"Local"
Non-Standard Annexes

Annex AA

Executive Steering Committee Charter

Executive Steering Committee Charter

Delaware Bay Area Committee Charter

1. Purpose and Mission

1.1. The Delaware Bay Area Committee, created under the Oil Pollution Act of 1990, is a component of the National Response System, as established under the National Oil and Hazardous Substances Contingency Plan (NCP). The Area Committee complements the National Preparedness System as defined by the Department of Homeland Security (DHS), by facilitating preparedness efforts of the "whole community" to promote and strengthen the National Preparedness mission areas of Prevention, Protection, Mitigation, Response, and Recovery. The Area Committee prepares an Area Contingency Plan (ACP) for their area, under the direction of the Federal On-Scene Coordinator (FOSC) and in conjunction with the Regional Response Teams (RRT), National Strike Force, State Emergency Response Commissions (SERCs), Local Emergency Planning Committees (LEPCs), the District Response Advisory Team and Preparedness Staff, Scientific Support Coordinator, and other stakeholders. The Area Committee also promotes affirmative conservation of threatened and endangered species and historical/cultural resources, in accordance with applicable law. The Area Committee's Executive Steering Committee (ESC) performs strategic oversight and provides direction for fulfillment of Area Committee missions and initiatives. The Executive Steering Committee (ESC) will focus their efforts on strengthening public-private preparation and response partnerships and pre-planning; engaging stakeholders; maintaining and improving the ACP, including Geographic Response Strategies; and setting strategic priorities and work plans for training, exercises, and/or other preparedness initiatives.

2. Composition

2.1. Per the Coast Guard Marine Environmental Response Manual, COMDTINST M16000.14(series), broad Area Committee representation provides for effective spill response planning and preparedness. Appendix A of the Marine Environmental Response Manual contains a list of agencies for potential inclusion on the Area Committee.

2.2. The ESC will function as a representational team of government, non-government organizations (NGO), and members of the private sector. This team has a shared role in preparedness and response activities within Coastal Zone, as defined by the 1997 Coast Guard/EPA Memorandum of Understanding and ACP, within Sector Delaware Bay's Captain of the Port (COTP) area of responsibility, as defined by Title 33 of the Code of Federal Regulations (CFR) part 3.25.

2.3. The Commander, Coast Guard Sector Delaware Bay, serves as the FOSC in the Coastal Zone, and is the Chairman of the ESC and the Area Committee. The FOSC, in consultation with the state agency Area Committee representatives from New Jersey,

Delaware, and Pennsylvania, designates a State co-chairman to serve on an annual basis from January 1 through December 31. The charter members of the ESC represent a broad spectrum of interests, expertise, and jurisdictions from the COTP zone to provide for effective contingency response planning and preparedness. The default composition of the ESC should include the following:

ESC Appointed Permanent Members	ESC At-Large Representatives
• USCG, Federal On-Scene Coordinator	• Oil Spill Response Organization (OSRO) Rep
• NJ State Representative	• Wildlife Response/Rehabilitation NGO
• DE State Representative	• Estuary/Water Environmental Quality NGO
• PA State Representative	• Industry Technical Specialist(s): Vessel
• NOAA	• Industry Technical Specialist: Facility
• DOI / USFWS Representative(s)	• Industry Technical Specialist: Pipeline
• US Army Corp of Engineers	• Industry Technical Specialist: Rail
• EPA Regions 2 and 3 (advisors)	• Local Emergency Preparedness Committee (LEPC) Rep
	• Sub Committee Chair(s)

Table 1

2.4. In accordance with Coast Guard Marine Environmental Response Manual, COMDTINST M16000.14(series), the FOSC will designate in writing all Appointed Permanent Executive Committee members. These members will serve indefinitely until a replacement is appointed. In coordination with ESC members, the FOSC will invite At-Large Representatives to participate on the ESC for a term of three years. The ESC may solicit a particular individual to fill an At-Large position based on a specific and desirable skill set or experience, or solicit applicants from the General Members of the Area Committee. If a pool of potential candidates for a particular position is desired, a solicitation will be advertised electronically to the Area Committee general membership, and verbally at an Area Committee general members meeting. Applicants will be asked to provide a resume and/or letter of interest to the ESC, via the Executive Secretary, by a set deadline. The ESC will decide on the method for filling a particular position (i.e. targeted individual outreach or solicitation for candidates) by majority vote, and in accordance with paragraphs 5 and 6 of this Charter. There is no limit to the amount of sequential terms that At-Large Representatives may serve. However, At-Large positions should be re-solicited from within the Area Committee upon vacancy or end of term so that the ESC may consider best qualified individuals to serve in respective roles.

3. Roles and Responsibilities

3.1. FOSC: The Commander, Coast Guard Sector Delaware Bay is the FOSC, and serves as the Chair of the ESC and Area Committee. In the absence of the Sector Commander, the Deputy Sector Commander will serve as Chair. The FOSC is ultimately responsible for ensuring the ESC and Area Committee fulfills its mission and purpose and adheres to the terms of this Charter. The FOSC or his/her designee will communicate ESC and

Area Committee business or issues, as deemed appropriate, up the Coast Guard chain of command. The FOSC will ensure continuing USCG administrative and logistical support of the ESC and Area Committee by appointing an Executive Secretary.

3.2. Executive Secretary: The Civilian Contingency Preparedness Specialist on Sector Delaware Bay's Contingency Planning Staff serves as the Area Committee and ESC Executive Secretary. The Executive Secretary is a non-voting member responsible for administrative and logistical support of the ESC and Area Committee, including but not limited to: coordinating Area Committee and ESC meetings, formatting/disseminating meeting agendas and minutes, completing the Area Committee's Annual Report, managing appointment letters, and other tasks assigned by the FOSC and/or Co-Chair.

3.3. ESC and Area Committee Co-Chair: The Co-Chair shall be a State representative (normally from the respective states' environmental protection/response agency and/or a State On-Scene Coordinator) from New Jersey, Delaware, or Pennsylvania who serves a one-year term. The Co-Chair position will rotate between the three state representatives, turning over annually on 1 January (PA 2018, DE 2019, NJ 2020, and so on). The Co-Chair is responsible for developing or recommending meeting agenda topics, and will personally facilitate ESC meetings during their time as Co-Chair. Additionally, the Co-Chair will assist in providing a summary of Area Committee initiatives and accomplishments from the previous year to the Executive Secretary annually in January for inclusion in the Area Committee Annual Report. The Co-Chair shall ensure that the ESC and Area Committee operate in accordance with this Charter and other applicable policy/guidance. The Executive Secretary will advise and assist the Co-Chair in the performance of these duties.

3.4. ESC Members: Sector Delaware Bay ESC members (Appointed and At-Large) will represent their entity and/or stakeholder group in support of the Area Committee's mission and purpose. Appointed and At-Large members may designate an alternate to represent on their behalf during ESC meetings, should the appointed or At-Large member be unavailable. ESC members should weigh in on and/or vote upon strategic issues, projects, or initiatives, examine or research particular issues within their areas of expertise, develop recommendations for action, and assist with the development of topical areas of focus for Area Committee meetings/activities.

3.5. Enclosure (1) contains a complete list and descriptions of ESC representative positions.

3.6. General Area Committee Members: The FOSC, in consultation with ESC members, allows port stakeholders to participate in the Area Committee and its activities. These port stakeholders are referred to as general members. All general members must conform to all applicable requirements, procedures, and protocols for Area Committee activities. General members may assist the ESC and Area Committee individually or as representatives of the organizations with which they are affiliated, and may include, but are not limited to, subject matter experts whose input is necessary in the development of the ACP or other activities. General members may participate in the

activities of sub-committees and work groups. General members are representative of federal, state, tribal, territorial, and local agencies; non-government organizations, marine industry; and other port stakeholders. Representatives for each aspect of the ACP, and those charged with its regulation and/or management, are encouraged to participate.

General Area Committee members are responsible for, but not limited to:

- Recommending ACP enhancement strategies that are realistic and commensurate with expected risks including plans, practices, exercises and procedures to safely respond to, mitigate the effects of, and recover from environmental incidents;
- Assisting the ESC and Area Committee in reviewing and updating the ACP;
- Participating in exercising of the ACP;
- Promoting inter-agency collaboration and preparedness; and
- Keeping abreast of, and sharing, "best practices" that may be of value to the Area Committee.

3.7. Sub-committees and Workgroups: Additional standing sub-committees and/or workgroups may be established upon approval of the ESC. The ESC will determine membership and/or target audience of such sub-committees or workgroups, unless otherwise established via applicable Charter for the sub-committee or workgroup. ESC members may be asked to contribute personnel, resources, or leadership to support sub-committee or workgroup activities. As of the writing of this Charter, the Marine Firefighting Sub-Committee is a standing sub-committee of the Area Committee, and is established and administered in accordance with its Charter (enclosure 2).

4. Meetings

4.1 There are three types of meetings: ESC meetings, Area Committee meetings, and Sub-Committee/Workgroup meetings. ESC meetings shall occur at least twice annually, but may be held quarterly at the discretion of the FOSC and ESC. In accordance with Coast Guard policy, Area Committee General Member Meetings shall occur at least twice annually. However, Delaware Bay Area Committee meetings and Executive Steering Committee meetings generally occur quarterly. Sub-committee and/or Working Group meetings are held as needed.

4.2 Area Committee meetings are held to share information relevant to the mission and purpose of the Area Committee, enable members to introduce topics, receive updates on projects, and conduct such business as deemed necessary and appropriate.

4.3 The Executive Secretary is responsible for communicating the dates of meetings as far in advance as practicable to the Area Committee membership in order to encourage maximum attendance. The Executive Secretary will disseminate agendas for ESC and Area Committee General Members Meetings no later than five working days prior to the meeting.

4.4 ESC meetings are held to discuss and provide strategic direction, make recommendations, and to review and vote on actions, projects, and/or tasks raised by the general membership or other ESC members. Additionally, ESC meetings are used to monitor the progress of the various projects and tasking, provide such guidance as may be necessary to effectively and efficiently carry out those projects and tasking, and carry out the functions of the ESC. Special Meetings may be conducted to address topics of a unique or time critical nature with as much notice given to ESC member as practicable. Special meetings may be conducted remotely if appropriate (i.e. conference call).

4.5 Meeting Rules and Administration: Robert's Rules of Order will guide the manner in which the FOSC and Co-Chair conduct ESC and Area Committee meetings. At a minimum, minutes shall include the date of the meeting, the list of attendees, a synopsis of items discussed and any recommendations, future action items, or accomplishments. The Executive Secretary will draft minutes from ESC and Area Committee meetings within 15 business days after the conclusion of the meeting, and disseminate to the ESC when completed.

4.6 All ESC meetings are closed to the general membership and public unless authorized by the FOSC. Requests by the general membership and public to attend ESC meetings may be submitted through the Executive Secretary. Members of the general public wishing to attend an Area Committee meeting will coordinate through the Executive Secretary. All guests shall be directed/introduced to the Executive Secretary for check-in prior to the start of the meeting.

5. Voting

5.1. Area Committee Meetings. No formal voting is conducted at a general membership meeting. This meeting is for information sharing only.

5.2. ESC Meetings. At the discretion of the FOSC, Co-Chair, or ESC membership, motions will be introduced and voted upon. Motions receiving a majority vote of a duly constituted quorum of the ESC membership shall be adopted, and recorded in the meeting minutes. Appointed and At-Large ESC members will receive one vote (note: Representatives of EPA Regions 2 and 3 are advisors and do not vote). Designated alternates may only vote when the ESC member they represent is absent. A duly constituted quorum is established when a simple majority of the ESC membership is represented in person and/or telephonically.

5.3. Voting may be conducted via teleconference or electronically on a case by case basis.

6. Compensation

6.1 ESC and Area Committee members do not receive reimbursement of any kind from the Coast Guard.

7. **Amendments**

7.1. Motions to amend this charter may be introduced by ESC members for discussion and vote. Amendment motions will be handled in accordance with paragraph 5.

8. **Records**

8.1. The FOSC will ensure that Area Committee business is documented in accordance with applicable policy, and this Charter. On behalf of the FOSC, the Executive Secretary maintains records of the ESC and Area Committee. Record keeping includes, but is not limited to, the following:

- ESC member appointment letters;
- ESC and Area Committee meeting agendas, attendance lists, and minutes;
- Documents recording key decisions and actions approved by the ESC and Area Committee;
- Subcommittee reports;
- Annual Area Committee Reports.
- Current edition of the ACP, including digital versions.

8.2 All records will be kept in the Coast Guards electronic data system, maintained by the Executive Secretary. Meeting agendas and minutes will also be posted to Homeport.

8.3. All ESC and Area Committee General Member meeting dates, agendas, meeting minutes, and the Area Committee Annual Report will be posted on the Sector Delaware Bay Homeport page.

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Date: 8 JAN 2019

Scott Anderson, Captain
USCG Federal On Scene Coordinator

Representative	Notes	Voting Status	Appointed or At Large	Type
USCG, SDB - Federal On Scene Coordinator	The Commander, Coast Guard Sector Delaware Bay is the FOSC, and is the Chair of the ESC and Area Committee. In the absence of, or by direction of the Sector Commander, the Deputy Sector Commander will serve as an Alternate FOSC.	Yes	N/A	Indefinite
Executive Secretary	The Executive Secretary is a Coast Guard member appointed by the FOSC and is a non-voting member of the ESC. The Executive Secretary will be responsible for administrative and logistical support of the ESC and Area Committee, including coordinating meetings, ensuring adequate record keeping, and other tasks assigned by the FOSC or Co-Chair.	No	N/A	Indefinite
PA State Representative	This representative is appointed by the FOSC to serve on the Area Committee and Executive Steering Committee. This is typically a State On Scene Coordinator (SOSC), or representative of the State's environmental response/protection agency. This member will represent the interests and concerns of his or her State. Duties include but are not limited to reviewing and updating the ACP, helping the Executive Steering Committee identify and work on strategic issues, assisting with exercise design and execution. Other state representatives may attend meetings with, or in place of, the primary state representative. Regardless of the number of representatives attending a meeting, PA gets a single vote.	Yes	Appointed	Indefinite
DE State Representative	This representative is appointed by the FOSC to serve on the Area Committee and Executive Steering Committee. This is typically a State On Scene Coordinator (SOSC), or representative of the State's environmental response/protection agency. This member will represent the interests and concerns of his or her State. Duties include but are not limited to reviewing and updating the ACP, helping the Executive Steering Committee identify and work on strategic issues, assisting with exercise design and execution. Other state representatives may attend meetings with or in place of the primary state representative. Regardless of the number of representatives attending a meeting, DE gets a single vote.	Yes	Appointed	Indefinite
NJ State Representative	This representative is appointed by the FOSC to serve on the Area Committee and Executive Steering Committee. This is typically a State On Scene Coordinator (SOSC), or representative of the State's environmental response/protection agency. This member will represent the interests and concerns of his or her State. Duties include but are not limited to reviewing and updating the ACP, helping the Executive Steering Committee identify and work on strategic issues, assisting with exercise design and execution. Other state representatives may attend meetings with or in place of the primary state representative. Regardless of the number of representatives attending a meeting, NJ gets a single vote.	Yes	Appointed	Indefinite
US Army Corps or Engineers	This is a seat that is filled by a representative of the Army Corps of Engineers as the USACE has equipment and or responsibilities to maintain the federal channel. If the primary Representative is not available, another employee of USACE attends meetings. Regardless of the number of representatives attending a meeting, USACE gets a single vote.	Yes	Appointed	Indefinite

Representative	Notes	Voting Status	Appointed or At Large	Type
Dept. of the Interior	This is a seat filled by a representative of the Department of The Interior as the DOI has responsibilities to protect and care for flora and fauna. The DOI representative has connections to USFWS field experts and Wildlife Refuge Managers in the area. Duties include, but are not limited to, reviewing and updating the ACP, helping design and participate in exercises, and participate in spill responses. Regardless of the number of representatives attending a meeting, DOI gets a single vote.	Yes	Appointed	Indefinite
USFWS	This is a permanent seat filled by a USFWS Representative. The position is a technical expert. Duties are similar to other positions. The representative is to help maintain the ACP, help design exercises, and advise the FOSC of wildlife concerns/considerations during pre-planning and during spill responses. This is a non-voting seat if DOI Representative is attendance at the ESC meeting. There is not an alternate for this position.	Yes	Appointed	Indefinite
NOAA	This is a permanent seat. The assigned Scientific Support Coordinator for the Sector fills the NOAA representative seat. The NOAA representative helps prepare responders for a spill response and offer technical assistance to the USCG during a spill. There is no alternate for this seat. Regardless of the number of representatives attending a meeting, NOAA gets a single vote.	Yes	Appointed	Indefinite
EPA II	This is a permanent advisory seat. As such, the agency does not vote on Area Committee business. The EPA representative from Region II advises the ESC and AC on environmental issues affecting the Coastal Zone. Duties include, but are not limited to, reviewing and updating the ACP,and helping design and participate in exercises.	No	N/A (Observer)	Indefinite
EPA III	This is a permanent advisory seat. As such, the agency does not vote on Area Committee business. The EPA representative from Region III advises the ESC and AC on environmental issues affecting the Coastal Zone. Duties include, but are not limited to, reviewing and updating the ACP,and helping design and participate in exercises.	No	N/A (Observer)	Indefinite
Oil Spill Removal Organizations	This seat represents the interests, capabilities, and concerns of the Oil Spill Removal Organizations (OSRO). The representative helps keep the ESC/AC informed of recent OSRO activities and capabilities. Because Delaware Bay and River Co-operative either hires other OSROs or works closely with other Co-ops, it has been a practice that the President of the DBRC would fill this seat. When the President of DBRC is not available, another employee of DBRC fills in for the President.	Yes	At Large	Term
Wildlife Response/Rehabilitation NGO	The Wildlife Resposne/Rehabilitation NGO position will represent the interests, capabilities, and concerns of wildlife response and/or rehabilitation. This individual should be from an established entity with wildlife research, response, and rehabilitation in their core missions. The organization should also have a program and/or expertise for the use of volunteers, with a well developed volunteer training program. The designated representative may send an altenate with similar qualifications.	Yes	At Large	Term

Representative	Notes	Voting Status	Appointed or At Large	Type
Estuary/Water Environmental Quality NGO	The Estuary/Water Environmental Quality NGO position will represent a research, scientific, and/or special interest in the maritime environment. The desired area of expertise for this position may be determined by the ESC based upon risk areas and/or areas of focus within the FOSC zone (i.e. Bay and River estuary, coastal, etc). This representative may help review and update portions of the ACP and help design and participate in exercises.	Yes	At Large	Term
Industry Technical Specialist: Vessel	The Industry Technical Specialist for Vessels will provide subject matter expertise for vessels and/or cargos (particularly oil/hazmat) operating within the port. This individual should have knowledge/experience with vessel response plans, and higher risk vessels/cargos operating in the port. This representative should also be well-versed in current operations, trends, and future outlook for port/vessel/cargo industry operations. This representative may help review and update portions of the ACP and help design and participate in exercises.	Yes	At Large	Term
Industry Technical Specialist: Facility	The Industry Technical Specialist for Facilities will represent regulated facility Operations & Emergency Response. Preferred background/experience includes facility emergency response planning/operations, and safety/environmental health, with an emphasis on higher risk/higher consequence facilities in the port (i.e. oil, refining, and/or chemical handling facilities, etc). This representative may help review and update portions of the ACP and help design and participate in exercises.	Yes	At Large	Term
Industry Technical Specialist: Pipeline	The Industry Technical Specialist for Pipelines will represent Pipeline operations, technical expertise, industry points of contact, and emergency response planning for pipelines within the FOSC zone. The representative could be a permanent or ad-hoc at-large seat for ESC business, at the ESC's discretion. This representative may help review and update portions of the ACP and help design and participate in exercises.	Yes	At Large	Term
Industry Technical Specialist: Rail	The Industry Technical Specialist for Rail will represent rail industry operations, technical expertise, industry points of contact, and emergency response planning, for rail operations within the FOSC zone. The representative will be able to provide insights into rail/cargo operations/trends within the zone, particularly those operations on rails with a water nexus. The representive will also be able to help the ESC/Area Commitee periodically review/update geographic response stategies for rail crossings, and linkage to rail emergency resposne plans, as applicable. The representative could be a permanent or ad-hoc at-large seat for ESC business, at the ESC's discretion. This representative may help review and update portions of the ACP and help design and participate in exercises.	Yes	At Large	Term
Local Emergency Planning Committee Rep	This postion will be solicited/selected from one of the LEPCs having a maritime nexus within the FOSC zone. This representative could be on a rotating basis, or specifically sought/invited to participate for a term based on a targetted/desired segment of the zone to help facilitate greater interaction/involvment with local LEPC(s), sharing of information, de-confliction, and partnership/collaboration opportunities for pre-planning and exercises.	Yes	At Large	Term

Annex BB

Spreadsheet of Geographic Response Strategy Site Visits

Geographic Response Strategy Site Visits

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
INDIAN RIVER INLET		NA					x							x	
ROOSEVELT INLET		NA					x							x	
FOWLER BEACH		NA					x							x	
MISPILLION RIVER		NA					x							x	
CONCH BAR/GRECOS CANAL		NA					x							x	
CLARK POINT		NA					x							x	
BROCKONBRIDGE GUT/SANDY POINT		NA					x							x	
MURDERKILL RIVER		NA					x							x	
ST. JONES RIVER		NA					x							x	
OPENING NORTH OF KITTS HUMMOCK		NA					x							x	
PICKERING BEACH-GUT SOUTH		NA					x							x	
PICKERING BEACH-GUT NORTH		NA					x							x	
LITTLE RIVER		NA					x							x	
LEIPSIC RIVER-OLD CREEK-SIMONS RIVER		NA					x							x	
HAY DITCH		NA					x							x	
SLUICE DITCH		NA					x							x	
THORNTOWN LEVEE BREACH		NA					x							x	
WOODLAND BEACH-NORTH GUT/SOUTH GUT		NA					x							x	
BIG BREAK-SLUICE RACE-LITTLE BREAK		NA					x							x	
BAKEOVEN POINT		NA					x							x	
SMYRNA RIVER		NA					x							x	
OPENING NORTH OF SMYRNA RIVER		NA					x							x	
CEDAR SWAMP-COLLINS BEACH		NA												x	
CEDAR SWAMP-COLLINS BEACH		nA												x	
MIDDLE DRAIN		NA												x	
LISTON POINT		NA												x	
PEACH HOUSE DITCH		NA												x	
RAYS DITCH		NA												x	
BLACKBIRD CREEK		NA												x	
APPOQUINIMINK RIVER		NA												x	
LOWER BREAK		NA												x	
UPPER BREAK		NA												x	
SILVER RUN		NA												x	
AUGUSTINE CREEK & AUGUSTINE BEACH		NA												x	
PORT PENN & OPENING NORTH OF PORT PENN		NA												x	
CANADAS BEACH NORTH		NA												x	
STAVE LANDING		NA												x	
ST. GEORGES CREEK		NA				x								x	
OPENING SOUTH OF C&D CANAL		NA				x								x	
C&D CANAL ENTRANCE		NA				x								x	
C&D CANAL BRIDGE		NA				x								x	
C&D CANAL BRIDGE (Route 13)		NA				x								x	
GOVERNOR BACON CENTER		NA				x								x	
DELAWARE CITY BRANCH CHANNE		NA				x								x	
PEA PATCH ISLAND		NA				x								x	
CEDAR CREEK-MOTIVA WATER INTAKE		NA				x								x	
RED LION CREEK		NA				x								x	
OPENINGS NORTH OF RED LION CREEK		NA				x								x	
TOM CREEK		NA				x								x	
OPENING NORTH OF TOM CREEK		NA				x								x	
GAMBLERS GUT		NA				x								x	
NEW CASTLE/BATTERY PARK		NA				x								x	
BROAD DYKE CANAL BRIDGE		NA				x								x	
OPENING AT RIVEREDGE PARK		NA				x								x	
MAGAZINE DITCH BRIDGE		NA				x								x	

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
CHRISTINIA RIVER		NA			x	x								x	
SHELL POT CREEK		NA			x						x				
STONEY CREEK		NA			x						x				
NAAMANS CREEK		NA			x						x				
NAAMANS CREEK RR BRIDGE		NA			x						x				
MARCUS HOOK CREEK RR BRIDGE		NA			x						x				
MONROE ENERGY WATER INTAKE		NA			x						x				
STONEY CREEK RR BRIDGE		NA			x						x				
CHESTER CREEK		NA			x						x				
CHESTER CREEK SOUTH RR BRIDGE		NA			x						x				
CHESTER CREEK NORTH RR BRIDGE		NA			x						x				
CHESTER CREEK I-95 RR BRIDGE		NA			x						x				
RIDLEY CREEK		NA			x						x				
RIDLEY CREEK NORTH/SOUTH RR BRIDGE		NA			x						x				
RIDLEY CREEK I-95 RR BRIDGE		NA			x						x				
CRUM CREEK SOUTH RR BRIDGE		NA			x						x				
CRUM CREEK NORTH/I-95 RR BRIDGES		NA			x						x				
DARBY CREEK		NA			x						x				
DARBY CREEK RR BRIDGE		nA			x						x				
DARBY CREEK JOHN HEINZ NWR… Inland		NA			x						x				
MUCKINIPATTIS CREEK…. Inland		NA			x						x				
HERMESPROTA CREEK RR BRIDGE… Inland		NA			x						x				
UPPER DARBY CREEK RR BRIDGE…Inland		nA			x						x				
COBBS CREEK RR BRIDGE…Inland		NA			x						x				
TINICUM ISLAND		NA			x						x				
FORT MIFFLIN, USACOE		NA			x						x				
SCHUYKILL RIVER LOWER END		NA			x								x		
SCHUYKILL RIVER UPPER END		NA			x								x		
SCHUYKILL RIVER GRAYS FERRY BRIDGE		NA			x								x		
SCHUYKILL RIVER GRAYS FERRY BRIDGE		NA			x								x		
SCHUYLKILL RIVER ARSENAL BRIDGE		NA			x								x		
SCHUYLKILL RIVER LOWER END		NA			x								x		
PIER 98 SOUTH & PIER 80		NA													
PENNS LANDING		NA													
EXCELON DELAWARE STATION PIER 61		NA													
EXCELON RICHMOND STATION		NA													
DEL AIR BRIDGE		NA													
ROHM AND HASS/FRANKFORD CREEK		NA		x											
PENNYPACK CREEK		NA		x											
PENNYPACK CREEK 1 RR BRDIGE		NA		x											
FILTRATION PLANT NORTH OF PENNYPACK CREEK		NA		x											
POQUESSING CREEK		NA		x											
POQUESSING CREEK RR BRIDGE		NA		x											
NESHAMINY CREEK		NA		x											
NESHAMINY CREEK BRIDGE SOUTH		NA		x											
NESHAMINY CREEK BRIDGE CENTRAL		NA		x											
NESHAMINY CREEK BRIDGE NORTH		NA		x											
COLLEGE POINT		NA		x											
OTTER CREEK		NA		x											
OTTER CREEK BRIDGE		NA		x											
MARTINS CREEK BRIDGE		NA		x											
MARTINS CREEK		NA		x											
SCOTTS CREEK BASIN		NA		x											
PENNSBURY MANOR STATE PARK		NA		x											
USX/FAIRLESS NORTH		NA		x											
BILES CREEK		NA		x											

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
UPPER BILES CREEK		NA		x											
TRENTON BRIDGE		NA		x								x			
4 OPENINGs INTO WETLANDS ON DUCK ISLAND		NA		x								x			
DUCK CREEK		NA		x								x			
CROSSWICKS CREEK		NA		x								x			
BLACKS CREEK		NA		x								x			
NORTH END OF NEWBOLD ISLAND		NA		x								x			
SOUTH END OF NEWBOLD ISLAND		NA		x								x			
BUSTLETON CREEK		NA		x								x			
ASSISCUNK CREEK		NA		x								x			
ASSISCUNK CREEK BRIDGE NORTH		NA		x								x			
ASSISCUNK CREEK BRIDGE SOUTH		NA		x								x			
RANCOCAS CREEK 1 RR BRIDGE		nA		x								x			
RANCOCAS CREEK 2 RR BRIDGE		NA		x								x			
SWEDES RUN RR BRIDGE		NA		x								x			
POMPESTON CREEK		NA		x								x			
POMPESTON CREEK RR BRIDGE		nA		x								x			
PENNSAUKEN CREEK		NA		x								x			
PENNSAUEKN CREEK RR BRIDGE		NA		x								x			
NORTH COOPER RIVER		NA		x								x			
COOPER RIVER 1 RR BRIDGE		NA		x								x			
COOPER RIVER 2 RR BRIDGE		NA		x								x			
BATTLESHIP NJ		NA		x								x			
NEWTON CREEK		NA	x									x			
NEWTON CREEK RR BRIDGE		NA	x									x			
BIG TIMBER CREEK		NA	x									x			
LITTLE TIMBER CREEK RR BRIDGE		NA	x									x			
BIG TIMBER CREEK RR BRIDGE		NA	x									x			
WOODBURY CREEK		NA	x												
MAIN DITCH RR BRIDGE		NA	x												
LITTLE MANTUA CREEK		NA	x												
MANTUA CREEK		NA	x												
MANTUA CREEK 1 RR BRIDGE		NA	x												
MANTUA CREEK 1 RR BRIDGE		NA	x												
AUNT DEBS DITCH		NA	x												
OLD CANAL		NA	x												
RACCON CREEK		NA	x												
RACCOON CREEK SOUTH		NA	x												
OLDMANS CREEK		NA	x												
OLDMANS POINT		NA	x												
HELMS COVE CENTRAL		NA	x												
HELMS COVE SOUTH		NA	x												
BRANDRIFF BEACH		NA	x												
PENNSVILLE		NA	x												
KILLCOHOOK POINT		NA	x												
DUPONT DEEPWATER		NA	x												
FIRST CREEK SOUTH OF FT. MOTT		NA	x												
MILL CREEK / GOOSE POND		NA	x												
BALDRIDGE CREEK		NA	x												
SALEM RIVER		NA	x							x					
OAKWOOD BEACH		NA								x					
MILL CREEK		NA								x					
STRAIGHT DITCH		NA								x					
OPENING BETWEEN STRAIGHT DITCH AND BACK DITCH		NA								x					
BACK DITCH		NA								x					
ALLOWAY AND LOWER ALLOWAY CREEKS		NA								x					

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
HOPE CREEK STATION		NA								x					
HOPE CREEK AND THREE GUTS NORTH		NA								x					
SHORE DITCH		NA								x					
FISHING CREEK		NA								x					
CAT GUT		NA								x					
UNNAMED OPENING ABOVE MAD CREEK		NA								x					
MAD HORSE CREEK		nA								x					
LOWER DEEP CREEK		NA								x					
CHERRY "Tree" CREEK		NA								x					
OPENING SOUTH OF CHERRY TREE CREEK		NA								x					
STOW CREEK		nA								x					
GUT SOUTH OF STOW CREEK		NA								x					
JACOBS CREEK		NA								x					
OPENING SOUTH OF JACOBS CREEK		NA								x					
COHANSEY RIVER		NA								x					
DRUMBO CREEK		NA								x					
OPENING NORTH OF MIDDLE MARSH CREEK		NA								x					
MIDDLE MARSH CREEK		NA								x					
GUT NORTH OF SEA BREEZE		NA								x					
GUT SOUTH OF SEA BREEZE		NA								x					
OYSTER GUT		NA								x					
PIER POINT NECK-FOUR GUTS NORTH		NA								x					
BACK CREEK		NA								x					
TARPON GUT		NA													x
CEDAR CREEK		NA													x
NANTUXENT CREEK		NA						x							x
BEACH CREEK		NA						x							x
GANDYS BEACH		NA						x							x
DYER CREEK		NA						x							x
PADGETTS CREEK		NA						x							x
SOW & PIGS CREEK		NA						x							x
BEADONS CREEK		NA						x							x
FORTESCUE CREEK		NA						x							x
RAYBIN BEACH/OYSTER CREEK		NA						x							x
FISHING CREEK		NA						x							x
STRAIGHT CREEK		NA						x							x
UNNAMED OPENING SOUTH OF STRAIGHT CREEK		NA						x							x
UNNAMED OPENINGS SOUTH OF KINGS POND		NA						x							x
KING POND		NA						x							x
ORANOAKEN CREEK		NA						x							x
DIVIDING CREEK		NA						x							x
UNNAMED CREEK EAST OF DIVIDING CREEK		NA						x							x
ELDER POINT		NA						x							x
MAURICE RIVER		NA						x							x
UNNAMED DITCH NORTH OF THOMPSONS BEACH		NA						x							x
RIGGINS BEACH		NA						x							x
UNNAMED DITCH NORTH OF MOORES BEACH		NA						x							x
WEST CREEK		NA						x							x
EAST CREEK		NA						x							x
DENNIS CREEK		NA						x							x
GOSHEN CREEK		NA						x							x
OPENINGS SOUTH OF GOSHEN CREEK		NA						x							x
BIDWELL CREEK		NA						x							x
COOKS CREEK		NA						x							x
DIAS CREEK		NA						x							x
UNNAMED CREEK SOUTH OF DIAS CREEK		NA						x							x

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
CAPE MAY INLET BAYSIDE		NA						x							x
CAPE MAY POINT DIAMOND BEACH ..... needs tp be developed		NA													
CONCRETE SHIP ... needs to be developed		NA													
CAPE MAY INLET OCEANSIDE		NA							x						
HEREFORD INLET		NA							x						
TOWNSEND INLET		NA							x						
CORSON INLET		NA							x						
GREAT EGG HARBOR INLET LONG PORT		NA							x						
ABSECON INLET		NA							x						
BRIGANTINE INLET		NA							x						
LITTLE EGG INLET		NA							x						
BARNEGAT INLET		NA							x						
MANASQUAN INLET		NA							x						
SHARK RIVER INLET		NA							x						
		NA													

Annex CC

MOUs for USCG-EPA Regions II and III Boundaries

Region 2 Boundary

DEMARCATION OF THE INLAND AND COASTAL ZONES
BETWEEN
U.S. ENVIRONMENTAL PROTECTION AGENCY – REGION 2
AND
U.S. COAST GUARD – FIRST DISTRICT
AND
U.S. COAST GUARD – FIFTH DISTRICT
AND
U.S. COAST GUARD – NINTH DISTRICT
FOR
PRE-DESIGNATION OF ON-SCENE COORDINATORS
FOR
POLLUTION RESPONSE IN REGION 2
(THE STATES OF NEW JERSEY AND NEW YORK)

1. PARTIES. The parties to this Agreement are the United States Coast Guard (USCG) and United States Environmental Protection Agency (EPA).

2. AUTHORITY. This Agreement is authorized under the National Contingency Plan, 40 CFR 300.210(b).

3. PURPOSE. The purpose of this agreement is set forth by which EPA and the USCG define the Region 2 Inland Zone (IZ)/Coastal Zone (CZ) boundaries, in order to establish responsibility for the pre-designation of On-Scene Coordinators (OSCs[1]) for pollution response pursuant to the National Oil and Hazardous Substances Contingency Plan (NCP, 30 CFR 300). This agreement provides a precise line of demarcation between the inland and coastal zones for inclusion in the federal regional contingency plan (RCP), as called for in the NCP section 300.210(b), and in the definitions for inland and coastal zones under NCP section 300.5. This MOU also establishes a formal mechanism by which OSC authority may be transferred between EPA and the USCG during an oil and/or hazardous substance pollution incident. Implicitly included in such a transfer of OSC responsibility is the responsibility for enforcement, as provided for in the USCG and EPA Memorandum of Understanding Concerning the Enforcement of Section 311 of the Clean Water Act, entered into on March 23, 1993.

4. RESPONSIBILITIES. In the area covered under this agreement, the U.S. Environmental Protection Agency (EPA) and the U.S. Coast Guard (USCG) will carry out agency and specific pollution response responsibilities under the National Contingency Plan (NCP), the National Response Plan (NRP), the Regional Contingency Plan (RCP), and the applicable Area Contingency Plans (ACP), and will assist each other to the fullest extent possible to prevent or minimize the impacts of actual or threats of discharges of oil onto navigable waters or adjoining shorelines, and actual or threats of releases of hazardous

[1] The Coast Guard uses the term Federal On-Scene Coordinator (FOSC) to prevent confusion with the On-Scene Commander in the Search-and-Rescue community. For the purposes of this document, only the NCP term On-Scene Coordinator and acronym OSC are used.

substances into the environment. The terms of this agreement will be incorporated into the applicable RCP and ACPs.

Inland Zone

The U.S. Environmental Protection Agency (EPA) provides the pre-designated On-Scene Coordinator (OSC) for pollution response in the Inland Zone. Response to discharges or releases, or a substantial threat of such a discharge of oil or release of a hazardous substance originating within the Inland Zone, including those from unknown sources, will be the responsibility of the EPA OSC.

Incidents for which the EPA does not provide the OSC are outlined in 40 CFR 300.120(c) and (d):

- releases of hazardous substances, pollutants, or contaminants, when the release is on, or the sole source of the release is from any facility or vessel under the responsibility, custody, or control of DOD or DOE

- remedial responses to facilities controlled by federal agencies other than DOD or DOE;

- all responses involving DOD owned or controlled military weapons.

The inland zone in Region 2 consists of the environment inland of the coastal zone excluding the Great Lakes and specified ports and harbors on inland rivers described in this agreement or adjacent regional and international boundary agreements, given the specific inland/coastal zone boundary precisely described later in this agreement.

Coastal Zone

The cognizant U.S. Coast Guard Captain of the Port (COTP) is the pre-designated On-Scene Coordinator (OSC) for pollution response in the Coastal Zone. Response to discharges or releases, or a substantial threat of such a discharge of an oil or release of a hazardous substances originating within the Coastal Zone, including those from unknown sources, will be the responsibility of the U.S. Coast Guard OSC.

Incidents for which the USCG does not provide the OSC are outlined in 40 CFR 300.120(c) and (d):

- releases of hazardous substances, pollutants, or contaminants, when the release is on, or the sole source of the release is from any facility or vessel under the responsibility, custody, or control of DOD or DOE

- remedial responses to facilities owned or controlled by federal agencies other than DOD or DOE; and

- All responses involving DOD owned or controlled military weapons.

The USCG hazardous substance response role is generally limited to the emergency actions in response to hazardous substance releases, as further defined in the NCP at 40 CFR 300.120(a)(1) and the Department of Transportation (DOT)/EPA Instrument of Redelegation dated May 27, 1988.

The later-described precise inland/coastal boundary line separates the inland and coastal zones, with the coastal zone consisting of the following on the seaward side of the line: United States waters subject to the tide, United States waters of the Great Lakes, specified ports and harbors on inland rivers, waters of the contiguous zone, other waters of the high seas subject to the NCP, and the land surface or land substrata, ground waters, and ambient air proximal to those waters.

Mutual Response Support and Transfer of OSC Responsibility

The proposed boundary lines do not preclude mutual assistance between the two agencies on an incident to best utilize the expertise and capabilities of each. In certain incidents, a complete transfer of OSC responsibility may be more practical than augmenting the predesignated OSC agency with the other's expertise and resources through mutual support.

A formal agency transfer of OSC may be appropriate when:

1. A hazardous substance response changes from an emergency response to a removal action;

2. One OSC or agency is better suited to coordinate the response to a specific incident. For instance, the EPA may request the Coast Guard OSC for oil discharges near the boundary that require navigable water response, or the Coast Guard may request an EPA OSC on certain hazardous materials cases;

3. A discharge or release crosses the boundary line and the scope of potential and/or actual environmental impacts in one Zone significantly exceeds the other;

4. An OSC's emergency response workload exceeds existing capabilities; or,

5. Other incident-specific situations in which EPA and USCG determine that a formal transfer of OSC responsibility is appropriate.

The opportunity to transfer responsibility can be initiated verbally, with a follow-up of written documentation of transfer for responsibility for discharges or releases. When the OSC duties are transferred, the agreement will be confirmed in writing by utilizing the attached Statement of Transfer Federal OSC Responsibility.

Incident Origin and Seepage Sites

When discharges or releases are discovered to have originated from the zone other than originally thought, the OSC with the responsibility for the source zone will assume responsibility. This transfer of responsibility can initially occur verbally, with a follow-up of written documentation (enclosure 1). A source may be unknown or may occur in both Zones. In that case, the OSC for the Zone most significantly impacted will assume responsibility.

A seepage site should remain under the authority of the predesignated OSC for the zone that it is contained in. OSC responsibility may be transferred when the discharge or release crosses or has the potential to cross the boundary line, and the two agencies agree that the scope of potential and/or actual environmental impacts in one Zone significantly exceeds the other.

OSC Responsibility under the National Response Plan

During pollution responses during Incidents of National Significance under organizational structures of the National Response Plan (NRP), pollution impacts may affect many areas within the region. In these instances, OSC boundary designations may not be strictly adhered to in an effort to best use available resources to respond to the myriad of pollution issues under the guide of the NRP and Emergency Support Function (ESF) #10, if activated. However, under ESF #10, care shall be taken to place an OSC on an incident consistent with the parent agency's expertise. Where mutual agreement is not readily reached at the ESF-10 and OSC level in such cases, OSC responsibility will be determined by the Regional Response Team (RRT) co-chairs.

Nuclear/Radiological Incidents

Please consult the Nuclear-Radiological Incident Annex to the National Response Plan for guidance on coordinating agency and other agency roles in a nuclear or radiological incident. On-Scene Coordinator authorities and responsibilities apply to releases of radionuclides designated as hazardous substances (40 CFR 302.4), except where specifically excluded from the hazardous substance definition (statutory exclusions related to the Atomic Energy Act and Uranium Mill Tailings Radiation Control Act). While a radionuclide release may be fully addressed under the NCP under FOSC authority, there are a number of situation-dependent authorities, responsibilities, and coordinating functions of other federal agencies that may apply. The National Response Plan Nuclear-Radiological Incident Annex reconciles these roles by defining a coordinating agency based on the circumstances of an incident (Table 1 of the Annex), and further defining agency roles and responsibilities for both Incidents of National Significance and lesser incidents. OSCs should implement their NCP authority in a radionuclide release consistent with the coordination mechanisms of the NRP Nuclear-Radiological Incident Annex when an incident beyond NCP-only coordination occurs.

Notifications following Transfer of OSC Responsibility

EPA and the USCG often work closely with state and local counterparts during oil and hazardous substance pollution responses. To facilitate federal coordination with the state and local response community following a formal transfer of OSC responsibility, a signed copy of the transfer agreement should be sent to the appropriate state and/or local emergency response department. However verbal notification to the states is required as soon as the transfer of OSC responsibility takes place followed by the signed copy. The lead for enforcement actions may also be determined by the agency providing the OSC under other agreements and procedures; therefore, a copy of the transfer agreement should be sent to USCG and EPA enforcement personnel as appropriate to adjust enforcement lead.

Amendments and Effective Date

This agreement will be subject to review and amendment coincident with each periodic review of the Regional, Area, and other applicable contingency plans and any other time at the request of any of the parties. It will remain in effect until modified or terminated by mutual agreement.

5. POINTS OF CONTACT. Points of contact for the coordination, support, and implementation of this agreement are as follows:

Chief, Response and Prevention Branch
US EPA, Region 2 (MS-211)
2890 Woodbridge Avenue
Edison, NJ 08837-3679

Chief, Response Division
USCG First District
480 Atlantic Avenue
Boston, MA 02110

Chief, Response Division
USCG Fifth District
Federal Bldg.
431 Crawford Street
Portsmouth, VA 23704-5004

Chief, Response Division
USCG Ninth District
1240 East 9th St.
Cleveland, OH 44199-2060

Commander
Sector New York
212 Coast Guard Drive
Staten Island, NY 10305

Commander
Sector Delaware Bay
1 Washington Avenue
Philadelphia, PA 19147-4395

Commander
Sector Buffalo
1 Fuhrmann Blvd.
Buffalo, NY 14203-3189

Commander
Sector Long Island Sound
120 Woodward Ave.
New Haven, CT 06512-3698

Regional and Area Contingency Plans covering the States of New Jersey and New York will be amended to reflect the following geographical boundaries. This boundary agreement supersedes other agreements previously enacted concerning the federal pre-designated OSC boundaries for purposes of pollution response within federal Region 2.

6. OTHER PROVISIONS. Nothing in this Agreement is intended to conflict with current law or regulation or the directives of the United States Coast Guard or Department of Homeland Security or Environmental Protection Agency. If a term of this agreement is inconsistent with such authority, then that term shall be invalid, but remaining terms and conditions of this agreement shall remain in full force and effect.

7. EFFECTIVE DATE. The terms of this agreement will be come effective upon transmittal by the Co-Chairs of the Region 2 Regional Response Team.

8. MODIFICATION. This agreement may be modified upon the mutual written consent of the parties.

9. TERMINATION. The terms of this agreement, as modified with the consent of both parties, will remain in effect indefinitely. Either party upon 30 days written notice to the other party may terminate this agreement.

ACRONYMS

ACP	Area Contingency Plan
COTP	Captain of the Port
CZ	Coastal Zone
DHS	United States Department of Homeland Security
DOD	United States Department of Defense
DOE	United States Department of Energy
DOT	Department of Transportation
EEZ	Economic Exclusion Zone
EPA	United States Environmental Protection Agency
ESF	Emergency Support Function
IZ	Inland Zone
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NRP	National Response Plan
OSC	On-Scene Coordinator
RCP	Regional Oil and Hazardous Substances Pollution Contingency Plan
RRT	Regional Response Team
USCG	United States Coast Guard

Statement of Agreement to Transfer Federal On-Scene Coordinator (OSC) Responsibility Between the U.S. Coast Guard (USCG) and U.S. Environmental Protection Agency (EPA) within Region 2 (excluding Caribbean)*

Pursuant to the Demarcation of the Inland/Coastal Zone Boundary for Region 2, this agreement documents that the (EPA/USCG) OSC hereby transfers responsibility to the (EPA/USCG) OSC to take response measures deemed necessary to protect the public health or welfare or environment from the below indicated threat or actual discharge or release:

at (location): _____

from (source): _____

on or about (time): _____, (date): _____ 20_____

and otherwise identified as (case name or number) _____

This transfer of responsibility is (check one):

❑ from USCG _____ to EPA Region _____
(Sector) (Region number)

—OR—

❑ from EPA Region _____ to USCG _____
(Region number) (Sector)

It is hereby agreed:

That this delegation of responsibility is limited solely to the aforementioned incident.

That this transfer of responsibility to the accepting OSC is COMPLETE and will include all associated investigation, cleanup or removal, disposal, public relations, enforcement, incidental paperwork, filing of required reports, and all other responsibilities of the OSC under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

That this transfer will further remain in effect until such time as the accepting OSC has determined that there is no further danger to the public health or welfare.

That this agreement does not preclude continued mutual support between EPA and the USCG as deemed appropriate for this incident.

COAST GUARD Federal OSC	**EPA OSC**
DATE	**DATE**

* This document provided as a means, not the sole means, to document exchange of OSC responsibility. If this form is unavailable or OSCs are unable to exchange signatures due to incident circumstances, other communications can be used to effect and document a transfer.

GEOGRAPHIC AREAS OF FEDERAL RESPONSIBILITY
for
The States of NEW JERSEY and NEW YORK
(Inland and Coastal boundary demarcations)

In agreement between EPA Region II and USCG's Sector Delaware Bay, Sector New York, Sector Long Island Sound and Sector Buffalo, the following demarcation lines between the inland and coastal zones, for federal responsibility for response action, have been established for the states of New Jersey and New York.

State of New Jersey

The following is a geographic description of the points of demarcation between USCG and EPA Region II, for assuming Federal On-Scene Coordinator responsibilities in the State of New Jersey.

In New Jersey, the ***coastal zone*** includes:

1. The territorial seas adjacent to the COTP NY zone described in 33 CFR 3.05-30.
2. Hudson River: The entire length bordering New Jersey.
3. Hackensack River: Downstream of the Route 80 Bridge in ***Hackensack***.
4. Passaic River: Downstream of the 8th Street Bridge in ***Wallington***.
5. All of the Arthur Kill, Kill Van Kull and Newark Bay.
6. Raritan Bay and Sandy Hook Bay.
7. Raritan River: Downstream of the Albany Street Bridge (Route 27) in ***New Brunswick***.
8. All of the Navesink River.
9. Delaware River: From the Delaware Bay to the Alternate Route 1 Bridge (Bridge Street) in ***Trenton***.
10. Rancocas Creek: From the Delaware River to the I-295 Bridge in ***Willingboro***.
11. All of the Cooper River.
12. All of Newton Creek and its tributaries.
13. All of Little Timber Creek.
14. Big Timber Creek: From the Delaware River to the Route 42 Bridge.

15. Salem River: From the Delaware River to the Route 49 Bridge in ***Salem***.

16. Tuckahoe River: From Egg Harbor to the draw bridge at Route 50.

17. Great Egg Harbor River: From Great Egg Harbor to Routes 50 and 559 in ***Mays Landing***.

18. Mullica River: From Great Bay to Route 563.

The ***inland zone*** in the State of New Jersey includes the following waterways:

1. Delaware River: Upstream from the Alternate Route 1 Bridge (Bridge Street) in ***Trenton***.

2. Hackensack River: Upstream of the Route 80 bridge in ***Hackensack***.

3. Passaic River: Upstream of the 8th Street Bridge in ***Wallington***.

4. Raritan River: Upstream of the Albany Street Bridge (Route 27) in ***New Brunswick***.

5. Salem River: Upstream from the first bridge in ***Salem***.

EPA Region II will respond to spills inland of, and on the highway boundaries described below. The demarcation lines in the State of New Jersey between the inland and coastal response zones are as follows:

<u>From the NY/NJ Border, South to Fort Lee:</u>

The EPA/USCG boundary, from the New York/New Jersey border, begins with the Palisades Interstate Parkway and continues south to Route 95 in ***Fort Lee***.

<u>From Fort Lee, South to Bayonne/From Bayonne, North to Ridgefield Park (Hudson River, Newark Bay, East Side of Hackensack River):</u>

The boundary resumes south of Route 95 along Route 505 (Hudson Terrace), which becomes River Road, and continues on River Road into ***West New York***. In West New York, the boundary bears to the east at the intersection of River Road and Port Imperial Boulevard. It continues south along Port Imperial Boulevard into ***Weehawken***, where it bears south along Harbor Boulevard; then South on Route 677 (Park Ave) into ***Hoboken***. The boundary then continues east on Route 670 (14th Street); then south on Route 679 (Hudson Street); then west on Route 681 (Observer Highway); then south on Luis Munoz Marin Boulevard into ***Jersey City***. The boundary then continues east on 18th Street, which becomes Washington Boulevard; east on 2nd Street; then south on Hudson Street; west on Grand Street; south on the NJ Turnpike Extension, east on Audrey Zapp Drive into ***Liberty State Park***; then south on Freedom Way,

west on Morris Pesin Drive to the NJ Turnpike Extension. The boundary continues south on the NJ Turnpike Extension to Route 440, south on Route 440 to Route 501 (JFK Boulevard) in ***Bayonne***; then north on Route 501 to the NJ Turnpike Extension, west on the NJ Turnpike Extension to Route 440, north on Route 440 to Route 1 in ***Jersey City***. The boundary continues north on Route 1 to Route 653 (County Road) into Secaucus, then Northeast on Route 653 to I-95 (NJ Turnpike), then north on 1-95 to Route 80 in ***Ridgefield Park***.

From Ridgefield Park to Harrison (West Side of Hackensack River):

The boundary resumes west on I-95 to I-80; then west on I-80 to Hudson St; then south on Hudson St to Moonachie Rd; then south on Moonachie Road to Washington Ave; then south on Washington Ave to the NJ Tpk; then south on the NJ Tpk to the Newark Pike.

From Harrison, North to Passaic/From Passaic, South to Newark (Passaic River):

The boundary continues west on the Newark Pike to Passaic Ave; then north on Passaic Ave which becomes River Rd/Riverside Ave/Jackson Ave/Carlton Ave to Locust Ave; then north on Locust Ave to 8th St; then north on 8th St to Passaic St. then west on Passaic St to Route 21; then south on Route 21 to Raymond Blvd; then east on Raymond Blvd to the NJ Turnpike.

From Newark to New Brunswick (Newark Bay, Arthur Kill, North Side of Raritan River):

The boundary continues south on the NJ Turnpike to Route 514 near ***Fords***; then west on Route 514 to Route 27; then south on Route 27 to Route 18 to ***New Brunswick***.

From New Brunswick to South Amboy (South Side of Raritan River):

The boundary continues south on Route 18 to Route 535; then east on Route 535 to Route 670 in ***Sayreville***; then east on Route 670 to Route 9 in ***South Amboy***.

From South Amboy, south to Long Branch (End of Sector NY AOR):

The boundary continues south on Route 9 to Route 35 South; and continues south on Route 35 to the vicinity of ***Eatontown***, where it reaches the southern boundary of Sector NY's AOR at 40°18'N latitude.

From Long Branch, south to Cape May (Begin Sector Delaware Bay AOR):

The boundary continues south on Route 35 to Route 70 in ***Brielle***; then south on Route 70 to Route 549; then south on Route 549 to Route 37; then west on Route 37, then south on Route 166 in ***Toms River*** to Route 9 South. The boundary continues south along Route 9 south to the Garden State Pkwy in ***Somers Point***; then south on the Garden State Pkwy to Route 47 in ***Rio Grande***.

From Trenton, South to Cape May:

The EPA/USCG boundary begins at the US Highway 1 Bridge between ***Morrisville, PA*** and ***Trenton, NJ***; continues east to its intersection with Route 29 South in ***Trenton***; then south along Route 29, which becomes Route 29/129, and merges into Interstate 195. The boundary continues on I-195 to its junction with Route 206 in the vicinity of ***White Horse***; then south on Route 206 to Route 130 in ***Bordentown***. The boundary then continues south on Route 130 to Route 49 in the vicinity of ***Deepwater***; then continues on Route 49 south and east, to its junction with Route 47 in ***Millville***. The boundary then continues south on Route 47, to its junction with the Garden State Parkway in the vicinity of ***Rio Grande***.

State of New York

The following is a geographic description of the points of demarcation between USCG and EPA Region II, for assuming Federal On-Scene Coordinator responsibilities in the State of New York.

Southeast New York State:

The ***coastal zone*** in the ***southeast region*** of New York State is described as:

1. The territorial seas adjacent to the COTP NY zone described in 33 CFR 3.05-30.

2. All of Lower Bay, Jamaica Bay, Gravesend Bay, East Rockaway Inlet, Coney Island Channel and tributaries south of the Belt Parkway on Long Island.

3. All of Upper Bay, The Narrows, Gowanus Bay, Gowanus Creek Channel, Bay Ridge Channel, Red Hook Channel, and Buttermilk Channel.

4. All of the Arthur Kill, Kill Van Kill and Newark Bay.

5. Hudson River (aka North River), from New York Bay to the Route 7 bridge in ***Green Island***.

6. All of the East River, Harlem River, and Spuyten Duyvil Creek, and Newtown Creek west of the Pulaski Bridge.

7. Westchester Creek, Bronx River, Eastchester Bay, Hutchinson River (aka Eastchester Creek), Flushing Bay and Creek, Little Bay, Little Neck Bay, Manhasset Bay, Hempstead Harbor and that portion of Long Island Sound west of a line drawn between the Connecticut/New York border and Dosoris Island on Long Island and north of Northern Blvd (Route 25A) on Long Island.

EPA Region II will respond to spills inland of, and on the highway boundaries described below. The demarcation lines between the inland and coastal response zones in the southeastern portion of the State of New York are as follows:

From the NY/NJ Border, West of the Hudson River, Northward:

The boundary between EPA and USCG begins on the Palisades Interstate Parkway; continues north on Route 9W to Interstate 787 in ***Albany***; then north on I-787 to Route 7 in ***Green Island***.

East of the Hudson River, From Green Island, Southward to the Bronx/Westchester County:

The boundary continues from the Route 7 bridge, to River Street in ***Troy***; then south on River Street, to the intersection with Front Street; then south on Front Street, to 1st Street; then south on 1st Street, to Madison Street; then west on Madison Street, to the CSX rail line. The boundary then continues along the CSX rail line, south along the eastern bank of the Hudson River, to the

intersection with Route 9 (Broadway) in the ***Bronx***. The boundary continues northeast on Route 9 to West 225th Street; then east on West 225th Street to the intersection with Route 87 (Major Deegan Expressway); then south on Route 87 to the intersection with Route 278 (Bruckner Expressway). The boundary then continues northeast on Route 278 to Route 95; then north on Route 95 to the Connecticut border.

Island of Manhattan:

The boundary begins on the northern tip of Manhattan on the Henry Hudson Parkway (Route 9A) and continues south on the Henry Hudson Parkway - which subsequently becomes the West Side Highway, West Street, and South Street - to the southern tip of Manhattan. The boundary then continues along the FDR Drive, which becomes the Harlem River Drive, to Dyckman Street, back to the intersection with the Henry Hudson Parkway.

Long Island (Brooklyn; Queens; Nassau and Suffolk Counties):

The boundary begins on the western end of the island at the Verrazano Narrows Bridge, and continues east along the Belt Parkway (Route 27) to the intersection with Merrick Road (Route 27A) in ***Rockville Center***; then east along Merrick Road, which becomes Montauk Highway at the ***Nassau/Suffok County*** border; then east along Montauk Highway to the intersection with Route 104 in the vicinity of ***Quogue***. The boundary then continues north on Route 104 to the intersection with Route 63 in ***Riverhead***; then north on Route 63 to Route 25; then west on Route 25 to the intersection with Route 25A in the vicinity of ***Calverton***. The boundary then continues west on 25A to the intersection with McGuinness Boulevard in ***Queens***; then south on McGuinness Boulevard to the Brooklyn-Queens Expressway (Route 278); then south on the Brooklyn-Queens Expressway to the Belt Parkway in ***Brooklyn***; then along the Belt Parkway back to the Verrazano Narrows Bridge.

Staten Island:

The boundary begins at the Outerbridge Crossing (Route 440) and proceeds north on Arthur Kill Road to the intersection with Route 440 in the Rossville section; then north on Route 440 to the intersection with Route 278. The boundary continues west on Route 278 to Western Avenue; then north on Western Avenue to Richmond Terrace; then east on Richmond Terrace to the ***St. George*** section, where Richmond Terrace becomes Bay Street. The boundary continues south on Bay Street to School Road; then southwest on School Road to Lily Pond Road; then south on Lily Pond Avenue to Father Capodanno Boulevard. The boundary continues southwest on Father Capodanno Boulevard to Greeley Avenue; then northwest on Greeley Avenue to Hylan Boulevard; then southwest on Hylan Boulevard to Craig Avenue. The boundary continues north on Craig Avenue to Bentley Street; then northwest on Bentley Street to Arthur Kill Road; then north on Arthur Kill Road back to the Outerbridge Crossing (Route 440).

The ***inland zone*** in the State of New York includes the following waterways:

1. Hudson River: From the Route 7 bridge in ***Troy***, north on the New York State Barge Canal system to Lake Champlain.

2. Lake Champlain: Those waters within the territorial boundary of New York State.

3. Mohawk River & the New York State Barge Canal: From the Hudson River west to ***Lockport***.

Northern New York State:

The ***coastal zone*** in northern New York State includes the following waterways inland of the boundary line, as described below:

1. Smokes Creek: Upstream past the confluence of the south and north branches of Smokes Creek, to the Route 62 bridges over the south and north branches of Smokes Creek, in the town of ***Lackawanna***.

2. The Union Canal: In the city of ***Buffalo***.

3. The Buffalo River: Upstream to the confluence with Cazenovia Creek at the Bailey Avenue (Route 62)/Hussey Street bridges in the city of ***Buffalo***.

4. The U.S. portion of the Niagara River and all of Grand Island.

5. The Scajaquada Creek: Upstream to the Grant Street bridge, in the City of ***Buffalo***.

6. New York State Barge Canal (formerly Erie Barge Canal) and Ellicott Creek: Elicott Creek upstream to the Young Street/Arterial Highway bridge in the city of ***North Tonawanda***. The New York State Barge Canal east to Lock 34 in the town of ***Lockport***.

7. 18 Mile Creek: Upstream to Burt Dam in the town of ***Burt***.

8. Oak Orchard Creek: Upstream to the Route 18 Bridge.

9. Sandy Creek at Sandy Harbor Beach: Upstream to Route 19 (Lake Road East Fork).

10. Bradock Bay including the north branch of West Creek: Upstream to Route 261 (Manitou Road).

11. The Genesee River: Upstream to its confluence with the New York State Barge

Canal at the Interstate 390 bridge, in the city of ***Rochester***.

12. All of Irondequoit Bay south to the Route 404 bridge, in the city of ***Rochester***.

13. All of Sodus Bay south to Route 104, in the town of ***Sodus***.

14. The Oswego River: South to Lock 8 in the town of ***Oswego***.

15. The Salmon River: Upstream to the town of ***Pulaski***.

16. French Creek Bay: Upstream to French Creek.

EPA Region II will respond to spills inland of, and on the highway boundaries described below. The demarcation lines between the inland and coastal response zones in the northern portion of the State of New York are as follows:

The boundary between EPA and USCG begins at Route 5 on the Pennsylvania/New York State boundary; then continues north and east along NY Route 5 to Interstate 190 North in the city of ***Buffalo***.; then north along Interstate 190 to Route 266 (River Rd), in the town of ***Tonawanda***. The boundary continues north along Route 266 to 265/384 (River Rd), in city of Tonawanda; then north and west along Route 265/384 (River Road) to its intersection with the La Salle Expressway in the city of ***Niagara Falls***; then west along the La Salle Expressway to the Robert Moses Parkway in the city of Niagara Falls.

The boundary continues west and north along the Robert Moses Parkway to Route 104, in the town of ***Lewistown***; then west along Route 104 to Route 18F (Lower River Road/Lake Road); continues north and west along Route 18F to its junction with Route 18 in the town of ***Porter***; then east along Route 18 to the intersection with the Lake Ontario Parkway at Lake Side State Park in the town of ***Kuckville***. The boundary continues east along the Lake Ontario State Parkway to the Genesee River; then east on Lake Shore Blvd, on the east bank of the Genesee River, to Irondequoit Bay; continues east along Route 101 Lake Road, on the east bank of Irondequoit Bay, to Sodus Bay; then east along Route 104, on the east bank of Sodus Bay, to Route 104A in the town of ***Wolcott***.

The boundary continues east along Route 104A to Route 104 in ***Oswego***; then east along Route 104 to the Oswego River; then continues east on Route 1 (North Road) on the east bank of the Oswego River, to Route 104B; then east on Route 104B East to Route 3 in the town of ***Mexico***. The boundary continues north along Route 3 to Route 180 at the Dexter Marsh Wildlife Management Area; continues north and east on Route 180 to Route 12E, in the Town of ***Limerick***; then north and west along Route 12E to the town of ***Cape Vincent***.

The boundary continues east along 12E, to French Creek Bay; then east on Route 12, on the east bank of French Creek Bay, to Route 37 in the town of ***Morristown***. The boundary continues northeast along Route 37 to the town of ***Hogansburg***, where Route 37 crosses the St. Regis River. The boundary then continues north along the east bank of the St. Regis River, to the St. Lawrence River to the international border with Canada.

Region 3 Boundary

REGIONAL RESPONSE TEAM

FEDERAL REGION III

Environmental Protection Agency

U.S. Coast Guard

Department of Agriculture

Department of Commerce

Department of Defense

Department of Energy

Department of Health and Human Services

Department of Interior

Department of Justice

Department of Labor

Department of Transportation

Federal Emergency Management Agency

General Services Administration

Commonwealth of Pennsylvania

Commonwealth of Virginia

State of Delaware

State of Maryland

State of West Virginia

District of Columbia

MEMORANDUM OF AGREEMENT (MOA) BETWEEN
U.S. ENVIRONMENTAL PROTECTION AGENCY - REGION III AND
U.S. COAST GUARD - FIFTH DISTRICT

Purpose

The intent of this Memorandum between the United States Environmental Protection Agency (EPA), Region III and the United States Coast Guard (USCG), Fifth District is to delineate the Region III Inland and Coastal Zone geographical boundaries establishing responsibility for the On-Scene Coordinator (OSC) for pollution response, pursuant to the Clean Water Act, as amended, (CWA), 33 U.S.C. §§ 1251 - 1387; and the National Oil and Hazardous Substances Contingency Plan (NCP), 40 C.F.R. §§ 300.5 and 300.120.

Definitions

The following definitions will apply to this Memorandum of Agreement (MOA):

Vessel - Every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water. This definition excludes permanently moored structures, which, while they may appear to be vessels are not inspected by the Coast Guard, i.e., barges moored at facilities effectively used as part of a non-transportation-related facility complex.

Commercial Vessel - As defined in this MOA, commercial vessel means tank vessels (ships and barges); freight ships and barges; commercial fishing vessels; inspected passenger vessels; and uninspected towing vessels. This definition excludes recreational vessels and uninspected passenger vessels carrying six or fewer persons for hire.

Marine Transportation-Related Facility (MTR Facility) - Any onshore facility or segment of a complex regulated under section 311 (j) of the Federal Water Pollution Control Act by two or more Federal agencies, including piping and any structure used or intended to be used to transfer oil to or from a commercial vessel. The marine transportation-related portion of the complex extends from the facility oil transfer system's connection with the commercial vessel to the first valve inside the secondary containment surrounding tanks in the non-transportation-related portion of the facility or, in the absence of secondary containment, to the valve or manifold adjacent to the tanks comprising the non-transportation-related portion of the facility, unless another location has been agreed to by the USCG Captain of the Port (COTP) and the appropriate Federal official.

U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Commander (dr)
Fifth Coast Guard District
431 Crawford Street
Portsmouth, VA 23704

Facility – means (1) a Facility, as defined by Section 101(9) of Comprehensive Environmental Response, Compensation and Liability Act, as amended (CERCLA), 42 U.S.C. § 9601(9), to mean any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel (*CERCLA Facility*), as well as (2) a Facility, as defined by Section 1001(9) of the Oil Pollution Act (OPA), and Section 311(a)(10) and (11) of the Clean Water Act, as amended (CWA), 33 U.S.C. §§ 2710(9) and 1321(a)(10) and (11), to mean any structure, group of structures, equipment, or device (other than a vessel) which is used for one or more of the following purposes: exploring for, drilling for, producing, storing, handling, transferring, processing, or transporting oil, and this term includes any motor vehicle, rolling stock, or pipeline used for one or more of these purposes (*OPA Facility*).

Pollution Response – means a "removal" of a "discharge" of "oil," as those terms are defined in Section 311(1), (2) and (8) of the CWA and Section 1001(7), (23) and (30) of the OPA, as well as a "response" to a "release" of "hazardous substances," as those terms are defined by Section 101(14), (22) and (25) of CERCLA.

Road - For boundary sections that are designated by the use of the median strip as the line on roads, the Inland Zone shall include the median strip.

Riverbank - The land along the edge of a river, which is at the level of the mean high water mark.

Tide - The periodic variation in the surface level of the oceans and of bays, inlets, and tidal regions of rivers, which is at the level of the mean high water mark.

Inland/Coastal Zone Boundary Designation

EPA Region III provides the OSC for pollution response in the Inland Zone. The cognizant USCG COTP is the pre-designated OSC for pollution response in the Coastal Zone, as defined in the NCP, 40 C.F.R. § 300.5.

Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans. The Inland and Coastal Zone geographical boundaries for Region III can be found in Attachment A (Written Boundaries) and Attachment B (Geographical Boundaries).

General Response Provisions

These provisions apply to all EPA OSCs and USCG COTP/OSCs serving Federal Region III. In Region III, the EPA and USCG will carry out agency and specific pollution response responsibilities under the NCP, the Regional Contingency Plan (RCP), and the applicable Area Contingency Plan (ACP), and will assist each other to the fullest extent

possible to prevent or minimize the impacts of an actual discharge or release, or a substantial threat of such a discharge or release, of an oil or hazardous substance where each respective agency has jurisdiction.

The designated boundary lines are intended to delineate the area of responsibility for federal response action to a discharge of oil or a release of a hazardous substance within Federal Region III and describe the transition point from the Coastal Zone (USCG jurisdiction) to the Inland Zone (EPA jurisdiction). For ease, boundaries were drawn following roads, state boundaries, and other landmarks and, as a general rule, the location of the source of the discharge in relation to the boundary will be the determining factor of which agency provides the OSC. However, this MOA recognizes the USCG's primary mission and expertise over discharges and releases in or threatening navigable waters subject to the tide, and EPA's primary mission and expertise for discharges and releases that occur on or threaten land and non-tidal, navigable waters. Therefore, the boundaries do not preclude one agency from transferring to the other agency OSC responsibilities for releases and/or discharges which occur within its zone, as set forth below.

The USCG, through the cognizant COTP, will assist the Inland Zone EPA OSC, consistent with applicable agency responsibilities and authorities. The USCG COTP will assume the role of OSC in response to an incident in the Inland Zone when it involves a commercial vessel, a commercial vessel transfer operation, the MTR portion of a facility, and results in an actual discharge or threatened discharge of oil or release of a hazardous substance into or on the navigable waters of the United States, its shoreline or the riverbank.

The EPA, through the EPA OSC, will assist the Coastal Zone USCG OSC, consistent with applicable agency responsibilities and authorities. The EPA will assume the role of OSC in response to an incident in the Coastal Zone when it involves a CERCLA and/or OPA Facility and results in an actual or threatened discharge of oil, or an actual or threatened release of a hazardous substance, that occurs on or threatens land and non-tidal, navigable waters.

The designated boundary lines do not preclude mutual assistance between the two agencies. Either agency can request the other to become the OSC when the requesting (lead) agency believes that the other agency can respond more effectively. The lead agency can request the other agency to determine whether it has the expertise and resources to mount an effective response, and accept or decline the request to serve as the OSC. Transferring Federal OSC authority from one agency to another can be done by verbal agreement between an EPA OSC and the USCG COTP. This verbal agreement shall be documented in a Pollution Report (POLREP) from the agency taking over the Federal OSC authority within 30 days of this verbal agreement.

Regardless of any agreements within this MOA, it is the responsibility of the EPA (for all Inland Zone responses) and the USCG (for all Coastal Zone responses) to ensure that the other agency (EPA or USCG) has properly taken over OSC responsibilities in its zone prior to relieving itself of any OSC responsibility.

Amendments and Effective Date

This agreement will be subject to review and amendment coincident with each periodic review of the Regional, Area, and other applicable contingency plans and any other time at the request of either of the parties. This document may be cancelled in whole or in part by any party thereto. Any cancellation will take place 30 days following delivery of written notification to EPA or USCG. It will remain in effect until modified or terminated by mutual agreement.

Requests or recommendations for modification to the Inland/Coastal boundary delineations or modifications to this MOA shall be referred to EPA Region III and USCG Fifth District prior to consideration. Those points of contact shall be:

- EPA Region III - Associate Division Director, Office of Preparedness and Response, Philadelphia, PA at (215) 814-3241; EPA's 24 hour number: (215) 814-3255;

- Fifth Coast Guard District - Chief, Response Division, Portsmouth, VA at (757) 398-6676; USCGD5's 24 hour number: (757) 398-6231.

Regional and Area Contingency Plans of the signatory agencies will be amended to reflect the following geographical boundaries and agreements contained herein. This MOA supercedes other MOAs previously in effect concerning the federal OSC boundaries for purposes of pollution response within Federal Region III. This document is effective upon the date that it is fully executed by both parties.

Date: 1/6/10

Kathryn A. Hodgkiss
Acting Division Director
Hazardous Site Cleanup Division
U.S. EPA Region III
Philadelphia, PA

Date: 1/5/10

CAPT Michael J. Andres
Commander (dr)
Fifth Coast Guard District
Portsmouth, VA

Attachment A

Written Boundary

Sector Baltimore

Start at a point latitude 38°27'15" N, longitude 75°30'00" W. on the Delaware-Maryland boundary, proceeding along the Delaware-Maryland boundary west to a point at latitude 38°27'37" N, longitude 75°41'35" W and north to the Pennsylvania boundary at a point latitude 39°43'22" N, longitude 75°47'17" W; thence west along the Pennsylvania-Maryland boundary to the West Virginia boundary at a point latitude 39°43'16" N, longitude 79°28'36" W; thence south and east along the Maryland-West Virginia boundary to the intersection of the Maryland-Virginia-West Virginia boundaries at a point latitude 39°19'17" N, longitude 77°43'08" W; thence southwest along the Loudoun County, VA boundary to the intersection with Fauquier County, VA at a point latitude 39°00'50" N, longitude 77°57'43" W; thence east along the Loudoun County, VA boundary to the intersection with the Prince William County, VA boundary at a point latitude 38°56'34" N, longitude 77°39'18" W; thence south along the Prince William County boundary to the intersection with Stafford County, VA, at a point latitude 38°33'22" N, longitude 77°31'52" W; thence east along the Prince William County, VA boundary to a point near the western bank of the Potomac River at latitude 38°30'11" N, longitude 77°18'01" W; thence south and east along the southern bank of the Potomac River to the Maryland-Virginia boundary at a point latitude 37°53'25" N, longitude 76°14'12" W; thence east along the Maryland-Virginia boundary as it proceeds across the Chesapeake Bay, Tangier and Pocomoke Sounds, Pocomoke River, and Delmarva Peninsula to a point on the Maryland-Virginia boundary near the Atlantic coast at latitude 38°00'18" N, longitude 75°30'00" W; thence north to the Delaware-Maryland boundary at the point of origin.

Sector Delaware Bay

North along State Highway 113 from the MD/DE state line to its intersection with US 9 in DE; then northward along US 9 to the southern bank of the Chesapeake and Delaware Canal (C & D Canal); then westward along the southern bank to the DE/MD state line, and then eastward along the northern bank of the C & D Canal to US 9, and then north along US 9 to its intersection with 1-495; then northward along 1-495 to its intersection with 1-95 at the PA/DE border; then northward along 1-95 to the Schuylkill River, and then along the high tide mark of the Schuylkill River to the dam at Fairmont Park, and then northward on I-95 to its intersection with US Highway 1; then northward along US Highway 1 to the US Highway 1 bridge between Morrisville, PA and Trenton, NJ.

Sector Hampton Roads

The southern boundary extends from the offshore extent of the Exclusive Economic Zone at 34-59.8N, 071-28.0W shoreward along 34-59.8N to the VA/NC border. Then along the border to the west bank of the Dismal Swamp canal; north along the west bank of the Hwy.13 to State Hwy. 10, along State Hwy. 10 to State Hwy. 156; then north along State Hwy. 156 over the Benjamin Harrison Highway Bridge in Hopewell, VA, to State Hwy.5; then east on Interstate 64; then west on U.S. Interstate 64 to State Hwy 30; north on State Hwy. 30 to State Hwy. 33; east on State Hwy. 33; west on State Hwy. 33 to U.S. Route 17; north on U.S. route 17 to State Hwy. 360; east on State Hwy. 360 across the bridge in Tappahannock, VA. To State Hwy. 3; south on State Hwy.3 to State Hwy.200; north on State Hwy. 200 to State Hwy.360; west on State Hwy. 360 to State Hwy. 202; north on State Hwy. 202 to State Hwy. 3; west on State Hwy 3 to State Hwy. 205; north along State Hwy 205 to State Hwy. 218; north along Hwy. 218 to State Hwy 301; east along State Hwy. 301 to the west bank of the Potomac River; east along the VA-MD border; across the eastern shore then out to sea to the offshore extent of the Exclusive Economic Zone.

Attachment B

Geographical Boundary

Annex DD

Federal Agencies Who Can Support the FOSC

Federal Agencies

Who Can Support the FOSC

Federal Agency Scientific/Technical Support

U. S. Coast Guard (USCG)

- **The National Strike Force Coordination Center (NSFCC)**
  The NSFCC manages the NSF which is authorized as the National Response Unit required under OPA, with responsibility for administering the USCG Strike Teams, and maintaining response equipment inventories and logistical networks. The NSFCC offers the technical assistance and equipment for spill response, assistance in coordinating resources during oil discharge response, Area Contingency Plan (ACP) or Regional Contingency Plan (RCP) review, coordination of spill response resources information, and inspection of Oil Spill Removal Organization (OSRO) response equipment. Strike Teams provide trained personnel and specialized equipment to assist the FOSC in training for spill response, stabilizing and containing the spill, and monitoring or directing response actions of the responsible parties (RPs) and/or contractors.

- **The USCG National Strike Force (NSF)**
  The NSF's mission is to provide highly trained, experienced personnel and specialized equipment to the Coast Guard and other federal agencies to facilitate preparedness and response to oil and hazardous substance pollution incidents in order to protect public health and the environment. The NSF's area of responsibility (AOR) covers all Coast Guard Districts and Federal Regions.

- **USCG Strike Teams (Atlantic, Gulf, and Pacific)**
  The three USCG Strike Teams are available 24 hours a day. If the Strike Team contacted is already committed, another Strike Team will be deployed. Each Strike Team maintains trained personnel and specialized equipment to assist with training in responding to spills, stabilizing and containing spills, and monitoring and/or directing response actions of the RPs and/or contractors. The Atlantic Strike Team, based at Fort Dix in New Jersey, provides response coverage to the Delaware Bay AOR.

- **Public Information Assist Team (PIAT)**
  PIAT is an element of the NSFCC staff available to assist the FOSC to meet the demands for public information during a response or exercise. PIAT provides interagency crisis communication team(s) and technical expertise to assist ICs and FOSCs meet their objectives of truth and transparency of operations for the public. PIAT provides emergency risk communication support to ICs and FOSCs during incidents such as oil spills, hazardous substance releases, hurricanes, floods, or other disasters. Its use is encouraged any time the FOSC requires outside public affairs support. Requests for PIAT assistance may be made through the NSFCC or National Response Center (NRC). See the Spill of National Significance (SONS) Public Affairs Reference for more information.

- **Incident Management Assistance Team (IMAT)**
  The IMAT was developed by the USCG to supply a ready-made team of highly trained individuals to assist the local Incident Command (IC) in dealing with a major incident. The IMAT is located in Norfolk, VA. The team is trained for initial quick response to a regionally or nationally significant event. The team consists of Incident Command Systems (ICS) process experts that can quickly set-up and assist in transitioning from the initial emergency phase to a more sustained planning process. The IMAT deploys with a limited amount of equipment to ensure ICS functionality within an Incident Command Post (ICP).

- **National Pollution Funds Center (NPFC)**
  NPFC is responsible for implementing those portions of OPA Title I delegated to the Secretary of the Department in which the USCG is operating. NPFC is responsible for addressing funding issues arising from actual and potential discharges of oil. Responsibilities of the NPFC include:
    1. issuing Certificates of Financial Responsibility (COFRs) to owners and operators of vessels to pay for costs and damages incurred by their vessels as a result of oil discharges,
    2. providing funding to various response organizations for timely abatement and removal actions related to oil discharges,
    3. providing equitable compensation to claimants who sustain costs and damages from oil discharges when the RP fails to do so,
    4. recovering monies from persons liable for costs and damages resulting from oil discharges to the full extent of liability under the law, and
    5. providing funds to initiate Natural Resource Damage Assessment (NRDA) activities.

- **USCG District Response Advisory Team**
  USCG's Fifth District Response Advisory Team (DRAT) and the Incident Management and Preparedness Advisor (IMPA) provide pollution planning, preparedness, and response policy guidance and assistance to an FOSC and staff on a regular basis.

- **USCG (SecDelBay) Marine Transportation System Recovery Unit (MTSRU)**
  MTSRU assists the FOSC in restoring port functions and resuming commercial activity as quickly as possible. MTSRU is the mechanism to prepare for and conduct recovery operations, mitigate the effects of a port closure and enhance the speedy recovery of the port back to normal operations.

Environmental Protection Agency

- **Environmental Response Team (ERT)**
  In the event of a continuing release or discharge, the FOSC has access to EPA's ERT, stationed in Edison, New Jersey; Cincinnati, Ohio; Erlanger, Kentucky; Las Vegas, Nevada; and Research Triangle Park, North Carolina. The ERT provides Scientific Support Coordinators (SSC) with expertise in treatment technology, biology, chemistry, hydrology, geology, and engineering. The ERT also has access to special decontamination equipment and can provide advice on a wide range of issues such as a multimedia sampling and analysis program, on-site safety (including development and implementation plans), cleanup techniques and priorities, water supply decontamination and protection, application of dispersants, environmental assessment, degree of cleanup required, and disposal of contaminated material. The FOSC may designate an SSC as principal advisor on scientific issues who also communicates with the scientific community and assists in requests to state and federal agencies.

- **Chemical, Biological, Radiological, and Nuclear (CBRN) Consequence Management Advisory Division (CMAD)**
  The CBRN CMAD, present at five geographic locations, provides 24/7 scientific and technical expertise to the FOSC or response customer for all phases of consequence management. With a focus on operational preparedness, CBRN CMAD facilitates the transition of the latest science and technology to the field response community in order to provide tactical options for screening, sampling, monitoring, decontamination, clearance, waste management, and toxicological/exposure assessment during decontamination of buildings or other structures following an incident involving releases of radiological, biological, or chemical contaminants. CBRN CMAD maintains critical partnerships with: (1) EPA's National Homeland Security Research Center and the EPA's special teams; (2) other federal partners including the U.S. Department of Homeland Security (DHS), Federal Bureau of Investigation, DOD, and Centers for Disease Control and Prevention (CDC)/Department of Health and Human Services (HHS); and (3) international partners.

- **Radiological Emergency Response Team (RERT)**
  RERTs have been established by EPA's Office of Radiation Programs (ORP) to provide response and support during incidents or at sites containing radiological hazards. Expertise is available in radiation monitoring, radionuclide analysis, radiation health physics, and risk assessment. RERTs can provide on-site support including mobile monitoring laboratories for field analysis of samples as well as fixed laboratories for radiochemical sampling and analyses. Request for support may be made 24 hours a day via the NRC or directly to the EPA Radiological Response Coordinator in the ORP.

National Oceanic and Atmospheric Administration (NOAA)

NOAA provides scientific support for responses and contingency planning in coastal and marine areas, including assessments of the hazards that may be involved, predictions of movement and dispersion of oil and hazardous substances through trajectory modeling, and information on the sensitivity of coastal environments to oil or hazardous substances. NOAA provides scientific expertise on living marine resources it manages and protects. It also provides information on actual and predicted meteorological, hydrologic, ice, and oceanographic conditions for marine, coastal, and inland waters, as well as, tide and circulation data. The Secretary of the U.S. Department of Commerce (DOC), through NOAA, also acts as trustee for natural resources managed or controlled by DOC, including their supporting ecosystems.

- **Scientific Support Coordinators (SSC)**
  The SSC, in accordance with the National Contingency Plan (NCP), will provide the FOSC scientific advice with regard to the best course of action during a spill response. The SSC will help facilitate consensus from the Federal natural resource management agencies and provide spill trajectory analysis data, information on the resources at risk, weather information, tidal and current information, etc. The SSC will be the point of contact for the Scientific Support Team from NOAA's Hazardous Material Response and Assessment Division. The FOSC's Guide to NOAA Scientific Support outlines all of the products and services the NOAA SSC can provide for planning and response activities. The NOAA SSC can provide training and technical expertise with SCAT. The Shoreline Assessment Manual, updated August 2013 by NOAA/HAZMAT, outlines methods for conducting shoreline assessment after an oil spill.

- **National Weather Service (NWS)**
  NWS, a federal organization within NOAA, can provide various types of support to an Incident Command (IC)/Unified Command (UC) operating in Sector Delaware Bay area of responsibility The IC/UC will be provided with a direct unlisted number to the lead forecaster's desk, through which continuous information on wind speeds, temperatures, and other atmospheric data can be obtained.

U.S. Department of the Interior (DOI)

DOI has jurisdiction over the National Park System, National Wildlife Refuges, fish hatcheries, and public lands. The Regional Environmental Officer (REO) manages the department's response programs for oil and hazardous substance spills and oversees the department's responsibilities as a trustee for natural resources. The DOI may become involved in spill response

once contacted through the REO who is a designated member of RRT-3. The REO for RRT-3 is located in Philadelphia, PA.

- **U.S. Fish and Wildlife Service (USFWS)**
  The Secretary of the Interior acts as trustee for resources managed or protected by DOI Bureaus, including USFWS and Bureau of Reclamation (USBR). USFWS, an office within DOI, is responsible for the management of migratory birds, federally listed endangered and threatened species, and interjurisdictional fishes within SecDelBay AOR. National Wildlife Refuge lands established in/near the ACP planning area include:
    - John Heinz National Wildlife Refuge
    - Edwin B. Forsythe National Wildlife Refuge
    - Supawna Meadows National Wildlife Refuge
    - Cape May National Wildlife Refuge
    - *Note: States have several State Wildlife Management Areas.*

  When a spill occurs, the appropriate USFWS office(s) will provide timely advice on measures necessary to protect wildlife from exposure, as well as priority and timing of such measures. Protective measures may include preventing the oil from reaching areas where migratory birds and other wildlife are located or deterring birds or other wildlife from entering areas by using wildlife hazing devices or other methods.

  If exposure of birds and other wildlife to oil or hazardous substances cannot be prevented, an immediate decision will be made regarding rescue and rehabilitation of "oiled" birds and other wildlife. Decisions to rescue and rehabilitate "oiled" wildlife must be made in conjunction with other federal and state natural resource management agencies. Wildlife rehabilitators will need federal, and state permits to collect, possess, and band migratory birds and threatened/endangered species.

  For more information see the Fish and Wildlife and Sensitive Environments Plan (FWSEP), Annex 28 and the Wildlife Response Plan, Annex 28a of the RRT-3 RCP.

- **U.S. Geological Survey (USGS)**
  USGS maintains expertise in water quality characterization, oil fingerprinting, submerged oil and oil-particle formation, transport and resuspension of oil in fresh waters, riverine two-dimensional (2D) particle transport/hydrodynamic simulations, ecotoxicology, time-of-travel studies for freshwater systems, and geospatial data collection of visible spill plumes applicable to spill response events in freshwater environments. In addition, USGS can provide biological survey assistance for natural resources and contaminants and contribute distribution information about sensitive species (e.g., birds, invertebrates). USGS also provides extensive expertise and information for natural resource damage assessments (NRDAs) (e.g., aerial

surveys, abundance estimation, remote sensing, etc.).

- **Bureau of Safety and Environmental Enforcement (BSEE)**
  BSEE works to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement. BSEE's Offshore Regulatory Program develops standards and regulations to enhance operational safety and environmental protection for the exploration and development of offshore oil and natural gas on the U.S. Outer Continental Shelf (OCS).

U.S. Department of Health and Human Services (HHS)

HHS through the Agency for Toxic Substances and Disease Registry (ATSDR), serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and disease related to toxic substances. The ATSDR is directed by congressional mandate to perform specific functions concerning the effects on public health of ***hazardous substances*** in the environment. These functions include public health assessments of waste sites, health consultations concerning specific hazardous substances, health surveillance and registries, response to emergency release of hazardous substances, applied research in support of public health assessments, information development and dissemination, and education and training concerning hazardous substances.

Public Health Technical Specialists from the HHS Centers for Disease Control and Prevention (CDC) and ATSDR can assist with environmental health support.

- **The National Institute for Occupational Safety and Health (NIOSH)**
  NIOSH provides national and world leadership to prevent work-related illness, injury, disability, and death by gathering information, conducting scientific research, and translating the knowledge gained into products and services, including scientific information products, training videos, and recommendations for improving safety and health in the workplace.

In response to requests from workers (or their representatives), employers, and other government agencies, NIOSH Health Hazard Evaluation scientists conduct workplace assessments to determine if workers are exposed to hazardous materials or harmful conditions and whether these exposures are affecting worker health. NIOSH evaluates the workplace environment and health of employees by reviewing records and conducting on-site environmental sampling, epidemiologic surveys, and medical testing.

See the NIOSH Pocket Guide for more information.

U.S. Department of Agriculture (USDA)

USDA has scientific and technical capability to measure, evaluate, and monitor, either on the ground or by use of aircraft, situations where natural resources including soil, water, wildlife, and vegetation have been impacted by hazardous substances and other natural or man-made emergencies. The USDA may be contacted through the U.S. Forest Service emergency staff officers who are the designated members of the RRT.

USDA maintains trusteeship of national forest, wilderness areas, and wildlife within USDA- controlled forests, archaeological sites, range and farm lands, fisheries, and lands enrolled in the Wetlands Reserve Program. Additionally, the USDA plays a key role in the closing and re-opening of fisheries before, during, and after clean-up operations.

Department of Energy (DOE)

The Secretary of Energy has trusteeship over natural resources under its jurisdiction, custody, or control. DOE's land-holdings include national research and development laboratories, facilities, and offices.

The DOE Office of Petroleum Reserves (OPR) oversees the Strategic Petroleum Reserve (SPR), the world's largest supply of emergency crude oil, which was established primarily to reduce the impact of disruptions in supplies of petroleum products and to carry out obligations of the United States under the international energy program. The federally-owned oil stocks are stored in huge underground salt caverns at four sites along the coastline of the Gulf of Mexico in Texas and Louisiana. There are no storage SPR facilities located within the SECDELBAY_ACP planning area.

U.S. Department of Transportation (DOT)

DOT provides response expertise pertaining to transportation of oil or hazardous materials by all modes of transportation. Through the Pipeline and Hazardous Materials Safety Administration (PHMSA), DOT-PHMSA offers expertise in the requirements for packaging, handling, and transporting regulated hazardous materials.

Department of Defense (DoD)

- **U.S. Army Corps of Engineers (USACE)**
  The Secretary of the DoD has trusteeship over the natural resources on all lands owned by DoD or the Army (including lands and facilities managed by the USACE, Navy, Air Force, and Defense Logistics Agency). These lands include military bases and training facilities, research and development facilities, and munitions plants. USACE has trusteeship over natural resources under its jurisdiction, custody, or control. USACE landholdings include national research and development laboratories, facilities, and offices. Additionally, the USACE provide information on river levels within

this ACP planning area. The USACE does not currently provide river level data for the SecDelBay planning area.

- **U.S. Navy Supervisor of Salvage (SUPSALV)**
  SUPSALV has an extensive salvage/search and recovery equipment inventory, and the requisite knowledge and expertise to support these operations including specialized salvage, firefighting, and petroleum, oil, and lubricants offloading capability even in open sea response incidents. SUPSALV can also provide equipment for training exercises in support of national and regional contingency planning objectives. The FOSC may request assistance directly from SUPSALV. Formal requests are routed through the Chief of Naval Operations.

- **National Guard Civil Support Teams (CSTs)**
  CST were created in 1999 to respond to terrorist incidents involving WMD, as well as other disasters and catastrophic events, both natural and man-made. There are 57 CSTs located throughout the United States, with at least one in each state and territory. The mission of a CST is to support civil authorities at a domestic CBRNE (Chemical, Biological, Radiological, Nuclear, and high-yield Explosives) incident site with responsibilities such as identification and assessment of hazards, advising civil authorities, and facilitating the arrival of follow-on military forces during emergencies and incidents.

  CSTs normally operate as a State asset, under the command and control of the State Governor, but upon deployment, the unit provides direct support to the IC. CSTs support local emergency responders (Fire, Police, and EMS), as well as State and Federal agencies such as the DOE, FBI, EPA and FEMA.

Federal Investigative Services

Federal Agency Legal and Investigative Support

U.S. Department of Justice (DOJ)

DOJ can provide expert legal advice on complicated legal questions arising from discharges or releases and federal agency responses. The DOJ represents the federal government, including its agencies, in litigation relating to discharges.

Federal Bureau of Investigation (FBI)

The FBI, under the DOJ, is the lead federal agency for responding to threats from weapons of mass destruction (WMD). The Bureau investigates and collects intelligence on WMD-related threats and incidents to prevent attacks and respond to them when they occur. WMD Directorate (WMDD) is part of the FBI's National Security Branch. The WMDD leads the FBI's efforts to mitigate threats from chemical, biological, radiological, nuclear, or explosive weapons. The WMDD provides leadership and expertise to domestic and foreign law enforcement, academia, and industry partners on WMD issues. The FBI approaches these issues through four major areas: preparedness, countermeasures, investigations/operations, and intelligence.

U.S. EPA Criminal Investigations Division (EPA CID)

The EPA CID investigates allegations of criminal wrongdoing prohibited by various environmental statutes. Such investigations involve, but are not limited to, the illegal disposal of hazardous waste; the export of hazardous waste without the permission of the receiving country; the illegal discharge of pollutants to a water of the United States; the removal and disposal of regulated asbestos containing materials in a manner inconsistent with the law and regulations; the illegal importation of certain restricted or regulated chemicals into the United States; tampering with a drinking water supply; mail fraud, wire fraud, conspiracy and money laundering relating to environmental criminal activities. CID Special Agents are sworn federal law enforcement officers with statutory authority to conduct investigations, to make arrests for any federal crime, and to execute and serve any warrant.

U.S. Coast Guard Legal

The Fifth Coast Guard District has a legal staff that is available to provide support to the USCG FOSC. Additionally, and as needed, USCG Atlantic Area and headquarters can provide legal assistance to the USCG FOSC.

U.S. Coast Guard Investigative Service (CGIS)

CGIS Agents are available to investigate criminal violations of environmental laws enforced by the Coast Guard. CGIS should be notified and consulted regarding all cases that may be referred to the Department of Justice for criminal prosecution. CGIS Agents are trained criminal investigators who are familiar with the legal issues associated with prosecution of a criminal case. Additionally, CGIS Agents regularly work with agents of other Federal, State, and local law enforcement agencies and frequently become aware of violations of environmental laws and ongoing criminal investigations through these sources.

Unless expressly directed by the Chief of CGIS or higher authority, CGIS will not conduct an environmental crime investigation in a COTP zone without first notifying and, thereafter, coordinating with the COTP. Likewise, the COTP should avoid committing the Coast Guard to participate in criminal investigations, either solely or in coordination with other enforcement agencies, without first consulting the District Commander who will ensure appropriate coordination with CGIS. In the event exigent circumstances require the initiation of a criminal investigation before such notification or consultation can occur, the required communication must occur as soon as practical thereafter.

National Transportation Safety Board (NTSB)

In accordance with the USCG/NTSB MOU and 46 C.F.R. 4.40-15(b), the NTSB shall conduct the investigation of certain major marine and public/nonpublic vessel casualties. Except for the preliminary investigation, a separate Coast Guard casualty investigation will not be conducted, nor will parties in interest be designated by the Coast Guard. Although these investigations are conducted by the NTSB in accordance with their procedures, the Coast Guard will participate fully as a party.

Annex EE

Non-Government Agencies Who Can Support the FOSC

Nongovernmental Organizations, Academia, and Other Technical Support

Science and Technology Advisors (S&T Advisors)

S&T Advisors consist primarily of academia and represent specialized capabilities to provide knowledge, based on science and other technical experience, to supplement and strengthen that of the Incident Management Team (IMT).

The advisory capability may consist of individuals or institutions and may be identified during the preparedness phase or by incident-specific needs. The relationship may be as informal as a list of

names and contact information in a directory, or a more formal pre-spill relationship defined through letter of agreement.

- Delaware River Basin Commission
- The Partnership for the Delaware Estuary (PDE Science Directory)

Seafood Liaison Specialist (SLS)

During a response, the seafood/fishing industry is directly impacted by agency decisions that result in fishery closures and subsequent seafood safety testing. Having the capability to engage with all stakeholder groups helps cultivate a broad capability to understand, monitor, characterize, and model hazards that can inform all levels of preparedness and response decisions.

The SLS is a technical advisor that provides a way to collaborate and share information between the Incident Management Team (IMT), the seafood harvesting community, e.g., fishers, seafood restaurants, the agencies responsible for managing fishery closures and seafood safety, and others in the seafood industry. Guidance for the SLS position is located in Annex 42 of the RRT-3 RCP.

- FDA – NJ and Delaware - Shell Fish Branch #2, Office of State Cooperative program, Voorhees, NJ (856)290-4019
- National Marine Fisheries (NOAA)

Volunteers

In times of crisis or trouble, many citizens feel compelled to help or lend their assistance and expertise to the response effort. This help can be welcome if the demands of an incident exceed the available resources or if a particular set of skills are in short supply. Volunteers can support response efforts in any number of ways such as conducting beach surveillance, providing logistical support, or assisting in the treatment of impacted wildlife. The decision to employ volunteers will take into account the benefits that might be gained weighed against safety and liability realities. The UC, in the early stages of the event, will make the decision whether volunteers will be employed and in which capacities they can serve. For more details about the use of volunteers, please refer to

Annex 6a – and Volunteer section of this ACP, and the National Response Team's Use of Volunteers Guidelines for Oil Spills and the Volunteer Plan, (NRT - PLAN LINK).

Certified Marine Chemist (CMC)

The United States Coast Guard and the Occupational Safety and Health Administration (OSHA) require that a certificate issued by a Marine Chemist be obtained before hot work or fire producing operations can be carried out in certain spaces aboard a marine vessel.

In complying with both the U.S. Coast Guard and OSHA regulations, the CMC applies the requirements contained in National Fire Protection Association Standard 306. NFPA 306, Control of Gas Hazards on Vessels, describes conditions that must exist aboard a marine vessel. A survey by the Marine Chemist ensures that these conditions are satisfied. In addition, a CMC is able to perform similar evaluations on other than marine vessels where an unsafe environment exists for workers, or hot work is contemplated on a system that might contain residues of a flammable or combustible product or material. See National Fire Protection Association (NFPA) Certified Marine Chemists for a list of certified Marine Chemists.

Water Sampling Technical Specialist

The Water Sampling Technical Specialist is an advisor responsible for helping to create the water sampling and analysis plans, including the Initial Incident Characterization Sampling and Analysis Plan, and any needed updates throughout the response based on the sampling results. The Water Sampling Technical Specialist is responsible for monitoring the progress of sample analysis at the designated laboratory and making arrangements for receipt of data. A detailed plan for Water Sampling during an oil spill or hazardous substance release can be found in Annex 5b.

Community Air Monitoring (CAM) Coordinator

The CAM Coordinator leads CAM efforts during emergencies in order to measure, identify, and quantify airborne contaminants. The CAM uses these results as a baseline to facilitate fact-based decisions made by officials, ultimately safeguarding human health and the environment. The EPA has been pre-designated the CAM Coordinator in the Sector Delaware Bay AOR.

Annex FF

Oiled Wildlife Plan &

Threatened and Endangered Species

Oiled Wildlife Annex

Oiled Wildlife Response Quick Reference Guide

Oiled Wildlife Response Organization Contact Information		
*Note: These numbers should only be used in regards to oil spill responses or drills/exercises		
Tri-State Bird Rescue & Research, Inc. (Newark, DE) 1-800-261-0980	**International Bird Rescue** (Los Angeles & San Francisco, California) 1-888-447-1743	**Focus Wildlife** (Anacortes, Washington) 1-800-578-3048

Initial Wildlife Response Steps to Take Within the First 24 Hours of an Oil Spill Response

*Note: These steps should be taken even if no wildlife impacts are readily apparent.

*See page 22 for a more extensive list of initial steps.

1. Notify appropriate wildlife trustees that a spill has occurred.
    a. See page 23 for list of applicable trustees.
2. Alert an Oiled Wildlife Response Organization (OWRO) to notify them that a spill has occurred.
    a. This should be done even if a Wildlife Branch has not been established and the response is not ready to contract an OWRO yet. Early notification allows for more efficient deployment if an OWRO is needed as the response develops.
    b. **Identify who in the response will be authorized to sign a contract if activation of an OWRO is needed.** (See page 23 for more details)
3. The Environmental Unit should initiate a wildlife impact assessment.
    a. Identify who will carry out the assessment – possibilities include an OWRO, SCAT team, wildlife trustee agencies, etc.
4. Decide if hazing and deterrence is needed to prevent wildlife from becoming oiled.
    a. Identify who will carry out the hazing and deterrence and ensure they have the proper authorization (see page 28 for more details).

What Not to Do

1. Do not allow any untrained/unpermitted personnel to capture or disturb wildlife.
2. Do not attempt to decontaminate any oiled wildlife.
3. Do not hire a group to care for oiled wildlife without checking that they meet the requirements described in page 11 of this annex.

Oiled Wildlife Response Annex – Sector Delaware Bay

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Introduction

This Oiled Wildlife Response Annex was developed to provide information outlining the responsibilities and actions of the Wildlife Branch during an oil spill response within Sector Delaware Bay. The information in this section is pertinent even for oil spill situations where wildlife impacts are not readily apparent; oil releases almost always have some effect on wildlife, even if oiled animals are not immediately visible at the spill site.

This contingency plan covers the protocols and guidelines for initiating and sustaining an oiled wildlife response. This contingency plan may be used as a reference by the contracted Oiled Wildlife Response Organization (OWRO); however, it does not replace the years of experience necessary to successfully manage and carry out an oiled wildlife response. This contingency plan will meet the following objectives in order to facilitate effective and efficient oiled wildlife responses within the Area of Operation (AOR) of Sector Delaware Bay:

- Ensure human health & safety in all aspects of the oiled wildlife response.
- Define what qualifications an OWRO needs to effectively manage an oiled wildlife response.
- Identify species and habitats at risk of harm from oil spills in the AOR of Sector Delaware Bay.
- Identify facility requirements for oiled wildlife response and identify specific sites that meet those requirements in the AOR.

- Identify roles and responsibilities of individuals in the Wildlife Branch and Environmental Unit according to the Incident Command System.
- Outline initial response actions to ensure a timely and effective wildlife response is initiated, including appropriate notifications to regulatory agencies and key response personnel.
- Describe documentation procedures.
- Describe operations procedures and requirements.
- Describe the process of demobilizing the Wildlife Branch.

This Oiled Wildlife Response Annex functions as a contingency plan as part of the Sector Delaware Bay Area Contingency Plan (ACP); in the event of an oil spill an incident-specific Wildlife Management Plan (WMP) should be established according to the specific needs of the response. The WMP should be written by the Environmental Unit of the Planning Section in conjunction with the Wildlife Branch in the Operations Section.

Human Health and Safety

During oiled wildlife response operations, responder safety is paramount. A thorough site survey and hazard assessment should be conducted before the commencement of any operations and an incident-specific Site Safety Plan should be developed (See Section 2200 of the Sector Delaware Bay ACP). This plan will include a physical description and map of the site and identify hazards, key staff, security procedures, emergency contacts, and required personal protective equipment (PPE).

PPE

All workers must be trained on the proper use and limitations of required PPE prior to using the equipment. Working with oiled wildlife requires the use of PPE specific to the contaminant, such as coveralls, nitrile gloves, and safety glasses. In addition to hazards from oil, other physical hazards may be associated with wildlife rescue activities. For example, additional PPE may be required to protect against bites and scratches, such as leather gloves.

Zoonoses

Zoonoses are diseases that are transmissible between animals and humans, posing risks to the health and safety of humans as well as wildlife patients in care. Examples include rabies, toxoplasmosis, and coccidia. Responders with compromised immune systems, pregnant responders, and elderly responders are more susceptible to these diseases. Steps necessary to mitigate the risks include wearing proper PPE and washing hands thoroughly after handling animals and performing animal husbandry. **Wildlife responders who may come into contact with mammals must have received the pre-exposure rabies vaccine**.

A wildlife veterinarian should be consulted when forming the incident Site Safety Plan and the Wildlife Management Plan in order to appropriately assess the risk of zoonotic diseases for each response. The veterinarian can help identify appropriate PPE as well as quarantine protocols for the animals in care. Special considerations may need to be taken in times of an outbreak of a wildlife disease, such as Highly Pathogenic Avian Influenza.

Job Health and Safety Risks

The following tables identify health and safety risks for the jobs that wildlife staff could perform during an oiled wildlife response. See the Oiled Wildlife Response Organization Qualifications section for additional information on safety training.

Table 1. Job-specific risks for wildlife staff during an oiled wildlife response.

	ICP	ld Operations								Primary Care Center						
		Assess/ Recover				Hazing										
Risk	WBD, Wildlife Spec.	Aerial	Motorized Boat	Canoe\Kayak	Shoreline	Motorized Boat	Canoe\Kayak	Shoreline	Stabilization Facility	Transport	Evidence Mgmt.	Intake/Processing	Washing	Drying	Husbandry	Facility Mgmt.	Volunteer Mgmt.
GENERAL																	
Dehydration	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fatigue/Exhaustion	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stress/Tension	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WORKING IN AN ENCLOSED, POPULATED SPACE																	
Electrocution from power cords	X												X	X			
Excessive noise	X	X	X			X			X	X	X	X	X	X	X	X	X
Eye strain from poor lighting, digital monitors	X										X						
Restricted ability to move/evacuate	X	X	X	X		X	X		X		X	X	X	X	X	X	X
Ergonomic strain	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X
Trip hazards (cords, equipment, etc.)	X								X		X	X	X	X	X	X	X
WORKING OUTDOORS																	
Challenging terrain			X	X	X	X	X	X									
Debris			X	X	X	X	X	X									
Getting lost			X	X	X	X	X	X		X							
Hypothermia			X	X	X	X	X	X	X	X						X	
Incidental wildlife encounters			X	X	X	X	X	X									
Insect bites/stings			X	X	X	X	X	X	X							X	
Lightning		X	X	X	X	X	X	X	X	X		X	X	X		X	
Overheating	X	X	X	X	X	X	X	X	X	X						X	

	ICP	ld Operations								Primary Care Center						
		Assess/ Recover				Hazing										
Risk	WBD, Wildlife Spec.	Aerial	Motorized Boat	Canoe\Kayak	Shoreline	Motorized Boat	Canoe\Kayak	Shoreline	Stabilization Facility	Transport	Evidence Mgmt.	Intake/Processing	Washing	Drying	Husbandry	Facility Mgmt.	Volunteer Mgmt.
Poisonous plants			X	X	X	X	X	X									
Precipitation			X	X	X	X	X	X		X						X	
Sunburn/windburn		X	X	X	X	X	X	X		X						X	
WORKING ON/NEAR WATER																	
Cold-water immersion		X	X	X	X	X	X	X		X							
Currents		X	X	X	X	X	X	X		X							
Drowning		X	X	X	X	X	X	X		X							
Eye strain from glare		X	X	X	X	X	X	X		X							
Fast-moving/powerful water		X	X	X	X	X	X	X		X							
Slippery surfaces		X	X	X	X	X	X	X		X							
Splash/spray		X	X	X	X	X	X	X		X							
Tides		X	X	X	X	X	X	X		X							
WORKING ON AN AIRCRAFT OR BOAT																	
Crash/collision		X	X	X		X	X			X							
Capsizing			X	X		X	X			X							
Hazardous operating area		X	X	X		X	X			X							
Incapacitated pilot		X	X	X		X	X			X							
Motion sickness		X	X	X		X	X			X							
Working around unfamiliar equipment		X	X	X	X	X	X			X							

	ICP	ld Operations								Primary Care Center						
		Assess/ Recover			Hazing											
Risk	WBD, Wildlife Spec.	Aerial	Motorized Boat	Canoe\Kayak	Shoreline	Motorized Boat	Canoe\Kayak	Shoreline	Stabilization Facility	Transport	Evidence Mgmt.	Intake/Processing	Washing	Drying	Husbandry	Facility Mgmt.	Volunteer Mgmt.
WORKING WITH WILDLIFE																	
Getting hit, bit, clawed, scratched, etc.			X	X	X				X	X		X	X	X	X		
Zoonoses			X	X	X				X	X	X	X	X	X	X	X	
SPECIAL OPERATIONS																	
Cuts, burns, shocks from equipment/tools														X		X	
Explosives/flammables						X	X	X									
Ingestion of petroleum products			X	X	X	X	X	X	X		X	X	X		X		
Inhalation of petroleum fumes			X	X	X	X	X	X	X	X	X	X	X		X		
Skin contamination by petroleum products			X	X	X	X	X	X	X		X	X	X		X		
Working in a confined space		X	X			X			X	X							
Working in Level D PPE			X	X	X	X	X	X	X		X	X	X	X			

Table 2. PPE Required for working with oiled wildlife in the field, during transport, and at the stabilization or primary care center.

PPE Type	FIELD	TRANSPORT	STABILIZATION OR PRIMARY CARE CENTER
Full Face Shield			X
N95 Face Mask		X	X
Safety Glasses/Goggles	X		X
Hard Hat	X		X
Hearing Protection	X		X
PVC Vinyl Apron			X
Nitrile Gloves	X	X	X
Nitrile Gauntlet Gloves			X
Tyvek© Coveralls (DuPont™ Tychem Chemical Resistant)	X	X	X
Fire-resistant Clothing	X	X	X
Personal Flotation Device	X	X	

Species and Habitats at Risk during Oil Spills

Species

Many wildlife species in Sector Delaware Bay's AOR are at particular risk of harm from oil spills, especially considering the area's position in a major bird migration flyway. This section focuses on species at risk according to input from local wildlife trustees and their status on the federal and/or state Threatened & Endangered (T&E) lists.

Key species are listed in the following table. For a full list of species at risk, including their listing status, breeding season, and critical habitat within Sector Delaware Bay, click the following link (this list is subject to change):

https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:a2e31634-60c2-4e7c-98f2-5475cda9d564

Table 3. Key species at risk in the Sector Delaware Bay AOR.

Species	Status
Mammals & Marine Mammals	
Indiana Bat (*Myotis sodalis*)	Endangered NJ, PA
Little Brown Bat (*Myotis Lucifugus*)	Endangered
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered
Harbor Seal (*Phoca vitulina*)	Marine Mammal Protection Act
Gray Seal (*Halichoerus grypus*)	Marine Mammal Protection Act
Birds	
Black Rail (*Laterallus jamaicensis*)	Endangered in NJ
Piping Plover (*Charadrius melodus*)	Threatened
Roseate Tern (*Sterna dougallii dougallii*)	Endangered (Northeast population)
Red Knot (*Calidris canutus rufa*)	Threatened & Endangered DE, NJ, PA
Reptiles	
Bog Turtle (*Glyptemys muhlenbergii*)	Threatened
Eastern Massasauga (*Sistrurus catenatus*)	Threatened
Green Sea Turtle (*Chelonia mydas*)	Endangered
Hawksbill Sea Turtle (*Eretmochelys Imbricata*)	Endangered
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)	Endangered
Leatherback Sea Turtle (*Dermochelys coriacea*)	Endangered
Loggerhead Sea Turtle (*Caretta caretta*)	Endangered
Diadromous Fish	
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	Species of concern
Shortnose Sturgeon (*Acipenser brevirostrum*)	Endangered
Crustacean	
Horseshoe Crab (*Limulus polyphemus*)	Not listed
Insect	
Bethany Firefly (*Photuris bethaniensis*)	Endangered DE

Further information on species at risk in the Sector Delaware Bay area can be found here:

- https://dnrec.delaware.gov/fish-wildlife/conservation/endangered-species/
- https://www.pgc.pa.gov/Wildlife/EndangeredandThreatened/Pages/default.aspx
- https://dep.nj.gov/njfw/wildlife/endangered-threatened-and-special-concern-species/#endangered-and-threatened

Habitats

A habitat is considered at risk of harm from oil spills if it is particularly sensitive to damage, hosts a wide variety of organisms, or acts as key habitat for a T&E species. The following locations are considered at risk and should be treated with special consideration to prevent damage during oil spills.

Map Key

- National Wildlife Refuge/National Fish Hatchery
- Coastal Barriers
- Water Bodies

Follow this link for an interactive version of the map above, including names of the coastal barriers:

https://ipac.ecosphere.fws.gov/location/44JPSF4KYRH55NHHAPRQCJXLRE/resources#coastal-barriers

Oiled Wildlife Response Organization Qualifications

Oiled wildlife response requires specific skills, equipment, certifications, and experience in order to conduct operations safely and effectively. While local wildlife rehabilitators may be an excellent resource during an oil spill because of their expertise with wildlife in the area, most rehabilitators do not specialize in oiled wildlife response. In order to ensure that the oiled wildlife response goes as smoothly as possible, the Oiled Wildlife Response Organization (OWRO) contracted to manage the response should meet the criteria discussed in this section.

Permits

State and federal permits may be required for various aspects of the oiled wildlife response. In order to legally carry out the required response activities, the OWRO must either preemptively hold the necessary permits or be granted the permits by the appropriate authority at the time of the spill. See the following tables for specific permit information.

Table 4. Permit information for oil spill response activities: **Migratory birds.**

ACTION	PERMIT NAME	AUTHORIZING LAW OR REGULATION	Details
Hazing/Deterrence	Hazing Permit Incidental Take Permit	Endangered Species Act, Section 10(a)(1)(B)	Special permission is required to "take" endangered species
	Hazing Permit Eagle Take-Associated with, but not the Purpose of, an Activity (Incidental Take)	Bald and Golden Eagle Protection Act, 50 CFR 22.80	Bald and golden eagles have special protections under this act
	Local wildlife trustees should be consulted prior to hazing to ensure the proper protocols, trainings, and certifications are in place.		

Capture and Transport	Migratory Bird Scientific Collecting Permit	Migratory Bird Treaty Act, 50 CFR 21.73	Federal Permit
	Eagle Scientific Collecting Permit	Bald and Golden Eagle Protection Act, 50 CFR 22.50	Federal Permit
	Pennsylvania Scientific Collectors Permit	58 Pa. Code § 51.71	
	Delaware Rehabilitation Permit	Title 7, Chapter 1, Section 103 and Delaware Administrative Code Regulation 13.0	
	Delaware Scientific Collectors Permit	Title 7, Chapter 5, Subchapter IV, Section 555	
	New Jersey Rehabilitation Permit (Avian)	NJ Admin Code § 7:25-4.6 (a)(8,11,13)	
Decontamination and Rehabilitation	Migratory Bird Rehabilitation Permit	Migratory Bird Treaty Act, 50 CFR 21.76	Federal Permit, including eagles
	Pennsylvania Rehabilitation Permit	58 Pa. Code § 147.304	
	Delaware Rehabilitation Permit	Title 7, Chapter 1, Section 103 and Delaware Administrative Code 3900 Regulation 13.0 (Endangered Species) Title 7, Chapter 6, Section 601 and Delaware Administrative Code 3900 Regulation 16.1.1	
	Delaware Scientific Collectors Permit	Title 7, Chapter 5, Subchapter IV, Section 555	
	New Jersey Rehabilitation Permit (Avian)	NJ Admin Code § 7:25-4.6 (a)(8,11,13)	
Banding	US Federal Bird Banding and Marking Permit	50 CFR 10 General Provisions, 50 CFR 13 General Permit Procedures and 50	

		CFR 21 Migratory Bird Treaty Act	
	Pennsylvania Scientific Collectors Permit	58 Pa. Code § 51.71	
	Pennsylvania Banding Permit	34 Pa. Code § 2921 (a)	
	NJ Scientific Collectors Permit	N.J.S.A. 23:2A-1-13	
	NJ Banding Permit	N.J.S.A. 23:2A-1-13	

Table 5. Permit information for oil spill response activities: **Terrestrial mammals.**

ACTION	PERMIT NAME	AUTHORIZING LAW OR REGULATION	Details
Hazing/Deterrence	Local wildlife trustees should be consulted prior to hazing to ensure the proper protocols, trainings, and certifications are in place.		
	Hazing Permit Incidental Take Permit	Endangered Species Act, Section 10(a)(1)(B)	Special permission is required to "take" endangered species
Capture and Transport	Pennsylvania Scientific Collectors Permit	58 Pa. Code § 51.71	
	Delaware Rehabilitation Permit	Title 7, Chapter 1, Section 103 and Delaware Administrative Code Regulation 13.0	
	Delaware Scientific Collectors Permit	Title 7, Chapter 5, Subchapter IV, Section 555	
	New Jersey Rehabilitation Permit (Mammals)	NJ Admin Code § 7:25-4.6 (a)(8,11,13)	
Decontamination and Rehabilitation	Pennsylvania Scientific Collectors Permit	58 Pa. Code § 51.71	

	Pennsylvania Rehabilitation Permit	58 Pa. Code § 147.304	
	Delaware Rehabilitation Permit	Title 7, Chapter 1, Section 103 and Delaware Administrative Code Regulation 13.0	
	Delaware Scientific Collectors Permit	Title 7, Chapter 5, Subchapter IV, Section 555	
	New Jersey Rehabilitation Permit (Mammals)	NJ Admin Code § 7:25-4.6 (a)(8,11,13)	
Rabies Vector Species	Delaware Rehabilitation Permit	7 Delaware Administrative Code 3900 Regulation 13.3	
	Pennsylvania Rehabilitation Permit	58 Pa Code § 147.306	Must take a written RVS certification exam

Table 6. Permit information for oil spill response activities: **Reptiles and amphibians (not including sea turtles).**

ACTION	PERMIT NAME	AUTHORIZING LAW OR REGULATION	Details
Hazing/Deterrence	Local wildlife trustees should be consulted prior to hazing to ensure the proper protocols, trainings, and certifications are in place.		
	Hazing Permit Incidental Take Permit	Endangered Species Act, Section 10(a)(1)(B)	Special permission is required to "take" endangered species
Capture and Transport	Pennsylvania Scientific Collectors Permit	58 Pa. Code § 51.71	
	Delaware Rehabilitation Permit	Title 7, Chapter 1, Section 103 and Delaware	

		Administrative Code Regulation 13.0	
	Delaware Scientific Collectors Permit	Title 7, Chapter 5, Subchapter IV, Section 555	
	New Jersey Rehabilitation Permit (Reptiles and Amphibians)	NJ Admin Code § 7:25-4.6 (a)(8,11,13)	
Decontamination and Rehabilitation	Pennsylvania Scientific Collectors Permit	58 Pa. Code § 51.71	
	Pennsylvania Rehabilitation Permit	58 Pa. Code § 147.304	
	Delaware Rehabilitation Permit	Title 7, Chapter 1, Section 103 and Delaware Administrative Code Regulation 13.0	
	Delaware Scientific Collectors Permit	Title 7, Chapter 5, Subchapter IV, Section 555	
	New Jersey Rehabilitation Permit (Reptiles and Amphibians)	NJ Admin Code § 7:25-4.6 (a)(8,11,13)	

Table 7. Permit information for oil spill response activities: **Sea turtles and marine mammals**.

ACTION	PERMIT NAME	AUTHORIZING LAW OR REGULATION	Details
Hazing, Capturing, Transporting, and Cleaning Marine Mammals	112(c) Authorization, Stranding Agreements	Marine Mammal Protection Act	NOAA, NMFS Federal Permit
	109(h) Authorization, Rehabilitation	Marine Mammal Protection Act	
	Hazing Permit Incidental Take Permit	Endangered Species Act, Section 10(a)(1)(A) Marine Mammal Protection Act, 16 U.S.C. 1362	Special permission is required to "take" endangered species

Hazing, Capturing, Transporting, and Cleaning Turtles	On land, Endangered Species Permit TE-697823	Endangered Species Act; 50 CFR 222.310 and 50 CFR 223.206	USFWS Federal Permit
	Incidental Take Permit	Endangered Species Act, Section 10(a)(1)(B)	Special permission is required to "take" endangered species NOAA Federal Permit

Personnel Training and Certifications

In order to work with wildlife that is contaminated with petroleum products, personnel should have the appropriate level of hazardous material training, as defined by 29 CFR 1910.120 and as identified by the incident Safety Officer.

- Personnel working directly with oiled animals, in the field or at a care center, should have a **24-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)** certification, with an annual **8-hour refresher HAZWOPER** course.
- Personnel working in a support or administrative role (i.e. not in contact with any oiled animals) should have a **Hazardous Communications (HazCom)** certification.
- Personnel working remotely do not need a hazardous material certification.

In addition to hazardous material training, personnel should have training and experience relevant to the animal care they will be doing. This includes experience with animal field capture, animal handling, administering medical treatments, performing exams, and decontaminating animals, among many others. See Table 8 for specific trainings that wildlife personnel should have completed prior to the response.

OWRO staff and volunteers who have not had sufficient training prior to responding to an oil spill may receive on-site just-in-time training conducted by an individual with prior response experience, in coordination with the incident Safety Officer; alternatively, these individuals may be assigned less hazardous duties appropriate to their current level of training.

Table 8. Trainings and certifications required or recommended for wildlife personnel.

Training / **Personnel**	HAZWOPER	ICS 100-300	Aircraft Safety	Boating Safety	Firearm Safety	First Aid/CPR	Basic Rehabilitation Skills	Animal Washing	Supervisory and Crisis Management
USFWS Response	R	R	R	R	R	R	-	-	-
Rehab Management	R	R	-	-	-	H	H	H	H
Initial Assessment	R	-	H	H	-	H	-	-	-
Bird Deterrent	R	-	-	H	H	H	-	-	-
Field Workers	R	-	-	H	-	H	H	-	-
Facility Workers	R	-	-	-	-	-	H	H	-

R = Required Training, if performing the activity
H = Highly recommended for establishing best practices, if performing the activity

Veterinary Requirements

Oiled wildlife response requires the oversight of a licensed wildlife veterinarian because of the host of health issues caused by petroleum exposure; furthermore, the states of Delaware, New Jersey, and Pennsylvania require permitted wildlife rehabilitators to work with a veterinarian. A veterinarian must have a current Drug Enforcement Administration license in order to use controlled substances, which are often critical for adequate veterinary care of oiled wildlife. This includes the use of euthanasia solution, which must be readily available during oiled wildlife responses in order to perform humane euthanasia at the discretion of a veterinarian.

Wildlife disease management is also a concern during oiled wildlife responses; involving a wildlife veterinarian in the response can be a critical factor in establishing adequate disease monitoring, prevention, and containment protocols. State wildlife veterinarians may also need to be involved in the response if there is an active outbreak of a disease of concern (for example, Highly Pathogenic Avian Influenza).

Volunteers

Unpaid volunteers may be involved in an oiled wildlife response. These individuals are subject to the same training requirements listed above. Just-in-time or convergent volunteers may be

utilized, but they must receive adequate training at the time of the response in order to meet these requirements. The OWRO should also have adequate liability insurance that includes coverage for volunteers.

Other Requirements

The contracted OWRO should have adequate knowledge and experience with the various aspects of an oiled wildlife response, including the following: ICS positions, facility requirements, documentation and communication within the ICS, identification of oiled wildlife in the field, field capture of oiled wildlife, transporting oiled wildlife, and communicating appropriately with the media, among others.

Facility Requirements and Identification

Oiled wildlife responses require facilities with specific characteristics in order to effectively stabilize, decontaminate, and rehabilitate contaminated wildlife. This section will discuss the requirements for two types of oiled wildlife facility, a Stabilization Facility and a Primary Care Center, and will list some facilities that meet these requirements in the Sector Delaware Bay AOR.

Stabilization Facility

A Stabilization Facility may not be needed in every oil spill response. If a Primary Care Center cannot be located within a 2-hour drive of the spill site or if the animals recovered from the spill site are especially debilitated, an on-site or nearby Stabilization Facility will be established. A Stabilization Facility could be in the form of a brick-and-mortar building, a mobile trailer, or a field tent, depending on the incident circumstances (note – the OWRO may need assistance from the Logistics Section to source a Stabilization Facility, especially if a trailer or tent is desired). Stabilization Facilities require the following characteristics:

- Private shelter with protection from the elements and restricted access from the public
- Temperature control
- Ventilation
- Electricity
- Adequate space for patients in their transport carriers
- Adequate space for a treatment area

The goal of a Stabilization Facility is to provide supportive care (i.e. emergency treatments, fluid therapy, normalizing body temperature) for patients who are extremely debilitated and/or will be traveling a long distance to the Primary Care Center. This supportive care can drastically increase a patient's chance of survival, as the initial 24-48 hours of care are most critical for an oiled animal. The Stabilization Facility should be staffed by OWRO personnel or personnel who have been trained by the OWRO to stabilize oiled wildlife.

Oiled Wildlife Response Facility/Primary Care Center

The ideal location for the Primary Care Center is rarely at the spill site; under certain circumstances the center can be located several hours away from the spill site. A facility's ability

to safely provide medical and rehabilitative care is more important than its proximity to the spill site. In remote areas or locations where an adequate facility cannot be identified within a 2-hour drive of the spill site, temporary stabilization sites may be required to ensure that appropriate emergency care is provided to wildlife prior to transport (see above).

Primary Care Center requirements can vary significantly, depending on the following:

- Overall scale of the spill and potential wildlife impact
- Species and age of wildlife affected
- Geographic location
- Season/weather
- Type of contaminant(s)

Facility requirements can vary significantly depending on the circumstances of the incident; therefore, a permanent facility (for example, a local wildlife rehabilitator's facility) is not always advisable and may actually be an impediment in providing the appropriate facility design for the situation.

A suitable Primary Care Center will possess the following characteristics:

- A large, open floor space (**~3,000ft^2**)
    - A large, open floor space allows responders to easily reconfigure equipment as the needs of a response change. Plastic sheeting (4 mil) is secured to the floor of the facility with painter's tape in areas where animals will be housed to protect the floor and for ease of clean up during demobilization.
- Adequate HVAC system
    - The HVAC system must be able to maintain the temperature of the open floor space between **70°F and 80°F**. To protect responders and patients from toxic contaminant fumes, an HVAC system capable of up to 10 air exchanges per hour is ideal.
- Reliable water supply
    - A response can use up to **7,000 gallons per day**. Water may be used for drinking water for responders, care for patients, or decontamination. Water used for decontamination will be contained within a containment berm and pumped into oily waste water containers.
- Reliable power
    - Oiled wildlife response can require many pieces of equipment including refrigerators/freezers, medical equipment, power tools, pool pumps, and washers/driers. The facility needs to have an adequate number of outlets and the ability to handle the power draw of running much or all of the need equipment simultaneously.
- Adequate parking
    - Oiled wildlife response is resource intensive and one of the most important resources is people. Personnel needs fluctuate as a response progresses and can be significant. **Parking for up to 50 responders is desirable.**

- Security
    - Security is necessary to restrict/control access to the facility and prevent unauthorized individuals from accessing response operations. This protects unauthorized visitors from hazards associated with spill response, protects responders/patients from unauthorized visitors, and ensures that your property is protected.

Pre-identifying real estate that may be suitable for oiled wildlife response within the AOR will help expedite an oiled wildlife response. Each location should be thoroughly surveyed, ideally by an OWRO, using a *Facilities Checklist* such as the following: https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:f638e12f-851c-4678-b232-f3202768c835.

As of February 2024, the following facilities have been identified as possible Stabilization Facilities and/or Primary Care Centers:

- **Tri-State Bird Rescue & Research, Inc.** 170 Possum Hollow Rd, Newark DE 19711. (302) 737-9543.
    - Suitable for small-large scale responses involving birds, reptiles, amphibians, and terrestrial mammals.
- **Prime Hook National Wildlife Refuge.** 11978 Turkle Pond Rd, Milton DE 19968. (302) 684-8419.
    - Suitable for small-medium scale responses involving birds, reptiles, amphibians, and terrestrial mammals.
- **Marine Education, Research, and Rehabilitation (MERR) Institute**. 801 Pilottown Rd, Lewes DE 19958. (302) 228-5029.
    - Suitable for small scale responses involving marine mammals and sea turtles. Possesses some limited capabilities for birds, reptiles, and amphibians.

Pre-Release Conditioning

Occasionally the Primary Care Center will not be suitable for long-term care for decontaminated patients that need intensive pre-release conditioning. See the International Wildlife Rehabilitation Council/National Wildlife Rehabilitators Association *Standards for Wildlife Rehabilitation* for housing, rehabilitation, and conditioning standards for each taxa of wildlife. These standards are particularly important to follow to ensure that aviaries and pools are adequate to condition seabirds for release.

Local rehabilitation facilities within the Sector Delaware Bay AOR are listed below with their taxa and short or long-term housing capabilities.

- Tri-State Bird Rescue & Research, Newark, DE
    - Avian[2], Mammal[2], Reptiles[2], Amphibians[2]
- National Aquarium, Baltimore, MD
    - Marine Mammals[1], Sea Turtles[2]
- National Aquarium Animal Rescue Stranding Response Center, Ocean City, MD

    - Marine Mammals[1]
- Marine Education Research and Rehabilitation (MERR) Institute, Lewes, DE
    - Marine Mammals[1]
- Marine Mammal Stranding Center, Brigantine, NJ
    - Marine Mammals[2]
- Mercer County Wildlife Center, Lambertville, NJ
    - Avian, Mammals[2]
- Schuylkill Wildlife Center, Philadelphia, PA
    - Avian[2], Mammals (no rabies vector species)[2], Reptiles[2], Amphibians[2]
- Raptor Trust, Millington, NJ
    - Avian[2]

[1]Short-term, [2]Both short-term and long-term

Incident Command Structure

Wildlife Response

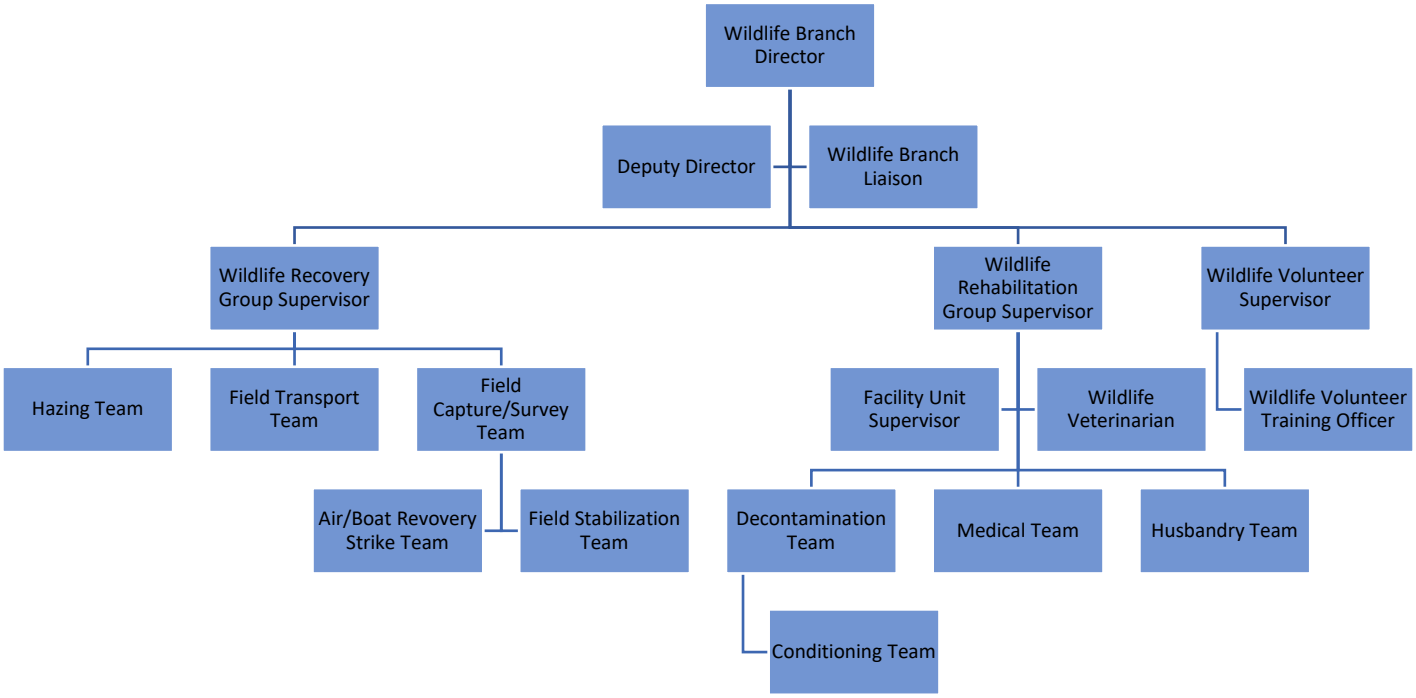
In the event of a spill or threat of a spill occurring within Sector Delaware Bay's AOR impacting or potentially impacting the environment, a Unified Command shall be activated. The Incident Management Team will be responsible for initiating an oiled wildlife response. Wildlife response actions will comply with NIMS-ICS standards and follow a Wildlife Branch organization structure.

Wildlife Branch staff will coordinate with personnel from the Operations Section, Logistics Section, Planning Section (Environmental Unit), and Finance Section as needed to advocate for and represent Wildlife Branch needs. Resource requests will be submitted through the Logistics Section using ICS 213RR forms. All financial activity will be documented and submitted through the proper channel; this may be through the Finance Section or directly through the RP depending on the structure of the response and how the OWRO was contracted in to the response.

The Wildlife Branch will be part of the Operations Section. Depending on the magnitude of the wildlife response, additional command staff may be required within the Wildlife Branch. Command staff may include:

- Assistant Safety Officer for Wildlife
- Assistant Liaison Officer for Wildlife
- Public Information Officer for wildlife-related issues

Below is an example organization chart for the Wildlife Branch.



Initial Response Actions

Response Priorities

Response activities are prioritized to ensure an effective wildlife response. The following activities shall be initiated within the first 24-48 hours of an incident:

- Conduct notifications to wildlife trustees.
- Mobilize an OWRO.
    - Once mobilized, an OWRO can handle most, if not all, of the rest of these initial response priorities.
- Initiate a wildlife impact assessment.
- Mobilize and deploy wildlife equipment, supplies, and additional OWRO personnel.

- Develop and implement an incident and species-specific Wildlife Deterrents (Hazing) Plan.
- Develop an incident-specific Wildlife Management Plan.
- Ensure that required federal and state permits are in place or that applications for appropriate permits are submitted.
- Establish a "1-800" oiled wildlife reporting hotline.
- Identify regional resources needed for a wildlife response and initiate establishment of required oiled wildlife care facilities.
- Conduct reconnaissance and recover carcasses to reduce secondary contamination of wildlife.

Notifications

In the event of an oil spill (or other relevant contaminant) that has impacted wildlife, or has the potential to impact wildlife, a representative from Sector Delaware Bay should ensure notification is provided to the United States Fish and Wildlife Service and any additional local wildlife trustees. These regulatory agencies have authority over wildlife and other resources at risk. Local wildlife trustees in the AOR of Sector Delaware Bay include:

- Delaware Department of Natural Resources and Environmental Control
- New Jersey Department of Environmental Protection
- Pennsylvania Game Commission (birds and mammals)
- Pennsylvania Fish and Boat Commission (reptiles, amphibians, fish)
- Administrators for state or federally-managed natural areas affected by the spill
- Department of Interior Regional Environmental Officer
    - John Nelson (PA, DE) – Philadelphia Regional Office, (215) 597-5378
    - Andrew Raddant (NJ) – Boston Regional Office, (617) 223-8565
- US Fish & Wildlife Service Regional Spill Response Coordinator
    - Margret Byrne, USFWS Northeast Region 5, (413) 253-8593

Oiled Wildlife Response Organization Activation

There are a few ways to contract an OWRO during an oil spill response.

- The Responsible Party (RP) may contract directly with the OWRO.
    - This is typically the fastest and most efficient method.
- If the RP is not determined and the USCG is opening the Oil Spill Liability Trust Fund, the OWRO will typically be sub-contracted through an Oil Spill Response Organization (OSRO).
    - If the OWRO holds a Basic Ordering Agreement (BOA) with the USCG, the OWRO can be contracted directly through the USCG.
- If an agency (e.g. USFWS, EPA) has requested that an OWRO be activated, then the funding will need to be determined on a case-by-case basis.

To activate Tri-State Bird Rescue & Research's (TSBRR) Oiled Wildlife Response Team, please call the following 24-hour emergency contact hotline: **(800) 261-0980.**

Use this number ONLY to notify TSBRR of an oil spill or oil spill drill/exercise.

For non-emergency situations please contact:

Main Office: **(302) 737-9543 x 121** Email: **oilprograms@tristatebird.org**

The caller shall be prepared to provide the OWRO with appropriate contact information and a synopsis of the incident. This includes the type of contaminant and amount spilled, type and number of animals affected, and type of habitat affected.

The OWRO along with the Environmental Unit and Operations Section Chief will determine the best path forward for wildlife response operations.

Oiled Wildlife Reporting Hotline

An appropriate interface with the public shall be established. In most cases this will be in the form of a Wildlife Observation Reporting Hotline which will collect information on impacted wildlife sightings from the public and receive and record sightings from response personnel.

The Hotline shall be staffed with appropriate personnel representing USCG Sector Delaware Bay. The Wildlife Branch will provide the Hotline personnel with approved messaging about the wildlife response to convey to callers from the public. Messaging will instruct callers not to attempt capture of the animal due to health and safety concerns for both the individual and the animal. Observation data from callers will be recorded and communicated to the Situation Unit and Wildlife Branch for assessment and subsequent action.

The Wildlife Observation Reporting Hotline number and messaging shall be included in daily work assignments (***ICS-204***) ensuring that observations made by response personnel are reported, documented and communicated to the Wildlife Branch in a similar fashion.

Additionally, appropriate messaging will be developed and provided to the Joint Information Center or Public Information Officer to release as media notices.

Documentation

Data Collection and Chain of Custody Records

All wildlife data collected will be important for documenting ongoing response efforts and meeting evidentiary requirements. These data may also be incorporated into Natural Resource Damage Assessment activities. During the initial phase of a wildlife response the Unified Command, wildlife trustees, and the OWRO shall agree on all the documentation procedures before commencing wildlife recovery efforts. All responders shall adhere to the procedures throughout the response. All team members shall be briefed on appropriate methods to record and store the data they are required to collect.

Wildlife Field Observations

The wildlife field teams will record animal sightings (both impacted and non-impacted) and any pertinent information about field activities as they relate to wildlife. Wildlife field observations can be recorded on paper (see Figure 1 for a sample field survey) or digitally using the United

States Fish & Wildlife Service (USFWS) Wildlife Response Survey through Survey 123. All forms must include the following information:

- Field team members
- Contact information for field team
- Location where the field team worked (GPS coordinates, detailed landmarks)
- Method of survey (e.g. on foot, boat, car, etc.)
- Time and date
- Incident name

Photographic documentation generated during field operations should be submitted to the Documentation Unit daily. When possible, written documentation should accompany photographs (location, description of why photograph was taken, etc.).

Chain of Custody Forms

At the onset of any oiled wildlife response effort local the USFWS Field Spill Response Coordinator (FSRC) should be consulted for incident-specific Chain of Custody procedures. In the absence of immediate input, the following general procedure should be practiced with due diligence.

Once an impacted animal is collected, the recovery team shall begin a chain of custody form. This form should include the following information:

- Field team members
- Contact information
- Location of collection (preferable GPS coordinates)
- Species (if known)
- Time and date animal was collected
- Incident name
- Indication of whether the animal is dead or alive
- Indication of whether the animal is oiled or not

This form must stay with the individual animal at all times. Forms should be placed in a plastic Ziploc® bag and attached to the animal's transport carrier. If possession changes hands, then the form must be signed (signature, date and time) by the person who is relinquishing custody. The person receiving custody must also sign the form (signature, date and time) and his / her contact information must be added to the form. Both parties shall retain a copy of the form. Carcasses should only be given to people with the authority to have possession.

Custody forms for live animals should be filed systematically once the animal arrives at the Wildlife Response Facility. All forms for carcasses should be attached to the carcass, unless asked to do otherwise by the law enforcement agent in charge of evidence. Depending on the species, status, and retrieval location there may be multiple agencies with law enforcement representation. Incident-specific protocols may be amended based on jurisdiction of agencies.

Individual Animal Logs

All live animals recovered by the field teams will be assigned a case number unique to the incident and an individual animal case record will be started for each animal upon arrival at the Wildlife Response Facility. A case number for each animal should be generated from a running tally and recorded on the animal's log. The case number will be the animal's identification while in the rehabilitation facility. The animal's log will follow the progress of the individual from the initial intake through release. Significant information will be recorded about the animal's health and rehabilitation status; anyone writing on the form is required to sign and date their additions.

Collected carcasses will also receive a unique number generated from a morgue log and will be recorded on the chain of custody form. Any additional information that might be required can be added to the chain of custody form. All individuals adding information to the chain of custody form must sign and date their additions.

Animal Evidence Samples

Evidence samples shall be collected from all animals (live and carcasses) arriving at the facility. Law enforcement representatives with appropriate jurisdiction should be consulted at the onset of wildlife efforts on what samples to collect, who can take the samples, how to label the samples and how to store the samples.

Samples at a minimum should include the following information:

- Date and time of collection
- Sample type
- Incident name
- Species
- Case number
- Collector's name

During the admission process photographs will be taken of each animal or carcass, including a tag with the date, time, species, case number and temporary band ID number, and incident name in large, black letters. The original data cards containing the photographs should be given directly to law enforcement or securely stored when not in use. Additionally, data on any card designated for evidence should never be shared or downloaded to another device.

Law enforcement must also approve carcass storage methods. Incident specific protocols may be amended based on jurisdiction of agencies. For more details, refer to the US Fish & Wildlife Service *Best Practices for Migratory Bird Care during Oil Spill Response*.

Daily Reports

Daily summaries are submitted by the OWRO to summarize activities performed, impacted wildlife collected, patient totals in the Oiled Wildlife Response Facility, patients transferred, patients released, etc. This report is submitted to the members of the Incident Command Post. This report can be used to plan for the next operational period.

Daily briefings will also be conducted prior to every shift at the Stabilization Facility and/or Primary Care Center, typically in the morning and mid-day. The Wildlife Branch Director and Site Safety Officer will brief all OWRO personnel on safety considerations, work assignments, and general response updates.

Medical Records

The OWRO will be responsible for medical documentation of all animals collected, live and deceased. They may have their own digital/web-based data/reporting system like *Wildlife Rehabilitation MD (WRMD)* or they may keep paper records for each patient. Patient medical records will follow the animal from their initial exam until final disposition. Medical records should be kept secure whether digital or paper as they may be needed by law enforcement as evidence.

Wildlife Branch Operations

Assessment and Survey

Prioritization of Sensitive Species/Habitats

Oiled wildlife response operations must first start with a thorough assessment of the species at risk and sensitive habitats, as the loss of endangered/threatened species is one of the biggest environmental concerns following an uncontrolled release of contaminants. Assessment strategies are determined based on a combination of the origin/location of the spill, projection of the spill, and sensitive species/habitats at risk (see Species and Habitats at Risk section above). Booming, skimming and physical control of oil acts as the first line of defense, but proper assessment of all species and habitats are necessary for the mitigation and prevention of wildlife impacts by an oil spill. The OWRO will consult with wildlife trustees and/or SCAT (Shoreline Clean-up and Assessment Technique) teams to coordinate viewing of these habitats.

Survey Methods

Reconnaissance surveys should be utilized as soon as possible following the release of a spill so that the number, location, and type of species affected can be determined and relayed to key response personnel, including the Wildlife Branch Director, Environmental Unit Leader, and Situation Unit Leader. The location and number of wildlife (alive, dead, oiled and unoiled) should be plotted on a map; digitized maps are preferred, such as ERMA and Survey123 for multi-agency access to the information obtained during survey operations. The scope and frequency of subsequent surveys will be incident-specific.

Personnel performing surveys must be able to properly identify species, interpret behavioral characteristics that may indicate oiling (e.g. excessive preening, loafing and beaching from exhaustion/hypothermia, etc.), and have local knowledge of habitats and ecology. Utilizing a combination of OWRO staff, skilled observers, and volunteers will ensure an overall successful operation. All survey methods and operations must be authorized and coordinated through the Operations and Logistics Section. Examples of different survey methods are:

- Aerial Surveys – Helicopter, fixed wing aircraft, and drones

- Active Ground Surveys – Automobile, boats, on-foot patrol
- Passive Ground Surveys – Game cameras and monitoring equipment

Data Collection

Data collected from wildlife surveys are essential for determining next steps and tracking numbers and movement of species (both oiled and at-risk of oiling). This information is necessary to determine the proper implementation of wildlife field operations. After a survey, the information will be relayed to the Wildlife Branch Director, Environmental Unit, and Situation Unit to discuss next steps. This may involve pre-emptive capture of un-oiled but at-risk species, development of a hazing/deterrence plan, and priorities for physical capture of oiled wildlife. See the Documentation section of this annex for more information on data collection.

Hazing and Deterrence

Authorizations

A deterrence plan that employs many different methods of both audio and visual stimuli to dissuade animals from entering an at-risk area can be extremely helpful in prevention of oiled wildlife. The various methods and tools used can require certain permits, licenses, and trained operators. All deterrence activities will require authorization from appropriate natural resource management.

Certain tools, such as pyrotechnics, may require permits from the local Fire Marshall. All workers performing hazing and deterrence must have a minimum of 24-hour HAZWOPER training.

Techniques and Tools

The following factors should be considered when developing a hazing plan:

- Some animals are not candidates for hazing and deterrence, including animals that don't have an escape pathway, currently oiled animals, birds in catastrophic molt, and nesting birds. Pre-emptive capture and relocation may be more appropriate for these animals.
- Consider the environmental impact of chemicals and litter from hazing equipment.
- Avoid dispersing wildlife into areas that might become contaminated, being mindful of oil trajectory projections.

A variety of audio and visual stimuli should be utilized in order to prevent habituation. Deterrence is most effective if the entire area of concern can be hazed as continuously as possible, with various devices and intervals of disturbance. If this is not possible, careful reconsideration of a hazing program should be discussed before operations begin. Some devices may be operated automatically and can be used when personnel are limited, during bad weather, or overnight.

The following table lists a variety of techniques and tools that can be used for effective hazing/deterrence:

Table 9. Hazing/deterrence tools.

Tools	Audio	Visual	A & V	Exclusion
Bird Bombs, Screamers, Screamer Rocket Bangers	**X**			
Shell Crackers	**X**			
CAPA launcher and rockets	**X**			
Propane Cannons	**X**			
Distress and Alarm Calls	**X**			
Phoenix Wailer	**X**			
Mylar Tape		**X**		
Scarecrows		**X**		
Flags		**X**		
Balloons		**X**		
Lasers		**X**		
Lights		**X**		
Blowy Man		**X**		
ATV			**X**	
Aircraft – including drones			**X**	
Boats			**X**	
Overhead Lines				**X**
Netting				**X**
Fencing				**X**
Plastic Balls				**X**
Spikes/coils				**X**

Note: Utilizing a combination of tools and techniques will further dissuade wildlife by ensuring resistance to habituation. For example, you can use exclusion methods like fencing and netting in addition audio/visual stimuli like lasers and distress calls to maximize efforts.

Collection and Capture

Wildlife capture should be implemented as safely and early as possible to increase the survival rate of oiled animals. The period of time that oiled wildlife remain in the field is exponentially detrimental to their condition and repeated unsuccessful capture attempts may fatally exhaust an animal, so a well-developed capture plan is critical for animal survival.

Safety is paramount for both humans performing the capture and for the wildlife being captured. Field workers should have knowledge of handling requirements for the affected species to protect themselves and the animal; wild animals can be easily permanently injured if handled improperly and are prone to capture myopathy, which may be fatal. Weather and environmental conditions should also be considered before attempting to capture wildlife.

Wildlife capture rules:

- Safety always comes first.
- Ensure personnel are trained and familiar with wildlife capture and handling.
- Wear appropriate PPE and clothing for the field conditions, contaminant, and target species.
- Never work solo – utilize the buddy system and work in teams.
- Do not pursue wildlife until they are exhausted.
- Report any injuries.

Preemptive Capture

In some situations, pre-emptive capture may be necessary for wildlife that are at-risk and cannot be effectively removed using hazing, deterrence or exclusion from the area of concern. Before attempting preemptive capture, consult the USFWS and state wildlife trustees to obtain permission, particularly for T&E species. If immediate relocation is not appropriate, licensed wildlife rehabilitators may be authorized to temporarily hold and release preemptively captured wildlife.

Consider preemptive capture when:

- Animals cannot physically or behaviorally be removed from an at-risk area.
- Nesting birds and their chicks are at-risk of becoming oiled unless removed (note: pinniped nurseries and seabird rookeries are off limits for any type of capture).

Live Animal Capture

A variety of capture methods and techniques should be employed for successful results. Techniques will vary depending on species natural history and behavior, species priority (i.e. T&E species), weather, and terrain conditions.

Possible capture techniques include the following, among others:

- On-water capture using boats and nets
- Setting traps (e.g. foothold nooses, mammal live traps, pit traps for reptiles and amphibians, etc.)

- On-land capture using nets and sheets
- Corrals

Proper handling of captured wildlife is critical to prevent injury. Grabbing birds by the wings or allowing wings to flap freely can result in fractures, dislocations, or soft tissue damage that may warrant euthanasia. Some species require restraint of the feet and head to prevent handler injury. **Never tape an animal's mouth closed or tape its limbs together.** Never attempt to handle raptors without proper training. Once animals are captured, covering their head with a sheet or pillowcase and immediately placing the animal into a covered transport container will greatly reduce the animal's stress.

Appropriate containers should be available for captured wildlife, with the following characteristics:

- Ample ventilation
- Enough space for the animal to stand and spread their wings/limbs
- Bedding at the bottom of the carrier to secure the animal's footing and provide some absorption of oil
- A visual barrier between the animal and humans to reduce the animal's stress; this can be in the form of a sheet draped over the carrier as long as the sheet is breathable and able to be secured.
- Labelled with appropriate information – see Documentation section

Most wildlife should be placed in a carrier alone, except for social species or precocial babies. Be sure to consider ambient temperature to prevent overheating or hypothermia and keep carriers in a quiet place to reduce stress.

Carcass collection

Carcass collection prevents secondary oiling of other animals and ingestion of oil by predators. Carcasses may also act as evidence in investigations about the incident. A carcass collection procedure should be developed as part of the Wildlife Management Plan, including a chain of custody protocol, in coordination with the US Fish & Wildlife Service. See the Documentation section for information about carcass labelling. Carcasses should be wrapped in foil followed by paper bags and locked in a refrigerator or freezer. All carcasses should be processed in the same manner as live animals with recorded observations on the extent of oiling and evidence collection.

Animal Transport

Oiled wildlife that have been captured and labeled should be brought to the nearest care facility as soon as possible. In some cases, wildlife may need field stabilization and others may be able to go directly to a primary care facility; this determination will be at the discretion of the OWRO.

Vehicles that transport oiled wildlife should have adequate ventilation and a separate cab and cargo space so that humans are not enclosed with harmful vapors. Animal containers must be secured to prevent moving around during transport. Transport personnel must be mindful of the

ambient temperature in the cargo area to prevent animals from overheating or developing hypothermia.

Rehabilitation

Field Stabilization

OWRO personnel will assess animals in the field and determine if they require stabilizing medical treatments before transport. If needed, a field stabilization station will be set up using trailers or a pop-up tent and heating/cooling elements as appropriate. Only personnel with training in veterinary medicine will perform stabilizing treatments. Field stabilization is provided to animals in critical condition and animals who will remain in the field for longer than 2-3 before transport. Field stabilization does not include washing the animals or taking blood samples.

Steps for field stabilization:

- Gross contaminant removal (clearing the eyes, nostrils/nares, and mouth of bulk oil)
- Body temperature regulation
- Fluid therapy
- Minimize stress for the animal

Triage

Oiled wildlife brought to the Primary Care Center will be triaged so that animals are treated according to their condition and species priority. Full examinations will not be performed until the animals are stable. Some patients may require humane euthanasia if injuries are too severe and decontamination and rehabilitation is not possible. The Wildlife Management Plan should include a euthanasia plan developed by the wildlife veterinarian, OWRO, and state/federal wildlife trustees. Euthanasia guidelines may also be found in the federal and state wildlife rehabilitation permits held by the OWRO.

Examination/Initial Treatment and Pre-Wash Care

Each patient will be assigned an ID number, a medical log will be created, and evidence will be collected as described in the Documentation section of this annex. Full physical examinations will be conducted under veterinary supervision, including observations on the animal's behavior, extent of oiling, dehydration, temperature, body condition, and any overt injuries. An ongoing treatment plan will be developed in consultation with the wildlife veterinarian.

Animals typically need 2-3 days of supportive treatments before they are fit to undergo decontamination. Species-specific housing will be provided according to the International Wildlife Rehabilitation Council/National Wildlife Rehabilitators Association *Standards for Wildlife Rehabilitation* and daily husbandry will be provided for all animals in care. OWRO personnel and the wildlife veterinarian will determine when an animal is a candidate for decontamination.

Decontamination

Wildlife decontamination should only be performed by qualified individuals; attempting to wash animals without prior training may lead to human or animal injury, repeat washes (an animal

should ideally only be washed once), or even the death of the animal. Proper PPE must be worn in order to protect the wash team, including chemical-resistant coveralls and gauntlet gloves, eye protection, and waterproof boots.

Once patients are deemed stable enough for a wash, OWRO personnel will determine the necessary protocol for decontamination based on the contaminant, degree of weathering, and pre-treatments needed to break down the oil. Wash techniques will vary depending on the type of animal and the degree of the oiling. Some animals may need to be sedated or anesthetized during the wash process at the discretion of the wildlife veterinarian.

The following water conditions are required for successful decontamination:

- Temperature between 104-108°F
- Hardness between 2-5 grains per gallon
- Pressure between 40-60 psi for rinsing

Once patients have been decontaminated and rinsed, they must be given ample time in drying pens.

Pre-Release Conditioning

Once animals have been fully decontaminated, they will need additional supportive care before they are ready for release. Some animals, like frogs and snakes, may be able to be released within days after decontamination. Other animals, like loons and diving ducks, may need weeks in enclosures with pool access to develop adequate waterproofing for release. A plan for pre-release conditioning will be developed for each animal by OWRO personnel. If the Primary Care Center cannot meet the needs of the animals for pre-release care, the animals will be transferred to an appropriate facility (see Facility Requirements section).

All animals must be thoroughly evaluated before release can be considered. In general, the following criteria must be met for an animal to be released back into the wild:

- Adequate physical fitness and normal behavior for the species and lifestyle
- Full recovery from any injury or illness
- Acclimation to the outdoors – including impeccable waterproofing for birds
- Body weight within 10% of the species normal range
- Normal blood values for the species

Release

The release of any oil-impacted wildlife must be approved through the appropriate federal and state wildlife trustees. A release plan should be created by the OWRO and submitted to the Environmental Unit. If animals do not meet release criteria at the conclusion of wildlife response operations, they may be transferred for additional rehabilitation, euthanized, or placed in a long-term facility. This decision should be made by the OWRO in conjunction with federal and state wildlife trustees.

The Unified Command will give the final authorization and approval for release, but the release site must first meet the following criteria:

- No oil contamination present
- No risk of recontamination
- Same general geographic area of capture, if possible
- Appropriate seasonal range for the species (important consideration during migration periods)
- Available, natural, and uncontaminated food sources
- Minimal human disturbance (including boats and noise from spill response operations)
- Favorable weather conditions/forecast
- Appropriate time of day for the species

Post-release monitoring can provide valuable data to evaluate the success of decontamination and rehabilitation. Methods for post-release monitoring include USFWS bands for migratory birds, auxiliary bands, and GPS or radio telemetry collars/backpacks. These methods typically require additional state and federal permits.

Wildlife Branch Demobilization

As the spill is contained and contaminated areas are cleaned, the potential for additional wildlife to be impacted will decline and the wildlife field operations can be scaled back and eventually ended. Rehabilitation operations will continue after that until all impacted animals have been rehabilitated and released or transferred/placed. It is not unusual for wildlife operations to demobilize after other Operations Section responders.

The OWRO and the Operations Section will jointly develop a demobilization plan for the Primary Care Center and any Stabilization Facility which will either be returned to their pre-incident condition or put in a stand-by mode if the potential for additional oiling of animals is significant. The demobilization plan will include:

- A schedule for reducing staff and volunteers
- Determination of what will happen with any animals still in care
- Disposal or redistribution of prescribed medications
- A process to inventory, sanitize, and/or decontaminate any remaining supplies and equipment
- A plan to return, redistribute, or store remaining supplies and equipment as appropriate
    - Supplies and equipment may be demobilized before the conclusion of wildlife operations
- Coordination with the Wildlife Branch Director and law enforcement on transferring documentation and evidence from the Primary Care Center

ESA Section 7

Requirements

9716: Inter-agency Memorandum of Agreement Regarding Oil Spill Planning & Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act

I. INTRODUCTION

A. Parties. The Parties to this agreement are the U.S. Coast Guard (USCG), the U.S. Environmental Protection Agency (USEPA), the Department of the Interior (DOI) Office of Environmental Policy and Compliance, the U.S. Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration's (NOAA's) - National Marine Fisheries Service (NMFS) and National Ocean Service (NOS).

B. The Parties have conducted a review of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and associated oil spill response activities to coordinate their actions under Section 1321(d) of the Clean Water Act and Section 7(a)(1) of the Endangered Species Act, as amended (16 U.S.C. 1531 et seq.) (ESA). Section 1321(d) of the Clean Water Act establishes the NCP and assigns responsibilities to Federal agencies in mitigating damage from oil and hazardous materials spills, including the conservation of fish and wildlife. Section 7(a)(1) of the ESA requires all Federal agencies, in consultation with and with the assistance of the Secretaries of the Interior or Commerce, as appropriate, to review their programs and utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of listed species. As a result of this review, recommended procedures have been developed that will achieve better conservation of listed species and critical habitat during implementation of oil spill response activities.

C. This agreement provides a general framework for cooperation and participation among the Parties in the exercise of their oil spill planning and response responsibilities. Following the recommended procedures presented in this agreement will better provide for the conservation of listed species, improve the oil spill planning and response procedures delineated in the NCP, and ultimately streamline the process required by Section 7(a)(2) of the ESA.

II. PURPOSE

A. This agreement is intended to be used at the area committee level primarily to identify and incorporate plans and procedures to protect listed species and designated critical habitat during spill planning and response activities. Proactive regional planning may also take into consideration concerns for proposed and candidate species, as well as listed species' habitat not yet designated as critical.[1]

[1] Adverse effects on non-designated critical habitat used by listed species has a potential for having an adverse affect on these listed species. Therefore, planners should consider these areas if information is available.

B. This agreement coordinates the consultation requirements specified in the ESA regulations, 50 CFR 402, with the pollution response responsibilities outlined in the NCP, 40 CFR 300. It addresses three areas of oil spill response activities: pre-spill planning activities, spill response event activities, and post-spill activities. The agreement identifies the roles and responsibilities of each agency under each activity. By working proactively before a spill to identify potential effects of oil spill response activities on listed species and critical habitat, and jointly developing response plans and countermeasures (response strategies) to minimize or avoid adverse effects, impacts to listed species and critical habitat should be reduced or avoided completely. Should a spill occur, response plans and countermeasures will be used to implement response actions to minimize damage from oil discharges in a manner that reduces or eliminates impacts to listed species and critical habitat. In the event that oil spill response actions may result in effects on listed species or critical habitat, the agreement provides guidance on how to conduct emergency consultation under the ESA. It also describes the steps for completing formal consultation, if necessary, after the case is closed, if listed species or critical habitat have been adversely affected.

C. The goal of this agreement is to engage in informal consultation wherever possible during planning and response. With adequate planning and ongoing, active involvement by all participants, impacts to listed species and critical habitat and the resulting need to conduct subsequent ESA Section 7(a)(2) consultations will be minimized or obviated.

III. LEGAL AUTHORITIES

A. The Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1321., requires that when a spill occurs, the President take such action as necessary to ensure effective and immediate removal of a discharge, and mitigation or prevention of a substantial risk of a discharge of oil into the waters of the United States. The National Contingency Plan (NCP), 40 CFR Part 300, prepared in accordance with the FWPCA, assigns duties to Federal agencies to protect the public health and welfare, including fish, wildlife, natural resources and the public. The NCP designates the Federal On Scene Coordinator (FOSC) as the person responsible for coordinating an oil spill response. (The abbreviation OSC is used in the NCP, while the abbreviation for Federal On Scene Coordinator is FOSC in this agreement.) Nothing in this agreement limits the authority of the Federal On Scene Coordinator as defined in the NCP.

B. The Endangered Species Act of 1973 (ESA), as amended, 16 U.S.C. §1531 et seq., provides a means to protect threatened and endangered species and the ecosystems upon which they depend. The ESA requires that Federal agencies insure that the actions they authorize, fund, or carry out do not jeopardize listed species or adversely modify their designated critical habitat. Regulations for conducting Section 7 consultation are set forth in 50 CFR Part 402.

IV. DEFINITIONS

The following definitions apply to this agreement and are taken from the definitions contained in either the NCP or the March 1998 USFWS & NMFS Endangered Species Consultation Handbook. For definitions of terms not listed below, refer to the USFWS & NMFS Endangered Species Consultation Handbook and the NCP as appropriate.

Area Committee - the entity appointed by the President consisting of members from qualified personnel of Federal, state, and local agencies with responsibilities that include preparing an area contingency plan for an area designated by the President. The chairs of the Area Committee are the USCG for coastal and Great Lakes plans, and the USEPA for inland plans. In some instances the Regional Response Team (RRT) may act as the Area Committee. In this MOA, the term Area Committee also includes the RRT acting as the Area Committee.

Area Contingency Plan (ACP) - the plan prepared by an Area Committee (or the RRT acting as the Area Committee) that is developed to be implemented in conjunction with the NCP and Regional Contingency Plan (RCP), in part to address removal of a worst case discharge and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President. A detailed annex containing a Fish and Wildlife and Sensitive Environments Plan prepared in consultation with the USFWS, NOAA, and other interested natural resource management agencies should be incorporated into each ACP. In this MOA, the term ACP also includes sub-area ACP's, sub-area contingency plans, geographic response plans and geographic response strategies as per 40 CFR 300.210.

Biological Assessment - information prepared by or under the direction of the Federal action agency (USCG or USEPA) regarding: 1) listed and proposed species and designated critical habitat that may be affected by proposed actions; and, (2) the evaluation of potential effects of the proposed actions on such species and habitat.

Biological Opinion - document which includes: (1) the opinion of the USFWS or NMFS as to whether or not a Federal action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of designated critical habitat; (2) a summary of the information on which the opinion is based; and (3) a detailed discussion of the effects of the action on listed species or designated critical habitat. This document will also contain an incidental take statement, that, if appropriate, exempts the Federal actions from the ESA Section 9 take prohibitions.

Candidate species – plant and animal taxa considered for possible addition to the List of Threatened and Endangered Species.

Case is Closed – When removal operations are complete in accordance with 40 CFR 300.320(b).

Critical habitat - areas designated by the USFWS and NMFS pursuant to Section 4 of the ESA for the purposes of identifying areas essential for the conservation of a threatened or endangered species and which may require special management considerations.

Emergency Consultation – an expedited consultation process that takes place during an emergency (natural disaster or other calamity) (50 CFR 402.05). The Services have determined that oil spill response activities qualify as an emergency action. The consultation may be initiated informally. The emergency continues to exist until the removal operations are completed and the case is closed in accordance with 40 CFR 300.320(b). The FOSC will continue to conduct emergency consultations, if needed, until the emergency is over and the case is closed. Formal, or informal, consultation is initiated after the emergency is over, at which time the USFWS and/or NMFS evaluates the nature of the emergency actions, the justification for the expedited consultation, and any impacts to listed species and their habitats.

Federal On Scene Coordinator (FOSC) - the Federal official predesignated by USEPA or the USCG to coordinate and direct responses under the FWPCA as defined in the NCP.

Formal Consultation[2] - a process between USFWS or NMFS and the Federal action agency (USCG or USEPA) that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's written request and submission of a complete Section 7 consultation initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement, as appropriate, by either of the Services. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat. See informal consultation).

Incidental Take - take of listed fish or wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant.

Informal Consultation - an optional process that includes all discussions and correspondence between the USFWS or NMFS and the Federal agency (USCG or USEPA) or designated non-Federal representative, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Services' expertise to evaluate the agency's assessment of potential effects or to suggest possible modifications to the proposed action, which could avoid potential adverse effects. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat).

[2] Formal consultation can occur during planning or after the conclusion of emergency consultation if listed species or critical habitat have been affected.

Listed Species – for the purposes of this MOA, any species of fish, wildlife or plant, which has been determined to be endangered or threatened under Section 4 of the ESA.

National Contingency Plan (NCP) – National Oil and Hazardous Substances Pollution Contingency Plan. The NCP is a national plan that provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants and contaminants. The NCP is set forth in 40 CFR 300.

National Response Team (NRT) - a national team, defined under the NCP, responsible for national planning, policy, and coordination for hazardous substance and oil spill preparedness and response, consisting of representatives from agencies named in 40 CFR 300.175(b).

Regional Response Team (RRT) - a regional team of agency representatives that acts in two modes: the standing RRT and incident specific RRT. The Co-chairs are the USCG and USEPA. The standing team is comprised of designated representatives from each participating Federal agency, state governments and local governments (as agreed upon by the states). Incident-specific teams are formed from the standing team when activated for a response. The role of the standing RRT includes establishing regional communications and procedures, planning, coordination, training, evaluation, preparedness and related matters on a region-wide basis. It also includes assisting Area Committees in coordinating these functions in areas within their specific regions. The role and composition of the incident-specific team is determined by the operational requirements of the response. During an incident, it is chaired by the agency providing the FOSC.

Services – Term used to refer to both the USFWS and NMFS.

V. PROCEDURES

Oil spill planning and response procedures are set forth in the NCP. This agreement is intended to facilitate compliance with the ESA without degrading the quality of the response conducted by the FOSC, to improve the oil spill planning and response process, and ensure continued inter-agency cooperation to protect, where possible, listed species and critical habitat.

A. PRE-SPILL PLANNING

(1) While drafting Area Contingency Plans themselves may not result in effects to listed species, actions implemented under the plans may. It is essential that the Area Committee engage USFWS and NMFS during the ACP planning process while developing or modifying the ACP and response strategies. This informal consultation can be used to determine the presence of listed species or critical habitat, and the effects of countermeasures, and to ensure that measures to reduce or avoid impacts to listed species and critical habitats during oil spill response activities are developed. By consulting on the anticipated effects prior to implementing response actions, decisions can be made rapidly during the spill, harm from response actions can be

minimized, and implementation of response strategies specifically designed to protect listed species and critical habitat can be achieved.

(2) The pre-spill planning process is shown as a flow chart in Appendix A. The Area Committee Chair will request, in writing, that endangered species expertise and a species list be provided by the Services.[3] The request should also describe the area and include a general description of the countermeasures being considered and the planning process to be used (e.g., a workgroup). In order to document the request for consultation and planning involvement, the request shall be sent to both NOAA and USFWS. To obtain NMFS assistance, a request should be sent to the Department of Commerce (DOC) RRT representative, with a copy to the NOAA Scientific Support Coordinator (SSC) and the NMFS Regional Field Office. For USFWS support, a request should be sent to the local USFWS field office(s), with a copy to the USFWS Regional Response Coordinator (RRC) at the appropriate USFWS Regional Office(s) and the DOI RRT representative. It is the responsibility of the USFWS RRC, acting through the Ecological Services Assistant Regional Director, and the NOAA SSC to act as a liaison between the respective Service and the Area Committee. USFWS and NMFS will orally respond to the request within 30 days of receipt and provide a written response within 60 days. The response should include designation of a listed species expert to assist the Area Committee.

(3) If listed species or critical habitat are present in the planning area being considered the Area Committee should use a planning process that ensures engagement of Service experts.[4] This process shall ensure that the appropriate participants jointly gather and analyze the information needed to complete the Planning Template in Appendix C. This planning process constitutes informal consultation.[5] The goals of this planning process are to identify the potential for oil spill response activities to adversely affect listed species and critical habitat and to identify for inclusion in the ACP information on sensitive areas, emergency response notification contacts, and any other information needed. Methods should be developed to minimize identified adverse effects and, where necessary, the plan should be modified accordingly. If specific sources of potential adverse effects are identified and removed, the Services will provide a concurrence letter and Section 7(a)(2) requirements will be deemed to have been met.[6]

(4) If, after the process in Appendix C has been followed, it cannot be determined that adverse effects will not occur during a response action, the USCG or USEPA, as appropriate, will initiate formal consultation using the information gathered in Appendix C; this information will be used by the Services to complete formal

[3] 40 CFR 300.170(a).
[4] Process options include using an informal workgroup; formal workgroup, Environmental Risk Assessment process, or other process based on Area Committee needs.
[5] This process does not negate any regional consultations that have already occurred, nor alter the strategies/procedures in the ACP until the ACP is officially modified in consultation with USFWS or NMFS.
[6] Letter is required for the administrative record. See Appendix E.

consultation.[7] This will be a programmatic consultation that generally addresses oil spill response activities at issue in the plan area. At times when specific information is available about certain oil spill response methods and listed species and critical habitat, it may be possible to pre-approve particular activities that may be implemented in the event there is insufficient time to initiate emergency consultation before the need to take action.[8]

(5) All parties recognize that development and modification of the ACP is an ongoing process. Changes, including modifications to response actions or changes to the species list, should be addressed regularly through a dynamic planning process. The Services should contact the Area Committee or workgroup if they become aware of newly listed species that may be affected by planned response activities. The Area Committee should likewise notify the Services of changes to planned response activities. The Area Committee or workgroup should evaluate any changes and assess the need for additional consultation as needed.

B. OIL SPILL RESPONSE

During an oil spill event which may affect listed species and/or critical habitat, emergency consultations under the ESA are implemented (50 CFR 402.05) for oil spill response actions.[9] Emergency consultation may be conducted informally through the procedures that follow (See Appendix A). Emergency consultation procedures allow the FOSC to incorporate listed species concerns into response actions during an emergency. "Response" is defined in this agreement as the actions taken by the FOSC in accordance with the NCP. The FOSC conducts response operations in accordance with the NCP and agreement established in the ACP.

(1) As per the NCP and ACP, the FOSC will notify the RRT representatives of DOI and DOC through the established notification process regardless of whether listed species or critical habitat is present. Upon notification, the DOC and DOI representatives shall contact the NOAA SSC and RRC, respectively, and other appropriate Service contacts as provided in internal DOC or DOI plans, guidance, or other documents. If established in the ACP, the FOSC may also contact the Service regional or field offices directly (see Section V(A)(3) above). If listed species and/or critical habitat are present or could be present, the FOSC shall initiate emergency consultation by contacting the Services. The NOAA SSC and RRC shall coordinate appropriate listed species expertise. This may require timely on-scene expertise from the Services' local field offices. These Service representatives may, as appropriate, be asked by the FOSC to participate within the FOSC's Incident Command System and provide information to the FOSC.[10]

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[7] Letter is required for the administrative record. See Appendix E.

[8] Due to time constraints associated with spill response, this does not mean that immediate spill response actions cannot occur to meet the requirements of 40 CFR 300.317. However, planning should address specific procedures for initiating emergency consultation for activities that are pre-approved and for those that have not been pre-approved.

[9] Based on pre-spill planning or discovered during the response.

[10] 40 CFR 300.175(b)(7) & (b)(9); 40 CFR 300.305(e).

(2) The ACP, including any agreed upon references cited in the ACP, should form the basis for immediate information on response actions. As part of emergency consultation, the Services shall provide the FOSC with any timely recommendations to avoid and/or minimize impacts to listed species and critical habitat.[11] The NOAA SSC should also be involved in these communications as appropriate. If incidental take is anticipated, and if no means of reducing or avoiding this take are apparent, the FOSC should also be advised and the incidental take documented. If available, the FOSC should consider this information in conjunction with the national response priorities established in the NCP.[12] The FOSC makes the final determination of appropriate actions.

(3) It is the responsibility of both the FOSC and the Services' listed species representatives to maintain a record of written and oral communications during the oil spill response. The checklist contained in Appendix B is information required to initiate a formal consultation in those instances where listed species and/or critical habitat have been adversely affected by response actions.[13] If it is anticipated that listed species and/or critical habitat may be affected, the FOSC may request that the USFWS and/or NMFS representative to the Incident Command System oversee and be responsible for the gathering of the required information in Appendix B while the response is still ongoing.[14] The FOSC may also choose to designate another individual to be responsible for collecting the information.[15] Although in some instances the drafting of information for Appendix B may be completed after field removal operations have ceased, it is anticipated that collection of the information should be complete before the case is officially closed and that no further studies will be necessary.

(4) It is the responsibility of the FOSC to notify the Services' representatives in the Incident Command System of changes in response operations due to weather, extended operations, or some other circumstance. It is the responsibility of the Services to notify the FOSC of seasonal variances (e.g., bird migration), or other natural occurrences affecting the resource. If there is no Service representative in the Incident Command System, the FOSC will ensure that the NOAA SSC and/or DOI representative to the RRT remains apprised of the situation. The Services will continue to offer recommendations, taking into account any changes, to avoid jeopardizing the continued existence of listed species or adversely modifying critical habitat, and to minimize the take of listed species associated with spill response activities.

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[11] See Section 8.1 of the USFWS & NMFS Endangered Species Consultation Handbook (http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm).
[12] 40 CFR 300.317 National Response Priorities.
[13] See Section 8.2(B) of the USFWS & NMFS Endangered Species Consultation Handbook.
[14] If requested by the FOSC, the NOAA Scientific Support Coordinator (SSC) may coordinate this data collection.
[15] See Appendix D for example Pollution Removal Funding Authorization (PRFA) Statement of Work language.

C. POST RESPONSE

If listed species or critical habitat have been adversely affected by oil spill response activities, a formal consultation is required, as appropriate.[16] Informal emergency consultation shall remain active until the case is closed. The FOSC will initiate consultation on the effect of oil spill response activities (not the spill itself) after the case is closed. Every effort shall be made to ensure that relevant information generated as part of the consultation process is made available for use in the Natural Resource Damage Assessment (NRDA) process. (Note: NRDA activities are separate from this consultation.)

(1) After the FOSC determines that removal operations are complete in accordance with 40 CFR 300.320(b), the impacts of the response activities on listed species and critical habitat will be jointly evaluated by the FOSC and the Services.

(2) If listed species or critical habitat were adversely affected by oil spill response activities, the FOSC will follow the procedural requirements of 50 CFR 402.05(b) (see Appendix A). The document developed by following Appendix B, information required to initiate a formal consultation following an emergency, should be included with a cover letter to the Services requesting consultation and signed by the FOSC. The FOSC will work with the Services and the NOAA SSC, as appropriate, to ensure that Appendix B is complete.[17] This document comprises the FOSC's formal request for consultation.

(3) The Services normally issue a biological opinion within 135 days of receipt of the Section 7 consultation request (50 CFR 402.14). When a longer period is necessary, and all agencies agree, the consultation period may be extended. The final biological opinion will be prepared by the Services and provided to the FOSC, USFWS RRC, NOAA SSC, DOI and DOC RRT members, and the Area Committee Chair so that recommendations can be reviewed by the Area Committee, and where appropriate, implemented to minimize and/or avoid effects to listed species and critical habitat from future oil spill response actions.[18] The result of the consultation should be considered by the FOSC for inclusion in a lessons learned system so changes can be made to the ACP, as necessary, for the benefit of future oil spill response actions. If such changes to the ACP modify the anticipated effects to listed species or critical habitat, the Services should appropriately document the anticipated changes in future effects and complete any appropriate administrative steps.

[16] If only proposed species or proposed critical habitat have been adversely affected, a formal consultation is not required; however, ESA conference procedures should be followed as appropriate. See the USFWS & NMFS Endangered Species Consultation Handbook for conference information.
[17] The NOAA SSC may also assist.
[18] Recommendations may also be provided for addressing effects caused by spill response actions. This information should be provided to the NRDA process as appropriate.

VI. Points of Contact. The following are the points of contact for each Party:

USCG: Chief, Office of Response, Coast Guard Headquarters (G-MOR), (202) 267-0516.

USEPA: Oil Program Center, U.S. Environmental Protection Agency, (703) 603-8823.

NOAA - NMFS: Section 7 Coordinator, Endangered Species Division, Office of Protected Resources, (301) 713-1401.

USFWS: National Spill Response Coordinator, U.S. Fish and Wildlife Service, Division of Environmental Quality, (703) 358-2148.

NOAA - NOS: Director, Office of Response and Restoration, (301) 713-2989 x101.

DOI: Office of Environmental Policy and Compliance, (202) 208-6304.

VII. Funding and Resources. This agreement is not a fiscal or funds obligation document. Nothing in this agreement shall be construed as obligating any of the Parties to the expenditure of funds in excess of appropriations authorized by law or otherwise commit any of the Parties to actions for which it lacks statutory authority. It is understood that the level of resources to be expended under this agreement will be consistent with the level of resources available to the Parties to support such efforts. Any activities involving reimbursement or contribution of funds between the Parties to this agreement will be handled in accordance with applicable laws, regulations and procedures. Such activities will be documented in separate agreements with specific projects between the Parties spelled out. The separate agreements will reference this general agreement.

VIII. Effective Date. The terms of this agreement are effective upon signature by all Parties.

IX. Modification. This agreement may be modified upon the mutual written consent of the Parties.

X. Termination. The terms of this agreement, as modified, with the consent of all Parties, will remain in effect until terminated. Any Party upon 60 days written notice to the other Parties may terminate their involvement in this agreement.

Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act

Approved By: **Date**:

Assistant Commandant for Marine Safety
and Environmental Protection
U.S. Coast Guard — 5/25/01

Acting Assistant Administrator
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency — 7/22/01

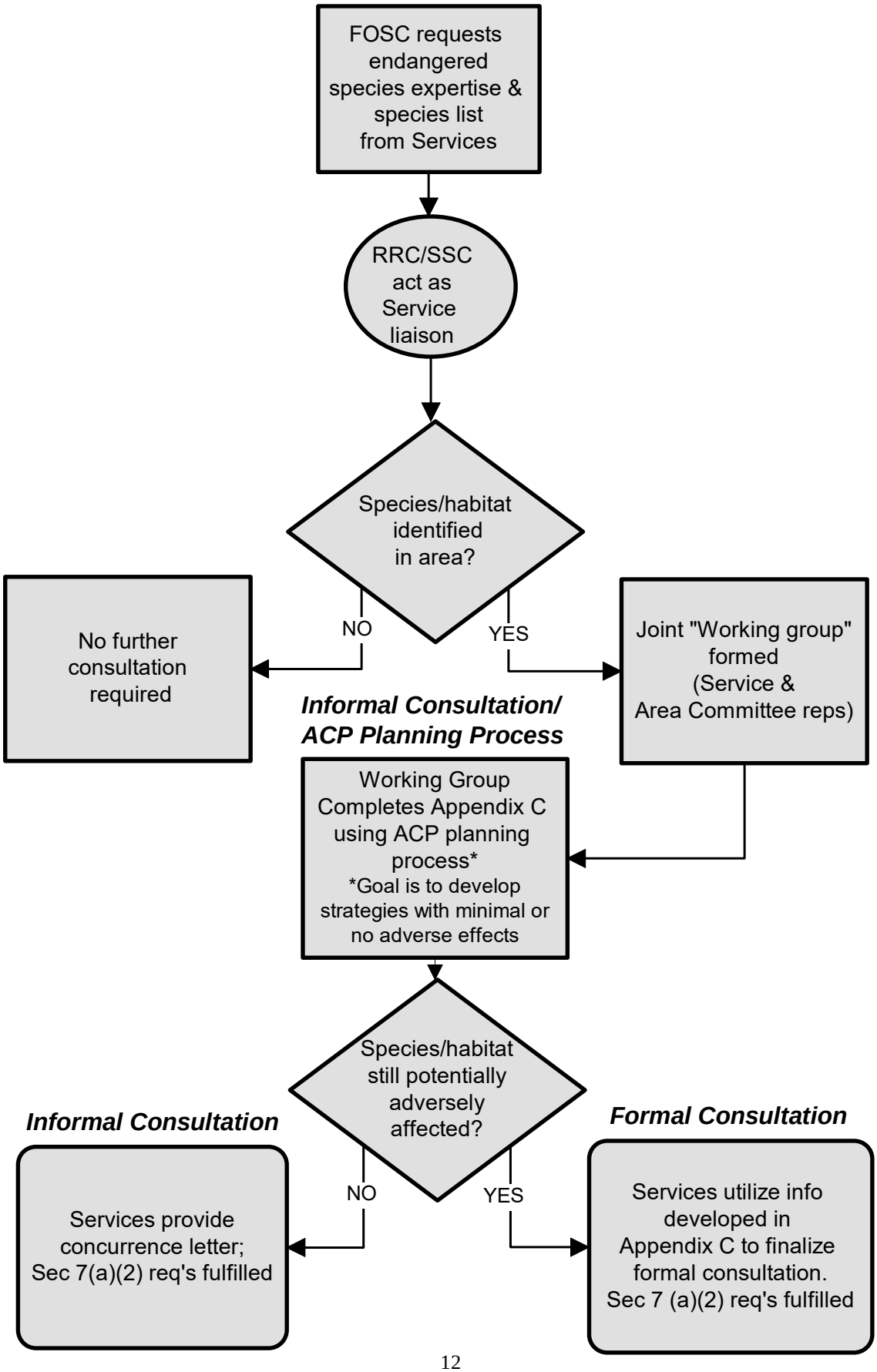
Acting Director
U.S. Fish and Wildlife Service — 8 June 2001

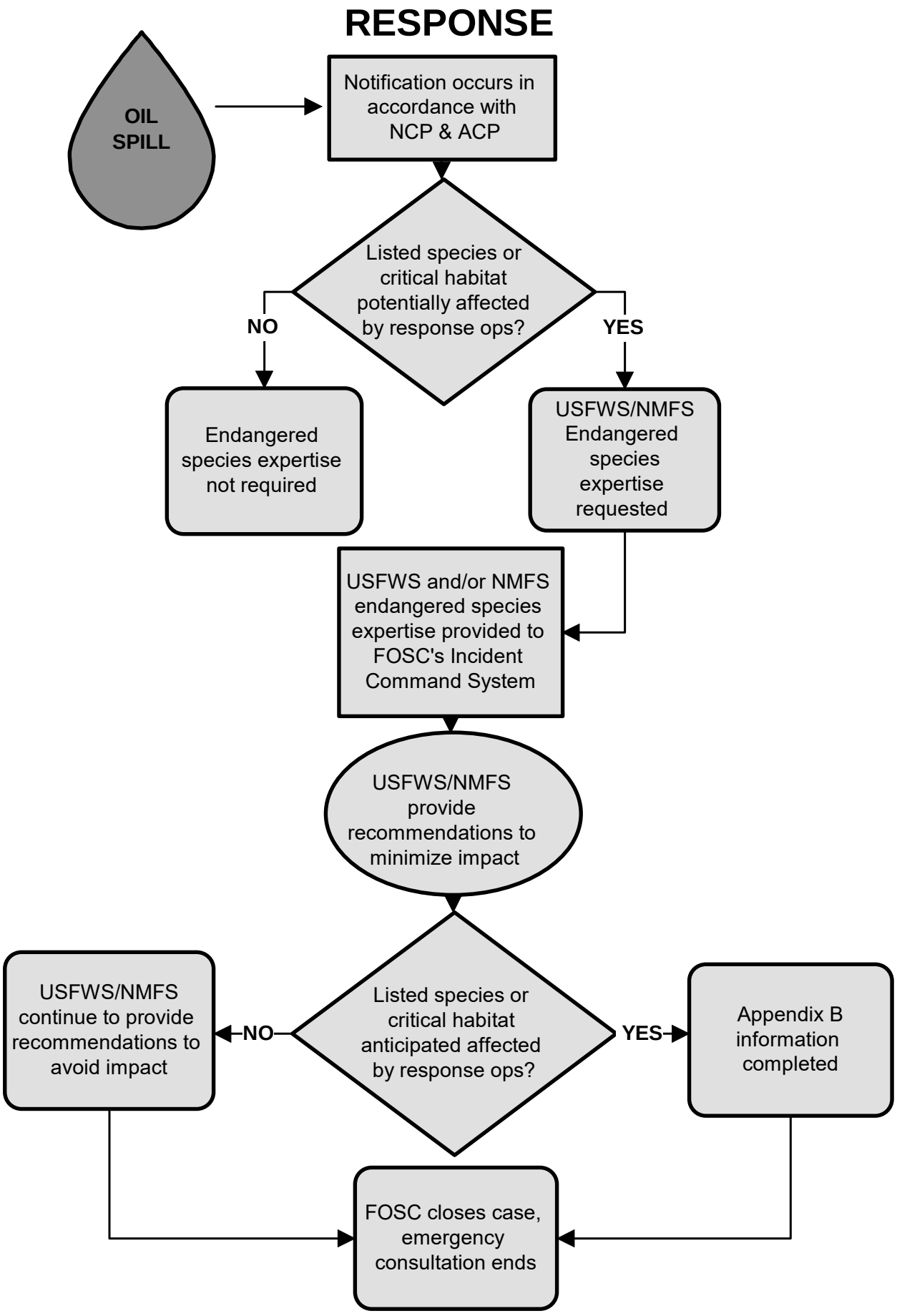
Acting Assistant Administrator for Fisheries
National Marine Fisheries Service
National Oceanic and Atmospheric Administration — 5/15/01

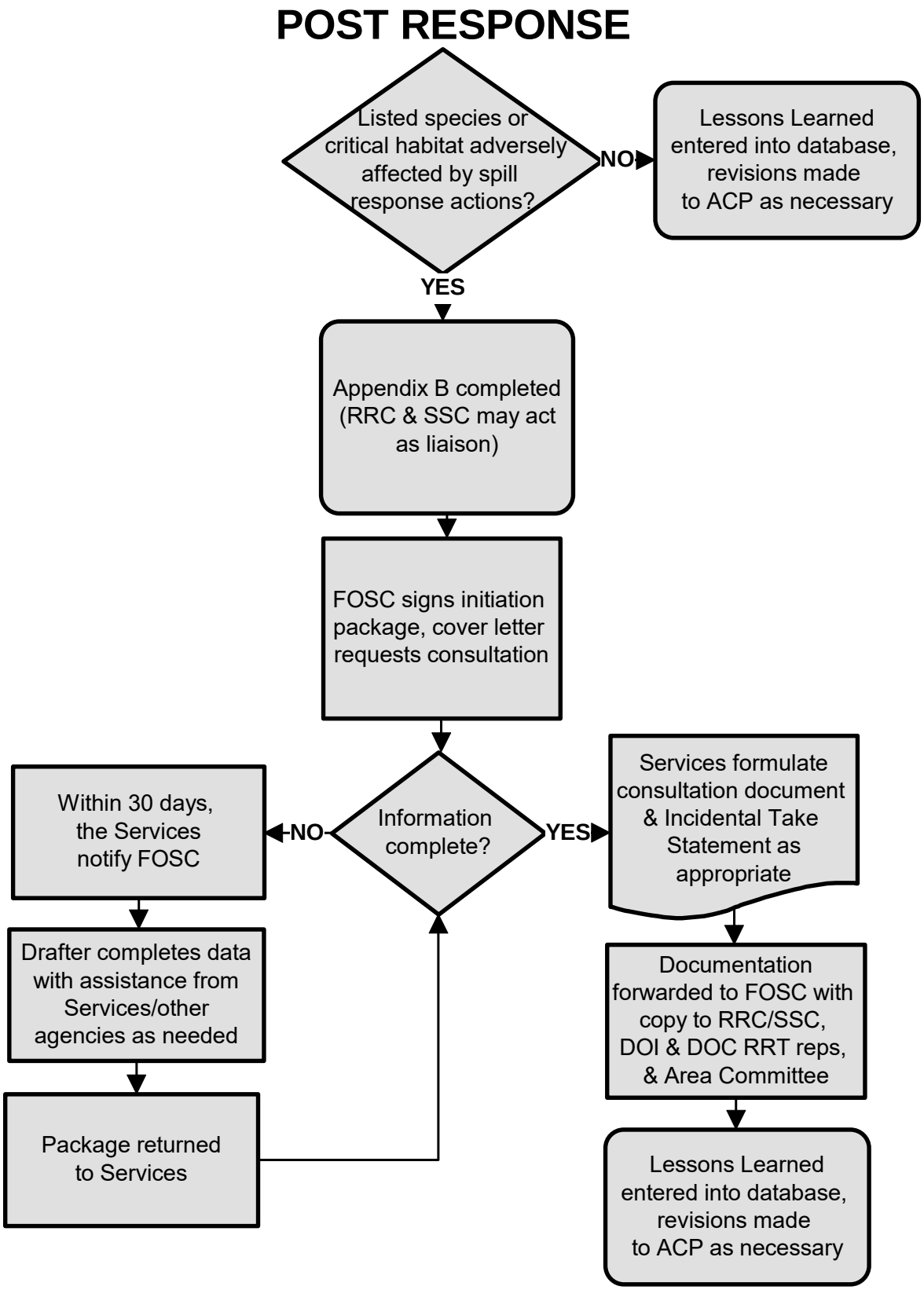
Assistant Administrator
National Ocean Service
National Oceanic and Atmospheric Administration — 5/30/01

Director
Office of Environmental Policy and Compliance
Department of the Interior — 6/13/01

PRE-SPILL PLANNING




RESPONSE
OIL SPILL
Notification occurs in accordance with NCP & ACP
Listed species or critical habitat potentially affected by response ops?
NO
YES
Endangered species expertise not required
USFWS/NMFS Endangered species expertise requested
USFWS and/or NMFS endangered species expertise provided to FOSC's Incident Command System
USFWS/NMFS provide recommendations to minimize impact
Listed species or critical habitat anticipated affected by response ops?
NO
YES
USFWS/NMFS continue to provide recommendations to avoid impact
Appendix B information completed
FOSC closes case, emergency consultation ends


POST RESPONSE
Listed species or critical habitat adversely affected by spill response actions?
NO
Lessons Learned entered into database, revisions made to ACP as necessary
YES
Appendix B completed (RRC & SSC may act as liaison)
FOSC signs initiation package, cover letter requests consultation
Information complete?
NO
Within 30 days, the Services notify FOSC
Drafter completes data with assistance from Services/other agencies as needed
Package returned to Services
YES
Services formulate consultation document & Incidental Take Statement as appropriate
Documentation forwarded to FOSC with copy to RRC/SSC, DOI & DOC RRT reps, & Area Committee
Lessons Learned entered into database, revisions made to ACP as necessary

APPENDIX B

EMERGENCY CONSULTATION
INFORMATION CHECKLIST IN ANTICIPATION OF FOLLOW-UP FORMAL CONSULTATION (50 CFR 402.05)

As soon as practicable after the emergency is under control, which occurs when the case is closed, the FOSC initiates consultation (either formal or informal, as appropriate) with the Services if listed species and/or critical habitat have been affected. The FOSC should ensure that the following checklist is completed before the case is closed. After the case is closed, this information along with a cover letter requesting consultation will be sent to the Services.

1. Provide a description of the emergency (the oil spill response).

2. Provide an evaluation of the emergency response actions and their impacts on listed species and their habitats, including documentation of how the Services' recommendations were implemented, and the results of implementation in minimizing take.

3. Provide a comparison of the emergency response actions as described in #2 above with the pre-planned countermeasures and information in the ACP.

APPENDIX C

PLANNING TEMPLATE

One of the goals of the Area Contingency Plan (ACP) planning process is to develop strategies or actions that reduce the potential for planned oil spill response activities to adversely affect listed species and designated critical habitat. The planning process may also develop strategies that purposefully protect these resources. The following template is recommended for use by a working group of both Service and Area Committee representatives to develop a document that 1) is used to complete consultation pursuant to Section 7 (a)(2) of the Endangered Species Act of 1973, as amended, and 2) produces information to be included in the appropriate sections of the ACP. To streamline the consultation process, the various sections of this document could be drafted during the planning process and used to develop or modify the ACP.[19] This development process will assist all parties in gaining a thorough understanding of the actions under review and provide opportunities for any Section 7 consultation related issues to be raised and addressed in the planning process, rather than during the oil spill response action.

This template is intended to guide the thought process of creating consultation documents and incorporates content requirements set forth in 50 CFR 402.12 as well as information pertinent to the National Contingency Plan requirements under the Fish and Wildlife Annex; not every item will be applicable to every situation.[20]

Introduction

This section generally should be completed in one, or possibly two paragraphs.

- General overview of the response strategy including: (1) a brief description - one to two sentences; (2) background, history, etc. as appropriate; (3) purpose of the response strategy; (4) identification of the species and designated critical habitat that may be affected (for consultations that will address large numbers of species, it may be desirable to present this list in the form of a table either attached or presented in another section. Also, if species that may potentially occur in the area are not included in this document, explain why).
  This should be developed jointly by the action agency and the Services.

Description of the Proposed Response Strategy

- Provide a description of the response strategy being considered. This is likely to be a detailed description taken substantially from the ACP. It should include how the

[19] It is not required that this planning template be formally written or completed during informal consultation, especially if no modifications to the strategy are required. However, it can be very useful in documenting the [team's] thought process for the administrative record, serving as a guide, or providing additional documentation as needed.

[20] The guide on "Developing Consensus Ecological Risk Assessments" provides procedures which may be helpful in exploring and analyzing these issues. Copies can be obtained from USCG Headquarters (G-MOR-2).

response action will be implemented, including equipment and methods. Examples include use of dispersants to avoid shoreline impacts, and deployment of booms to protect sensitive areas. Include all known aspects of the action, such as time frames, why the action is appropriate, indirect effects, etc. An example of an indirect effect may be hauling boom on, or driving vehicles through, a sensitive dune area to gain access to a spill site.
This should be developed by the action agency with the assistance of the Services.

- Provide a description of specific area that may be affected by the response strategy (i.e. Sample Bay, 100-mile section of outer coastline, etc.). Include some measure of the area potentially impacted (i.e., "This plan addresses oil spill response activities that may be conducted out two miles from the coast throughout the 100 mile coastline area encompassed by this ACP"). If different activities are being proposed in different areas, identify this. The team should discuss the appropriateness of presenting this information in terms of the activities that will be conducted within each area, or the areas where each activity will be conducted. For example, "Dispersants may be applied throughout the 10 mile coastline length of Area A and the 25 mile coastline length of Area B." Maps may be useful.
  This should be developed mainly by the action agency; however, modifications may be made with the assistance of the Services and subject to the approval process for chemical countermeasures in the NCP as appropriate.

- Identify how to quickly obtain species/habitat information during a spill (i.e. first refer to ACP and site summary sheet, call State FWS, check website, etc.).
  This should be developed jointly by the action agency and the Services.

- Identify emergency response points of contact to be notified during a spill. Establish spill parameters for notification as necessary. These should be included in emergency notification numbers as well as on any site summary sheets, in geographic response plans, etc.
  This should be developed jointly by the action agency and the Services.

Description of the Affected Environment

- Describe the listed species and designated critical habitat areas that may be affected by the action in terms of overall range and population status. Include the number and location of known subpopulations within and adjacent to the action area (i.e., identify the areas known to be used by the species and, if appropriate, identify the specific times periods of use, such as February - April). Discuss the action area in relation to the distribution of the entire population (e.g., edge of the range, center of population abundance, key reproductive area, etc.). Present views of Service recognized experts on the species, if appropriate.
  This should be provided by the Services.

- Ensure that these sensitive areas are referenced in the ACP (i.e. via ESI maps, specially generated GIS maps, site summary sheets, or other digitized format, etc.).
  This should be completed by the action agency.

- Provide biological data on listed species: historical use, presence, and potential use of habitat areas within the action area. Literature and other documents containing such information may be incorporated by reference. Provide species observation information, and recent results of species surveys, including, if appropriate, a description of methods, time of year surveys were performed, level of effort, and confidence intervals. Again, literature and other documents containing such information may be incorporated by reference. Maps may be useful to depict this information.
  The Services should assist in developing this information. In many instances the Services will be able to supply this information from their records.

- Identify other designated sensitive areas, both adjacent to and within the proposed action area. These include National Wildlife Refuges, National Marine Sanctuaries, etc.
  This should be developed jointly by the action agency and the Services.

Analysis of the Effects of the Action

- Describe all effects of the response strategy relative to the listed species of concern and its habitat, including designated critical habitat. This should include direct, indirect, beneficial, and cumulative effects as well as effects from interrelated and interdependent actions, if any.
  This should be developed jointly by the action agency and the Services.

- Describe any measures that may avoid or lessen adverse effects as well as any measures that will enhance the species' present condition. If appropriate, delineate the locations of such measures. A discussion of environmental "tradeoffs" (including no action) may be appropriate. For example, "Dispersants may be toxic to the listed aquatic species when used in concentrations above 70%; however, oil coming ashore and smothering the listed species in tidal marshes is of greater concern due to the extremely poor conservation status of this species." Reference any already completed relevant reports, studies, biological assessments, etc.
  This should be developed jointly by the action agency and the Services.

Modification to Strategy (as needed)

If necessary, after joint analysis of the information, the action or strategy may be modified.

- Describe the new strategy or action. For example, "Dispersants will not be used in

concentrations above X% or in areas less than three feet deep. They may be used in Area A and Area B. A Service representative from Regional field office B will be contacted during an oil spill response during the months of February - April in Area B."
This should be developed jointly by the action agency and the Services.

Documentation

This template is a guide to help you through the planning process, however, when sections are written out as the process is completed, the final document serves the same purpose as a biological assessment. It may be used to complete consultation pursuant to Section 7 of the ESA.

- The document should be maintained on file by the Services and may be referred to during an oil spill response.

- The Area Committee will ensure that this document becomes part of the ACP as appropriate such as:
- Included as an appendix to the Dispersant or In Situ Burn Operations Plan;
- Included as a reference document in the appropriate section of the ACP;
- Include relevant information in sections of the ACP such as Notifications, Site Summary Sheets, Geographic Response Plans, GIS maps, etc.

- The document should include points of contact from both the action agency and the Services.

APPENDIX D

SAMPLE POLLUTION REMOVAL FUND AUTHORIZATION (PRFA) LANGUAGE*

This Statement of Work (SOW) language is intended as sample language only. The language can be tailored to ensure that the FOSC is provided with the resources needed to meet the desired activities or functions required. Accordingly, more precise or succinct language may be used.

PRFA SOW additional/optional work elements to meet the FOSC's ESA mandated activities associated with removal actions:

…..

To arrange for, and as appropriate coordinate with, the resources needed to meet the conference and consultation requirements of the ESA.

Specific activities anticipated under this requirement include:

(a) Providing the expertise needed to make sensitive removal decisions which could potentially impact on listed species or critical habitats associated with this incident;
(b) Gathering and documenting the information needed to provide input into the aforementioned decisions and to document the resulting impact of removal actions; and
(c) As required, preparing the consultations required of the FOSC for the Service(s).

Funding under this agreement is provided for:

(a) Salaries, travel and per diem;
(b) Appropriate charges for use of equipment or facilities;
(c) Any actual expenses for goods and/or services reasonably obtained in order to provide the agreed upon support to the FOSC removal activities (including contracts.)

* Developed by the National Pollution Funds Center

APPENDIX E

SAMPLE LETTERS FOR REQUESTING CONCURRENCE OR FORMAL CONSULTATION

These sample letters have been developed to assist the Parties to this agreement in documenting the requirements of the Endangered Species Act. This is suggested wording only and may be used to complete the administrative record as needed. The request for concurrence can be used after the planning process for a particular area or countermeasure when it has been determined that no adverse effects will occur. The Services will provide a concurrence letter, as appropriate, for documentation. Alternatively, the request for formal consultation can be used after planning results indicate that adverse effects may still occur. If this is the case, the Services will evaluate the information developed jointly by the workgroup and issue a biological opinion.

Request for Concurrence Letter:

Mr./Ms. xxx
U.S. Fish and Wildlife Service/National Marine Fisheries Service
Division of Endangered Species

Dear Mr./Ms. xxx:

In accordance with the requirements of Section 7 of the Endangered Species Act, I am seeking your concurrence that the [Coast Guard's/EPA's] implementation of the [name of plan] is not likely to adversely affect the [identify the listed species and designated critical habitat that may be affected. Note, in cases where many listed species or critical habitat designations may be involved, it may be appropriate to refer to an attached list]. This [name of plan] has been developed with the assistance of [name of Service staff] of the U.S. Fish and Wildlife Service/National Marine Fisheries Service and in accordance with the procedures identified at 40 CFR Part 300, the National Contingency Plan. To assist in completing informal consultation, please find attached the Biological Evaluation that has been produced through the planning process described in the Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act using the Planning Template contained in Appendix C of that Agreement.

Thank you for your efforts in this matter. If you require additional information, please contact [provide a contact with a telephone number].

Sincerely,

Request for formal consultation:

Mr./Ms. xxx:
U.S. Fish and Wildlife Service/National Marine Fisheries Service
Division of Endangered Species

Dear Mr./Ms. xxx:

In accordance with the requirements of Section 7 of the Endangered Species Act, I am requesting the initiation of Formal Consultation on the effects of the [Coast Guard's/EPA's] implementation of the [name of plan]. Through informal consultation with your staff [or identify the appropriate Service office(s)], we have determined that implementation of spill response activities in accordance with the subject [name of plan] is likely to result in adverse effects to [identify the listed species and designated critical habitat that may be affected. Note, in cases where many listed species or critical habitat designations may be involved, it may be appropriate to refer to an attached list]. This [name of plan] has been developed with the assistance of [name of Service staff] of the U.S. Fish and Wildlife Service/National Marine Fisheries Service and in accordance with the procedures identified at 40 CFR Part 300, the National Contingency Plan. While these actions may result in short-term adverse effects, it is our belief that the species [and designated critical habitat areas] will ultimately benefit from them. To assist in completing Formal Consultation, please find attached the Biological Evaluation that has been produced through the planning process described in the Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act using the Planning Template contained in Appendix C of that Agreement.

Thank you for your efforts in this matter. If you require additional information, please contact [provide a contact with a telephone number].

Sincerely,

ESA Emergency Response Checklist

9717 ESA Emergency Response

[Link to ESA MOA Section 9716]

The FOSC notifies appropriate representatives of NOAA, USFWS, State Natural Resource Trustees and/or other agencies and stakeholders once an oil spill has occurred with the potential for impacting environmentally sensitive areas, endangered species and/or critical habitats. Actions of the FOSC:

- Use pre-identified points of contact or "Notification List" from ACP
- Gathers information about areas impacted, sensitive areas, species and critical habitats
    - As soon as possible after the spill has occurred, determine data needs and who will be providing or collecting the data
- Notify/alert Service representatives, NOAA SSC and/or DOI representative of any changes in response operations due to weather, extended operations or some other circumstance
- Obtain information from the USFWS or NMFS of seasonal variances (e.g. bird migration), or other natural occurrences affecting the resource
- Maintain a record of all written and oral communications during the response (See Appendix B of the ESA MOA for a means for tracking this information), to include recommended response procedures and incidental take.
- If listed species or critical habitats are impacted or could be present in the area affected by response activities, initiate emergency consultation by contacting the USFWS and NMFS through agreed-upon procedures.
- Appoint an Endangered Species expert who will serve in the Incident Command System (ICS) command structure to help ensure that the necessary information, using terminology understood by USFWS and NMFS, is gathered at the Incident Command Post (ICP) daily
    - If appropriate, the NOAA SSC and/or the USFWS representative may coordinate endangered species expertise for the FOSC
    - If there is no USFWS or NMFS representative in the ICS, but they are aware of the situation, the FOSC must ensure that the NOAA SSC and/or DOI are apprised of the situation
    - Information gathered will be used in the consultation
- The Incident Action Plan will serve as formal documentation of actions directed to minimize the impacts of response actions
- Emergency consultation continues until the FOSC determines that the spill response is complete.

USFWS and/or NMFS provide the FOSC with timely recommendations to avoid and/or minimize impacts to listed species and critical habitat. If an incidental take is anticipated, USFWS and/or NMFS would advise FOSC of ways to minimize this, or, if this is not possible, document the actual take of listed species.

A "***take*** is defined in the ESA as: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The USFWS has defined "harm" as "an act which actually kills or injures wildlife." 50 C.F.R. § 17.3. The regulation further explains that "[s]uch act may include significant habitat modification where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

The FOSC should request the support of a USFWS and/or NMFS representatives (or someone else mutually agreed upon) to gather and document the information necessary for post-emergency Formal Consultation, including:

- Description of the emergency (the oil spill response)
- Evaluation of the emergency response actions and their impacts on listed species and their habitats, including documentation of how USFWS and/or NMFS recommendations were implemented, and the results of implementation in minimizing take
- Comparison of the emergency response actions with the pre-planned countermeasures and information in the ACP

Note: As necessary, the FOSC can make funding available to USFWS and/or NMFS for costs incurred in providing any agreed upon assistance such as preparing the Biological Assessment for formal consultation. However, the USFWS and/or NMFS are not reimbursed for completing a Biological Opinion.

ESA Post Response

Checklist

9719 ESA Post-Response

The FOSC determines when removal operations are complete and closes the case ensuring that:

- Lessons learned are recorded;
- Documentation is filed; and,
- Area Committee is advised of any necessary changes to the ACP

The Emergency Consultation Checklist from the ESA MOA [Link to ESA MOA 9716] should be compiled before the FOSC determines that the response operations are completed and the case is closed. Oil Spill Liability Trust Fund (OSLTF) funding is not available after the case is closed.

The FOSC, USFWS and NMFS jointly evaluate the impacts of response activities on listed species and critical habitat. The information for the evaluation comes from data gathered during the response, not from any new studies.

If joint evaluation concludes that listed species and/or critical habitat were not adversely affected by response activities, the consultation process is complete.

The FOSC must send a letter to USFWS and/or NMFS including:

- Report of this agreement; and,
- Request a letter of concurrence from USFWS and/or NMFS.

If joint evaluation results in a disagreement between USFWS, NMFS, and the FOSC, USFWS and/or NMFS will send the FOSC a letter stating why they believe there were adverse effects on listed species or critical habitat. The FOSC may act on the USFWS/NMFS reply or simply document the response.

If impacts have occurred, the FOSC sends a letter to USFWS and/or NMFS to initiate *Formal Consultation*. Enclose the information gathered during the response with any modifications that may have been made during the post-response joint evaluation.

- This can be done by finalizing the Emergency Consultation Checklist from Appendix B of the MOA and submitting it with a cover letter and a request for formal consultation from Appendix E as an initiation package to the Service(s).
- Also see Activity 11: Documenting the Risk Assessment, pg. 65 of the Guidebook.

Note: If a USFWS representative assists in preparing the initiation package, the same representative will not be responsible for reviewing it.

The USFWS and/or NMFS have 30 days from receipt of the initiation package to determine if the package is complete. When complete, they issue a Biological Opinion within 135 days.

Example Of Informal Consultation Letter From USFWS to the Response Organization

9735 Informal Consultation

Memorandum

December 9, 2004

To: Operations Section Chief (O'Brien's Group)
Deputy Operations Section Chief (USGC)
Planning Section Chief (O'Brien's Group)
Deputy Planning Section Chief (USCG)

From: Group Supervisor, Wildlife Recovery

Subject: Practices for minimizing impacts to bald eagles during response actions related to the ***M/V Athos I*** discharge of oil – informal consultation pursuant to Section 7 of the Endangered Species Act.

Since the inception of ***M/V Athos I*** response (Incident) activities and pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*), a representative of the U.S. Fish & Wildlife Service (Service), acting as Wildlife Recovery Group Supervisor, has verbally coordinated with the Operations Section and U.S. Coast Guard to tender recommendations to minimize or avoid adverse impacts to bald eagles due to response actions related to the Incident. Those recommendations are consistent with the response strategies outlined in the Philadelphia Area Contingency Plan including:

- Recover mobile oil;
- Recover oiled wildlife – both dead and alive to prevent scavenging and secondary contamination;
- Boom creeks to prevent oiling of sensitive areas, especially eagle foraging areas; and,
- Monitor shorelines for oil impacts, and coordinate the selection of cleanup methods with the Environmental Unit.

Further, the Service recommended that:

- Response-related aircraft maintain a ¼ mile radial distance and 500 foot altitude from nest areas during aerial surveys; and,
- Areas identified by the Service as eagle foraging habitat should receive the highest priority for shoreline cleanup. The Service, as part of the Incident Operations Center, wants to review cleanup methodologies used in those areas prior to implementation. Cleanup methods selected should use the least amount of personnel for maximum cleanup effect, and media coverage around eagle foraging area should be avoided.

The Wildlife Recovery Group Supervisor (FRC Stern) coordinated with the Endangered Species Biologists at the Service's New Jersey Field Office on Monday, 29 November 2004 and Wednesday, 9 December 2004 to review the aforementioned recommendations and develop additional recommendations as appropriate. The Service as part of the response action has and continues to coordinate with Biologists from the New Jersey Division of Fish and Wildlife – Endangered, Non-game Species Program (ENSP) who are currently monitoring eagles in the vicinity of the Incident. ENSP Biologists are placing deer carcasses out to distract bald eagles from potentially scavenging on oiled wildlife. The Service recommends that use of deer

carcasses to distract bald eagles be continued as part of the Incident Action Plan in coordination with ENSP. Additionally, the Wildlife Recovery Group Supervisor has coordinated with the Tri-State Bird Rescue and Research veterinarian Dr. Erica Miller on Monday 29 November 2004 regarding potential concerns for bald eagle health issue in the event of oiling.

The Service further recommends that the U.S. Coast Guard continue to coordinate oil recovery and selection of shoreline cleanup methodologies with the Service during evolution of the Incident. If you have further questions, please contact the Wildlife Group Supervisor or Ms. Lisa Arroyo of the Service's New Jersey Field Office at 609/646-9310.

cc:

Documents Unit
Lisa Arroyo, USFWS
Jeff Underwood, USFWS
Tim Fannin, USFWS

Wildlife (Bird) Recovery Options

9739 Wildlife (Bird) Recovery Operations/Procedures

Capture of birds will only be attempted by qualified personnel with USFWS oversight. Oiled wildlife are highly unpredictable and can inflict serious injuries to a responder; accordingly, proper personal protective equipment shall be used when capturing or handling oiled wildlife. In some cases, The USFWS may recommend that the FOSC seek the assistance of the USDA APHIS - Wildlife Services to help with wildlife recovery operations. Safety must be accorded the highest priority throughout the capture and transport process. Migratory birds are susceptible to stress; handling, noise and visual stress should be minimized.

Teamwork is essential in capture operations. As they lose their waterproofing, oiled birds move to shore, first preening on open beaches and river banks and later hiding under cover. Birds in this condition can be retrieved in teams of two or three people on foot with radio communication approaching quietly from water's edge and blocking access to water. This technique is most effective before dawn. Birds can then be captured using long-handled dip nets, towels, or picked up by hand. Birds should never be chased to exhaustion.

Certain birds may be baited in close by "chumming" with fish or squid and captured with a long-handled net. Several species may also be effectively captured from a boat with a netgun within 10-15 meter range. Cannon, rocket and drop nets may be effective, when used with baiting techniques. Swim or walk-in traps may also prove effective, but must be regularly monitored.

Recovery Processing

Once birds are captured they should be removed from the netting and placed in towels, sheets or netting over the entire bird. Wings must be folded normally against the body. Care must be taken to avoid the bills and talons of large birds such as herons and raptors. A reverse body hold is recommended for large birds. Always hold the bird below waist level and away from the face. Always carefully handle the birds to minimize damage to feathers.

Each captured bird should be accompanied by a form with the following information: capture boat and personnel; date, time and location of capture; technique used to capture the animal; amount of oil in the area and whether the bird was observed or captured in the oil; behavior at capture, e.g., aggressive, lethargic, comatose; and, description of the bird, i.e., sex, age, distinguishing marks.

After transport, birds should be immediately examined by an attending veterinarian or other qualified personnel. If a treatment center is not in close proximity, it may be necessary to perform initial treatment at the collection site, such as clearing mouth and nostrils of oil; rehydrating the bird; checking for signs of oil toxicity, pining a cloth around the birds body to prevent hypothermia; and placing the bird into a transport container and avoiding disturbance, except to hydrate.

Carcass Retrieval and Processing

For all spills, a primary response goal is to prevent continued or additional contamination of wildlife as a result of predation. All bird carcasses should be retrieved and delivered to collection or morgue sites directed by the USFWS personnel to prevent oil from entering the food chain. Each carcass should be accompanied by a form containing the date and place of collection, the name of the collector, and if known, the species collected. Forms accompanying the carcass should be kept in a plastic storage bag for protection. An indelible pen or pencil should be used for labeling. If the carcass is not collected, a form should still be filled out and submitted to the USFWS collection or morgue site including a brief explanation for not collecting the specimen. Place retrieved carcasses in a plastic bag, ***one carcass per bag only***. Place the completed retrieval information form in a zip-lock bag, place it in the bag with the carcass, and tie the plastic bag shut for delivery to the Wildlife Recovery Area / morgue. Carcasses should be kept cool, but not frozen during transport to the morgue.

Environmentally Sensitive Area (ESA) & Essential Fish Habitat (EFH) Post Response Procedures

Endangered Species Act (ESA) and Essential Fish Habitat (EFH)
Post-Response Procedures

The purpose of this document is to inform the Federal On-Scene Coordinator (FOSC) of the potential need to conduct consultations **after** the emergency response phase of an incident is over, though every effort should be made to engage the Services early on concerning potential or actual response actions. During the course of emergency response operations, an FOSC must document and track environmental compliance implementation procedures regarding ESA Section 7 and EFH including, but not limited to: Incident Command System (ICS) Form 232-CG Resources at Risk Summary reports, Incident Briefing Form (ICS 201), ESA/EFH Emergency Consultation checklists, etc. The FOSC must comply with consultation requirements for ESA Section 7 and EFH pursuant to 50 Code of Federal Regulations (CFR) § 402.05 and 50 CFR § 600.920.

During a response, the FOSC is responsible for directing response actions so that ESA listed species are not put at risk, or that formally designated Critical Habitats of ESA listed species and/or EFHs are not destroyed. This process is accomplished through pre-spill planning consultations, along with documenting the results of those consultations within Regional Contingency Plans and Area Contingency Plans, as appropriate. However, spill response remains incredibly dynamic and not all federal actions and impacts can be appropriately planned for. For actions not covered by a pre-spill consultation that are used, or are considered for use during an emergency response, the FOSC must follow ESA and/or EFH emergency response procedures and complete ESA and/or EFH consultations in collaboration with the Services once the emergency phase of the response has ended.

There are three criteria for evaluating the effects of response actions on ESA listed species and designated Critical Habitats, and two criteria for evaluating the effects of response actions on EFH. These criteria are used by the FOSC to determine the type of ESA consultation required with National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS), and/or type of EFH consultation required with NMFS. Depending on the incident response, the FOSC may coordinate with the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC), Department of the Interior (DOI) representative, subject matter experts, and/or the Services to determine whether response actions had one of the following effects.

For ESA listed species and designated Critical Habitats:

(1) The action had **No Effect** (none at all, negative or positive);

(2) The action **May Affect**, but was **Not Likely to Adversely Affect (NLAA)**, listed species or adversely modify or destroy designated Critical Habitat; or

(3) The action **May Affect,** and was **Likely to Adversely Affect (LAA)**, listed species and likely adversely modified or destroyed designated Critical Habitat.

For EFH:

(1) The action had **No Adverse Effect**; or

(2) The action **May Adversely Affect** (**Adverse Effects** are anything that changes the quality or quantity of EFH).

"No effect" or "no adverse effect" is the appropriate determination if the response actions occurred in an area where no ESA listed species and designated Critical Habitats occur and no EFH is present, or

if the action and the stressors of that action would not affect ESA listed species, designated Critical Habitats, or EFH. To assist with "no effect" determinations, the FOSC should ask whether ESA listed species or designated Critical Habitats were exposed to the action or the effects of the action. If not, then "no effect" is the appropriate determination. For example, if there is a seasonality to the presence of an ESA listed species, and the action occurs within the season where the species is not present during the time of response actions, then a "no effect" determination is acceptable. An example of this is nesting loggerhead sea turtles in the Gulf of Mexico. If shoreline cleanup is to occur at the time when there are no nests and no nesting activity, then the action would have no effect on loggerheads. However, it is important to check whether other sea turtle species may be nesting in the area. This "no effect" determination must be documented within the respective unit's administrative record. Similarly, if the "no adverse effects" on EFH determination is made, this should also be documented.

If the FOSC determines that emergency response actions "may affect" ESA listed species and/or designated Critical Habitat—that is, species or designated Critical Habitats are likely to be exposed to the response actions—then the FOSC shall follow the consultation processes identified in 50 CFR § 402 during and following the emergency operations.

If the FOSC has made a "may affect" determination during an emergency response, the FOSC must engage in emergency consultation with USFWS and/or NMFS as soon as practicable. This engagement with the Services during the response will likely aid in reducing the likelihood of adverse effects on listed species and/or designated Critical Habitats and should help the FOSC meet their responsibility to engage in the post-response consultation once the response has ended. In accordance with the 2001 Memorandum of Agreement (MOA), these consultations shall remain active until the conclusion of emergency response operations.

Pursuant to 50 CFR § 402.14(c), the FOSC must submit a written request to the Services once the emergency response phase is over. The type of consultation and request to the Service(s) will depend upon the type of effects the response actions had on listed species and/or designated Critical Habitat. If the FOSC determines that the response actions were NLAA (***informal consultation***), the FOSC must then submit a letter to the Service(s) with the details below, their determination, and request concurrence on that NLAA determination. If the FOSC determines that the response actions were LAA, the FOSC must submit an initiation package (and/or Biological Evaluation) to begin ***formal consultation*** after the emergency phase of the response is over. This process is necessary to document and evaluate any adverse effects that may have occurred as a result of response actions. The FOSC cannot make a determination on jeopardy or adverse modification of critical habitat, this is the responsibility of the Services. Therefore, the FOSC must work with the Services to evaluate response actions determined LAA (by the FOSC), and if those response actions resulted in jeopardy or adverse modification of critical habitat. Due to the nature of emergency consultation, determinations of jeopardy or adverse modification of critical habitat are challenging to evaluate during a response. However, any recommendations provided by the Services during the response and the consultation, after the fact, must be documented in the resulting emergency BO and can be integrated into future response actions and response plans.

The following information must be provided to the Services in order to begin an informal or formal consultation:

(1) A description of the agency response action(s) taken;

(2) A description of the specific area that may have been affected by response actions to include listed species and designated Critical Habitat;

(3) A description of Best Management Practices (BMPs)[1] that were followed, if applicable;

(4) A description of the manner in which any ESA listed species or designated Critical Habitat may have been affected by the response action, and an analysis of any cumulative effect;

(5) Any relevant reports, including environmental impact statements, environmental assessments, or biological evaluations prepared, if applicable; and

(6) Any other relevant available information on the response action, listed species, or designated Critical Habitat.

Informal consultations conclude with a Letter of Concurrence from the Service(s). Formal consultations conclude with a Biological Opinion (BO) from the Service(s). For examples of template letters, BOs, or any additional ESA Section 7 templates or document, please refer to NRT.org[2]

FOR FURTHER GUIDANCE WITHIN THE U.S. Coast Guard (USCG), PLEASE CONSULT WITH:

U.S. Coast Guard Natural Resources, COMDTINST 5090.3A (series)
Commanding Officer's Environmental Guide, COMDTPUB P5090.1 (series)

[1] BMPs may be actions already listed or applied within an applicable Regional Contingency Plan (RCP)/Area Contingency Plan (ACP), or BMPs may be recommendations from the Services for the actions taken during a specific incident.

[2] National Response Team (NRT) National Environmental Compliance (NEC) Homepage link: https://nrt.org/Main/Resources.aspx?ResourceType=Endangered%20Species%20Act%20(ESA)%20Section%207&ResourceSection=2

RRT3 Environmental Best Management Practices for Coastal Zone Oil Spill Response

(DEC 2023)

REGIONAL RESPONSE TEAM III (RRT3)

Environmental Best Management Practices (BMPs) for Oil Spill Response in Regional Response Team 3 (RRT3) Coastal Zone

BMPs for Oil Spill Response

Appendix 9-A6

December 2023.0

RECORD OF CHANGES

The Regional Response Team III (RRT3) Executive Committee approved the RRT3 Environmental Best Management Practices (BMPs) for Coastal Zone Oil Spill Response on December 6, 2023. Maintenance of this plan is the responsibility of the RRT3 Consultation, Natural Resources, and Damage Assessment (CNRDA) Workgroup. Minor changes may be made periodically, and an update and review will be conducted at least once per year, at a minimum, to validate points of contact. The most current version of the plan will be posted on the RRT3 Website under the Regional Contingency Plan (RCP) Appendix 9 and the USCG District 5 District Response Advisory Team (D5 DRAT) Sharepoint site.

DECEMBER 2023 EDITION

Change Number	Date of Change/Review	Person & Agency Making Change	Description of Change/Update
2023.1			
2023.2			
2023.3			
2023.4			
2023.5			
2023.6			
2023.7			
2023.8			
2023.9			
2023.10			
2023.11			
2023.12			
2023.13			
2023.14			
2023.15			

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USE OF THE ENVIRONMENTAL BMPS FOR OIL SPILL RESPONSE IN THE COASTAL ZONE

Regional Response Team III (RRT3) is committed to implementing measures to reduce and avoid potential impacts on federally listed and managed species, designated critical habitat, Essential Fish Habitat (EFH), and cultural/historical resources. The RRT3 has compiled the following collection of Best Management Practices (BMPs) to avoid and/or minimize impacts to trust resources under the Marine Mammal Protection Act (MMPA) and Migratory Bird Treaty Act (MBTA), to serve as recommendations under the Endangered Species Act (ESA) Section 7 consultation regulations to avoid and minimize effects to endangered and threatened species and critical habitat, to minimize and avoid adverse effects on identified categories of EFH under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and to avoid and minimize effects to cultural and historic resources under the National Historic Preservation Act (NHPA) Section 106.

Background and Purpose

The purpose of this document is to provide recommendations and guidance to the Federal On-Scene Coordinator (FOSC) to avoid and minimize impact to fish, wildlife, and cultural/historic resources during a response to an oil spill.

All BMPs are provided as recommendations and guidance, developed in coordination with Department of Commerce National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), and U.S. Department of the Interior's (DOI) U.S. Fish and Wildlife Service (USFWS), to avoid and minimize impact to fish and wildlife resources during a response to an oil spill. These agencies are referred to as "the Services." State Historic Preservation Office (SHPO) input for cultural/historic resource considerations during oil spill response operations is also included within this guidance document.

This document is not intended to cover all possible scenarios or every individual species. The BMPs provided in this document are general in nature for oil spill response actions and enable the FOSC to quickly implement BMPs for response actions at the onset of a response. Due to area, environmental, and situational differences amongst potential operation areas, the RRT3 maintains this list of BMPs as an appendix to the Regional Contingency Plan and will update and revise the list as additional BMPs are developed, and/or updated information becomes available regarding the effectiveness and feasibility of implementing the BMPs. Incident specific BMPs may need to be developed to account for incident specific variances based on spilled products, species or location specific concerns, and types of response actions utilized and/or considered.

Direction to USCG Fifth District Units

The U.S. Coast Guard (USCG) Fifth District units will take these BMPs into consideration when carrying out oil spill response operations. This guidance will be used to cover oil spill and/or hazardous substance response actions within the Fifth Coast Guard District coastal zone, which includes Delaware, District of Colombia, Maryland, portions of New Jersey, North Carolina, portions of Pennsylvania, and Virginia.

The regional NOAA SSC and/or DOI Regional Environmental Officer **shall** be informed whenever the FOSC engages in emergency consultation with the Services. The SHPO **shall** be notified for NHPA consultations.

U. S. Coast Guard (USCG) District Incident Management and Preparedness Advisors (IMPAs) and District Response Advisory Teams (DRATs) are excellent resources to consult with regarding application of BMPs.

The USCG IMPA and DRAT are available 24/7 via District Command Centers.

Note: *This is a guidance document only. Units are encouraged to suggest modifications to this document to the RRT3's Consultation, Natural Resources, and Damage Assessment (CNRDA) Workgroup.*

ENVIRONMENTAL BMPS FOR COASTAL OIL SPILL RESPONSE

General Response Operations

☐ Response personnel may not attempt to scare, herd, disturb, or harass any protected species to encourage them to leave the area. Coordination with National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC), U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) Stranding Coordinator, or appointed point of contact, may result in authorization for these actions.

☐ Report stranded, injured, sick, trapped, entangled, or dead wildlife to the Incident Commander (IC) and Environmental Unit as soon as possible to ensure appropriate agency notifications are made. *Utilize the 'USFWS Wildlife Spill Response Survey' within the Survey123 app if available and being utilized for incident* ArcGIS Survey123 Downloads (esri.com)*.The USFWS species are preloaded into the Wildlife Spill Response Survey, however any species including NMFS species can be recorded in the app.*

☐ If a sea turtle is stranded, injured, or sick, and actively moving, it should be retained onboard a vessel or if on land, responders should remain with the turtle until the stranding/rehabilitation personnel provide guidance on what action should be taken, which could include transferring the turtle to a designated stranding/rehabilitation facility.

☐ If a sea turtle is stranded, injured, or sick but unresponsive (doesn't move its head or flippers when handled), you should follow the handling and resuscitation guidelines after you have called the NOAA hotline at 866-755-NOAA (6622). Do not assume that an inactive turtle is dead. The onset of rigor mortis and/or rotting flesh are often the only definite indications that a turtle is dead. Releasing an unresponsive turtle into any amount of water may drown it. Unresponsive sea turtles may recover following resuscitation.

- For your and the turtle's safety, always pick it up by the shell and keep your hands away from the head. Sea turtles have been known to revive up to 24 hours after resuscitation procedures have been followed. In accordance with Sea Turtle Resuscitation Regulations (50 CFR 223.206(d)(1)), steps for resuscitation can be found at https://media.fisheries.noaa.gov/dam-migration/sea_turtle_handling_and_resuscitation_measures.pdf.

☐ Handling live sturgeon should be minimized and used only when necessary. Sturgeon should be supported by a sling or net when being moved. Live sturgeon must never be held vertically by the tail or gills and should never be tied by the tail. Sturgeon should be kept in water to the maximum extent possible to reduce stress.

- For a non-responsive or overly stressed sturgeon, personnel must allow the animal to recover in floating net pens or in well-aerated onboard live tanks and shielded from direct sunlight. Alternatively, the sturgeon may be immersed in clean river water and moved back and forth to aid water passage over the gills.
- The sturgeon should be released as soon as possible when it has recovered. At water temperatures <7°C (44°F) and >27°C (80°F), holding time of a recovered sturgeon must not be greater than 30 minutes. A spotter should watch the fish as it is released making sure it stays submerged and does not need additional recovery immediately after release.
- Sturgeon are extremely sensitive to chlorine and other sanitizing solutions. Use care when using any of these products around sturgeon.

☐ If any impacted sea turtle, sturgeon, or marine mammal (or their parts) are observed, NMFS should be contacted for collection protocols. If a Wildlife Branch is stood up, coordination for response and collection should be communicated through the NMFS representative in the Wildlife Branch. NMFS may authorize collection by spill response personnel if species specific responders are not available (and delegation authority is allowed under the appropriate permit) and will provide instructions on proper handling and disposition. For impacted marine mammals and sea turtles, call the NMFS Regional Marine Animal Hotline: 866-755-NOAA (6622), Option zero to speak with NMFS staff. For sturgeon, reports should be made to NMFS Protected Resources Division by phone (978-281-9328) and e-mail (nmfs.gar-sturgeon-salvage@noaa.gov) as soon as possible.

- Do not dispose of any federal trust resource marine mammal or turtle parts until examination and documentation is conducted. Disposal will not take place until federal trustees (NOAA/USFWS) give final approval.
- Wildlife operations present some unique challenges to evidence handling requirements that often must be resolved early in response. Important data and samples are collected during oil spill response that ultimately may be used to assess exposure of species to oil and injuries resulting from that exposure. This information and material ultimately may be used for legal purposes including both criminal and civil proceedings. The potential for litigation associated with an oil spill requires specific measures when collecting, handling, and transferring samples and data. Coordinate with federal trustees (NOAA General Counsel's Office and the DOI Office of the Solicitor) to ensure chain of custody (CoC) protocols are followed. The CoC record should include the names of sample collectors, sample identification numbers, date and time of sample collection, location of sample collection, and names and signatures of all persons handling the sample in the field and in the laboratory. The documents provided below provide chain of custody information:
    - Guidelines for Oil Spill Response and Natural Resource Damage Assessment: Sea Turtles at https://media.fisheries.noaa.gov/dam-migration/opr-61_final.pdf.
    - NOAA Pinniped and Cetacean Oil Spill Response Guidelines at https://repository.library.noaa.gov/view/noaa/10479.
    - Additional chain of custody forms for other NOAA resources can be found at https://www.diver.orr.noaa.gov/field-forms-and-templates.

☐ Human Safety Considerations:

- Prior planning, training, and protective equipment should be provided for responders that may need to engage directly with marine mammals.
- Zoonotic pathogens are another risk of handling marine mammals.
- Safety perimeters around pinniped colonies should be established.

Vessel Operations

☐ All response vessel operators and crew must watch for and avoid collision with species protected under the ESA and MMPA (sea turtles, manatees, seals, dolphins, whales, Atlantic and short-nose sturgeon). The Environmental Unit can provide an updated list of protected species in the response area. When available a dedicated wildlife observer should be assigned for each response area.

☐ All response vessels shall maintain minimum distances specified below for specific species:

- 1,500-ft distance (500 yards) from North Atlantic right whale.
- 300-ft, as practicable, from all other marine mammals (i.e., dolphins, other whales, seals/pinnipeds, and porpoises):
  - Seal colonies will likely flush (i.e., move away from) from haul outs into the water at greater distances than 300-ft. Consideration should be given to the potential presence of pups on haul outs in certain seasons. A biologist associated with an authorized marine mammal stranding response program experienced in marine mammal/protected species identification should be onboard to advise location of boom deployment distances when possible.
- 300-ft from waterfowl /seabird aggregation sites. Large numbers of sea birds and waterfowl winter in coastal waters bays and tributaries, with flocks of up to 5,000 individuals. Boat operations must maintain a minimum distance from waterfowl / sea bird aggregation sites.
- 150-ft from sea turtles.
- 50-ft from manatees (rare in RRT3). All in-water operations, including vessels, must be shut down if a manatee comes within 50 ft of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-ft radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 ft of the operation. All on-site project personnel are responsible for observing water-related activities for the presence of manatees. Animals must not be herded away or harassed into leaving.
- 100-ft from all other protected species not already listed above. Stop operating mechanical equipment, including response vessels, immediately if any protected species is observed within a 100-ft radius and resume after the species has departed the area of its own volition.

☐ All response vessels should:

- If marine mammals, sea turtles, or bird colonies are observed within the response area, report to Environmental unit via Wildlife Hotline and/or USFWS Wildlife Spill Response Survey in Survey123 (if established). If Environmental Unit is not yet established, report to the Operations Section. If there is the potential for damage to marine resources, it is recommended that an Environmental Unit be established. Reports should be submitted by the end of the current operational period.
- When sea turtles, dolphins, or whales are sighted while the vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until they have left the area.
- Report if a whale is observed within the envelope of the NOAA spill trajectory for the next 48 hours.

- Any vessel collisions with and/or injury or impacts to any protected species (sea turtles, manatees, dolphins, whales, etc.) shall be reported to the Wildlife Hotline immediately. Likewise, report any stranded, injured, trapped, entangled, or dead protected species to the Wildlife Hotline as soon as possible for further guidance on what action should be taken.
- Mariners shall check various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sightings in the area.
  - Vessels 65 ft in length or longer must comply with the Right Whale Ship Strike Reduction Rule (50 CFR 224.105), which includes reducing speeds to 10 knots or less in Seasonal Management Areas.
    - Reduce speed to 10 knots or less when a right whale sighting is reported, mother/calf pairs, or groups of marine mammals are observed, when safety permits.
    - Secure all materials on vessels to prevent inadvertent loss overboard.

☐ All response vessels will follow marked channels and/or routes using the maximum water depth whenever possible.

☐ All response vessels shall operate at "Idle Speed/No Wake" at all times while in water depths where the draft of the vessel provides less than a 4-ft clearance from the bottom, and after a protected species has been observed in and has departed the area or adjacent to sensitive/environmentally important shorelines.

☐ Avoid vessel grounding, prop and bow/keel/skeg scarring, and prop washing in tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties.

☐ Avoid/minimize anchoring and spudding on tidal marsh, seagrass, and oyster reef habitats; anchor and spud on bare sand and mud bottoms, while avoiding archaeological sites or other historic properties. As soon as practically possible, consult with the State Historic Preservation Office (SHPO) and Tribal Historic Preservation Office (THPO) to determine proximity of archeological/historic sites and specific best management practices for those areas.

☐ Avoid/minimize shading of seagrasses with large vessels and barges for more than a few days; move large vessels and barges from over seagrasses onto bare sand or mud substrates when not undergoing active operations (such as in barge staging areas).

☐ Where equipment or crews must gain access across tidal marsh, seagrass, or oyster habitats, use shallow draft vessels to minimize disturbance, as applicable.

☐ Identify pinniped colonies in the response area as soon as possible and avoid disrupting the group as much as can be reasonably achieved. A response vessel should have a biologist experienced in marine mammal/protected species identification to observe and direct the response team to minimize impacts to groups of seals.

☐ If manatees are present, all water-based work and vessel operations must be in accordance with USFWS Standard Manatee Conditions for In-Water Activities (fws.gov). All response personnel shall be instructed about the presence of manatees and the need to avoid collisions with and injury to manatees. Advise all response personnel that there are civil and criminal penalties for harming, harassing, or killing manatees. Notify USFWS if manatees are observed.

On-water Mechanical Operations

(On-water Containment, Recovery, Protection)

☐ A biologist experienced in marine mammal/protected species identification or dedicated crew member is required for all skimming, booming, burning, and dispersant operations, with responsibility for avoiding marine mammals, sea turtles, birds, and reporting distressed or deceased animals.

☐ Stop operating mechanical equipment, including response vessels, immediately if a protected species is observed within a 50-ft radius and resume after the species has departed the area of its own volition.

☐ Entanglement:

- All in-water equipment (including hard and sorbent booms) must be properly secured with materials that reduce the risk of entanglement of marine species. Booms, lines, and other equipment must be made of materials that reduce the risk of entanglement of marine species. Keep all in-water lines (rope, chain and cable, including the lines to secure boom, buoys, anchors, etc.) stiff, taut, and non-looping. Floating line should be used as appropriate.
- Where feasible, the use of equipment with breakaway capabilities is advised to prevent or minimize the risk of entanglement of marine species.
- The Sea Turtle Stranding and Salvage Network (STSSN) should be contacted if sea turtles are entangled or entrapped during offshore operations.

☐ Entrapment:

- In-water equipment (including hard and sorbent boom) must be placed in a manner that does not entrap species within the work area or block access for them to navigate around the work area.
- If protected species become entrapped in an enclosed area, notify NMFS immediately. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised, then activities may cease so the animal can either leave on its own or be moved under the direction of NMFS.
- The Sea Turtle Stranding and Salvage Network (STSSN) should be contacted if sea turtles are entangled or entrapped during offshore operations.

On-water Chemical Countermeasures

(Dispersants, Solidifiers, Herding Agents, Elasticity Modifiers)

☐ A biologist experienced in marine mammal/protected species identification or dedicated crew member is required for all skimming, booming, burning, and dispersant operations, with responsibility for avoiding marine mammals, sea turtles, birds, and reporting distressed or deceased animals.

☐ Where approved, dispersants should not be used within a 3-nautical mile radius of marine mammal species (e.g., whales, dolphins, seals, sealions, and manatees). The radius should increase to 10-nautical miles if North Atlantic right whales are observed in the area.

☐ Where approved, avoid dispersant applications near bird concentration areas and minimize bird exposure from wind drift of applied dispersant.

Other Countermeasures

(In-situ Burn, Bioremediation)

- ☐ A biologist experienced in marine mammal/protected species identification or dedicated crew member is required for all skimming, booming, burning, and dispersant operations, with responsibility for avoiding marine mammals, sea turtles, birds, and reporting distressed or deceased animals.
- ☐ Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observers on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported to the Environmental Unit immediately.
- ☐ Avoid burning near bird concentration areas and minimize bird exposure from wind drift of smoke.
- ☐ Avoid burning near archaeological sites or other historic properties, particularly when these are not completely submerged.

Aircraft Operations

(Airplanes, Helicopters, Drones/Unmanned Aircraft Systems)

☐ Prior to operating Unmanned Aircraft Systems (UAS) coordinate with respective land managers to get specific UAS limitations.

☐ UAS flights should be limited to 100 feet above ground level (AGL) above resting birds on land or water (i.e., not in flight). Rotary aircraft should limit elevations to 300-400 feet AGL. If hazing/disturbances occur, increase altitude and report adjusted height to the Environmental Unit.

☐ Fixed-wing aircraft should follow NOAA marine mammal aerial survey protocols for speed (100 mph preferred), height (1000 feet AGL), and dwell time and for aircraft choice.

- For flyovers for identifying animals in the area are best done from aircraft that can fly low and slow and remain in an area for an extended period.

☐ Aircraft must stay >1,000 feet above bird nesting and aggregation sites and limit repetitive passes to minimize disturbance.

☐ Where deemed applicable, wildlife observers may be deployed on aircraft to report and record sightings of ESA species and/or other wildlife.

Vehicle Operations

(All-Terrain Vehicles, Automobiles/Trucks Heavy Equipment)

- ☐ Prior to vehicle operations, a biologist experienced in shorebird species identification is required to evaluate beaches for use by shorebirds (nesting, fledgling) each day.
- ☐ Prior to vehicle operations, the SHPO and THPO (if applicable) should be consulted to avoid disturbance of archaeological sites or other historic properties.
- ☐ Generally, preference is given to operations during daytime periods to minimize impacts to sea turtles and nesting shorebirds. Prior to any nighttime operations, it is highly recommended to consult with the Services for guidance.
- ☐ Utilize a lightweight vehicle with low tire pressure (10 psi), such as an All-Terrain Vehicle (ATV) or Mule whenever possible to reduce sand compaction and/or rutting.
- ☐ Utilize the same trackline for vehicle operations to minimize disturbance to multiple areas.
- ☐ Power wash vehicles prior to operating on beach areas to prevent spread of invasive species (e.g., Asian sand sedge).
- ☐ Enter the beach only at designated access points and proceed directly to the hard-packed sand near or below the high tide line. Stay below the tide line when driving if no oil is present and it is safe to do so.
- ☐ Do not drive in dune habitat.
- ☐ Avoid driving over the wrack line or areas of dense sargassum (otherwise known as seaweed), which may contain sea turtle hatchlings or newly hatched birds.
- ☐ Do not enter posted sea turtle or shorebird nest sites and minimize time spent around these sites. Most of these will be marked with posts and signs, but not all.
- ☐ Drive slowly. Travel should be slow enough to observe any bird eggs, chicks, or sea turtle hatchlings in the vehicle's line of travel. Be aware that bird chicks often feed along the water's edge. They may freeze in place rather than run away when ATVs or other vehicles approach.
- ☐ Check under and around vehicles and heavy equipment parked in shoreline areas before they are moved. Shorebirds (piping plover and red knot) are especially vulnerable when they are roosting at night, and extra care should be taken at these times. However, by this time of year, it is likely that these two federally threatened shorebird species have departed the area.

Shoreline Response Operations

(Protection/Containment: Pre-impact Debris Removal, Deflection/Protection Boom, Barriers/Berms, Flooding; Shoreline Treatment / Cleanup: Natural Recovery, Washing/Flushing, Physical Removal, Vegetation Cutting/Removal, Vacuum)

- ☐ In shallow nearshore areas with sensitive habitats, consider land-side access from roads, bulkheads, or other developed areas for operations.
- ☐ Avoid and minimize response disturbance to sensitive shoreline habitats and in particularly sand dunes and wetlands. Of particular concern are areas with Federally listed species in dune habitats such as tiger beetle, seabeach amaranth, and nesting birds. Contact the Environmental Unit to identify updated locations with these listed species in dune habitats.
- ☐ Where equipment or crews must access areas across tidal marsh, seagrass, or oyster habitats, use shallow draft vessels or specialized equipment with low pressure/flotation tires, equipment mats, walk boards, or other comparable methods to minimize disturbance, as applicable.
- ☐ Keeping clean wrack in general proximity is ideal, but it is not necessary to move it a substantial distance and back—use reasonable judgment.
- ☐ Following response work on beaches, return the beach to its original profile at the end of each day.
- ☐ Do not enter sites where birds are nesting or roosting and maintain a buffer of at least 300 ft from these sites. If birds are flushed, move away from the area, and observe a larger buffer distance to avoid and minimize disturbance.
- ☐ When working in or near bird migratory/wintering areas, work crews should be limited to the minimum number of personnel and equipment required to complete response activities in an efficient time frame and as is feasible to minimize disturbance.
- ☐ Be aware of the potential for sea turtle nesting activity if any operations are planned on Atlantic Ocean-facing sand beaches. Nests, eggs, and hatchlings may be present from May through November.
- ☐ Adult sea turtles, crawls, nests, eggs, hatchlings, and critical habitat should be protected during response activities on sea turtle nesting beaches, including hatchling turtles as they emerge from the nest and crawl to the sea. If a sea turtle nest is inadvertently excavated during assessment or response activities, all work shall cease in that area immediately and the Environmental Unit should be contacted.
- ☐ Upon locating any dead, injured, or sick sea turtle, birds, or marine mammals, or if eggs or nests are disturbed during response activity, initial notification must be made to the Environmental Unit as soon as possible. The Environmental Unit will make further notifications to the appropriate agency contacts.
- ☐ Contact the Unified/Incident Command (UC/IC) and Environmental Unit prior to conducting any response efforts that require substantial ground disturbance as additional SHPO coordination may be required. Federally recognized tribes with interest in the area and the THPO may be contacted if applicable.
- ☐ Cease all activities involving subsurface disturbance and immediately contact the UC/IC and Environmental Unit if prehistoric/historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time (and leave all artifacts in place). The SHPO and/or THPO must be notified. Response activities

shall not resume without verbal and/or written authorization from the UC/IC in consultation with the designated Historic Preservation Specialist (HPS) and document decisions; if there is no designated HPS then the UC/IC should receive guidance from the SHPO and/or THPO. If unmarked human remains are encountered during response activities, stop all work immediately and report to the UC/IC and Environmental Unit through your chain of command.

Staging Areas / Support Facilities

☐ Equipment and material staging areas must be located outside of areas of natural/native vegetation and known endangered species habitats, including federally threatened plant(s) that may be present in dunes. Areas proposed for equipment and material staging should be determined in consultation with the SHPO and/or THPO to avoid disturbance of archaeological sites or other historic properties. Contact the Environmental Unit (if established) for assistance.

☐ Use existing beach access areas and trails only.

☐ All trash resulting from the response should be removed from the area as appropriate or disposed of properly in covered wildlife-proof trash receptacles.

Waste Management

☐ All trash resulting from the response should be removed from the area as appropriate or disposed of properly in covered wildlife-proof trash receptacles.

Grounded or Displaced Vessel Response/Removal Operations

- ☐ Avoid and minimize response disturbance to sensitive benthic and shoreline habitats including tidal marshes, oyster reefs, seagrasses, sand beaches, and dunes.
- ☐ Contact the Environmental Unit prior to conducting any response efforts that require significant ground disturbance as U.S. Army Corps of Engineers (USACE) and/or State permits may be required. Additionally, substantial ground disturbance beyond the initial disturbance caused by the grounding may require additional SHPO coordination for historic sites and/or THPO for tribal coordination.
- ☐ Contact the Environmental Unit if significant sediment disturbance is anticipated, as further coordination with USACE may be required.
- ☐ Contact the Environmental Unit if filling of wetlands or surface waters or dredging that creates or expands surface waters is anticipated, as emergency permitting from State Agencies may be required.
- ☐ Turbidity control measures may be implemented if significant turbidity increases are expected during response actions. Such control measures include:
    - Install floating turbidity barriers with weighted skirts that extend to within 1-ft of the bottom around all work areas that are in, or adjacent to, surface waters, if heavy turbidity is expected.
    - Use these turbidity barriers throughout vessel removal to control erosion and siltation and ensure that turbidity levels within the project area do not exceed background conditions (i.e., the normal water quality levels from natural turbidity).
    - Position turbidity barriers in a way that does not block species entry to or exit from designated critical habitat.
    - Monitor and maintain turbidity barriers in place until the authorized work has been completed and the water quality in the project area has returned to background conditions.
- ☐ Avoid response vessel grounding, prop and bow/keel/skeg scarring, and prop washing in tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties.
- ☐ Avoid/minimize anchoring and spudding on tidal marsh, seagrass, and oyster reef habitats; anchor and spud on bare sand and mud bottoms, while avoiding archaeological sites or other historic properties. Consult with the SHPO and/or THPO to determine proximity of archeological/historic sites.
- ☐ If spudding on seagrasses cannot be avoided, fill spud holes to grade with clean sand, as feasible, to minimize impacts. Consult the Environmental Unit for any remediation requirements.
- ☐ Avoid/minimize shading of seagrasses with large vessels and barges for more than a few days; move large vessels and barges from over seagrasses onto bare sand or mud substrates when not undergoing active operations (such as in barge staging areas).
- ☐ Prior to hoisting, refloating, or repositioning grounded or displaced vessels, work crews should evaluate the immediate area and determine an ingress/egress path that will have the least impact to tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties. Contact the Environmental Unit for assistance.
- ☐ Temporary stakes/buoys should be used to mark the ingress/egress path, if applicable, to assist in staying on course and to avoid the areas of greatest tidal marsh, oyster reef, and seagrass habitat extent and quality.

- ☐ In shallow areas with sensitive shoreline and bottom habitats, consider land-side access from roads, bulkheads, or other developed or disturbed areas for response operations, where feasible.
- ☐ Where equipment or crews must access grounded or displaced vessels across tidal marsh, seagrass, or oyster habitats, use shallow draft vessels or specialized equipment with low pressure/flotation tires, equipment mats, walk boards, or other comparable methods to minimize disturbance, as applicable.
- ☐ Avoid pulling grounded or displaced vessels or other items across or onto tidal marsh, seagrass, and oyster reef habitats - items should be hoisted or refloated if possible. Use of lift bags, rollers, equipment mats, and other methods should be evaluated to minimize impacts, such as rutting and keel scarring.
- ☐ Avoid digging, jetting, excavation, and similar methods in tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties to refloat or reposition displaced vessels.
- ☐ If the above suite of habitat based BMPs cannot be applied, further USACE and State permits (see above) and Essential Fish Habitat (EFH) consultation may be required.

For further guidance and assistance with Best Management Practices (BMPs) during a response/incident, please contact the Environmental Unit (if established). BMPs that are utilized should be documented by the FOSC via the RRT3 ESA/EFH Biological Evaluation Guidance & Form for USCG Fifth District Coastal Zone.

ENVIRONMENTAL POINTS OF CONTACT

Primary Environmental Agencies / Organizations

If the Environmental Unit is not stood up, the key points of contact for environmental, wildlife, and historic preservation concerns during an oil spill response are provided below.

U.S. Coast Guard Fifth District Response Advisory Team (DRAT)

- David Pugh, david.e.pugh1@uscg.mil, 757-373-4133 (cell)
- Elisha Cook, elisha.fs.cook@uscg.mil, 757-630-1430 (cell)

National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC)

- Frank Csulak, frank.csulak@noaa.gov, 732-371-1005

U.S. Fish and Wildlife Service (USFWS) Response Coordinators

- Sarah Shaeffer (NJ, NY, DE, Eastern PA/Delaware Watershed), sarah_scheaffer@fws.gov, 609-833-1476
- Jo Ann Banda (MD, Western PA, VA, WV, DC), joann_banda@fws.gov, 804-824-2413 (office), 804-694-7647 (cell)
- Brian Spears (NC), brian_spears@fws.gov, 251-284-5295 (cell), 251-928-9765 (office)

Department of the Interior (DOI)

- John Nelson, john_nelson@ios.doi.gov, 215-597-5012 (office), 215-266-5155 (cell)
- Joyce Stanley, joyce_stanley@ios.doi.gov, 404-331-4524 (office), 404-852-5415 (cell)

Tri-State Bird Rescue and Research

- 302-737-9543, https://tristatebird.org/oil-spill-response/

Report a Stranded or Injured Marine Mammal or Sea Turtle

Northeast Marine Mammal and Sea Turtle Stranding and Entanglement Hotline, 866-755-NOAA

New Jersey

- Marine Mammal Stranding Center, 609-266-0538, https://mmsc.org/

Delaware

- MERR Institute, 302-228-5029, https://www.merrinstitute.org/

Maryland

- Maryland Marine Animal Reporting Hotline, 800-628-9944
- Maryland Department of Natural Resources Cooperative Oxford Laboratory (Dead animals only), https://dnr.maryland.gov/fisheries/Pages/oxford/stranding.aspx
- National Aquarium in Baltimore, Marine Animal Rescue Program, https://www.aqua.org/Support/BLUEprint/animal-care-and-rescue-center

Virginia

- Virginia Aquarium and Marine Science Center, 757-385-7575, https://www.virginiaaquarium.com/research-and-conservation/stranding-response

North Carolina

- NOAA Fisheries Southeast Marine Mammal Stranding Hotline, 877-WHALE-HELP
- NOAA Fisheries Southeast Sea Turtle Stranding/Salvage Network Hotline, 844-SEA-TRTL
- Sturgeon Salvage Network, 844-STURG-911
- Giant Manta Ray Reporting, 727-824-5312, manta.ray@noaa.gov
- North Carolina Sea Turtle Stranding and Salvage Network Hotline, 252-241-7367
- North Carolina Division of Marine Fisheries, 252-241-5119
- University of North Carolina–Wilmington Marine Mammal Stranding Program, 910-515-7354

State Historic Preservation Office Contacts

For the most current list of SHPO contacts please see the National Conference of State Historic Preservation Officers website at ncshpo.org/directory/.

New Jersey SHPO; Department of Environmental Protection, Historic Preservation

- Kate Marcopul, kate.marcopul@dep.nj.gov, 609-633-2397; http://www.state.nj.us/dep/hpo/

Pennsylvania SHPO; PA Historic Preservation Office

- Andrea MacDonald, amacdonald@pa.gov, 717-787-4215; http://www.phmc.pa.gov/Preservation

Delaware SHPO; Division of Historical and Cultural Affairs

- Gwen Davis, gwen.davis@delaware.gov, 302-736-7410; http://history.delaware.gov/
- Sarah Carr, sarah.carr@delaware.gov, 302-736-7431

West Virginia SHPO; Division of Culture & History

- Susan Pierce, Susan.M.Pierce@wv.gov, 304-558-0240; http://www.wvculture.org/

Maryland SHPO; Maryland Historical Trust

- Susan Langley, susan.langley@maryland.gov, 410-697-9564 (office), 410-353-8777 (cell); https://mht.maryland.gov/
- Troy Nowak, troy.nowak@maryland.gov, 410-697-9577 (office), 240-291-1267 (cell)

Washington D.C. Historic Preservation Office

- David Maloney, david.maloney@dc.gov, 202-442-8800; http://planning.dc.gov/historicpreservation
- Steve Callcott, steve.callcott@dc.gov, 202-741-5247

Virginia SHPO; Department of Historic Resources

- Julie Langan, julie.langan@dhr.virginia.gov, julie.langan@dhr.virginia.gov, 804-482-6087; http://www.dhr.virginia.gov/
- Stephanie Williams, stephanie.williams@dhr.virginia.gov, 804-482-6082

North Carolina SHPO; Division of Archives and History

- Darin Waters, darin.waters@ncdcr.gov, 919-814-6636; https://www.ncdcr.gov/state-historic-preservation-office
- Ramona Murphy Bartos, ramona.bartos@ncdcr.gov, 919-814-6583

LIST OF ABBREVIATIONS

Abbreviation	Definition
AGL	Above Ground Level
ATV	All-Terrain Vehicle
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CNRDA	Consultation, Natural Resources, and Damage Assessment
CoC	Chain of Custody
D5	District 5 *(U.S. Coast Guard)*
DC	District of Colombia
DE	Delaware
DOI	Department of the Interior
DRAT	District Response Advisory Team
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ENVL	Environmental Unit Leader
FOSC	Federal On-Scene Coordinator
ft	Feet *(unit of measurement)*
GIS	Geographic Information System
IC	Incident Commander
IMPA	Incident Management Preparedness Advisor *(U.S. Coast Guard)*
MBTA	Migratory Bird Treaty Act
MD	Maryland
MERR	Marine Education, Research, & Rehabilitation
MMPA	Marine Mammal Protection Act
mph	Miles per hour *(measurement of speed)*
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NC	North Carolina

NHPA	National Historic Preservation Act
NJ	New Jersey
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOAA SSC	NOAA Scientific Support Coordinator
NY	New York
PA	Pennsylvania
psi	Pound per square inch *(measurement of pressure)*
RCP	Regional Contingency Plan
RRT3	Regional Response Team III
SHPO	State Historic Preservation Office
STSSN	Sea Turtle Stranding and Salvage Network
THPO	Tribal Historic Preservation Office
UAS	Unmanned Aircraft System
UC	Unified Command
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
VA	Virginia
WV	West Virginia

Sector Delaware

Bay PREP Exercise

2023 Resources at Risk

1. Incident Name Delaware Bay PREP drill	2. Operational Period (Date/Time) From: 7 AUG 2023 To: 10 AUG 2023	RESOURCES AT RISK SUMMARY ICS-232-OS

3. Environmentally Sensitive Areas and Wildlife Issues

Site Name and/or Physical Location	Site Considerations
Cape Henlopen State Park	T/E shorebirds present and nesting; T/E insects and plants present along dunes.
Prime Hook NWR (DE)	T/E birds present and nesting, high bird concentrations
Pea Patch Island (Ft. Delaware State Park) (DE)	Thousands of colonial nesting birds
Higbee Beach WMA (NJ)	T/E shorebirds and gulls/terns present and nesting
Cape May Point State Natural Area (NJ)	T/E shorebirds present and nesting
Mouth of Cedar Creek (DE)	High numbers of shorebirds on flats

Narrative:

This report covers resources present in August in the waters and along the shoreline of Delaware Bay and the lower Delaware River from the mouth of the bay up to Delaware City (DE)/Finns Point (NJ). The drill scenario includes the release of 8,959 bbl of IFO 380, a heavy fuel oil (HFO), with the following characteristics:

- When spilled on water, HFO usually spreads into thick, dark-colored slicks, which can contain large amounts of oil. The most viscous oils will often break into discrete patches and tarballs, instead of forming slicks. Oil recovery by skimmers and vacuum pumps can be very effective early in the spill. Very little of this viscous oil is likely to disperse into the water column.
- HFO is a persistent oil; only 5-10% is expected to evaporate within the first hours of a spill. Consequently, the oil can be carried hundreds of miles in the form of scattered tarballs by winds and currents. The tarballs will vary in diameter from several feet to less than 1 inch, and they may be very difficult to detect visually or with remote sensing techniques.
- These oils can occasionally form an emulsion, but usually only slowly and after a period of days.
- Because of its high viscosity, beached HFO tends to remain on the surface rather than penetrate sediments. Light accumulations usually form a “bathtub ring” at the high-tide line; heavy accumulations can pool on the surface.

ESA-listed species are designated with FT (federally threatened) or FE (federally endangered) following the species name; state listed species are designated with SE or ST following the state abbreviation.

Shoreline:

Much of the bay shoreline is composed of mixed coarse-grained sand and gravel beaches. Bay inlets are lined with marshes; substantial marsh complexes occur along both the DE and NJ bay shorelines. Riprap shorelines/jetties are present in developed areas near Cape Henlopen and Cape May.

Birds:

Concentration areas are listed in the table above; however, marshes and tidal flats along the shoreline are all important habitats for birds. Delaware Bay is important habitat for shorebirds during their fall migration.

Bird Associated with Shorelines (beaches, marshes, and tidal flats):

Shorebirds, gulls, terns: Rufa red knot (FT, DE SE, NJ SE) and piping plover (FT, DE SE, NJ SE) are present along bay shorelines. Piping plover may be nesting at the following sites: Cape Henlopen State Park (DE), Prime Hook NWR (DE), Higbee Beach WMA (NJ), Cape May Point State Natural Area (NJ). Rufa red knots forage on beaches and flats. Other species of shorebirds, gulls, and terns may be present along DE and NJ shorelines including American oystercatcher (DE SE), black-necked stilt, spotted sandpiper, black skimmer (DE SE, NJ SE), common tern (DE SE), Forster’s tern (DE SE), Least tern (DE SE, NJ SE), and great black-backed gull.

Wading birds - Black-crowned night-heron (DE SE, NJ ST), yellow-crowned night-heron (DE SE, NJ ST), Cattle egrets (NJ ST) and other wading birds (herons, egrets) can be found along the shorelines of Delaware Bay. Yellow-crowned night-herons, cattle egrets, glossy ibis, and snowy egret may still be nesting in August.

Raptors - Bald eagles (NJ SE), osprey (NJ ST), and peregrine falcons (NJ/PA SE) can be present along the shoreline and forage in bay waters. Osprey are nesting in August, and nests are relatively common along the Delaware shoreline of the bay. Other species of raptors (hawks) may also be present).

Other - Resident marsh birds present and nesting include clapper rail and marsh wren. Other passerines may be present in marsh and upland areas, including black rail (DE SE), sedge wren (DE SE), and saltmarsh sparrows.

Bird Associated with Bay waters: Species present and feeding or rafting in bay waters include resident waterfowl (American black duck, Canada goose, hooded merganser, mallard), double-crested cormorants, gulls, and terns. Pelagic seabirds may also be present towards the mouth of the bay, including Wilson's storm-petrel and shearwaters.

Direct oiling of birds reduces the buoyancy, water repellency, and insulation provided by feathers, and may result in death by drowning or hypothermia. Preening of oiled feathers may also result in ingestion of oil resulting in irritation, sickness, or death. Adult birds bringing even small amounts of oil back to their nests on their feet or feathers may reduce the hatching success of eggs or survival of young.

Fish/Marine Invertebrates:
Shortnose sturgeon (FE) and Atlantic sturgeon (FT) are present in Delaware Bay waters. Giant manta ray (FT) may also be present in bay and coastal waters. Delaware Bay is a major nursery area for sandbar sharks and a core use area for sand tiger sharks – it is a designated HAPC for both species. EFH is present for many highly migratory and resident (shelf) fish and invertebrate species, and the area supports productive fisheries for these species. Invertebrate species present in the bay include horseshoe crabs, blue crab, blue mussel, whelks, quahogs, softshell clams, American lobster, and longfin squid. Oyster reefs are present in the upper portions of Delaware Bay and several tributaries to the main bay (e.g., Milford Neck).

Larval and juvenile life-stages are especially sensitive to spilled oil because they inhabit shallow, protected waters, are less mobile, and are more sensitive to oil toxicity.

Sea turtles: Loggerhead sea turtles (FT) are common in bay waters, and green (FT) and Kemp's ridley (FE) sea turtles can also be present. Direct effects of oil exposure on sea turtles may include oiling of sensory organs, reddening and sloughing off of the skin, dysfunction of the salt gland, uptake of oil in the gastrointestinal system, and disturbed diving and respiration patterns.

Marine Mammals:
Bottlenose dolphins are abundant in nearshore and offshore waters. Oil may cause irritation of skin and mucous membrane surfaces in marine mammals. Inhaling vapors may cause irritation of the lungs. These impacts are more commonly reported for spills in protected bays where oil exposure tends to be prolonged.

Insects: Little white tiger beetle (DE SE) and beach-dune tiger beetles can be found at Cape Henlopen State Park. Beach-dune tiger beetle can also be found at other sites along the Delaware shoreline (Slaughter Beach, Beach Plum Island, Big Stone Beach, Logan Creek Wildlife Area). Care should be taken not to disturb these habitats during response activities. Contact state natural resource agencies for exact locations prior to beginning cleanup operations.

Other shoreline resources: Seabeach amaranth (FT) is present at Cape Henlopen State Park. Other rare and endangered plants are present along the Delaware and New Jersey shorelines of the bay. Care should be taken not to disturb plants during response activities. Contact state natural resource agencies for exact locations prior to beginning cleanup operations.

4. Archaeo-cultural and Socio-economic Issues

Narrative:
Archaeological and historical sites are present along the bay shorelines. Some historic sites are present in bay waters.

Managed areas:
USFWS properties: Prime Hook NWR and Bombay Hook NWR (DE); Cape May NWR (NJ) are present along the shoreline of the bay.
*Delaware***:** Cape Henlopen and Great Marsh Preserve state parks are present along the shoreline. Multiple wildlife areas are present along the shorelines (managed by DNREC Division of Fish and Wildlife).
New Jersey: Many state WMAs (managed by NJ Division of Fish and Wildlife) and Preserves (NJ Department of Natural Lands Trust) are present along the New Jersey Shoreline.
The Nature Conservancy (TNC) owns two properties bordering Delaware bay: Eldora nature preserve, Seabreeze Preserve.

Recreational and commercial fishing are common in the bay. NJ Aquaculture leases are present in the upper portions of Delaware Bay.

Ferry routes potentially impacted include the Cape May/Lewes Ferry and Fort Mott/Fort Delaware Ferry.

Prepared by: NOAA Scientific Support Team	**Date/ Time**
Jennifer Weaver	7/27/2023 / 1315

Threatened & Endangered Species
Within Sector Delaware Bay

Species and Habitats at Risk during Oil Spills

Species

Many wildlife species in Sector Delaware Bay's AOR are at particular risk of harm from oil spills, especially considering the area's position in a major bird migration flyway. This section focuses on species at risk according to input from local wildlife trustees and their status on the federal and/or state Threatened & Endangered (T&E) lists.

Key species are listed in the following table. For a full list of species at risk, including their listing status, breeding season, and critical habitat within Sector Delaware Bay, click the following link (this list is subject to change):

https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:a2e31634-60c2-4e7c-98f2-5475cda9d564

Table 3. Key species at risk in the Sector Delaware Bay AOR.

Species	Status
Mammals & Marine Mammals	
Indiana Bat (*Myotis sodalis*)	Endangered NJ, PA
Little Brown Bat (*Myotis Lucifugus*)	Endangered
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered
Harbor Seal (*Phoca vitulina*)	Marine Mammal Protection Act
Gray Seal (*Halichoerus grypus*)	Marine Mammal Protection Act
Birds	
Black Rail (*Laterallus jamaicensis*)	Endangered in NJ
Piping Plover (*Charadrius melodus*)	Threatened
Roseate Tern (*Sterna dougallii dougallii*)	Endangered (Northeast population)
Red Knot (*Calidris canutus rufa*)	Threatened & Endangered DE, NJ, PA
Reptiles	
Bog Turtle (*Glyptemys muhlenbergii*)	Threatened
Eastern Massasauga (*Sistrurus catenatus*)	Threatened
Green Sea Turtle (*Chelonia mydas*)	Endangered
Hawksbill Sea Turtle (*Eretmochelys Imbricata*)	Endangered
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)	Endangered
Leatherback Sea Turtle (*Dermochelys coriacea*)	Endangered
Loggerhead Sea Turtle (*Caretta caretta*)	Endangered
Diadromous Fish	
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	Species of concern
Shortnose Sturgeon (*Acipenser brevirostrum*)	Endangered
Crustacean	
Horseshoe Crab (*Limulus polyphemus*)	Not listed
Insect	
Bethany Firefly (*Photuris bethaniensis*)	Endangered DE

Further information on species at risk in the Sector Delaware Bay area can be found here:

- https://dnrec.delaware.gov/fish-wildlife/conservation/endangered-species/
- https://www.pgc.pa.gov/Wildlife/EndangeredandThreatened/Pages/default.aspx
- https://dep.nj.gov/njfw/wildlife/endangered-threatened-and-special-concern-species/#endangered-and-threatened

Habitats

A habitat is considered at risk of harm from oil spills if it is particularly sensitive to damage, hosts a wide variety of organisms, or acts as key habitat for a T&E species. The following locations are considered at risk and should be treated with special consideration to prevent damage during oil spills.

Map Key

- National Wildlife Refuge/National Fish Hatchery
- Coastal Barriers
- Water Bodies

Follow this link for an interactive version of the map above, including names of the coastal barriers:

https://ipac.ecosphere.fws.gov/location/44JPSF4KYRH55NHHAPRQCJXLRE/resources#coastal-barriers

U.S. Fish and Wildlife

Best Practices for Migratory Bird Care During Oil Spills

U.S. FISH AND WILDLIFE SERVICE

November 2003

Best Practices for Migratory Bird Care During Oil Spill Response

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Edited by

Catherine Berg

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Introduction

Background

Best Practices for Migratory Bird Care During Oil Spill Response (*Best Practices)* is the result of a Fish and Wildlife Countermeasures Coordination Project undertaken by the U.S. Fish and Wildlife Service (USFWS). The goals of the project include the development of national "best practices" using established protocols for keeping unoiled birds away from an oil spill and for dealing with oiled birds. Establishing a standardized approach helps protect wildlife resources, enables On-Scene Coordinators (OSCs) to focus on other aspects of spill response, and helps instill public confidence in overall response activities.

A group comprised of natural resource management agencies, rehabilitators, veterinarians, and industry representatives developed this document at a 3-day workshop held in February 2001 in Anchorage, Alaska. This workshop was a follow-up to the March 2000, Wildlife Countermeasures Session on the Effects of Oil on Wildlife Conference held in Myrtle Beach, South Carolina. Prior to the Alaska workshop, information was distributed through a variety of forums to interested parties. The outreach included a solicitation for copies of existing relevant standards and protocols. As a result of this effort, 26 documents were collected. Of those, 11, which were the most current and relevant, were selected by the workshop Steering Committee to serve as primary source documents for the workshop. (See *References*, page 45.)

A draft of the "Best Practices" document was presented at the March 2001 International Oil Spill Conference in Tampa, Florida, at a special session entitled *Migratory Bird Countermeasures Coordination Project*. This was an open meeting and comments were solicited and discussed. The U.S. Fish and Wildlife Service accepted written comments on the draft document through July 31, 2001. During this time, the document also underwent internal USFWS review.

Intended Uses

This document, *Best Practices for Migratory Bird Care During Oil Spill Response*, is intended for use by the U.S. Fish and Wildlife Service and other natural resource management agencies, oiled bird rehabilitators, OSCs, and Potentially Responsible Parties (PRPs) as a guide in:

- Developing appropriate sections of Area Contingency Plans;

- Evaluating contractors for bird capture and rehabilitation;
- Making informed choices during spill responses; and
- Evaluating oiled bird rehabilitation activities to improve field practices.

The creators of this document set out to define and recommend the best practices for their field with the aim of promoting the welfare of migratory birds during an oil spill response. Actual bird responses will depend on factors including the size of the spill, species involved, type of product spilled, time of year, and location. It is generally recognized that there are significant differences between a spill affecting 10 birds and one involving 1,000 birds. It is important that spill responders and pre-spill planners recognize that the degree of effort and complexity in bird response can be significant when comparing small and large events. This document is intended to help pre-spill planners and spill responders make informed decisions keeping the best interests of the birds in mind.

In defining the best practices of a migratory bird response, each aspect of a response is discussed separately. Topics include safety, training, capture and handling, stabilization and rehabilitation, and release criteria. Much of what is discussed in this document describes factors that constitute highest and best migratory bird care and recommendations for achieving the highest standard of care.

This document is not intended for use as a training manual. It is to serve as guidance for acquiring the best achievable care for birds during an oil spill response. Neither is this document an exhaustive list of techniques in this field, in which practical knowledge is being continuously refined and developed. It is intended that this document will be periodically reviewed and updated. If techniques not included here are proposed during an oil spill response, the U.S. Fish and Wildlife Service will seek the most current and best information on which to base an educated decision on the appropriate course of action.

Criteria for Evaluating Rehabilitation Groups

The following criteria will be used when considering and evaluating bird rehabilitators for conducting oiled-bird response.

- Hold all necessary permits for bird-related response activities;
- Experience in the capture, treatment, and care of oiled birds;
- Experience conducting bird-related response activities within the Incident Command System structure;

- Sufficiently trained, equipped, and experienced staff, and ability to train and equip personnel and volunteers for bird-related response during an emergency response;
- Ability to quickly mobilize to perform bird capture, field evaluation, stabilization and transport, including remote locations if necessary;
- Access to appropriate facilities adequate for treating and housing oiled birds:
    - Ability to establish and operate bird intake, holding, and isolation areas within 12-24 hours of wildlife response activation; and
    - Ability to establish and operate bird cleaning and pre-release areas within 48 hours of wildlife response activation.
- Agreement with a licensed veterinarian, experienced in the treatment of oiled birds, to provide any necessary veterinary medical care; and
- Use of best practices as outlined in the remainder of this document.

Chapter

1

Responsibility & Organization

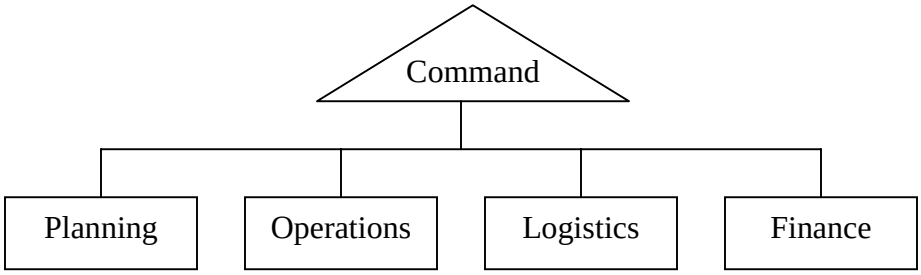
Trust Responsibilities

In the event of an oil spill, trust responsibilities for migratory birds and their habitats are clearly given to the U.S. Fish and Wildlife Service through several federal legislative statutes including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Water Act (CWA), National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the Migratory Bird Treaty Act (MBTA), and the Endangered Species Act (ESA). States also have trust responsibilities for migratory birds within their state boundaries under various state statutes. Because of these shared trust responsibilities, both federal and state agencies are required to respond to spills, or potential spills, that may impact migratory birds. To facilitate efficient and effective coordination during a migratory bird response, federal and state agencies may consider developing Memorandums of Agreement (MOA's) or Memorandums of Understanding (MOU's) that pre-designate regional primary points of contact, establish lead representatives, and define roles for natural resource emergency situations.

Organizational Structure of a Wildlife Response

The organizational structure of a migratory bird response should fit within the Incident Command System (ICS) or the overall spill response structure. Federal directives and some states mandate use of the ICS by their agencies as the emergency management system for oil and hazardous substance spill response. The ICS is a standardized on-scene emergency management system designed to adopt an integrated organizational structure equal to the complexity and demands of an incident without being hindered by jurisdictional boundaries. A simplified chart of the ICS response organizational structure follows:

Example: Response Organization



Command

The Command or Unified Command, which includes the State On-Scene Coordinator and Federal On-Scene Coordinator, is responsible for authorizing and coordinating all incident operations. While the Command may include other entities such as a Responsible Party On-Scene Coordinator, only Federal and State On-Scene Coordinators have authority over bird-related response decisions. The OSC will consult with the USFWS and state agencies when migratory birds may be impacted to determine appropriate response measures. For incidents that could significantly impact trust resources such as endangered species, the OSC may request that an agency representative become part of the Command.

Planning

When trust resources, such as migratory birds, may be affected by an oil spill, USFWS and state wildlife agency representatives will likely become involved in the response effort through the Planning Section. The representatives provide input on the protection of sensitive resources and how to minimize impacts to trust resources like migratory birds. Most bird-response planning occurs within the "Environmental Unit" of the Planning Section. The Planning Section identifies all bird-related response activities and describes those activities in the Incident Action Plan. Depending on the nature and extent of the spill, such activities may include wildlife reconnaissance, carcass recovery, hazing, wild-bird capture and transport, safety and communications, and rehabilitation and release. The Incident Command must approve all migratory bird response actions. The responsibilities of the Planning Section related to bird response include:

- Identifying sensitive areas, locating birds-at-risk, and recommending response priorities;
- Identifying the need for, and obtaining permits, consultations, and authorizations required by the provisions of the Endangered Species Act, MBTA, and other wildlife laws; and

- Developing a plan for bird protection and response strategies (e.g., removing oiled carcasses, pre-emptive capture, hazing, and capture and treatment).

Operations

A USFWS representative or state wildlife agency representative should also serve within the Operations Section, to provide oversight of the bird-related and other wildlife response activities. Bird-related response and other wildlife activities, including the operation of a wildlife rehabilitation center, are managed under the "Wildlife Branch" of the Operations Section. It is critical that all wildlife response activities be coordinated and communicated through the Planning Section, Situation Unit, which is responsible for maintaining the communication of critical incident information vital to establishing and maintaining an effective command and control environment. The responsibilities of the Operations Section related to bird response include:

- Minimizing migratory bird losses during spill response;
- Overseeing and coordinating all activities of private migratory bird care groups, including groups employed by the responsible party;
- Coordinating early aerial and ground reconnaissance of birds at the spill site, and reporting the results to the Situation Unit Leader;
- Collecting oiled carcasses,
- Employing bird hazing measures as authorized in the Incident Action Plan;
- Recovering and rehabilitating impacted birds;
- Collecting necessary samples; and
- Identifying and maintaining a central bird processing center for evidence tagging, transportation, veterinary services, treatment and rehabilitation, storage, and other support needs.

Logistics

The Logistics Section is responsible for providing facilities, services, and material in support of the incident response. Bird-related support needs are identified in the Incident Action Plan and acquired within Logistics.

Finance

The Finance Section is responsible for financial and cost analysis aspects of the spill response incident.

Chapter

2

Safety and Human Health

Worker health and safety are of primary importance in any bird rescue and rehabilitation effort. The earliest phases of a bird-related response during an oil spill are generally the most hazardous to human health and safety. Thus, safe practices during field collection of birds must be a priority. Bird rescue programs will not be initiated unless personnel can conduct activities safely.

As with all spill response activities, the bird rescue and rehabilitation effort needs to be coordinated and monitored by the spill response command center operations, safety, and medical staffs. A written site safety plan, in accordance with 29 CFR 1910.120(b)(4), must be developed for the rehabilitation facility and submitted to the Spill Safety Officer. If field activities are on-going for bird response, the site safety plan needs to be expanded to include these activities and any specialized equipment that will be used (e.g., net guns, cannon nets, propane cannons).

Summary of Safety Precautions

Bird rescue and rehabilitation workers can minimize the risks associated with physical and chemical hazards by following the precautions below:

- Observe all industrial hygiene safety precautions stated in the Health and Safety Plan.
- Know how to use the Material Safety Data Sheet (MSDS).
- Take all required training regarding the hazards of the work task, and in the proper use and limitations of personal protective equipment.
- Wear personal protective equipment approved for, and appropriate to, the oil spilled to minimize contact with contaminated materials and inhalation of vapors.
- Maintain an awareness of field conditions and hazards (terrain, climate, flora/fauna, etc.) to prevent slips, trips and falls.

- Keep all oil, cleaning compounds, and contaminated materials away from skin, face, and eyes.
- Always remove protective equipment and wash hands and face with soap and water or approved cleaners before eating, drinking, or smoking.
- Ensure that all oiled personal protective equipment, supplies, and waste material are placed in appropriate receptacles.
- Ensure that work areas are kept clean.
- Never conduct bird rescue work alone; always work in teams.
- Keep birds at or below one's waist level to protect the face and eyes from pokes, bites, and scratches.
- Report all injuries and illnesses to the supervisor and/or Command Center medical staff.
- Be alert for over-heating and hypothermia.
- Don't overwork. Eat regularly and well.
- Never eat, drink, or smoke in bird handling areas.
- If you have immunosuppressive conditions, or you are pregnant, do not have direct contact with birds and consult your physician prior to participating in other aspects of bird-related response activities.
- Update tetanus shots.

Training for Bird Rescue/Rehabilitation Personnel

In addition to mastering specific bird rescue and rehabilitation tasks, personnel must be trained to recognize and minimize risk of injuries from oil-related and physical hazards associated with bird response operations prior to being allowed to participate in on-site activities. Elements of required and recommended training will vary depending on the tasks of the individuals involved in the response. Training-hour requirements and specific courses vary with level of involvement, agency policy, and OSHA and state regulations.

Required Training

29 CFR 1910.120(e) establishes the training required for hazardous operations site workers, including supervisors. All oiled-bird rescue and rehabilitation personnel must be trained to the minimal levels required in 29 CFR 1910.120 (e)(3)(iii). In addition, there

must be adequate on-site supervision by persons who meet the training requirements of 29 CFR 1910.120(e)(4).

Recommended Training

In addition to the training required by federal regulations, further training is highly recommended (and mandated for USFWS spill response personnel) for safe and efficient operations during a spill response. This guidance is considered a minimum essential training for bird rehabilitators in accordance with the goal of establishing best practices.

As a minimum, any personnel conducting bird deterrence or bird hazing activities should attend an 8-hour bird-deterrent training workshop and, if using pyrotechnics or firearms, should also attend 8-hour firearm safety training and 4-hour range training. Bird-capture personnel, field stabilization personnel, and bird transport personnel should attend a 16-hour basic rehabilitation skills training. Bird washing personnel should attend a 4-hour bird washing skills training session.

Personnel operating a boat should be licensed or certified with 24-hour watercraft operator safety training. Anyone riding in a boat should only ride with a certified or licensed operator. Response personnel performing field functions (e.g. bird surveys) while riding in a small aircraft should complete 8-hour basic aviation safety training. As indicated above, any personnel handling firearms should attend 8-hour firearm safety training and 4-hour range training. All teams operating in the field should have at least one person in the party certified in First Aid and CPR. Response personnel participating in the Incident Command Center should be trained to a minimum level of ICS300.

Table 1 summarizes basic training requirements and recommendations as discussed in detail above for each operational group.

Table 1. Summary of training essential to implementing "best practices" when responding to oiled migratory birds.

Training / Personnel	HAZWOPER	ICS 100-300	Aircraft Safety	Boating Safety	Firearm Safety	First Aid/ CPR	Basic Rehabilitation Skills	Bird washing	Supervisory and Crisis Management
USFWS Response[1]	R	R	R	R	R	R	-	-	-
Rehab Management[2]	R	R	-	-	-	H	H	H	H
Initial Assessment[3]	R	-	H	H	-	H	-	-	-
Bird Deterrent	R	-	-	H	H	H	-	-	-
Field Workers[4]	R	-	-	H	-	H	H	-	-
Facility Workers[5]	R	-	-	-	-	-	H	H	-

R = Required training, if performing the activity
H = Highly recommended for establishing best practices, if performing the activity
[1] = Training requirements established by Director's memorandum March 9,1998
[2] = Supervisory personnel and personnel in-charge.
[3] = Personnel conducting resources-at-risk reconnaissance surveys
[4] = Bird capture teams, field stabilization units, transport personnel, etc.
[5] = Bird washers, cage cleaners, pen monitors, etc.

Personal Protective Equipment

Personal protective equipment (PPE) must be used in accordance with 29 CFR 1910.120 (g)(3) to protect wildlife response personnel from exposure to hazardous substances. To guard against injury from birds, all workers should wear approved personal protective equipment appropriate to their task.

Recommended PPE

- Full eye protection, i.e., goggles, safety glasses, or face shield (Birds will peck when under stress and should be considered dangerous as they will aim for eyes.);
- Oil resistant rain gear or oil protective clothing (coated Tyvek, Saranex, etc.);
- Gloves (neoprene or nitrile rubber) that are oil resistant, waterproof, and provide protection against pecking and sharp talons;
- Non-skid shoes/boots, which are oil resistant and waterproof;
- Ear protection (muff or ear plug type) when using pyrotechnic devices or operating machinery; and
- Personal flotation device when working on or near water.

Respiratory protection from organic vapor hazards may also be required for some operations. If respirators are used, respiration training and fit testing are required in accordance with 29 CFR 1910.134. (USFWS personnel are not allowed to operate in an environment requiring protective gear above Level D as established in 29 CFR 1910.120, Appendix B, Part A.). All workers must be trained, in accordance with 29 CFR 1910.132(f), on the proper use and limitations of all personal protective equipment prior to using the equipment.

In addition to hazards from oil, numerous physical hazards may be associated with bird rescue activities. To protect against bites and scratches, appropriate clothing and equipment should be worn underneath the oil protective equipment whenever necessary. Workers should be aware of temperature, weather, and other environmental conditions and use personal protective equipment to guard against dangerous waters, frostbite, hypothermia, heat-stress disorders, and infectious diseases.

There is a potential health risk to poultry, farm and domestic animals (including pets) from clothing or equipment that has been in contact with wild birds. Decontamination procedures must be established and workers are required to return used oil spill response equipment and supplies to their supervisor in accordance with 29 CFR 1910.120(k).

Personal Safety When Handling Birds

Human safety is the primary consideration in bird handling; the safety of the bird being handled is important but secondary. In accordance with 50 CFR 21.31, bird capture and handling may only be done by trained and permitted individuals. Handling and restraint techniques appropriate for specific species need to be applied. M.E. Fowler's book, *Handling and Restraint of Wild and Domestic Animals* (Fowler, 1995) serves as a preliminary guide to handling procedures.

Capturing oiled birds is often physically and emotionally stressful for bird-handlers. Dehydration, exhaustion, and poor nutrition can all affect a person's ability to assess and react to a dangerous situation. It is therefore important that workers stay well hydrated and eat nutritionally sound meals. Rest is equally important. A tired, stressed person, the presence of oil, and hazardous terrain are a dangerous combination. Workers should be aware of their own condition and also the conditions of those around them. The safety of all depends on the alertness of each individual.

All rescue/rehabilitation work crews should have a first aid kit on site for minor cuts and scrapes. If bitten, scratched or otherwise injured, report the injury to a supervisor and seek treatment. Each crew or team, should be assigned at least one person trained to provide emergency first aid, including CPR.

Other safety issues are covered in Chapter 4, *Capture, Handling, and Transport*, page 18.

Zoonoses

Wild birds may carry diseases that are transmissible to people. Diseases that are transmitted from animals to humans are called *zoonoses*. They may be viral, bacterial, fungal or parasitic in nature. They can be transmitted to humans by four primary routes:

- Inhalation of particles (spores, bacteria) in the air;
- Ingestion of feces (i.e., projectile feces, poor hygiene);
- Dermal contact; and
- Indirectly, via a vector (e.g. needle sticks, insect bites).

NOTE: Individuals who have immunosuppressive conditions are more susceptible to contracting zoonotic diseases.

To reduce risk of contracting zoonotic diseases, and in accordance with best practices, bird handlers should always:

- Wash hands thoroughly with soap and water after handling birds.

- Wash hands well before and after eating.
- Avoid smoking or eating near birds; do so in designated areas only.
- Clean and treat all cuts and scratches.
- Use appropriate PPE.
- For a list of zoonotic diseases, modes of transmission, and symptoms, see Appendix 2.

Hazardous Substances

Bird rescue and rehabilitation workers may be exposed to spilled oil, and must be so informed in accordance with 29 CFR 1910.1200(e). Prior to handling a contaminated bird, the Material Safety Data Sheet (MSDS), as established in 29 CRF 1910.1200(g), for the spilled material should be reviewed and all recommended precautions followed. In accordance with 29 CFR 1910.120(h), workers and the rehabilitation facility shall be periodically monitored, using calibrated instruments and devices to determine airborne concentrations of petroleum products (e.g., benzene). Appropriate PPE is required (see *Personal Protective Equipment*, page 11). Ventilation in all work areas should prevent the buildup of airborne contaminants. (See *Facilities*, page 36*)*

A portion of the rehabilitation facility should be designated for the storage of contaminated clothing, equipment and medical waste until the items can be decontaminated or disposed in accordance with 29 CFR 1910.120(k)(2-5).

Volunteers

Wildlife response programs regularly use volunteers, particularly at the rehabilitation facility. Wildlife response managers need to ensure that volunteers are appropriately trained, supervised, and informed of all hazards in accordance with 29 CFR1910.120(i). A comprehensive volunteer management program is an essential component of an efficient wildlife response. This management program needs to address, at a minimum, volunteer safety, training, supervision, scheduling, and liability.

Chapter

3

Deterrence

Following an oil spill, it may be necessary to initiate a deterrence program that disperses and excludes unoiled birds from contaminated areas to reduce bird mortality. If warranted, deterrence activities are initiated as soon as possible following an oil spill to prevent birds from establishing or continuing regular use patterns within a contaminated area. Any delays may decrease the effectiveness of the program in reducing the overall numbers of oiled birds. Deterrent devices used to disperse birds include both visual and auditory techniques, using both simple and sophisticated devices in order to respond to the unique habits of different bird species, surrounding environments, and the spill situations. Information necessary to help determine whether or not to begin a deterrence program includes, but is not limited to: spill location, species present, species type, time of year, availability of nearby uncontaminated habitat, and location of species in relation to the spill.

All deterrence activities require authorization from appropriate natural resource management agencies and oversight by the designated USFWS representative. Only those persons trained and certified in bird deterrence techniques will be allowed to conduct these activities. Deterrence activities must be authorized and coordinated within the Incident Command System. A communication line will need to be established between deterrence personnel and Air Operations to avoid potential bird/aircraft collisions.

Aerial and Ground Surveys

Reconnaissance surveys for resources-at-risk are conducted as soon as practical following the spill. The main objective of these surveys is to evaluate the number, species and locations of birds that could be impacted by the oil spill. All surveys will be authorized and coordinated through the ICS. The scope and frequency of subsequent surveys will be incident-specific. Written reconnaissance survey results and maps are submitted to the appropriate ICS subunit within the Planning Section. The location and number of birds will need to be plotted on maps or charts for use by the Situation Unit.

Experienced personnel are essential for effective surveillance. An observer should have the appropriate knowledge to properly identify species, record behavioral

characteristics, be familiar with local area ecology, and make other pertinent observations. Ideally, an aerial survey should be done by helicopter, but fixed wing aircraft can also be used.

Deterrence Program Considerations

Consider the following points before beginning any deterrence operations:

> **NOTE:** No attempt should be made to disperse oiled birds.

- Worker safety.
- Local habitats and species.
    - Some species, especially those found associated with a human environment are difficult to deter, especially if chosen deterrents mimic sounds or visual elements associated with that environment.
    - Consider the potential effects of human activity and disturbance on sensitive habitats and species.
    - Molting birds are not easily dispersed, and require a combination of different techniques.
- Availability of "clean" habitat within a reasonable distance.
    - Avoid dispersing birds into areas that might become contaminated; be aware of oil trajectory predictions.
    - Determine if "clean" habitat can be made more attractive (e.g., temporarily limiting access to people, boats or certain activities)
- Appropriate technique.
    - Deterrence will be most effective if the entire area of concern can be hazed as continuously as possible. As a general rule, do not start a deterrence operation that cannot be maintained for the required duration.
    - Automatically operated devices, which require checking only once a day or less, may be used when staffing is limited, during bad weather, or at night.
    - In general, expose the area to a variety of devices and techniques, with random variations to control habituation. Be prepared to back off as events dictate.

- Appropriate technique cont.
    - In general, most deterrence activities would probably not be effective for areas larger than seven to 10 miles in length or diameter.
    - Highly mobile devices (e.g. sound-emitting buoys) that can influence large radiuses are necessary for larger spills on water.
    - Some types of oil, like fuel, are highly flammable during the first hours following a spill, due to the presence of high concentrations of volatile oil fractions. Techniques with potential to induce sparks are to be avoided in these situations.
- Potential side effects.
    - The effects of sound-emitting devices on humans will influence whether or not some techniques will be acceptable to local residents.

Once the decision to deter or haze unoiled birds has been made, remember that each spill situation will be unique and preplanned deterrence activities must be viewed as tentative at best. The pros and cons of every deterrence operation are to be evaluated in view of site- and incident-specific details and after consultation with local experts. If pyrotechnics are used, permits may also be required from the local fire marshal.

See *Appendix 3,* for a discussion of the advantages and disadvantages of various deterrence methods.

Pre-emptive Capture

Pre-emptive capture includes the capture, handling, transportation, short-term holding and release of healthy, uncontaminated birds. According to 50 CFR 21.31(f)(1)(i), permitted rehabilitators are authorized to temporarily possess healthy, unaffected birds for the purpose of removing them from imminent danger. Pre-emptive capture of federally listed threatened or endangered species should not be conducted without prior consultation with, and approval by, the USFWS under Section 7 of the Endangered Species Act. No capture activities may be conducted in pinniped or seabird rookeries. Preemptive capture must be supervised by the USFWS and authorized by the Incident Commander

This secondary response option has limited application based on species-specific criteria. The primary concerns when conducting pre-emptive capture are human and

bird safety and minimizing transportation and holding times. Safety of the birds should be focused on stress reduction. Minimize stress by:

- Having the equipment necessary to handle and transport birds as quickly and efficiently as possible;
- Minimizing the number of vessels, aircraft, all-terrain vehicles, etc. to herd and capture birds in a given area;
- Avoiding unnecessary noise and disturbance during the capture effort;
- Never pursue the birds to the point of exhaustion; and
- Minimizing human contact with the birds except to provide veterinary care.

Pre-emptive capture techniques for birds may be the same as those used by bird banding operations such as mist nets and herding molting or flightless birds into corrals. All techniques should be considered in consultation with the U.S. Fish and Wildlife Service.

Chapter

4

Capture, Handling, & Transport

Capture

Human safety is a primary consideration before any retrieval effort is made. Hazardous weather conditions, unsafe footing, icy rivers, or dangerous seas may preclude a bird rescue attempt. In addition, captive birds are often aggressive and should be regarded as dangerous in any sort of confining situation. Only authorized and trained individuals are allowed to undertake the capture and treatment of oiled birds under the direction of a permitted rehabilitator. Teamwork is essential to minimize additional stress to the birds. To capture and handle oiled birds, rehabilitators must have appropriate licenses and permits in accordance with 50 CFR 21.31. Land-owner or manager permission may be necessary to access capture sites. All capture activities are developed within the Planning Section, coordinated within the ICS, and must be authorized by the Incident Command.

A bird capture program should be implemented as early as is safely possible in a spill response effort to increase the survival rate of birds. Captured birds are to receive medical evaluation and preliminary treatment as quickly as possible. The conditions under which oiled birds are captured can vary widely from one spill to another. A variety of capture methods and techniques are employed to maximize capture success. The effectiveness of rescue efforts will be influenced by factors such as time of year, type and amount of material spilled, species involved, local terrain, tides, and weather. Birds can be safely collected and transported in a variety of challenging conditions when rescue workers adhere to basic rules.

Capture Rules

- Ensure personnel are trained;
- Put safety first;
- Wear protective clothing.
- Work in teams; never work alone;

- Report any injuries;
- Do not allow the presence of domestic animals; and
- Do not pursue animals until they are exhausted.
- As a preliminary reference for developing a capture strategy, consult the summary of bird characteristics, natural history, and specific species concerns located in *Appendix 4*.

Capture Planning

In addition to trained personnel, well developed plans will ensure a safe and successful capture program.

Reconnaissance Plan

This plan describes the steps rescuers will take to survey birds in oiled offshore waters, near-shore waters, and along shorelines, as well as birds in areas that could be oiled. The reconnaissance plan also calls for surveys of nearby feeding, loafing and roosting areas to detect oiled birds that may have moved away from contaminated sites. Knowledge of the local area ecology is critical.

Capture Plan

Capture plans are site specific and address the following:

- Safety of personnel and birds from chemical and physical hazards;
- Personal protective equipment and clothing;
- Capture equipment and methods;
- Site access and egress;
- Bird approach and disturbance of unoiled birds;
- Adequate search coverage;
- On-site holding;
- Special site considerations (e.g. sensitive habitat, rookeries, cultural resources/historic properties); and
- Species prioritization for capture, as provided by USFWS.

Safety Plan

A safety briefing or plan must be approved by the ICS Safety Officer and available to all members of the capture team. The safety plan includes required personal protective equipment, communication instructions, and separate contingency plans for on-land and on-water capture activities, as appropriate. The plan will also discuss hazards of forecasted weather, terrain, and bird species.

Communications Plan

A communications plan for the capture program needs to be part of the site safety plan. The communications plan identifies the method of communication that will be used by the capture team, types of communications equipment (e.g. radios, cell phone), and how the capture program communications will be monitored.

Capture Equipment

An equipment maintenance and inventory schedule is an essential element of a successful bird capture program. Capture equipment and supplies need to be regularly maintained and restocked as necessary to ensure availability, cleanliness/ decontamination, and good working condition when an oil spill occurs. The equipment should be readily accessible and easily mobilized. Staging capture equipment in multiple locations can be helpful in reducing response time.

Capture Technique

An effective capture of oiled birds occurs swiftly with minimal pursuit and noise, uses correct techniques based on the species pursued and local conditions, and exposes the oiled bird to the least amount of stress. Knowing the pursued species' natural history and behavior allows for a more successful capture while decreasing the stress on the birds. Unless specifically authorized by the U.S. Fish and Wildlife Service, no normal, healthy, unoiled birds may be collected. No capture activities may be conducted in pinniped or seabird rookeries. All bird carcasses that are discovered during capture, need to be collected to prevent secondary oiling. Capture teams should receive guidance from the U.S. Fish and Wildlife Service regarding carcass collection protocols and how to record the location and condition of each carcass prior to collection. (See *Dead Oiled, Bird Handling* on page 25). In the case of raptors, only appropriately trained individuals should carry out their capture as these birds require special handling techniques.

The most common capture techniques use dip nets, net guns, and mist nets. Other techniques have been developed to target specific species groups (e.g. the use of foot traps for small shorebirds). The use of spotlights at night is sometimes employed for birds that are especially skittish and difficult to approach during the day.

A capture team consists of two or more people wearing appropriate protective clothing. Capture equipment most likely to be needed should be carried at all times. The teams evaluate each capture site and develop strategies to suit the terrain and species being pursued. Prior to entering the search area, the team identifies a plan of action, keeping in mind that alternative plans and equipment need to be available should the primary plan fail.

Capture by Boat

The first priority in the collection of oiled birds is to deal with birds already beached. Approaching and capturing birds from a boat is considered a secondary strategy. Oiled birds are under stress and should be allowed to come ashore at their own pace. Chasing an oiled bird will use up more of the bird's energy reserves and subject it to further stress. When pursuing birds by boat, it is important to know the birds' diving habits for best capture results. If capture is not accomplished after repeated attempts (3-4) on water, a judgment is made to either back away and hope the bird will beach itself or continue pursuit, which may result in the bird drowning. All personnel working near water must wear personal flotation devices.

Bird Handling

All bird handling should be done in a manner that minimizes stress to the bird and ensures that the bird does not injure itself or the handler. Birds have different weapons and strategies for defense so it is important that oiled birds be handled correctly. The chasing, capturing, and confinement of oiled birds will also increase their susceptibility to secondary and stress-related problems. Use of proper techniques will minimize stress and maximize efficiency. Only authorized, permitted and trained individuals may handle oiled birds.

The Material Safety Data Sheet (MSDS) for the spilled oil should be reviewed prior to handling a contaminated bird. Birds are to be carefully handled through light coverings that minimize damage to the bird's feathers and human exposure to oil. Coverings include sheets, towels and gloves. No oiled birds should be handled with bare hands. Although gloves and coverings are selected to eliminate skin contact with oil and to afford protection from pecks, bites and scratches, heavy or bulky gloves are rarely used and not recommended because they reduce human dexterity and can result in injury to the bird.

Appropriate Bird Handling

- Wear the appropriate personal protective gear, including gloves and eyewear;
- Use a towel, sheet, or light covering to place over the birds;

- Handle clean birds with clean gloves and equipment;
- Be alert for occasional and unexpected sharp foreign objects in birds, such as fish hooks;
- Approach a bird from behind or the side;
- Get control of a bird's head by grasping the beak where it joins the head, by controlling the neck at the base of the skull, or by cupping the skull with a gloved hand if towels and blankets are unavailable;
- Fold the wings into its body and pick it up while controlling the head;
- Hold birds at waist level and away from the face and other people to avoid injury from pecking and biting; and
- Work in teams and request assistance if needed.

NOTE: It is inappropriate to mechanically restrict the bird (e.g., tape, rubber band) from opening its beak/bill.

Appropriate handling techniques are based on the size and species of the bird. For example, small birds, such as shorebirds, are cupped in the hand and placed in small non-plastic, non-abrasive bags (e.g. pillowcase or small cloth bag). The basic technique for medium-sized oiled birds, such as a duck or murre is the two-handed body hold, making sure to not restrict the bird's breathing. Large oiled birds, such as geese, are usually controlled using the buddy system to ensure a proper hold on the bird. References such as *Handling and Restraint of Wild and Domestic Animals* (Fowler, 1995) provide more complete descriptions of bird handling techniques. Aggressive birds will require additional restraint of the head and/or feet and should only be handled by field personnel experienced in such techniques.

NOTE: The handling of raptors should be left to appropriately qualified and experienced personnel.

A summary of bird characteristics, natural history, and species-specific concerns is located in *Appendix 4*.

Containers

Captured birds are immediately placed into containers that provide safety for both the bird and the handlers. These include well-ventilated, solid-sided carriers such as modified cardboard boxes, plastic carriers, or shipping kennels. Containers are constructed to meet the hazards and conditions of transportation. Occasionally, qualified, experienced personnel may elect to use pillowcases as temporary field transport containers for small birds due to difficult terrain/access or weather conditions. All containers must close properly to prevent escape during transport.

Bird container requirements

- Secure lids/tops for closing;
- Sufficient space inside for comfort;
- Paper or cloth towels on the bottom of the container to absorb oil;
- Adequate ventilation on all sides; and
- Labeling to include: date, time, location of capture, species (if known), specific injury, and name of person capturing bird.

Each container should contain only one bird unless determined otherwise by qualified, experienced personnel. If necessary, some gentle, gregarious birds of compatible species (see list below) may be placed two or three to an appropriately sized container.

Compatible Species

Guillemots
Auklets
Murres
Ducks (except Scoters)
Mergansers
Geese
Terns
Sandpipers
Eared Grebes
Horned Grebes

Compatible species placed in the same container should be strong, stable, and equally affected by the oil. Containers are to be checked 5-10 minutes after placing birds together to ensure compatibility.

Steps for Containered Birds

- Pay attention. Do not leave containers with birds unattended;
- Place containers in a safe and quiet location (e.g. away from noise and activity, above high tide-line);
- Minimize temperature extremes (e.g. hot sun);
- Space containers adequately to ensure sufficient ventilation; and
- Keep containers away from oil vapors.

When taking birds to a central collection site or rehabilitation facility, do not leave the birds unattended. Containers are to be handed over to a site worker. Convey to the site worker in writing and orally, information about the bird's condition, the location the bird was found, etc.

Field Stabilization

All of the chemical hazards to humans also apply to affected birds. Attempts by oiled birds to clean their feathers through preening can result in oil ingestion and irritation of sensitive membranes of the eyes, mouth, lungs, and digestive tract. In addition, once feathers become matted, weatherproofing and insulating properties are lost, leading to either rapid chilling or overheating. Other problems may occur when food sources become contaminated, or when birds cannot fly or swim well enough to feed adequately. Despite being on water, oiled birds frequently experience dehydration and electrolyte abnormalities.

Oil contaminated birds that are captured or collected by appropriately trained field teams may require stabilization in the field before being transported to an off-site rehabilitation facility. (See *Training for Bird Rescue/Rehabilitation Personnel*, page 8). Field stabilization is provided to oiled birds that are likely to remain in the field longer than 2-3 hours. Field stabilization is a "first-aid" method, rendered only by trained personnel, for administering temporary care and initial treatment to quickly mitigate the effects of oiling on birds soon after capture. This field treatment will increase the oiled bird's chances for successful cleaning, rehabilitation and eventual release. Field stabilization does **not** include washing or taking blood samples, which can stress the bird and is difficult to accomplish effectively in the field.

Steps For Field Stabilization

- Clear mouth, nostrils and eyes. Heavily oiled birds may have debris and oil built up in their mouths and nostrils, which may impair their breathing. These foreign materials are removed prior to any additional treatment being rendered.

- Regulate temperature. Oiled birds lose their ability to thermoregulate. When possible, the bird's temperature is taken and the bird is warmed or cooled as appropriate. Once a bird's body temperature is normal, the bird is closely monitored for visual signs of chill or overheating.

- Treat for dehydration. Oiled birds are almost always significantly dehydrated and need to be gavage-fed fluids on a regular schedule, beginning at stabilization and as long as presenting conditions do not contra-indicate the administration of oral fluids. Pedialyte®, or a similar electrolyte solution, is recommended for treating dehydration. If the bird will remain in the field for a significantly long period prior to stabilization at a facility, a stomach-coating product (e.g., Toxiban®) may be used to help reduce the long-term effects of ingested oil.

- Minimize stress. Place birds in a safe, quiet, warm, ventilated area away from drafts, human disturbance, and other noises.

- Record field treatments. Transmit treatment records for individual birds, or for groups of birds (when treating large numbers of birds) with the bird(s) when they are checked in at the rehabilitation center.

Dead, Oiled Bird Handling

During an oil spill response, all carcasses need to be collected to prevent secondary oiling. Oiled bird carcasses will be collected in accordance with spill incident-specific instructions and chain-of-custody protocols provided by the U.S. Fish and Wildlife Service. (See *Records*, page 43). The designated, local USFWS representative will coordinate the collection, storage, and handling of any dead migratory birds with the Service's Division of Law Enforcement. When collected, each bird carcass is placed in an individual plastic bag. Where cause-of-death analysis is important, each bird must first be wrapped in clean foil to keep the carcass from contacting the plastic bag, which could contaminate the hydrocarbon sample. Each carcass is labeled with the date, time, location, species (if known), and collector's name; taken to a designated morgue location; and placed in a refrigerated unit.

Bird Transport

Captured birds are moved to an appropriate stabilization or treatment center at the earliest opportunity. Only appropriately trained personnel may transport birds (see *Training for Bird Rescue/Rehabilitation Personnel*, page 8). It is preferable to transport birds in an enclosed vehicle. Adequate space (at least 1-1/2") is left between containers during transport to allow sufficient airflow through side vents (top vents are not, by themselves, adequate). Remember, freshly oiled birds typically emit hydrocarbon vapors; therefore, always maintain adequate ventilation in the vehicle to protect both humans and birds from inhaling such vapors. Only one bird per transport container is acceptable except in the case of non-aggressive, compatible species (e.g. murres), which may be transported two or three birds (same species) to an appropriately sized container (see *Containers*, page 22).

Containers are secured to prevent load shifting that could cause the containers to slide together and impede air circulation. Birds are placed in secured containers before being transported to protect them from injury or escape during the transport process. If birds must be transported in an open vehicle or skiff, it is important that all containers are securely tied with rope or straps prior to transport. Make sure to compensate for cold outside temperatures and wind chill when moving birds in an open vehicle.

Temperature control and monitoring are critical during transport. Wet birds may require a temperature close to 80°F to be comfortable during transport, while dry, oiled birds will require a cooler environment. Note that birds may overheat inside an air-conditioned vehicle when containers are exposed to direct sunlight. Keep in mind that

human comfort during transport may not be synonymous with the temperature and ventilation needs of the transported birds.

Birds are monitored periodically on transports longer than one hour, as directed by the response veterinarian. For trips that take longer than four hours, birds should be hydrated periodically during the transport. Critical cases require more frequent monitoring. The person transporting birds must maintain contact between the field and the rehabilitation facility so that departure and arrival times may be anticipated at these locations.

Summary of Transport Practices

- Allow 1-1/2" between containers for ventilation;
- Only 1 bird per container unless they are non-aggressive compatible species;
- Maintain inside vehicle air temperature between 68-70°F or higher if birds are cold; and
- Monitor birds hourly; more frequently if unstable.

NOTE: No domestic animals are allowed in transport vehicles.

Chapter

5

Stabilization and Rehabilitation

In accordance with 50 CFR 21.31, the U.S. Fish and Wildlife Service issues permits for migratory bird rehabilitation. A rehabilitation permit is required for the capture, care, and treatment of oiled migratory birds. Only those individuals trained and experienced in oil spill response bird stabilization and rehabilitation techniques may care for oiled birds (see *Training for Bird Rescue/Rehabilitation Personnel*, page 8). During an oil spill response, the Incident Command must authorize all bird rehabilitation activities. These activities are developed within the Environmental Unit of the Planning Section of the ICS and implemented within the Wildlife Branch of the Operations Section.

The goal in rehabilitating birds during an oil spill response is the release of a healthy bird back into its natural environment. The stabilization procedures described in this section (similar to those described under "Field Stabilization" in the previous chapter) represent the first medical treatment that an oiled bird receives soon after capture. Only trained and experienced personnel may administer this type of care. Stabilization procedures are performed at a designated stabilization site or at the primary rehabilitation center.

General Guidelines for Stabilization

- Stabilize within 2 to 4 hours of capture.

- Minimize stress. Handle the birds as little as possible. Prepare treatments ahead of time. Keep noise to a minimum. Speak in a low voice. Provide visual barriers or "hides" so that the birds do not have to constantly see humans or other birds.

- Provide appropriate temperature control and ventilation. This is especially important since oiled birds typically have difficulty regulating their body temperature and are susceptible to secondary diseases that can be caused by poor ventilation.

- Evaluate all cases and consider euthanasia of high-risk birds. Unnecessary suffering can be alleviated and limited resources dedicated to those birds having a better chance of survival. (See *Euthanasia* , page 30).

- Prevent health risks to humans and to other birds. Wear protective eyewear, protective clothing, and masks (if appropriate) when handling oiled birds. Isolate birds with signs of infectious disease. Understand the physical dangers associated with the handling of each species. Secure treatment for injured humans, clean all cuts thoroughly with an antiseptic, and obtain medical attention for major wounds.

- Keep complete and accurate records. This helps to ensure that each bird receives appropriate medical care. A sequentially numbered, plastic leg band or equivalent ID tag, should be applied to identify each bird while in care. (See *Records*, page 43).

Federal regulations require a written agreement with a licensed, **veterinarian-of-record** who will provide medical supervision and oversight during a bird-related response (50 CFR 21.31(d)(1)(iii). The veterinarian is responsible for all medical aspects of the capture and treatment program, but does not necessarily have to be physically present during all bird treatment and care actions.

Veterinarian-of-Record Responsibilities

- Joint decision-making with rehabilitation personnel;

- Use of controlled substances (e.g. sedatives, euthanasia);

- Necropsy supervision;

- Triage and pre-release evaluation; and

- Quality of medical records.

Evaluation and Admission

The evaluation and admission process involves collection of biomedical data on individual birds, to establish the medical and rehabilitation courses of action necessary to care for that bird. **All** personnel performing bird evaluation and admission must wear appropriate personal protective equipment to protect them from exposure to oil and potential injury from birds. Additionally, steps should be taken to minimize stress to birds during this process, including speaking in a low voice, and rapid completion of the examination to reduce bird handling time.

When prioritizing multiple birds of the same species, treatment prioritization is based on the nature and extent of oiling, physical examination, and blood parameters. Medical attention should be given to those with the greatest probability of survival.

Four criteria that can be used to establish prognosis are (1) packed cell volume (PCV)/total solids (TS) determinations, (2) body weight relative to norm for species, (3) body temperature, and (4) physical exam results. Birds that do not meet criteria set for these results may be quickly, and humanely euthanized in order to alleviate suffering and to allow more treatable birds a greater opportunity of rehabilitation success.

However, when multiple species are presented for triage, prioritization by species may also be necessary. For example, an endangered species or a species of special concern may be given priority over resident waterfowl or an exotic species with the same or more critical condition. The incident-specific wildlife recovery and rehabilitation plan addresses species prioritization, as an integrated parameter of triage. The designated U.S. Fish and Wildlife Service representative establishes the species prioritization in close consultation with the veterinarian-of-record.

General Steps for Evaluation and Admission

- Start an individual record for each bird.
- Review and record bird data provided by field team: capture location, date, time, chain-of-custody information.
- Place a temporary identification band or tag on each bird.
- Record general bird information: ID number, species, age class, sex (if possible).
- Record overall impression of bird's clinical status (e.g. depressed, hyperactive, alert, etc.).
- Record degree of oiling: area(s) of body and degree (light, etc.).
- Perform physical examination: record temperature, weight, presence of overt injuries/disease states, oil-related effects, etc.
- Perform stabilization treatment: manually remove excess oil from nares, mouth and vent; flush eyes with a sterile saline or equivalent solution; and administer Pepto-Bismol® or Toxiban® or their equivalents in conjunction with hydration using a balanced electrolyte solution.
- Collect samples: take a blood sample to determine packed cell volume (PCV), total solids (TS) and blood glucose (BG); an oiled feather sample; a photograph of the bird (for evidentiary purposes); and other specialized samples for additional biomedical diagnostics, as indicated.

Additional medical therapies that may be warranted

- Parenteral (e.g., not oral) fluid administration.
- Prophylactic use of antifungals (e.g., itraconazole).
- Start of treatment/isolation for overt clinical disease or injuries.
- Start of treatment addressing hematological abnormalities.
- Treatment of vomiting and/or seizures.
- Initiation of additional diagnostics when indicated (e.g. blood panels/CBC's, radiographs, or cultures).

Inappropriate Treatments During Admission

- Prophylactic use of antibiotics, eye ointments, or antiparasitics in the absence of clinical signs.
- Oral administration of mineral oil.
- Washing bird immediately after initial evaluation and admission.

Euthanasia

During an oil spill response, there are circumstances under which it may be necessary to humanely euthanize birds. For each spill where bird rehabilitation is undertaken, the bird rehabilitator will prepare a written euthanasia plan in consultation with the veterinarian-of-record and the designated U.S. Fish and Wildlife Service representative. The euthanasia plan will take into account species, spill, and regional characteristics.

Euthanasia is appropriate for any oiled bird with injuries that will render it unable to survive in the wild or unsuitable for use in captivity (50 CFR 21.31(e)(4)(iii)). Such injuries include fractured limbs (particularly those affecting a joint), injuries to the beak, extensive soft tissue injuries, and significant visual or auditory deficits. If birds are euthanized in the field, they will be collected following the procedures outlined in this document in Chapter 4. To prevent secondary contamination or poisoning, euthanized carcasses are never left in the field.

See *Appendix 5*.

Necropsy

Valuable information can be collected from necropsies of dead birds. This information can be used both to refine treatment protocols for live birds during the spill event as

well as to collect data on the successes and limitations of the rehabilitation process. The spill response veterinarian-of-record should conduct or supervise all necropsies, in consultation with the designated representative of the U.S. Fish and Wildlife Service. Prior to conducting a necropsy, the USFWS representative and veterinarian will agree on which forms to use; which samples to collect (e.g., tissues, feathers); how those samples will be prepared (e.g., formalin or frozen), stored, and shipped; and where samples will be analyzed. Reports are filed and all samples handled and stored using appropriate chain-of-custody protocols, provided by the USFWS.

Cleaning

The structure of a bird's feathers provides insulation and waterproofing. When a bird is oiled, waterproofing and insulation are lost, which may lead to hypothermia. Internal effects of oil may include damage to the lungs, gastrointestinal-hematological system, liver, or kidneys. This damage is caused by inhalation of volatile components, ingestion during preening, drinking or eating, and dehydration.

Based on these injuries, birds must be medically stabilized before cleaning. The cleaning process can be stressful to birds and care should be taken at every step to reduce that stress. Birds are monitored for signs of stress or instability during the wash, rinse, and drying processes. Handlers must always work in teams when handling birds during the cleaning process.

Bird Health Criteria for Cleaning

- Bright/Alert/Responsive (BAR); judged stable.
- Packed cell volume (PCV) and total solids (TS) within 90% of normal values.
- Exceptions as determined by veterinarian on a case-by-case basis.

Wash Water Criteria

- Pressurized and adjustable system delivery at 40-60 psi.
- Temperature 102 to 108°F depending on species, type of oil, and condition of the bird.
- Hardness 2-5 grains per gallon (some variation in species requirements).
- Large volumes of water (with these characteristics) available.

Cleaning-agent Criteria

- Able to remove oil from feathers without damaging feather structure or irritating skin and mucosal surfaces.
- Non-toxic.

- Leaves no residue.

NOTE: The only bird-cleaning agent that is recommended at this time is Dawn® dishwashing liquid (regular, not anti-bacterial formula) because it removes oil from feathers; is non-toxic; and does not leave a residue. Other methods or products are not recommended for use or testing during an oil spill at this time.

NOTE: Pretreatment agents are used only when absolutely necessary because they are an additional substance that must be removed. Methyloleate or warmed Canola oil are appropriate agents for pre-treatment of tarry feathers.

Drying

The most effective means of drying most bird species is to maintain an ambient air temperature between 90 to 95°F using a pet dryer. Other heat sources, such as heat lamps or brooders, may be more appropriate for some species including most shorebirds. Birds are continually monitored during the drying process to ensure that they do not become overheated. Using net-bottom pens for most water birds will reduce the chances of overheating and allow for better circulation of warm air to ventral (belly) feathers. Some species (e.g. eagles, pelicans), however, require the use of pens with solid floors.

Waterproofing (water birds)

After water birds (e.g. ducks, murres) are washed and determined to be dry or waterproofed, they are given access to freshwater pools for swimming. Birds are checked regularly to monitor for chilling and incomplete waterproofing. A seabird is considered "waterproofed" if it exhibits normal behavior, body temperature, and buoyancy after 24 hours in a pool with no haul-out. Some reasons for a lack of proper waterproofing may include incomplete removal of oil, incomplete or non-optimal rinsing, underlying injury or disease, poor pool-water quality, and feather loss or damage.

Waterproofing (terrestrial and wading birds)

After a terrestrial or wading bird is washed and determined to be dry or waterproofed, it is given access to fresh water for drinking and bathing. Additionally, misting the bird will encourage preening and test for waterproofing. Terrestrial birds should display waterproofing appropriate for their species.

Husbandry

Husbandry encompasses the housing, hygiene and nutritional aspects of maintaining wild birds in captivity. The goal in rehabilitating oiled birds is the release of healthy birds back into their natural environment. In order to achieve this goal, it is necessary

to treat the presenting problem — injury from oiling — as well as to prevent any secondary infections or injuries that may occur while keeping birds in captivity. The key to quality husbandry during an oil spill response is an emphasis on herd-health management.

Housing

Injuries or illnesses from improper captive housing can be a serious problem in the rehabilitation of oiled birds. Appropriate housing can reduce or prevent problems such as pressure sores, feather contamination, foot lesions, and infectious disease transmission. The following are best practices guidelines for good housing design and maintenance to maximize the chances of survival and release of healthy birds:

- Construct pens according to the needs of the species affected.
- Allow appropriate space based on species need.
- Provide padding as necessary.
- Avoid cages with wire walls or floors as these can cause feather damage, beak trauma, and foot lesions.
- Avoid solid floors for species susceptible to keel sores or fecal contamination of feathers.
- Provide perches as required.
- Provide for an adequate thermal gradient (combination of ambient air temperature and radiant heat source) appropriate for birds to maintain normal body temperature.
- Avoid placing washed (clean) birds in housing that previously held oiled (contaminated) birds to minimize the risk of re-oiling clean birds.
- Maintain high water quality through water exchange or overflow to eliminate waterproofing problems by re-contaminating feathers.
- Provide haul-outs as required, taking into account waterproofing and pre-release condition.

Disinfecting

Prevention of disease transmission relies heavily on effective disinfecting and sterilization of all inert objects used in treating the birds. In addition, consistency in technique and frequency of cleaning procedures will help ensure that optimum cleanliness is maintained throughout the response effort. Personnel should be trained in standard cleaning procedures so that these procedures will become routine.

Some Important Disinfecting Guidelines

- Know which pathogens are likely to occur; match disinfectant agents and procedures for best results.
- Clean and disinfect transport cages, holding pens, and restraint equipment after each use. Outdoor steam-cleaning is the preferred cleaning method.
- Change the papers under net-bottom pens at least twice a day.
- Complete water turnover, at least every 4 hours, to provide the most effective water filtration or overflow in pools.

Nutrition

Birds are fed sufficient food to increase body weight. Sufficiency is determined by the nutritional value of the food, based on a metabolic formula as well as the underlying body condition and health status of the bird.

Nutritional and Food-Handling Guidelines

- Food Types and Delivery: In most cases, gavage-feed birds a high-caloric and digestible food slurry prior to washing. For cleaned birds, provide solid food, appropriate for the species, in dishes or containers in a manner that prevents re-soiling of feathers. Feed birds, within pools, non-oily food in a manner that mimics feeding in their natural environment. Allow all birds, within an enclosure or pool, an opportunity to feed. Keep feeding records for each bird, or pen of birds in the case of large numbers of birds.
- Cleanliness: Wash hands prior to, and after, handling food. Thoroughly clean and disinfect all food preparation utensils and containers after each use.
- Storage: Properly store all food in freezers, refrigerators, airtight containers, etc. to prevent contamination and spoiling. Store bird and human food separately. Monitor temperatures of refrigerators, freezers, thawing tubs and food handing areas to ensure food quality.

Ongoing Health Assessment

After washing, bird assessment must continue to determine whether additional medical and rehabilitation intervention is necessary prior to a release assessment. These procedures, while not as intensively instituted as during intake, follow the same basic areas: assessment of hematological values (PCV, TS), assessment of nutritional state (through successive weighing and assessment of flesh tone), and behavioral observations in pools or pens (to ensure appropriate feeding activities, social interactions, waterproofing, and other behaviors). All birds are handled either with washed hands or powder-free gloves (to maintain waterproofing status), and only non-contaminated exam equipment and areas are used for these assessments. Additional

pre-release rehabilitative care may be necessary for some individuals and, if birds need to be kept in a hospital situation for a period of time, rewashing may be necessary.

Chapter

6

Facility Requirements

The size and extent of a rehabilitation facility will vary depending on location and need. Not all spill responses will require the use of, or will be in the vicinity of a permanent bird rehabilitation facility. The size of the spill, its location, and the number of birds oiled will determine the type and location of a facility that can meet the required need. There are basically, three types of oiled bird rehabilitation facilities: fixed, permanent facility; temporary facility established in local, fixed structures; and mobile units brought to a spill location to set up a temporary facility.

The facility requirements in 50 CFR 21.31 establish minimal standards of care. It is critical that spill responders and pre-spill planners recognize the degree of effort and complexity required to implement a migratory bird response and establish an adequate facility. Pre-spill planning is encouraged to achieve wildlife response systems that will adequately address the needs of small as well as large bird-rescue efforts. For best achievable care standards, response entities who are planning or authorizing oiled-bird rehabilitation facilities are encouraged to consult: (1) entities who have constructed permanent facilities, operated temporary facilities, or who have conducted facility planning (e.g., OWCN/IBRRC, Washington State, Tri-State Bird Rescue and Research, Inc.); and (2) documents such as the States/British Columbia Oil Spill Task Force wildlife facilities report.

Regardless of the type of facility used for bird rehabilitation during a spill response, the following facility requirement guidelines apply:

Facility Setup

- Establish and operate intake, holding, and isolation areas within 24 hours of wildlife response activation.

- Establish and operate bird cleaning and pre-release areas within 48 hours of wildlife response activation.

Facility Layout (traffic flow)

- Separate contaminated and uncontaminated areas with a de-contamination area, to eliminate cross-contamination from oil and disease.

- Ensure that facility layout minimizes audio and visual stimulus (e.g., human traffic and noise) to reduce stress to birds.

- Ensure that layout facilitates the natural "flow" of birds through the admission, rehabilitation, and release process.

Established Bird Areas (within a Facility)

- Intake
- Holding
- Wash/rinse
- Drying
- Pools/Outdoor caging
- Food preparation
- Hospital/isolation
- Morgue/necropsy
- Storage

In certain situations and depending on the spill characteristics, areas may have multiple designations, i.e., intake may need to occur in the holding area, but such designations will still follow the above indicated "traffic flow" requirements.

NOTE: A general guideline for estimating sufficient space for the bird holding area within a facility, including walking and aisle space, is to allow for 6 square feet per average-sized (1 kg) bird. More space may be needed for larger birds.

Facility Temperature

- Maintain air temperature between 65-85°F, adjustable within 2°F increments, in all pre-wash and wash areas, including bird intake, holding, and hospital.

- Maintain ability to warm or cool individual bird enclosures as needed.

- Maintain temperature in all remaining areas to meet human comfort needs.

Air/Ventilation

- Provide fresh air exchanges via air/ventilation system that ensures healthful air quality (as indicated by low odor levels, prevention of mold/mildew

growth, and minimal dust particles). Use of HEPA filters is highly recommended.

- Optimal: In bird areas, a minimum of 10 to 15 air exchanges per hour, to minimize disease risk.

- Optimal: In human areas, a minimum of 8 air exchanges per hour.

Electricity

- Maintain a reliable electrical supply sufficient for all electrical needs including heating, lighting, ventilation, air conditioning, water heaters, pet dryers, heat lamps, blenders, freezers, refrigerators, pool filters, computers, and faxes.

- Provide Ground Fault Interrupt circuits in all areas where circuits may be exposed to water.

Water Supply

- Temperature: Provide washing and rinsing water temperatures of 102 to 108°F, while maintaining additional hot water supply sufficient for other uses (e.g., laundry, cleaning, food preparation, warm-water pools).

- Pressure: Provide water pressure at 40-60 psi in wash and rinse area, while maintaining sufficient water pressure in other areas (e.g., doing laundry, washing dishes).

- Quantity: Provide supply line(s) large enough for all areas requiring water simultaneously (e.g., wash/rinse area, pool area, laundry.) The quantity should be sufficient to provide a continuous flow of 4 gallons/minute to all indoor outlets and additional supply for pools.

- Quality: Maintain a water hardness of 2-5 grains per gallon for all bird wash and rinse stations and waterproofing pools. Provide a source of potable water for human use.

Waste Water

- Facilitate disposal of all oily wastewater in accordance with appropriate Federal, State, and municipal regulations.

- Facilitate disposal of all gray water (e.g., rinse water, pool overflow) in accordance with appropriate Federal, State, and municipal regulations.

- Control storm water and other runoff, as appropriate, to prevent contact with gray water and oily wastewater.

Solid Waste

- Facilitate disposal of all solid waste in accordance with appropriate Federal, State, and/or local hazardous waste, municipal solid waste, and/or biological waste laws and regulations.

- Ensure that disposal of carcasses proceeds under the direction of the designated U.S. Fish and Wildlife Service representative.

Outdoor Areas

- Maintain a perimeter of restricted access from the public to outdoor areas.

- Provide outdoor space typically as large as the footprint of the facility itself (buildings or structures); may be larger depending on the species.

- Provide sufficient pool size as dictated by release criteria and by species (e.g., to demonstrate that grebes can fly, flight space is provided within the outdoor enclosure).

- Locate facility in a place that minimizes visual and auditory stress to birds.

- Provide vehicle access and parking.

Non-Bird Areas

- De-contamination area.

- Administration area (e.g., sign in, volunteer orientation, training, record keeping).

- Rest areas and rest rooms for workers.

- Sufficient space for human food storage, preparation, and dining.

Security

- Provide controlled access to the facility and any associated outdoor areas (e.g., pools, bird enclosures).

Pest Control

- Develop and maintain a pest control plan for rodents and insects.

- Develop and maintain a plan for predator exclusion.

Communications

- Ensure adequate access to phones, faxes, and computers with internet access for all rehabilitation personnel.

- Maintain communication, via radio or cell phone, with all field capture teams and field stabilization units.

Visitor Control

- Coordinate and facilitate all visits by news media through the Joint Information Center within the ICS.
- Limit visitor frequency to no more than 2 per day.
- Limit number of persons per visit to minimize stress to birds.

Chapter

7

Release

Release Criteria

The goal in rehabilitating oiled birds is to release healthy birds back into their natural environment. During a spill event, it is highly recommended that the bird rehabilitator prepare a release plan for the release of rehabilitated birds in consultation with the designated USFWS representative. The plan is submitted to the Planning Section within the ICS and authorized by the Incident Command. There are certain criteria that must be met prior to releasing birds. For those birds that do not meet release criteria, several options are available following consultation with the USFWS. These include additional rehabilitation, euthanasia, or placement in a long-term facility.

Bird Release Criteria

- Normal behavior (including natural feeding, swimming, & diving);
- Body weight within 10% of normal for that species;
- Waterproofed;
- Normal blood values;
- Normal physical exam;
- Free of apparent disease;
- Acclimated to outdoor temperature and light;
- Pelagic species who have been maintained on fresh water for over 14 days should be re-acclimated to salt water prior to release; and
- Free of all temporary leg bands and other ID tags and fitted with a permanent USFWS metal leg band.

Release Site Criteria

- No oil contamination present;

- No risk of re-contamination;
- Same general geographic area of capture, if possible;
- Appropriate seasonal range for species (important consideration during migration periods);
- Available, natural, uncontaminated food sources;
- Minimal human disturbance (e.g., boats, noise);
- Favorable weather conditions/forecast;
- Appropriate time of day for species; and
- Minimal logistics for traveling to site.

Post-Release Monitoring

To determine the long-term effectiveness of rehabilitation of oiled birds, post-release monitoring is a necessary component of the rehabilitation effort. Follow-up on released birds can improve the processes and criteria associated with emergency bird care. Monitoring also enhances biologists' understanding of the role that exposure to oil has on both medical and behavioral aspects to bird ecology, such as short-term and long-term survival and breeding status. A post-release monitoring plan should be part of the USFWS-approved release plan.

Several different methods are currently used for post-release monitoring of birds after rehabilitation. The most commonly used technique is to acquire federal band return data, collected by hunters, beach walk programs, or others, to determine mortality levels in released birds. Although this method is relatively simple to undertake, it is difficult to determine survival with any confidence due to low band return rates. A method that facilitates collection of more behavioral information is color banding and visual observation of released animals. This method requires large amounts of observation effort and is limited to birds that remain close to land and do not migrate. The most effective means to acquire information on released oil rehabilitated birds is through the use of radiotelemetry. This method involves placing a transmitter onto birds prior to release and monitoring the activated signal by radio or satellite. In this way, biologists may follow birds for months to years after release.

Chapter

8

Records

The importance of recording information cannot be over-emphasized. Record collection enhances individual bird care, response evaluations, and the ability to accurately characterize the best practices for appropriate care. In-house records are maintained at the rehabilitation facility and copies provided to the U.S. Fish and Wildlife Service. Final reports from the rehabilitator for the oiled-bird response, including carcass chain-of-custody and sample collection records, where required, should be delivered to the USFWS within 30 days of the date the FOSC declares the response closed or from the departure date of the rescue/rehabilitation organization, whichever comes first.

Scientific Records

The following types of records are necessary to preserve vital information for scientific study, natural resource damage assessment, and improved rehabilitation practices and techniques:

- Resources-at-Risk Survey: provides information regarding the location of birds and other animals in relation to the spilled oil.
- Oiled bird sightings: records and maps for all reports of oiled birds.
- Field Retrieval Report: records for all birds collected in field.
- Live Bird Log.
- Dead Bird Log.
- Running tally: list of all in-house birds by species and case number.
- Daily Care Report: documents care for each bird or enclosure, including feedings, treatments, medications, normal/abnormal activities.
- End-of-Day Report: reports current and next day's work.

- Oiled Bird Examination Report: individual record summary of retrieval, medical exam, diagnostic results, samples collected (chemical, blood, and tissue), cleaning, treatment, evaluation, chain-of-custody, Federal bird bands, and final disposition.

- Record of samples collected (chemical, blood, feather, and tissue).

- Lab Analyses Report: identifies all samples sent to labs; requested analyses; and lab results.

- Federal Bird Banding Report: lists all birds banded for release.

- Necropsy Report.

Some sample forms are provided in *Appendix 6.*

Administrative Records

The following are types of additional documentation and reporting requirements associated with an oil spill response effort for entities such as the Incident Command System, USFWS Rehabilitation Permit Office of Migratory Bird Management, and law enforcement, among others.

- Incident Action Plan – ICS 200: Includes Site Safety and Health Plan, Communications Plan, Organizational Structure, and Group Assignments.

- Pollution Incident Daily Resource Report (USCG Daily Report).

- Chain-of-Custody Record: all migratory birds that die as a result of contact with exposed oil represent evidence of a potential violation of the Migratory Bird Treaty Act. As such, each bird carcass must be labeled with an *Evidence Seizure Tag* provided by the USFWS Division of Law Enforcement or other law enforcement agency, through the designated USFWS representative. The bird carcasses are then delivered to a central, secure, evidence storage area and a Chain-of-Custody record completed.

- Qualified Wildlife Responder Application.

Some sample administrative record forms are provided in *Appendix 6.*

References

Beaulieu, D. and G. Fitzgerald. 1998. Rehabilitation of contaminated birds: emergency action guide for oil spills. Union Quebecoise De Rehabilitation Des Oiseaux De Proie. 27p.

Environment Canada. Oiled bird stabilization training course. Marine Oil Spill Workforce Manual. Ministry of Environment, Lands and Parks. Victoria, BC. 30 p.

Environment Canada. Oiled bird search and collection training course. Marine Oil Spill Workforce Manual. Ministry of Environment, Lands and Parks. Victoria, BC. 33 p.

Fowler, M.E. 1995. Handling and restraint of wild and domestic animals. Iowa State University Press. Ames, IA. 392 p.

Gilardi, K.V.K. and J.A.K. Mazet. 1999. Oiled wildlife response in California: A summary of current knowledge of populations at risk and response techniques. Oiled Wildlife Care Network, Wildlife Health Center, School of Veterinary Medicine, University of Califoria, Davis, CA. 124 p.

Greer, R.D., D.J. O'Connor, L Frink, and S. Welte. 1998. Rehabilitation manual for oiled birds. Exxon Biomedical Sciences, Inc. East MillStone, NJ. And Tri-State Bird Rescue and Research, Inc. Newark, DE. 55p.

Greer, R.D. and D.J. O'Connor. 1994. Waterbird Deterrent Techniques. Exxon, Biomedical Sciences, Inc. Marine Spill Response Corporation, Washington, D.C. MSRC Technical Report Series 94-003. 38 p.

Lehoux, D. and D. Bordage. 2000. Deterrent techniques and bird dispersal approach for oil spills. Environment Canada, Canadian Wildlife Service. 80 p.

Miller, E.A., editor. 2000. Minimum Standards for Wildlife Rehabilitation, 3rd edition. National Wildlife Rehabilitators Association, St. Cloud, MN. 77 p.

Oiled Wildlife Care Network: California Department of Fish and Game, Office of Spill Prevention and Response. 2000. Protocols for the care of oil-affected birds. Wildlife Health Center, School of Veterinary Medicine, University of California, Davis, CA. 74 p.

Tarpley, J. and P. Kelly. 2000. Wildlife Response Plan for California. Sec 9710, Vol. I, Area Contingency Plan for the California North Coast, San Francisco Bay and Delta, and Central Coast. U.S. Coast Guard, Marine Safety Office, San Francisco, CA. 38 p.

White, J., S. Patton, A. Kasper, and J. Lainson. 1998. Recommended protocols for the care of oil-affected birds. States/British Columbia Oil Spill Task Force. Portland, OR. 73 p.

USFWS and Resource Applications Inc. 2000. Fish and Wildlife Annex to the USEPA Region III Inland Area Contingency Plan. U.S. Fish and Wildlife Service, Annapolis, Maryland/Resource Applications Inc. Richmond, VA. In: USEPA Region III Inland Area Contingency Plan. 1997. U.S. Environmental Protection Agency, Philadelphia, PA. 78 p.

Appendices

Appendix 1. Sample Supply and Materials List

Administration/Communications Items:

No.	Item	Purchase (P) or Stockpile (S)
	Air horn	P
	Animal identification and natural history books	P
	Beepers	P
	Binoculars	P
	Cellular phones	P
	Chairs, folding or stacking	S
	First Aid Kit (humans)	P
	Food and fluids for volunteers geared to good nutrition and hydration (from a list of local sources prepared in advance)	P
	Maps of impacted area and response facilities	P
	Marine radios (handheld)	P
	Master copies of all forms (designed in advance)	P
	MSDS binder (add pertinent sheets as needed)	S
	Operations Manual (designed in advance)	S

Animal Care Items:

No.	Item	Purchase (P) or Stockpile (S)
	Aluminum foil	P
	Antiseptic solution (Povidone iodine; chlorhexidine)	P
	Aprons (full coverage vinyl)	S
	Astro-Bubble® bedding roll	S
	Barrier Cream	S
	Bleach	S
	Blender, industrial type	S
	Blood collection tubes: Red top ____ Lavender top____ Green top ____ other types _____	P
	Boots, 16” vinyl (Men’s sizes 5-12)	S
	Broad spectrum antibiotic (having wide safety margin)	P
	Brood Rite® heaters 240 500 750 watt units	S
	Buckets, 5 gallon	P
	Butterfly catheters--Pediatric size or Scalp vein sizes	P
	Camera, disposable (to record each animal on intake)	P
	Can opener	P
	Cardiac and respiratory stimulants	P
	Catch pole	S
	Centrifuge for hematocrit tubes	P
	Clay tray for hematocrit tubes	P
	Cleaning table--sturdy, stable, and water resistant (96”x30”x28“)	S
	Cloth tape	P
	Clothes pins	S

	Cotton balls	P
	Cotton swabs	P
	Culturettes	P
	Cutting board	S
	Dawn® dishwashing liquid	S
	Dexamethasone sodium succinate	P
	Diaper pins	S
	Digital gram scale	P
	Dish drainer mat (perforated)	S
	Dishpans, plastic	S
	Disinfectant (Roccal D®)	P
	Drum lid wrench	P
	Drums, 55 gallon with lids	P
	Elasticon® tape	P
	Electrical adapters (heavy duty, triple outlet, outdoor type)	S
	Enteric coating agent (i.e. Pepto-Bismol® or Toxiban®)	P
	Euthanasia solution	P
	Exam forms	P
	Exam Tables Size:	S
	Eye wash bottles	P
	Floatation vest	S
	Floor mats, non-slip, self draining, anti-fatigue	S
	Foley catheters (12-16 gauge, with adapters) (12 adapters and 30 catheters per dozen animals)	P
	Food processor	S
	Food strainers	S
	Food/water containers Size(s):	S
	Formalin 10%	P
	Galvanized tubs, 17 gallon round, with lids	S
	Garbage can, 33 gal. metal with lid & wheels (rodent proof food storage)	S
	Garden hose (25')	S
	Gauntlet style gloves, butyl or neoprene	S
	Gauze squares	P
	Heat lamp fixtures with inline switch, clamp on type	S
	Heat lamps, 150 watt conical ceramic type	S
	Heating mats, kennel type	S
	Hematocrit tubes	P
	HEPA filtration units (portable)	P
	Hot/Cold water mixing valves, accurate +/- 2^{o}F.	S
	Injectable anesthetic agents	P
	Injectable sodium bicarbonate	P
	Insect repellent	P
	Isopropyl Alcohol	P
	IV fluid stand	P
	IV sets (18-25 gauge) Sizes:	P

	Kling® gauze	P
	Knife sharpener	S
	Knives carving paring boning fillet	S
	KY jelly	P
	Leg bands, plastic, numbered Sizes:_____ Colors: red blue yellow green white other____	P
	Lights, portable, on stand	S
	Measuring cups and spoons	S
	Micropore® tape	P
	Microscope	P
	Microscope slide cover slips	P
	Microscope slides	P
	Milk crate, plastic	S
	Multiple animal feeder	S
	Multitest sticks	P
	Necropsy instruments (append list)	P
	Needles (hypodermic) Sizes:	P
	Net, cast	S
	Net, hand	S
	Net, hoop	S
	Net, long handled	S
	Non-steroidal ophthalmic antibiotic solution	P
	Nylon netting (rolls 0.5” to 1”, smooth mesh)	S
	Oral rehydration fluid (i.e. Pedialyte®)	P
	Panalog® cream	P
	Penlight	P
	Perching and flooring material Type:	P
	Peroxide	P
	Pet carriers, waxed cardboard Small Large	P
	Pet carriers, plastic Large Medium	P
	Pet dryers, portable	P
	Plastic cups	P
	Plastic pitchers pint quart gallon	S
	Plastic sheeting, 4-8 mil polyethelene, 8’x100’ rolls	S
	Plastic Totes (small to large) for food storage	S
	Play pens, soft sided	S
	Plumbing adapters from 1/2” shower head to garden hose	S
	Pool thermometers	S
	Poultry shears	S
	Pretreatment agents (if needed based on type of oil and species involved)	P
	Protective goggles (non fogging)	S
	Pump hoses for intake and output, hot water resistant	S
	Rain gear XXL XL L M	S
	Raptor or welders gloves	S

	Refractometer (temperature compensated)	P
	Sea salt (bags and tablets)	P
	Sharps container	P
	Sheets	S
	Shell or crab cracking mallet	S
	Shelving unit (water resistant, sturdy)	S
	Shower heads w/inline shut off valves	S
	Sponges	S
	Spray/mist bottles, quart size	S
	Sterile electrolyte (Lactated Ringers Solution with 2.5% Dextrose; or Normosol)	P
	Sterile gauze wrap Size:	P
	Sterile instruments (list appended)	P
	Sterile saline	P
	Sterile syringes, Catheter tip Sizes:	P
	Sterile syringes, Luer lock type (1cc-60cc) Sizes:	P
	Stethoscope	P
	Stool	P
	Sump pumps (1/4 HP for small pool drainage)	P
	Sunscreen lotion	P
	Surgical gloves XL L M S	P
	Surgical masks	P
	Survival suit	S
	Tegaderm® Skin Covering	P
	Telfa® Pads	P
	Thermometer calibrated to 108º F (rectal)	P
	Thermometer, Photographic calibrated to 120°F. with hanging clips	S
	Tissue sample containers (small)	P
	Toothbrushes (extra soft, child size)	S
	Towels bath size hand size	P
	Trash bags	P
	Tube feeding ingredients (varies by type of animals fed) (append list)	P
	Tyvek® coveralls XXL XL L M S	S
	Utility sink, free standing, only drain plumbed	S
	Valve, inline ball-style, for garden hose	S
	Vetrap® 2” 4”	P
	Vitamin supplements	P
	Water Pic® dental irrigator	S
	Whistle on lanyard (order one per person in the field)	P
	Zipper style plastic bags Sizes:	P

Animal Deterrance

No.	Item	Purchase (P) or Stockpile (S)
	Animal calls	S
	AV Alarms®	S
	Cannon launched net	S
	Cracker shells (for 12 gauge shotgun)	S
	Decoys	S
	Hip waders	P
	Mist netting with cable ties, stakes, and mallet	S
	Mylar tape	S
	Net Gun	S
	Nylon cord	S
	Phoenix Wailer®	S
	Propane cannon	S
	Propane tank (20 lb.) 2 per cannon	S
	Scarecrow	S
	Seine net	S
	Shallow draft watercraft appropriate to conditions	P
	Shotgun, 12 gauge	P
	Spot lights	S
	Stroboscopic light, revolving	S

Facility Maintenance List:

No.	Item	Purchase (P) or Stockpile (S)
	Clock, battery operated	P
	Desk	P
	Desk Chair (rolling)	P
	Electrical circuit tester	S
	Extension cords (20amp, outdoor, 100' 50' 25')	S
	Fans, portable	S
	File cabinet or file storage box	S
	Fire extinguishers Type:	P
	Floor squeege	P
	Folding Metal Tables Size:	S
	Freezer Chest type Upright Lockable? Yes No	P
	Garbage cans, 33 gal. with lid & wheels	S
	Garden type spray nozzel	P
	Hardware Kit: electrical tape, wire nuts, assort. washers, nails, nuts, bolts, screws, rope, duct tape, wire, cotter pins	S
	Heaters, portable electric	S
	Large signs: Quiet Clean Animals Oiled Animals Medical Treatment Clean linens Newspaper Dirty Laundry Volunteer Area No Admitance Other_____	P
	Microwave oven	P

	Mop bucket with wringer & wheels	P
	Multiple-outlet power strips, heavy duty	P
	Paper towel holder	S
	Paper towels	S
	Plumbing Kit: Teflon tape, assort. rubber washers, hose clamps, PVC pipe cleaner and cement, Y hose connectors, male & female end repairs, splice repair kit	S
	Plywood and lumber for pens and pools:	P
	Pool filtration system	P
	Pool(s) Size(s):	P
	Power tool Kit: Cordless & corded drills, Circular and reciprocating saws with extra blades, drill index, extra batteries and charger for cordless tools, level	S
	Push broom	P
	Refrigerator Size(s):	P
	Room thermometers	S
	Shelving unit metal plastic wood	P
	Staple Gun (heavy duty)	P
	Staples for staple gun Type: Sizes:	P
	String mop	P
	Tarp, waterproof, grommetted, 20'x20' for pool liners, area covers	S
	Tool Kit: hammer, pipe wrench, pliers (channel, clamping , needlenose), hack saw, wire cutter/stripper, slot & phillips screwdrivers, utility knife, adj. wrench, tape meas.	S
	Trash barrels, 50 gallon, on wheels	P
	Trash Can liners 33 gal. 55 gal.	S
	Utility sink	P
	Vacuum cleaner , wet/dry type (Shop-Vac®)	P
	Water cooler	S
	Water heater, High capacity, on demand (90° rise at 3 GPM continuously) this item may require propane/natural gas hook up. Electric units are normally insufficient	S
	Water pressure gauge	P
	Water pressure pump (maintain 40 PSI at full flow, up to 60 PSI)	S
	Water test kit (pH, hardness, chlorine)	P
	Water treatment system (for hard/soft water, auto regeneration, min. maintenance high capacity)	S
	Water/sewage pump, electric, self priming, able to withstand hot water & debris	S

Office Supplies List:

No.	Item	Purchase (P) or Stockpile (S)
	Bulletin Board	P
	Calculator	P
	Clip boards	P
	Copier	P
	Disks compatible with computer Type:	P
	Dry erase markers black red blue green assorted	P
	Duct tape	P
	Fax machine	P
	File folder box	P
	Highliters pink yellow blue green assorted	P
	Ink/Toner cartridge for Copier Fax Printer Make/Model _____ Cartridge No._____	P
	Manila folders	P
	Masking tape	P
	Name tags or badges	P
	Paper clips large small	P
	Paper compatible with fax machine Ink jet Laser Roll (size:)	P
	Paper compatible with printer Ink jet Laser Pin feed	P
	Paper for copier Ink jet Laser	P
	Pencils	P
	Pens	P
	Portable computer w/database, spreadsheet, word processing programs, modem, cables	P
	Portable printer & cables, compatible w/computer model:_____	P
	Poster boards	P
	Push pins	P
	Rulers	P
	Scissors	P
	Scotch® tape	P
	Stapler (desk type)	P
	Staples for above stapler size:	P
	Waterproof markers black red other assorted	P
	White Out® fluid	P
	Whiteboard large medium small	P
	Writing tablets	P

Optional Surgical Item List:

No.	Item	Purchase (P) or Stockpile (S)
	Allis tissue clamps	P
	Disposable drapes	P
	Endotracheal tube	P
	Esophageal stethoscope	P
	Forceps	P
	Hemostat	P
	Instracal sterilizing liquid	P
	Needle holder (5.5 Olsen/Hegar)	P
	Needles Sizes:	P
	Oxygen	P
	Pan (stainless steel 8”x5”x2”)	P
	Scalpel blades No.:	P
	Scalpel handle	P
	Small animal anesthetic machine (Isoflurane vaporizer)	P
	Surgical caps	P
	Surgical gowns	P
	Surgical scissors	P
	Surgical table, stainless steel	P
	Sutures	P
	Towel clamps (3.5 Backhaus)	P

Source: Created by Jan White, Wildlife Publications, Maple Valley, WA.

Appendix 2. Zoonotic Diseases of Wild Birds

Organism Common Name	Mode of Transmission	Usual Source	Reported Species	Signs and Symptoms	Precautions for Handlers
BACTERIAL					
Campylobacter jejuni -Campylobacteriosis	O	Contaminated Tissue Fecal Exposure	Man, birds, mammals	Abdominal Pain, Fever, Vomiting, Headache	PPE/Gloves Handwashing Food Hygiene
Chlamydia psittaci -Chlamydiosis	I	Aerosol droplets	Man, birds	Conjunctivitis, Depression, Respiratory Infection	PPE Gloves/Mask Handwashing
Clostridia sp. Blackleg/Tetanus -Enterotoxemia/etc.	C, I Puncture Wounds	Fecal contamination Contaminated soil	Man, all mammals, birds	Anaerobic Wound Infections/Septicemia Hemorrhagic Enteritis/Neurotoxin	PPE Vaccination Handwashing Food Hygiene
E. coli -Colibacillosis	I, O	Contaminated Tissue	Man, birds, mammals	Enteritis Diarrhea	PPE/Gloves Handwashing Food Hygiene
Erysipelotrix sp. -Erysipeloid, diamond skin dis.	O, C Bites/Scratches	Water/Saliva Fish/Shellfish	Man, bird, cetacean	Cellulitis, Septicemia Rhomboid Skin Placque	PPE Gloves/Masks Handwashing
Listeria monocytogenes -Listeriosis	O	Water/Mud	Man, birds, mammals	Conjunctivitis	PPE Gloves/Masks Food Hygiene

O = Oral I = Inhalation C = Contact PPE = Personal Protective Equipment

Organism Common Name	Mode of Transmission	Usual Source	Reported Species	Signs and Symptoms	Precautions for Handlers
BACTERIAL (Cont.)					
Mycobacterium avium - Mycobacteriosis	I, C, Insect Vectors Scratches	Soil/Water	Man, birds, swine	Pulmonary Disease, Cervical Lymph-adenopathy	PPE Masks/Gloves
Mycoplasma sp. -Atypical pneumonia	I Aerosols	Mucous membranes	Man, most mammals, birds	Respiratory Infection Conjunctivitis	PPE Masks/Gloves Handwashing
Pasturella multocida -Pasturellosis	I, O?, C Bites/Scratches	Respiratory secretions from carrier birds or mammals	Man, pinnipeds, birds	Cellulitis/Respiratory Infection Septicemia/Enteritis Peracute Death	PPE Gloves/Mask Handwashing
Salmonella/Shigella Plesiomonas -Infectious Enteritis	O	Tissues from infected animal/fecal contamination	Man, all vertebrates	Enterocolitis/Diarrhea Fever/Septicemia	Food Hygiene Cooking/Chilling Handwashing/Gloves
Yersinia pseuotuberculosis -Pseuotuberculosis *Yersinia enterocolitica* -Yersiniosis	I, O, C	Fecal shedding Contaminated food or water	Man, birds	Enlarged Mesenteric Lymph Nodes *-Y. enterocolitica* enteritis	PPE Gloves

O = Oral I = Inhalation C = Contact PPE = Personal Protective Equipment

Organism Common Name	Mode of Transmission	Usual Source	Reported Species	Signs and Symptoms	Precautions for Handlers
VIRAL					
Paramyxovirus -Newcastle Disease	I,O	Secretions and Excretions	Man, birds	Conjunctivitis, Fever, Chills, Headache	Isolation of Suspects Sanitation PPE/Gloves/Mask
Influenza Virus -Influenza A	I, O	Aerosol droplets	birds, Harbor seals, pilot whale, man,	Upper Respiratory Tract Infection Pneumonia/Conjunctivitis	Isolation PPE/Mask/Gloves
FUNGAL					
Aspergillus sp. -Aspergilliosis	I	Spores from mold growth in damp, poorly ventilated areas	birds, cetaceans, man, birds	Respiratory Infections Granulomas	PPE/Mask Adequate ventilation
Coccidioides immitis Coccidioidomycosis	I	Spores in dust / soil (esp. following an earthquake)	Dolphin, man, sea lion, sea otter	Pyogranulomas in lung/other tissues	PPE/Mask Sanitation
Cryptococcus neoformans Cryptococcosis	I	Spores in soil contamined by bird droppings	Man, mammals, birds	Pulmonary disease but may disseminate to viscera, skin, bones or CNS	PPE/Mask Sanitation
Histoplasma capsulatum -Histoplasmosis	I	Spores in dust and soil and bird roosts	Man	Flu-like signs, fever, Respiratory signs	PPE/Mask Sanitation

O = Oral I = Inhalation C = Contact PPE = Personal Protective Equipment

Source: *Recommended Protocols for the Care of Oil Affected Birds*, States/British Columbia Oil Spill Task Force, 1998

Appendix 3. Deterrent Techniques

Gas-Operated Exploders

Detonators consist of a bottled gas supply, separate pressure and combustion chambers, an igniting mechanism and a barrel to aim and magnify the blast. Gas-operated exploders produce a loud directional shotgun-like noise by slowly filling a bellows with propane gas from a tank, then rapidly transferring this gas to a firing chamber and igniting it with a spark. Blasts are emitted at adjustable time intervals. The interval between detonations can be varied from less than one minute to 30 minutes. Some gas-operated exploders can be set to fire at random intervals and rotate after each explosion so that subsequent shots are aimed in different directions. The sound level is approximately 120 dB. An exploder can operate for about two weeks without refueling, but needs to be maintained regularly for effectiveness and to ensure that it is working properly.

> Note: Gas-operated exploders are extremely dangerous and should be used only by trained personnel.

Advantages

- Deployable in onshore and offshore situations (when placed on anchored rafts) especially when the oil is well confined and where birds are particularly susceptible;
- Protective of relatively large areas (200 - 1000 m or 30 - 50 ha);
- Rapidly remobilized;
- Automatically operated and require only minimal staffing;
- Effective during both day and night;
- Especially effective in deterring dabblers and geese;
- Inexpensive to operate and require little maintenance;
- Inexpensive to purchase ($300); and
- Widely available.

Disadvantages

- Birds rapidly habituate to the sound of the blasts (no more than two or three days and sometimes less than a few hours for some bird species);
- Not effective in deterring most shorebird species as well as gulls, coots, grebes and loons;
- Significantly reduced effective range and sound intensity when used in fog and wind;
- Difficult to install and operate on an anchored raft in open water and in bad weather; and
- Disturbing to local residents and responders.

Pyrotechnics

These devices frighten birds by producing a whistling noise, explosion and/or flash of light. Types include shotgun-launched projectiles (shell crackers) and a variety of pistol-launched projectiles. When using pyrotechnics, the danger of igniting spilled oil and vegetation should always be avoided. Both shotgun- and pistol-launched devices should be fired with the wind, and away from personnel. Safety goggles and ear protectors (muff or ear plug type) are worn, and personnel using pyrotechnics are expected to be trained in firearms safety.

Shotgun-launched projectiles include shell crackers and scare cartridges. They are fired from a 12-guage shotgun with the shell shot being replaced by a bulldog or M-80 firecracker that explodes at 100-150 yards

(91-136 m). Single barrel shotguns that break and load at the breech are recommended. The shotgun should be fired from the hip at a 45° angle, and shell crackers should explode as close to the birds as possible. Because of the light charge, the shotgun has only a slight recoil.

> Note: Pyrotechnics are extremely dangerous and should be used only by trained personnel.

Advantages

- Effective both day and night;
- Easily directed close to water birds;
- Especially effective in deterring open-water birds;
- Relatively high radius of effectiveness (at least 200 m from the source and up to 1 km for some bird species);
- Effective on land or in offshore situations;
- Highly effective in combination with other deterrents (motorboats, ATV, effigies); and
- Relatively inexpensive (roughly $50 per hundred).

Disadvantages

- Short duration of effectiveness (one or two hours);
- Less effective in deterring dabbling ducks;
- Ineffective in deterring gulls and shorebirds;
- Significantly reduced effective range and sound intensity when used in windy situations;
- Requires continuous staffing;
- Potentially hazardous to operators and bystanders if not used carefully;
- Potentially hazardous if used in areas containing volatile oil components; and
- Disturbing to local residents and responders.

Aircraft

Aircraft, especially helicopters, are effective deterrents because of the combination of loud noise and rapid approach from above. They are often effective for hazing birds away from large areas. Helicopters may also be used to herd flightless (young and molting) birds.

Aircraft are considered to be especially useful during the early stages of cleanup and hazing operations. They are more effective if used in combination with other devices such as shell crackers and gas-operated exploders. Because of their maneuverability and noise, helicopters are probably more effective than fixed-wing aircraft.

Not all bird species will take flight in response to overhead disturbances. Some waterbirds (e.g., loons and alcids) dive rather than fly when approached by aircraft, and others who are young or in their molting or brood-rearing stage may be incapable of flight. Flightless birds can be herded with a helicopter (Alaska Regional Response Team, 1991), or ground patrols after the helicopter has departed. Helicopters have been used successfully to drive flightless Canada geese over water, exposed tidal flats, and dense sedge in Alaska with the helicopter remaining 10 to 20 m (33-66 ft) behind the geese at an altitude of 1-15 m (3-49 ft). (Timm and Bromley, 1976).

Advantages

- Readily available to remote and roadless areas;
- Disperses birds in different types of habitats (marsh birds, offshore birds);
- Rapidly disperses birds while oil is still offshore;
- Requires minimal staffing; and
- Highly effective at deterring geese.

Disadvantages

- Less effective at deterring species other than geese, especially during molt;
- Less effective for birds gathered in very attractive sites like feeding or nesting grounds;
- Increased potential of bird-aircraft collisions during low flying activities;
- Ineffective at night;
- Reduced or limited feasibility during bad weather (especially fog);
- Time consuming for deterring birds on a large scale basis;
- Limited ability to procure helicopters, in heavy demand during an oil spill; and
- Relatively high cost of charter aircraft.

Motorboats

Motorboats can be used to deter birds located offshore where hazing from the shoreline with other techniques is ineffective in driving birds away. A few studies conducted during the last 20 years have demonstrated the potential of boats as an effective deterrent. Birds are more sensitive to boats propelled by outboard motors. A powerboat causes virtually instantaneous flight as soon as it appears on the water, causing a majority of birds to leave. There is some speculation that the larger the flock, the more sensitive it is to an approach (Batten, 1977). The hazing of diving birds with boats is generally considered slow, labor intensive, and may be ineffective. Boats may be useful for herding flightless waterfowl away from spilled oil to boomed areas of lagoons, or overland to inland lakes (Alaska Regional Response Team, 1991).

Advantages

- Useful in deterring birds located at some distance from the shoreline;
- Rapidly implemented for deterring birds while oil is still offshore;
- Works well with most species except diving birds;
- Covers relatively large areas; and
- Requires limited staffing.

Disadvantages

- Deployment potentially hazardous during bad weather, ice conditions or darkness;
- Limited ability to locate birds, especially in rough seas; and
- Difficult to direct dispersed birds to unoiled waters.

All-Terrain Vehicles (ATVs)

All-Terrain Vehicles (ATVs) such as quad-runners are moderately effective for hazing many species of waterfowl and shorebirds. Human presence reinforces the effects of the noise and rapid movement of the vehicle. A quad-runner can also be equipped with air horns or sirens, or used with pyrotechnics.

Advantages
- More efficient for covering larger shore areas (between 3 and 5 km instead of 1-2 km by foot); and
- Most effective when used in combination with other methods (e.g. noisemakers).

Disadvantages
- Limited to birds onshore;
- Limited to daylight use; and
- Potentially destructive to certain habitat types.

Electronic Sound Generators

These devices, broadcast loud, intermittent electronically synthesized sounds that are in the audible range of birds. The units can be adjusted to the most effective range of sound patterns for the target bird species, and sound patterns within this range can be varied over time to decrease habituation. Sound generators can be positioned on land, mounted on boats, or housed within a raft or buoy for effectiveness in open water and marine situations.

Advantages
- Useful in open water environments;
- Rapidly deployed;
- Projects over large areas;
- Readily deployed on leading edge of drifting oil slick;
- Maximizes potential of dispersing birds away from contamination, when deployed directly into oil slick;
- Reduces potential of bird habituation because buoy is moving with the wind and current and regularly encounters new groups of birds;
- Limited habituation of birds, even when anchored, due to the diversity of sounds produced;
- Operable and effective day and night;
- Operable during bad weather (fog and rain);
- Readily retrievable;
- Easy to handle and operate by two persons;
- Constructed to withstand the hazards of fire and explosion sometimes associated with oil slicks;
- Long-lasting effectiveness (>two weeks);
- Low maintenance (requires four marine batteries: two in the unit and two on full charge).

Disadvantages
- May be less efficient in areas where birds are accustomed to loud background noises, where hunting pressure is low; or where birds congregate in very secure habitats;
- Batteries must be replaced or recharged after 72 hours of operation;
- Requires a boat or a helicopter to be deployed offshore;
- Regular monitoring (daily) is recommended to ensure effectiveness;
- Range of effectiveness decreases during high winds and rough seas;
- Requires monitoring, when used in oil slick, to ensure that device stays in oil slick;
- Duration of effectiveness unknown when the buoy is used in a stationary mode;
- Disturbing to local residents and responders;

- Expensive, more so if the costs of radio beacon transmitters and receivers are included; and
- May not be immediately available.

Biosonics

These techniques use distress, warning, or alarm calls that are broadcast by tape players to disperse single or closely related species from the immediate area. In general, individuals or small flocks are less responsive than large flocks. The effectiveness of biosonics can be increased by supplementation with pyrotechnics.

Advantages

- Effective at lower sound intensities; and
- Slower habituation.

Disadvantages

- Highly species specific;
- May attract rather than deter birds, depending on life stage; and
- May attract predators and scavengers.

Underwater Acoustics

These include devices that put sound into water, such as sweep frequencies, killer whale vocalizations, and underwater percussion devices. These devices have not been studied enough to allow for guidance or to determine advantages and disadvantages and, therefore, are NOT recommended for use as bird deterrents during oil spill response.

Balloons

All-weather helium balloons are considered effective if properly maintained and frequently refilled and repositioned. They are generally 20-30 inches (50-75 cm) in diameter, and should not be fully inflated in order to reduce stress from wind resistance. Balloons may be suspended from land or from a floating object in the water. They should not be located near trees or other objects that could cause puncturing. Balloons should be tethered on 40-75 feet (12-23 m) of 48 lb (22 kg) or stronger monofilament line and initially spaced at least every 200 yards (183 m). Some balloons should be set very high to deter birds from flying overhead.

Advantages

- Inexpensive; and
- Readily available.

Disadvantages

- Rapid habituation;
- Ineffective at night;
- Do not function well in winds over 10 mph; and
- Potentially subject to ultraviolet degradation.

Flags

Flags are considered an effective and inexpensive hazing device for waterfowl. They can be constructed by mounting a three-by-two-foot (91-61 cm) sheet of black plastic to a four-foot (1.2 m) stake. The stakes

should be driven into the ground at an angle so the flags will move in light wind. They should be erected every 100 to 200 feet (30-61 m) on land, or on buoys over water. Mylar car dealership flags can also be effective for hazing waterfowl. Flags can be used in conjunction with gas-operated exploders.

Advantages
- Inexpensive; and
- Readily available.

Disadvantages
- Rapid habituation; and
- Ineffective at night.

Human Effigies and Predator Models

Human effigies (e.g., traditional scarecrows) and raptor models may be effective if they appear lifelike, have motion, are frequently repositioned, and are used in combination with loud sounds or recorded distress calls. Human effigies are more effective if you first establish the human form as being potentially detrimental (e.g., have response personnel create disturbance in the area before deploying human effigies), and are dressed similarly to personnel operating in the area.

Advantages
- Readily put in place;
- Easily remobilized;
- Does not constitute an auditory disturbance near populated areas or responders;
- Effective in good and bad (winds, rain, etc.) weather; and
- Relatively inexpensive (<$200).

Disadvantages
- Effectiveness limited to daylight, except if equipped with lights or combined with audio deterrents;
- Rapid habituation by birds (a few days); and
- Small range of effectiveness (100m or 4-8 ha).

Reflectors, Mirrors, and Reflecting Tape

Reflector devices can be constructed by attaching aluminum or tinfoil pie plates to a line suspended over land or water. These devices can be used in association with lights to haze waterfowl. Hand-held mirrors that reflect sunlight may also be effective. Mylar reflecting tape is another deterrent for many species of birds. This silver and red-coated tape is generally twisted and strung between support posts. The tape reflects sunlight, and vibrates under windy conditions producing a humming noise.

Advantages
- Inexpensive.

Disadvantages
- May attract, rather than deter, birds; and
- Ineffective at night.

Lights

Strobe, barricade, search, and revolving fixed lights have been used to haze birds, and they should be combined with other deterrent techniques such as exploders and pyrotechnics. Although lights may be partially effective for deterring waterfowl during the night, some bird species may be attracted to lights, especially during rain, fog, or heavy cloud cover.

Advantages

- Inexpensive.

Disadvantages

- May attract, rather than deter, birds.

Lure Areas and Bait Stations

Birds may be lured from one area to another with the use of bait food. However, bait stations require that large quantities of bait food be available over a period of days. Because lure areas need to be relatively close to a spill so that the food can be detected, this proximity may increase the oiling risk to birds attracted into the general area. Lure areas are recommended only when, after careful evaluation, alternative techniques would be expected to be ineffective.

Advantages

- Passive form of deterrence.

Disadvantages

- May attract birds not normally present in the area and increase potential for oiling as birds disperse from baited site.

Dyes

The feasibility of using dyes for deterring birds from oil spills is unknown because of data gaps including: species-specific reactions to colors, habituation potential, dye toxicity, dye solubility in various types of oil, concentration required, and rates of dye weathering. Therefore, use of dyes is NOT recommended as a bird deterrent during oil spill response at this time.

Trained Falcons and Hawks

Trained falcons and hawks are sometimes used at airports to chase away birds and disperse birds from runways. If used in a contaminated or oiled area, there is the potential that these trained birds could themselves become oiled or contaminated, or could potentially chase or disperse birds into contaminated areas. Using trained falcons and hawks is NOT recommended as a bird deterrent during oil spill response.

Decoys and Visual Devices

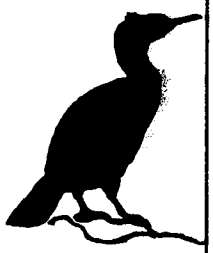
Dead-bird decoys or bird carcasses are sometimes used to discourage birds from using an area. However, placing dead-bird decoys or bird carcasses in a contaminated or oiled area may attract healthy birds of prey or other mammalian predators, potentially causing these predatory species to become contaminated or oiled. Using decoys and carcasses is NOT recommended as a bird deterrent during oil spill response.

Sources: *Deterrent Techniques and Bird Dispersal Approach for Oil Spills,* Denis Lehoux and Daniel Bordage, Canadian Wildlife Service, 2000; and *Rehabilitation Manual for Oiled Birds*, Greer, R.D., D.J. O'Connor of Exxon, Biomedical Sciences, Inc., L. Frink, and S. Welte of Tri-State Bird Rescue and Research, Inc., 1998.

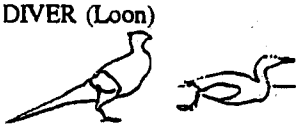
Appendix 4. Bird Natural History and Special Concerns

Source: *Oiled Bird Search and Collection Training Course*, Marine Oil Spill Workforce Manual, BC Environment

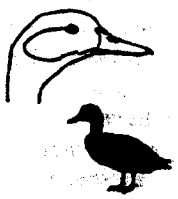
Appendix 4. Bird Natural History and Special Concerns

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	ALCIDS (Charadriiformes) Common Murre Rhinoceros Auklet Cassin's Auklet Pigeon Guillemot Tufted Puffin Marbled Murrelet Ancient Murrelet	Divers that use short narrow wings to fly underwater and use feet to steer, short legs attached toward the rear of the chunky body, have short-tail, large head, only three toes (all webbed) and dense waterproof plumage. Most prefer open sea, very gregarious, most nest in colonies on offshore islands. Nest disturbance can seriously reduce the success of a breeding season. Most molt all their flight feathers at once and are flightless for a period.	Some may be able to stand, but padding in box/ pen should be provided; those that stand on the entire foot up to the ankle are more awkward on land. Prone to foot and joint infections. Smaller alcids should be provided with hiding places. Can be aggressive, be careful of sharp beak. Birds will often be comforted by presence of others of their species in the same pen. Murres out on the water that have lost waterproofing will sometimes create a lot of splashing by flapping their wings while trying to stay afloat at the surface.
	**CORMORANTS & PELICANS** (Pelecaniformes) Brandt's Cormorant Double-crested Cormorant Pelagic Cormorant Brown Pelican	Foot propelled diving birds, have short legs to the rear of a stout body, long neck, with long beak sharply hooked at tip and no external nostril openings, long stiff tail, webbed foot (all 4 toes are webbed), are very aquatic and strong fliers. Feathers not completely waterproof. Gregarious, nest in colonies, can sink partly or completely below surface by squeezing air out of plumage. Swim low on the water. Can often be seen perching with wings held out.	Allow bird to breathe through its mouth. Always maintain head control, can strike and inflict severe bite. They walk poorly; can be provided rocks or slumps for perching in pen and padding in box/pen. It can help to support the strong feet when holding for tubing, etc. They may be more still and easier to work with this way.

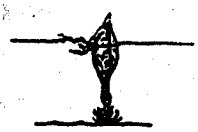
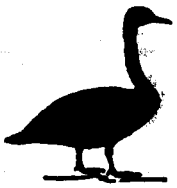
Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	GREBES (Podicipediformes) Horned Grebe Eared Grebe Red-necked Grebe Western Grebe Clark's Grebe	Foot propelled diving birds with short wings, rudimentary tails, slender pointed bill, four lobed toes with partial webbing, legs far back on body, soft plumage, very aquatic, weak fliers. Rarely on land, even to breed.	Head needs to be controlled so that handler avoids being struck by sharp beak. Awkward on land, will feel safest in the water, not likely to come ashore until they have to. Prone to getting sores on keel, so need lots of padding in boxes and pens. Likely to become soiled in pens because they don't move away from their own droppings. Handlers should try to avoid projectile feces. May fight among themselves and peck at each other in crowded conditions. Prone to getting an impacted cloaca.
	LOONS (Gaviiformes) Pacific Loon Common Loon Red-throated Loon	Large, foot propelled diving birds, with legs far back on long body, straight sharp beak, hard compact plumage, wings narrow and pointed. Loons have four toes, (front three are webbed). Rarely on land, except to breed, on shore, of lakes and ponds. Extremely sensitive to human disturbance near nest. Migratory. Flightless period during fall molt. LEG POSITION OF WALKER (Pheasant) VS DIVER (Loon) 	Strong birds with sharp beaks; need to always control head, usually need two people to handle a loon. Wear goggles. Will feel safer in the water and less likely to come onshore (until they have to); awkward on land. Very susceptible to stresses of captivity. Prone to sores on keel so need lots of padding in boxes and pens. May fight among themselves and hurt each other in crowded conditions. Prone to getting impacted cloaca. Likely to become soiled because they don't move away from their own droppings. Light oiling on surface feathers may not penetrate enough to destroy waterproofing. Handlers should try to avoid projectile feces.

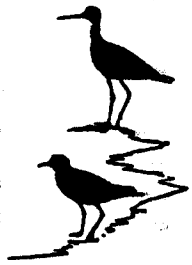
Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	SEA DUCKS & BAY DUCKS (Anseriformes) Canvasback Surf Scoter Black Scoter White-winged Scoter Bufflehead Goldeneye-Common, Barrows Harlequin Duck Scaups-Lesser Greater Oldsquaw	These sea ducks & bay ducks have relatively short legs and tails, most have broad flattened beaks, with dense plumage and the three front toes webbed, hind toe is lobed. Diving ducks are foot propelled with large, more widely spaced feet that make them less balanced on land than dabblers. Legs are short and farther to the rear of their bodies. Diving ducks have smaller more pointed wings than dabbling ducks. (Some diving ducks use both feet and wings when swimming underwater). Found in open ocean and bays. Most are migratory.	Diving ducks must build up air speed before taking off. Prone to sternal lesions, foot and joint damage, and should have padding in box/pen. Divers are less inclined to come ashore than dabblers (until they have to). A light oiling on the surface of dense plumage may not affect waterproofing. Most duck beaks are not dangerous to handlers. Male and female ducks generally have very different plumage; males are often aggressive toward females and sub adults, especially in crowded pens. Scoters will often go limp when being handled; this is not an indication that they are in serious trouble; they also can be aggressive, hissing and striking out, but there is little chance of them hurting handlers.
	STIFF-TAILED DUCKS (Anseriformes) Ruddy Duck	Stiff-tailed ducks have big feet and long tails, often held erect. Ruddy ducks' feet are so far back that they are nearly helpless on land. Ruddy ducks are the most aquatic diving ducks and can quietly sink below the surface without making a ripple Found in ponds, lakes & shallow bays.	Stiff-tailed ducks can be very shy; should be given hiding places. Ruddy ducks are nearly helpless on land and need padding in boxes and pens.

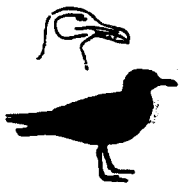
Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	DABBLING DUCKS (Anseriformes) Eurasian Wigeon Northern Shoveler American Wigeon Green-winged (Teal) Northern Pintail Gadwall Mallard	Dabbing ducks have short legs placed more to the front of the body, feet are generally smaller than those of diving ducks, have larger less pointed wings than the divers and dense plumage. Unlike seaducks, hind toe is not lobed or flattened. Usually feed in shallow fresh or salt water by tipping up the tail and reaching below the surface. Most rarely dive except to escape danger.	Dabbling ducks can bound directly from surface into flight; pens should be covered (i.e., netting), boxes should not be opened completely before handler is ready to hold duck. Easiest of the water bird groups to handle; more resistant to stresses of captivity. Males may be somewhat aggressive toward sub adults or females, especially in overcrowded pens. Light oiling on surface feathers may not penetrate enough to destroy waterproofing.
	GEESE (Anseriformes) Brant Snow Goose Canada Goose Whitefronted Goose	Geese have a large body, long neck, stout bill and dense plumage. Legs of geese are placed further forward on the body than on ducks and swans, which gives them better balance for walking. Swim and feed at water surface, often tipping up. Highly social. Have strong family bonds and lasting pair bonds.	Can be very aggressive, especially during breeding season (threatening displays are common). Powerful wings and legs, some have bony knob at carpet joint of wings that can inflict injury. It may be easier to hold the goose against the ground while its wings are controlled and then wrap a sheet around the wings and lower body, then it can be picked up and carried more easily. Can walk or run well. Because of dense plumage, light oiling on surface feathers may not penetrate enough to destroy waterproofing.

Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	SHOREBIRDS (Charadriiformes) Oystercatcher Turnstones Plovers Dunlins Sandpipers Phalaropes	Most are long-legged, and are seen walking, running or wading in or near the water. The larger shorebirds have long necks. Most have slender, specialized bills, They have dense plumage and are good fliers. Primarily wading shorebirds, often in large flocks. Most probe mud or sand. Can walk or run quickly.	Smaller shorebirds can benefit from being boxed or penned together. Many species are shy and should be provided hiding places in pens. Many species are small and delicate; require careful handling and are very susceptible to hypothermia. Oystercatchers' nest on offshore rocks and islets (on rocks and gravel) can be easily disturbed by people or boaters in their areas in spring. Many shorebirds prefer mud flats (areas where oil will persist).
	HERONS (Ciconiiformes) Great Blue Heron	Long necked, long legged waders with long, rounded broad wings, short tail, long bill and four long widely spread toes. Most are wading feeders. They are usually solitary except during breeding.	Long legs subject to trauma especially if cramped. Have sharp, pointed beaks and may aim for eyes of handlers--so always maintain head control. Wear goggles. Very shy and sensitive to human presence; provide visual barriers. Should be provided a perch and housed alone.
	TERNS (Charadriiformes) Common Tern Caspian Tern	Long narrow wings, dense waterproof plumage, long tail usually forked, sharp, pointed bill, no hook, webbed feet, short legs, but not strong swimmers on surface. Often hover and plunge head-first into water. Colonial breeders, migratory. Most terns mate for life. Long distance fliers.	Poor swimmers. Do not swim well on the water's surface. Have sharp cutting beaks.

Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	GULLS & JAEGERS (Charadriiformes) Glaucous-winged Gull California Gull Thayer's Gull Bonaparte's Gull Heermann's Gull Black-legged Kittiwake Mew Gull Herring Gull Ring-billed Gull Western Gull Parasitic and Pomarine Jaeger	Long pointed wings, dense waterproof plumage, short, fan-shaped tail, bill hooked at tip, webbed feet, agile walkers and runners, good swimmers on surface. Usually feed from surface. Gregarious. Colonial breeders. Migratory.	Can take off straight up from the ground or water's surface. Have sharp beaks. May regurgitate food if alarmed. Dense plumage, light oiling on surface may not penetrate enough to destroy waterproofing.
	TUBE-NOSED SWIMMERS (Procellariiformes) Northern Fulmar Black-footed Albatross Fork-tailed Storm-Petrel Leach's Storm-Petrel Sooty Shearwater Pink-footed & Short-tailed Shearwaters 	Tube-nosed swimmers have a hooked, deeply, grooved bill with nostrils enclosed in one or two tubes on the top of the bill. They have long narrow wings, webbed feet, and thick plumage. (Excess salt is excreted through tubular nostrils. Small pockets in the nasal passages may sense velocity of air currents.) Migratory, off-shore seabirds. Some, like the Black-footed Albatross and the Northern Fulmar, will follow and sometimes land near ships in search of food (and are attracted to fish oil thrown overboard). Most are colonial breeders. Usually come ashore only for breeding.	Shearwaters and Fulmars often rest weight on toes and lower legs giving them a somewhat crouching posture on land. May require padding in boxes and pens. Many medium and large size members of this group are capable of delivering hard bites. May regurgitate strong-smelling stomach oil when alarmed, and this may soil nearby birds. Live birds not usually found on shores unless they are sick or oiled. Shearwaters have strong feet and sharp nails which can inflict wounds.

Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Appendix 5. Euthanasia Guidelines

Rehabilitators must administer euthanasia in accordance with 50 CFR §21.31(e)(4)(iii). In addition, rehabilitators who treat migratory birds at oil and hazardous waste spills should do the following:

1. Euthanasia should be considered for a bird having serious injuries that will require extended treatment or render it unable to survive in the wild. Serious injuries can include fractured limbs (particularly those affecting a joint), injuries to the beak, extensive soft tissue injuries, and significant visual or auditory deficits.

2. When large numbers of birds are contaminated in a spill, it is necessary to selectively treat them so the appropriate attention is given to those with the greatest probability of survival. Packed cell volume (PCV), relative weight, and body temperature are used to identify those birds having reduced chances of survival.

   Birds having a PCV of less than 20 percent may require an extended period of treatment, and are thus at a greater risk of developing secondary complications. This is especially true for seabirds that may have little resistance to terrestrial disease organisms. Birds that are both underweight and hypothermic (relative to other birds of the same sex/species involved in the spill) have been shown to have a significantly decreased survival rate. A bird having consistently low body temperatures (less than 100º F.) despite attempts to warm the animal are considered a poor risk.

3. Birds showing signs of infectious disease should be isolated, and either supported until a diagnosis is made or euthanized and necropsied. Birds with lesions characteristic of avian pox (warty lesions around the eyes, mouth or on the feet) should be isolated and precautions taken to prevent exposure to other birds. Other signs which should arouse suspicion include: bloody or mucous discharge from the eyes, nose or mouth; moist or gurgling respiratory sounds; watery or bloody diarrhea; regurgitation; rapid weight loss; or pronounced neurologic signs.

4. Birds that show signs of chronic disease, such as extreme emaciation, have a very poor prognosis. Consider euthanasia for a very underweight bird that has wasted pectoral musculature and a prominent keel. However, note the following: the keel is normally very prominent in species such as herons and egrets; at certain times (the end of winter or migration), birds may also have reduced muscle mass with no underlying disease process; and severely dehydrated birds are often underweight but will gain rapidly with rehydration.

5. The degree of oiling, the temporary presence of bleeding from the GI tract, and molting are NOT considered adequate grounds for euthanasia.

6. Approval by Federal or State agencies is required before certain birds can be euthanized. This applies to threatened or endangered birds, migratory birds, unusual

birds with small local populations, and species with low reproductive potential. All birds that are euthanized must be disposed of as instructed by the Division of Law Enforcement or the USFWS on-scene oil spill coordinator, as the birds they possess may be essential evidence for a civil or criminal investigation conducted by the USFWS or other agencies.

7. Techniques for euthanasia:

   a. Appropriate for the size of the animal;

   b. Designed to minimize stress;

   c. Reliable and rapid.

   d. Safe for personnel administering technique.

8. Chemical injection as discussed below is recommended and preferred. Alternative techniques are mentioned but not discussed.

   a. Injection, according to dosage guidelines, of a commercial euthanasia solution, with prescribed routes usually being the medial metatarsal, right jugular or brachial veins, will quickly and painlessly kill most birds.

   b. Most euthanasia solutions are restricted drugs and subject to control by the Drug Enforcement Administration: professional supervision, inventory control, and locked storage are required. All solutions must be obtained through a veterinarian and used under veterinary supervision.

   c. Ensure that animals euthanized by this method do not become food for carrion eaters.

9. Alternative techniques of chemical euthanasia include inhalation of anesthesia or toxic gases. Physical euthanasia is not recommended.

10. Refrigerate all dead birds until necropsied. Post mortems conducted in-house can yield information that will help in determining treatment protocols in live birds at the facility. All carcass disposal should be coordinated with the Division of Law Enforcement or the USFWS on-scene oil spill coordinator and disposed of consistent with spill incident-specific instructions and chain-of-custody protocols.

Source: U.S. Fish and Wildlife Service Spill Response Contingency Plan, 1997. Appendix Q, as revised.

Appendix 6. Sample forms and formats.

Wildlife Field Reconnaissance Form - Shoreline or On Water Observations

1. Incident Name: _____ **2. Observation Team:** _____

3. Date: _____ **4. Time Start:** _____ **5. Time End:** _____

6. Segment Name: _____ **7. Segment No.:** _____

8. Survey Length: _____ ft. **9. Survey Width:** _____ ft. **10. Latitude:** _____ N **11. Longitude:** _____ W

12. Survey Mode: Foot ☐ Vehicle ☐ Boat/Ship ☐ Airplane ☐ Helicopter ☐ **13. Tide Table Data at Start of Survey:** _____ ft.

14. Weather: _____ (Describe Briefly) **15. Beaufort Scale:** _____ (See Chart) **16. Visibility:** < 0.1 mi (< 160 m) ☐ 0.5 mi. (800 m) ☐ 1.0 mi. (1.6 km) ☐ > 1.0 mi. (> 1.6 km) ☐

17. Round Trip Mileage: _____ (miles) **18. Round Trip Driving Time:** _____ (hours) **19. Trip Prep Time:** _____ (hours)

Species Name (See Four Letter Code Sheet)	No. of Animals	Condition Live/Dead	Oiled Yes/No	Scavenged Yes/No	Band or Tag No.	Photo Yes/No	Toe Clipped Yes/No	Comments on Wildlife (recoverable, catch technique, etc.)

OWCN Oiled Bird Intake Form

Spill and Capture Information

Barcode

Spill Name _____ *Animal Intake Number* _____

Intake Date/Time _____ *Examiner's signature* _____

Animal and Physical Exam Information

Temporary Band No. _____ *Species* _____

Type of Oil **Crude** **Refined** **Veg/Fish** **Other** *Area Oiled* **Entire** **Waterline** **Body** **Spotty**

External Oil Visible **Yes** **No**[a] *External Oil Not Visible but Bird is Oiled?* **Yes** **No**[b]

Oil not visible but bird oiled based on one or more of the following (circle): **smell oil** **plumage malaligned or parted** **sticky texture** **wet** **skin burns**

Percent Bird Oiled _____ % *or* **sheen?** *Depth of oiling* **Deep** **Moderate** **Surface**

Age **Chick** **Sub-Adult** **Adult** **Unknown** *Sex* **Male** **Female** **Unknown**

Weight _____ g. *Temperature* _____ °F *Dehydration* _____ %

Heart Rate _____ /min. *Resp. Rate* _____ /min. *CRT* _____ sec.

Attitude **BAR** **QAR** **Nonresponsive** *Body Condition* **Normal** **Thin** **Emaciated**

Head/Mouth/Bill	*NSL*	*Other* _____
Eyes/Ears	*NSL*	*Other* _____
Heart/Lungs	*NSL*	*Other* _____
Gastrointestinal	*NSL*	*Other* _____
Musculo-skeletal	*NSL*	*Other* _____
Integument	*NSL*	*Other* _____

Intake Diagnostics and Initial Plan

PCV _____ *BC* _____ *TP* _____ *BG* _____ *Blood Taken?* **Crit** **LTT** **RTT** **GTT**

Initial Feeding Plan _____ *Toxiban* _____ *ml given @* _____

Treatment Plan _____ *Itraconazole?* **No** **Yes** *Dose* _____

Date Washed _____ *Date(s) Rewashed* _____

Disposition Information

Disposition Status **Released** **Died** **Euthanized** **Transferred** **Placed** *Date* _____

Disposition Location _____ *Federal Band No.* _____

[a]May be diesel, jet fuel, gasoline, vegetable oil, fish oil, or other.
[b]Examiner cannot smell oil, feel oil, plumage intact (not wet or parted).

Revised 6/15/99

BIRD COLLECTION RECORD

Incident: _____ Date: _____ Time: _____

Species: _____ Male: ___ Female: ___ Adult: ___ Juvenile: ___

Capture Location: _____ On Water: ___ On Land: ___

Difficulty in Capture. Low: ____ Medium: ____ High: ____

Collector Information:

Name: _____
Organization: _____

Extent of Bird Oiling (circle one):

Completely Oiled Dorsal Surface No Obvious Oil Spotty Ventral Surface

Other Observations: _____

_____

_____

In House Band Number: _____ Federal Band Number: _____

Field Treatment (check):

Mouth, nostrils cleaned: _____
Body wiped: _____
Body wrapped: _____
Gavaged: _____
Emaciation: Slight: _____ Moderate: _____ Severe: _____

Warmed: _____
Temperature: _____
Eyes Irrigated: _____
Amount: _____

Remarks: _____

PATHOLOGY REPORT

CLINIC NO. _____ **PATHOLOGY NO.** _____
SPECIES _____ **SEX** ___ **AGE** ____ **DATE** _____
IDENT. _____ **PATHOLOGIST** _____
CLINICIAN _____ **STUDENT** _____ **STUDENT** _____

OWNER _____ **ADDRESS** _____
DR. _____ **ADDRESS** _____
SPECIMEN _____ **DIED OR KILLED** _____ **DESTROYED BY** _____
PRESERVED _____ **POST MORTEM STATE** _____
NUTRITIONAL STATE _____ **RECORDER** _____

PATHOLOGICAL DIAGNOSES:

CLINICAL ABSTRACT:

INTEGUMENT:

PERITONEUM:

DIGESTIVE CANAL:

LIVER:

PANCREAS:

SPLEEN:

DEPARTMENT OF THE INTERIOR
U. S. FISH AND WILDLIFE SERVICE
DIVISION OF LAW ENFORCEMENT

CHAIN OF CUSTODY RECORD

FILE NO.
INV-

DATE AND TIME OF SEIZURE:	REGION:	EVIDENCE/PROPERTY SEIZED BY:
SOURCE OF EVIDENCE/PROPERTY (person and/or location): ☐ TAKEN FROM: ☐ RECEIVED FROM: ☐ FOUND AT:		CASE TITLE AND REMARKS:

ITEM NO.	DESCRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag Numbers and any serial numbers):

ITEM NO.				
	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE	DELIVERED VIA: ☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE	
ITEM NO.				
	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE	DELIVERED VIA: ☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE	
ITEM NO.				
	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE	DELIVERED VIA: ☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE	

☐ ADDITIONAL TRANSFERS ON REVERSE SIDE

FORM 3-2063 (3/90)

Fish and Wildlife Protection Strategies

9738 Fish and Wildlife Protection Options

Primary Response

The primary response strategy for fish and wildlife protection emphasizes controlling the release and spread of spilled oil at the source to prevent or reduce contamination of potentially affected species, their habitats, and sensitive environments. Specific primary response options include: mechanical or physical means; chemical or biological treatment; in-situ burning; and natural recovery. Oiled carcass collection is also considered a primary response effort.

Mechanical or physical methods are used to control spills through containment and recovery. Containment booms are used to control the spread of oil to reduce the possibility of polluting shorelines and other resources, as well as to concentrate oil in thicker surface layers, making recovery easier. Boom can also be deployed to keep oil that has been stranded on the shoreline from floating to another location. Recovery of contained or stranded oil can occur using various equipment and means including skimming, scraping, absorption, etc. Physical response methods include but are not limited to:

- Booming
- Skimming
- Barrier/Berm
- Physical Herding
- Manual removal/Cleaning
- Mechanical removal
- Sorbents
- Vacuum
- Debris removal
- Vegetation removal
- Flushing
- In-situ burning

Chemical treatment employs the use of dispersing agents, also called dispersants, that contain surfactants, or compounds that act to break liquid substances such as oil into small droplets. In an oil spill, these droplets disperse into the water column, where they are subjected to natural process—such as wind, waves, and currents—that help to break them down further. Chemical dispersants should only be used when the associated impacts of dispersed oil are less harmful than non-dispersed oil. All wildlife in the dispersant target zone should be identified prior to approving the use of dispersants. Birds within the dispersant target zone should be hazed or captured if they become contaminated. Dispersants should not be applied over large concentrations of birds.

Others types of chemicals may also be employed to assist with recovery such as elasticity modifiers, emulsion treating agents, shoreline pre-treating agents, solidifiers, surface

collecting agents and surface washing agents. Like dispersants, all of these chemicals require RRT approval prior to use.

Biological treatment uses biological agents such as nutrients, enzymes, or microorganisms that increase the rate at which natural biodegradation occurs. Biodegradation of oil is a natural process that slowly removes oil from the environment.

In-situ burning of oil involves the ignition and controlled combustion of oil. It can be used when oil is spilled on a water body or on land. Use of this technique also requires RRT approval.

Natural recovery, leaving the oil alone, allows natural processes to remove the oil from the environment. Natural processes include evaporation, oxidation, and biodegradation. Natural recovery is not recommended for areas supporting wildlife concentrations.

Oiled carcass and debris retrieval operations are established in conjunction with primary response activities to remove short term sources of contamination and reduce food chain "contamination". Oiled carcasses, vegetation, and debris are collected and removed to prevent secondary oiling or additional contamination of wildlife as a result of predation and grazing. USFWS responders can assist with the collection of oiled wildlife and are responsible for cataloging and maintaining chain-of-custody for oiled migratory birds. In some cases, the USFWS may recommend that the FOSC seed the assistance of USDA 's Animal & Plant Health Inspection Service (APHIS) - Wildlife Services to help with carcass collection. USFWS Law Enforcement and/or a State Conservation Officer will supervise all morgue operations.

Secondary Response

Secondary response methods to protect fish and wildlife from an oil spill involve maneuvering healthy and uncontaminated fish and wildlife away from contaminated sites by use of deterrents, hazing, and preemptive capture.

Following an oil spill, it may be necessary to initiate a *deterrence or hazing* program that disperses and excludes unoiled or oiled / injured wildlife from contaminated areas to reduce mortality. If warranted, deterrence activities are initiated as soon as possible following an oil spill to prevent animals from establishing or continuing regular use patterns within a contaminated area. Deterrent devices used to disperse wildlife include both visual and auditory techniques, using both simple and sophisticated devices in order to respond to the unique habits of different species, surrounding environments, and the spill situations. Careful consideration should be given in the selection and placement of deterrence devices to prevent driving unoiled wildlife into oiled areas. In some cases, the USFWS may recommend that the FOSC seek the assistance of USDA APHIS Wildlife Services to help haze wildlife away from areas contaminated with oil and away from oiled wildlife / carcasses.

Fish deterrence techniques may include use of light, sound, smell, bubble curtains of air and herding nets to herd fish away from hazard areas.

Pre-emptive capture includes the capture, handling, transportation, short-term holding and release of healthy, uncontaminated wildlife. Prior to initiating a pre-emptive capture effort, it is essential to establish a release site or a holding facility and a release plan. Pre-emptive capture is recommended when there is a high potential for oiling sensitive wildlife species that are not easily hazed. However, this secondary response option has limited application based on species-specific criteria. The primary concerns when conducting pre-emptive capture are human and animal safety and minimizing transportation and holding times. Safety of the animal should focus on stress reduction as follows:

- Have equipment necessary to handle and transport animals as quickly and efficiently as possible;
- Minimize the number of vessels, aircraft, all-terrain vehicles, etc. to herd and capture animals in a given area;
- Avoid unnecessary noise and disturbance during capture efforts;
- Never pursue the animals to the point of exhaustion; and
- Minimize human contact with the animals except to provide veterinary care.

Nets, electrofishing and anesthetizing agents (e.g.,Tricaine Methanesulfonate) may be used to capture and remove fish to non-hazardous waters of similar temperature and chemistry.

Tertiary Response

Tertiary response is the capture and treatment or rehabilitation of wildlife contaminated by oil. It is implemented as the last resort for protecting wildlife. Oiled wildlife rehabilitation includes all elements related to capture, handling, transportation, stabilization, cleaning, care, holding, and release. The goal of a capture and treatment effort is the release of healthy wildlife back into their natural environment. The decision to initiate such an effort must consider incident-specific criteria. The criteria must be based on the best available science and focus on the protection and maintenance of healthy wild populations of the species affected by the spill. Considerations for initiating an oiled wildlife capture and treatment program include: condition of the animal, weather, oil toxicity, time, species of animal, extent of oiling, care in captivity, location of treatment, available care, facility, release, zoonotic diseases, permits and euthanasia.

There is no protocol available for capture, cleaning and treatment of oiled fish.

Annex GG

Oil Spill Annex

Oil Incident Annex

Oil Spill Incident Annex – Sector Delaware Bay

Introduction

A response to an actual or threatened release of oil is responded to under the National Contingency Plan (NCP). A response can vary greatly, involving only a few people or thousands. The initial action taken by responders sets the tone and direction of the response. Some very large incidents may also be responded to under the National Response Framework (NRF). [Link to Oil and Hazardous Materials Annex in the National Response Framework].

Purpose

The purpose of this Annex is to facilitate the rapid establishment of a multi-agency and responsible party incident command team to respond to an oil spill occurring in the coastal zone. ***This Annex should be used in conjunction with the ACP's Base Plan*** and if the cause of the incident is a suspected or actual terrorist incident, used in conjunction with the ACP's Terrorism Incident Annex.

The guidance in this Annex includes:

- **Unified Command Organization** – pp. 3
- **Unified Command Objectives** – pp. 4
- **Considerations and Actions of the Coast Guard Incident Commander/Unified Command** – pp. 5
    - Utilizing Command Staff Officers – pp. 7

- **Operations Section Organization** – pp. 8
- **Operations Section Chief** – pp. 8
- **Operations Section Chief References** – pp. 8
- **Responsibilities** – pp. 9
    - Recovery and Protection Branch – pp. 10
        - Protection Group – pp. 10
        - Oil Recovery Group – pp. 11
        - Submerged Oil Group – pp. 12
        - Decontamination Group – pp. 12
        - Source Control Group – pp. 13
    - Waterways Management Branch – pp. 13
        - Vessel Decontamination Group – pp. 14
            - Cleanup Assessment Team - pp. 14
            - Decontamination Task Force – pp. 15
        - Underwater Survey Group – pp. 15
        - Safety Zone Group – pp. 15
    - Wildlife Branch – pp.16
        - Wildlife Branch Director – pp. 16
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    - Wildlife Rehabilitation Group – pp. 17
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- **Planning Section Organization** – pp. 19
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- **Planning Section Chief References –** pp.20
    - Situation Unit – pp. 20
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    - Documentation Unit – pp. 21
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        - Submerged Oil Assessment Team – pp. 24
        - Shoreline Cleanup Assessment Team – pp. 24
        - Wildlife Team – pp. 25
        - Sign Off Team – pp. 27
        - Technical Specialists – pp. 27
            - Disposal Technical Specialist – pp. 27
            - Other (Wetland Ecology and Water Quality) – pp. 28
            - Natural Resource Trustee – pp. 28
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    - Marine Transportation System Recovery Unit (MTSRU) – pp. 29
        - Marine Transportation System Recovery Coordination Team – pp. 30
    - Volunteer Coordinator or Unit (as needed) – pp. 31

- **Finance Section Organization** – pp. 32
- **Finance Section Chief** – pp. 32
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- **Logistics Section Organization** – pp. 33
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- **Logistics Section Chief References** – pp. 33

- **Special Teams** – pp. 34

Unified Command Organization

The make-up of the Unified Command organization for a multi-agency oil spill response is usually comprised of representatives from the:

- US Coast Guard
- Pennsylvania Department of Environmental Protection
- New Jersey Department of Environmental Protection
- Delaware Department of Natural Resources and Environmental Control
- Responsible Party

However, the actual makeup of the Unified Command (UC) must be made on a case-by-case basis. Depending on the incident, additional federal, state, or local agencies may comprise the UC, as appropriate and necessary.

Note that PA, NJ, and DE state policy may require additional state agencies representing their interests in the UC if:

- Citizens have been harmed
- There is the possibility that citizens could be harmed

The state emergency management agencies (PEMA, NJ-OEM, DEMA) are to be notified of oil spills whenever the above conditions exist or if the spill is in excess of 1,000 gallons, for their information.

In general terms, an organization may be included in the UC if:

- The organization has jurisdictional authority or functional responsibility under law for oil spill response
- The organization is specifically charged with commanding, coordinating or managing a major aspect of the oil spill response
- The organization has resources to support the oil spill response
- The organization's area of responsibility is affected by the oil spill or the response operation

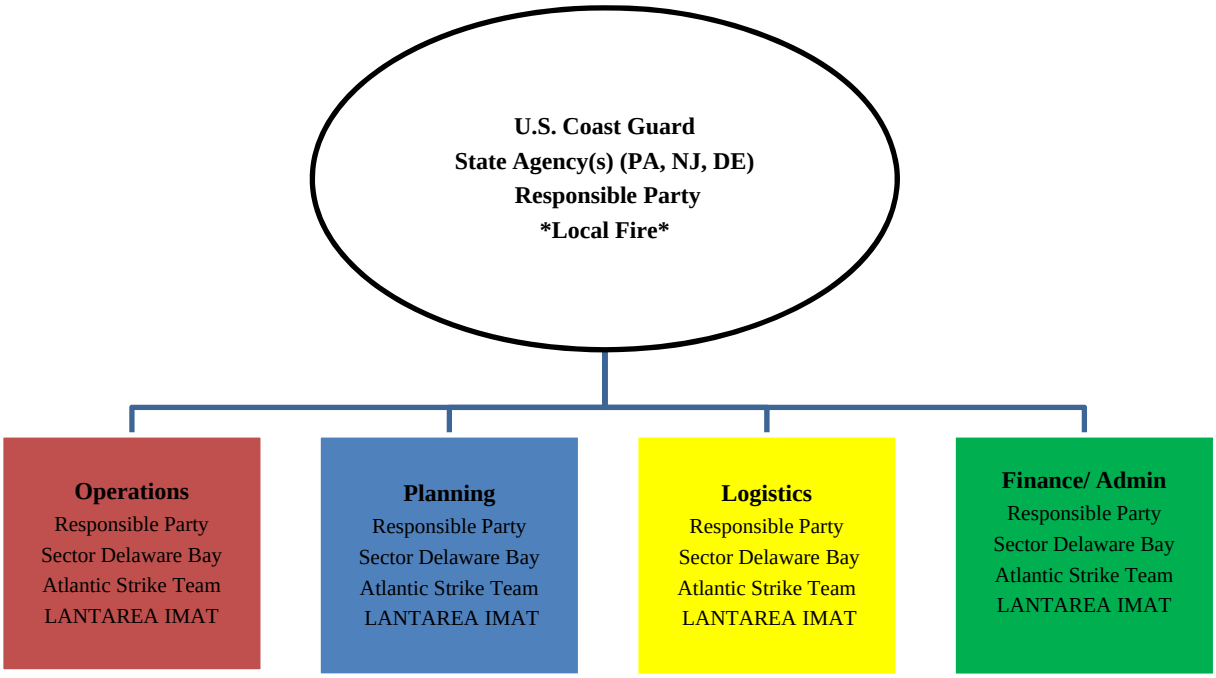

Figure 1 is a generic illustration of the agencies and/or entities that could serve in the Unified Command and General Staff. The list of agencies is not exclusive.
* Local Governments are encouraged to contact the Unified Command through the Liaison Officer.

Unified Command Objectives

Incident Commander References:

- [Link to U.S. Coast Guard, Incident Management Handbook (IMH), August 2006, Chapter 4 for examples of key decisions and objections]
- [Link to Incident Commander Job Aid]
- Various ICS Position Job Aids can be found on the Coast Guard's HomePort website (HomePort> Library> Incident Command System ICS>)
- The U.S. Coast Guard's Contingency Preparedness System which is a repository of lessons learned from exercises and real world events.
- MOU between the USCG, EPA & Corporation for National and Community Service TBD

The Incident Commander(s) / Unified Command (UC) set the tone for the response by developing response direction and guidance for the Incident Management Team (Response Organization). Chapter 4 of the U.S. Coast Guard, Incident Management Handbook (IMH) provides a list of decisions, incident priorities, incident objectives, and common tasks typically utilized during a spill. A link to the IMH is provided immediately above.

Considerations and Actions of the Coast Guard Incident Commander (CGIC)/Unified Command:

- Utilize the Oil Pollution Quick Response Card (QRC) [Link to Oil Pollution QRC]

- Make a determination if it is Safe to Respond [Link to Safe to Respond Policy]

- Follow Endangered Species Act requirements [Link to ESA Emergency Response Section 9717]
    - Notify the Regional Response Team representatives of the Department of Interior and Department of Commerce (NOAA) regardless of whether listed species or critical habitat are impacted
    - Determine if federally listed Threatened and Endangered species or critical habitat are present or could be present. If they are present, initiate Endangered Species Act informal Section 7 consultation with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) [Link to Federally Listed Threatened and Endangered Species location information], [Link to example Informal Consultation Section 9735], [Link to ESA MOA Signed Copy Sec. 9716],
    - Document any written or oral communications that involve decisions on endangered species or critical habitat
    - Notify the USFWS and NMFS representative on the Incident Command team of any response situation changes that may impact endangered species or designated critical habitats
    - Ensure that response strategies and tactics are planned to minimize impacts to threatened or endangered species and designated critical habitats
    - Consult with state ICs regarding the presence of state listed threatened and endangered species and/or critical habitats in the; spill area, potential impact areas, and clean-up locations
    - **Post response: Complete consultation pursuant to the Endangered Species Act as is appropriate.** [Link to ESA Post-Response Section 9719]

- Determine if historic properties will be potentially impacted by response activities. Helpful information can be found at:
    - National Register of Historic Places (by state and county) see: http://www.nationalregisterofhistoricplaces.com
    - State Historic Preservation Office (SHPO) contacts see: http://www.ncshpo.org/find/index.htm#p
    - For information on the Programmatic Agreement on Protection of Historic Properties During Emergency Response Under the National Oil and Hazardous Substance Contingency Plan, see: http://www.achp.gov/NCP-PA.html
    - Refer to the guidance in Section 9711, Protection of Historic Properties: Oil Discharge and Hazardous Materials Release Emergency Response Phase Checklist [Link to Guidance Section 9711]

- Note that, before federal projects affecting historic properties can proceed, the National Historic Preservation Act (NHPA) requires all federal agencies to identify, preserve and manage eligible historic properties under their ownership or control. Section 106 of the National Historic Preservation Act (NHPA) requires "consultation" with the SHPOs and when agreement cannot be reached, with the Advisory Council on Historic Preservation (ACHP). See http://www.achp.gov/docs/OFAP_Org_Chart.pdf
- For ACHP Questions and Answers – Consideration and Treatment of Historic Properties During the Response to DEEPWATER HORIZON Oil Spill, see: http://www.achp.gov/docs/OilQandA.pdf
- If historic properties are present or could be present, contact the appropriate SHPO. Consult with SHPOs in the event that oil impacts structures that are 50 years old or more and the cleanup activities include:
  - Removing structures
  - Power washing structures
  - Ground disturbance
- Document any written or oral communications that involve decisions on historic properties

- Determine viability of employing countermeasures
  - Utilize the Selection Guide for Oil Spill Response Countermeasures http://epasg.genwest.com/index.html#
  - Dispersants [Link to dispersant protocols for the Delaware River Region Section 9720]
  - In-situ burning [Link to In-situ Burn Protocols Section 9718]
  - Additional information may be found on the Regional Response Team III website: http://www.rrt3-rcp.nrt.org/production/NRT/RRT3-RCP.nsf/AllPages/HomePage.html
  - The EPA's Product Schedule can be found at: http://www.epa.gov/oem/content/ncp/product_schedule.htm

- Ensure that the natural resource trustees are promptly notified of the incident and that the trustee-appointed Federal Lead Administrative Trustee or Lead Administrative Trustee coordinates NRDA activities, including any requests for assistance, with the Liaison Officer

- In the event that a Responsible Party decides to no longer fund a response action, consult the guidance outlined in the Transitioning from a Responsible Party Managed Response to a Federal Response [Link to Transition Document Section 9721]

- In the event that there is NO known responsible party, consult the guidance outlined in the Federally Managed Spill Response document. [Link to Federally Managed Spill Response document Section 9799]

- Establish a 3rd party claims process. The UC should consider/require the cleaning of recreational boats to be part of the response cleanup activities and not necessarily part of the claims process

Utilizing Command Staff Officers

The specialized staff positions that could be utilized during a spill are typically a Safety Officer; Liaison Officer; Public Information Officer; and the Intelligence and Investigations Officers. Additional positions may be staffed as necessary, e.g. Volunteer Officer.

The UC and personnel assigned to fill the Staff Officer positions should utilize the following for more information:

- [Link to U.S. Coast Guard, Incident Management Handbook]
- [Link to Public Information Job Aid]
- [Link to Joint Information Center Manual]
- [Link to Liaison Officer Job Aid]
- [Link to Liaison Manual]
- [Link to Safety Officer Job Aid]
- National Strike Force, Public Information Assist Team
- Coast Guard District 5 Public Affairs Detachment
- The U.S. Coast Guard's Contingency Preparedness System

Recommended "best practices" for selected Staff Officers include but are not limited to:

- Liaison Officer:
  - Identify the need for Assistant Liaison Officers to work with the States of DE, NJ, and PA. Assistants should come from the States.
  - Assist the Federal Lead Administrative Trustee, if assistance is requested, as Trustees conduct Natural Resource Damage Assessment and Restoration activities
  - Coordinate VIP visits
  - Coordinate local, state, and federal political visits

- Information Officer
  - Set up the Joint Information Center (JIC)
  - Begin social media monitoring
    - Television, websites and blogs
  - Identify needs and request NSF Public Information Assist Team and USCG District 5 Public Affairs Detachment as necessary

- Safety Officer
  - Have sufficient Assistant Safety Officers in the field to ensure compliance with Site Safety Plans and OSHA requirements
  - Requested advisory capacity assistance from OSHA

Operations Section Organization

The Operations Section will be organized to meet the needs of the incident. For large and/or complex oil spill response operations the Operations Section Chief may organize as shown in Figure 2.

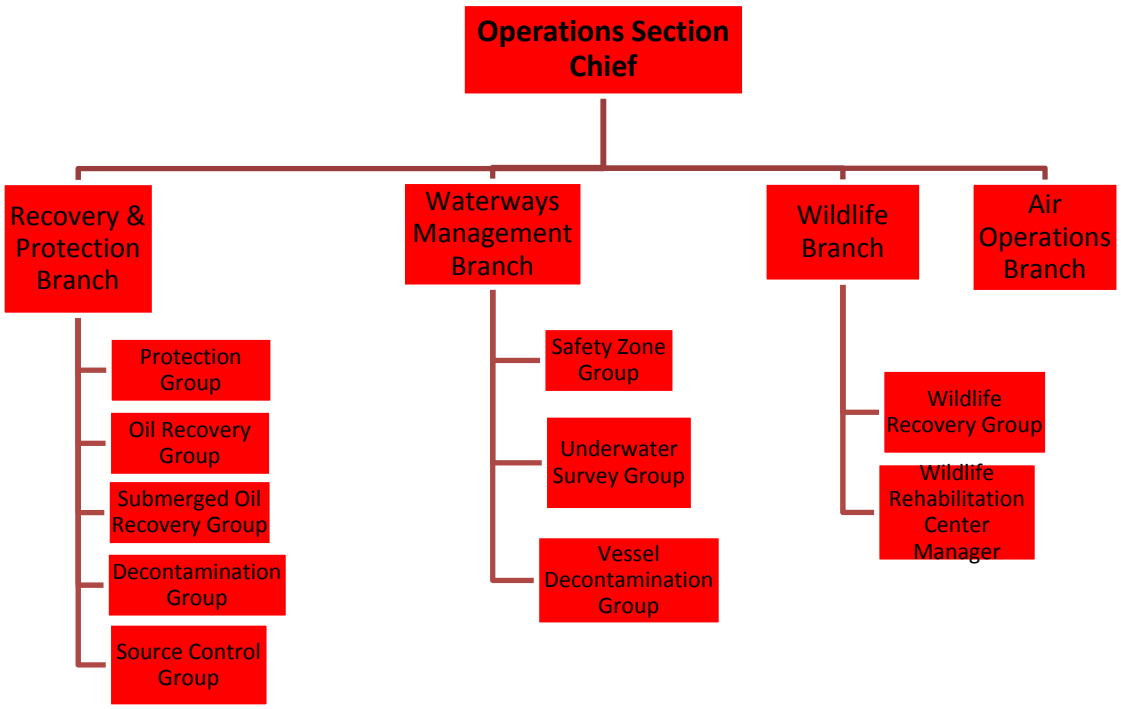

Figure 2. The size and makeup of the Operations Section is dependent on the size and complexity of the incident. For a major oil spill the Operations Section may be organized as shown above.

Operations Section Chief

The Operations Section Chief is responsible for the management of all tactical operations directly applicable to the primary mission.

Operations Section Chief References:

- U.S. Coast Guard, Incident Management Handbook, August 2006
- Operations Section Chief Job Aid
- Various ICS Job Aids for positions normally found in the Operations Section can be found on the Coast Guard's HomePort website (HomePort> Library> Incident Command System ICS>)

- See "Special Teams" at the end of this Annex. [Link to Special Teams]
- The U.S. Coast Guard's Contingency Preparedness System which is a repository of lessons learned from exercises and real world events.
- Pollution Removal Funding Authorizations (PRFA) for:
    - [Link to US Army Corps of Engineers PRFA]
    - [Link to State Environmental Agency PRFA]
    - [Link to US Fish and Wildlife Service PRFA]
    - [Link to Department of the Interior's Office of Environmental Policy & Compliance PRFA]

Responsibilities: The Operations Section Chief should also refer to the Oil Spill Quick Response Card utilized by the initial IC to confirm actions and notification that were taken. Depending on the complexity of the spill, a Multi Division/Group Organization or a Multi Branch Organization will need to be established (See: "Oil Spill" Chapter in the U.S. Coast Guard IMH). Overall, the Operations Section Chief is responsible for:

- Overseeing the initial assessment:
    - Determine or confirm location and time of spill; product and amount spilled; and area of known impact
    - Determine immediate safety hazards
    - Obtain best estimate of oil movement for next 12 hours based on current weather and tides
    - Identify areas that will be impacted

- Implementing protective booming strategy [Link to Strategies]
    - Prioritize protective booming (The Area Committee has determined that protecting openings to wetlands is the number one priority for protective booming. The philosophy is that oil can be deflected onto any river bank but must be prevented from going up tributaries into the wetlands.)

- Initiating efforts to control the source
    - Ensure actions are being taken to control and secure the source
    - If necessary, recommend establishing a safety zone
    - Contain the spill

- Establishing response branches (Recovery and Protection, Emergency Response, Air Operations, Waterways Management, Wildlife), as needed

- Consider conducting pre-impact cleanup of shoreline

- Identifying staging areas to be used [Link to pre-identified staging areas]

- As directed, conducting dispersant operations [Link to dispersant protocols Section 9720]

- As directed, conducting In-situ Burn operations [Link to In-situ Burn Protocols Section 9718]

Recovery and Protection Branch

The Recovery and Protection Branch is responsible for overseeing and implementing the protection, containment and cleanup activities as established in the IAP.

Protection Group

- Utilize Oil Spill Response Tools (See Electronic ACP's "MAPS" Section)
    - Based on location of spill, amount released, weather and other factors determine what areas will be impacted and the time they will be impacted
    - Provide prioritized protective booming list to the Operations Section Chief or Branch Director, if established

- Determine the organizations responding from or on behalf of the Responsible Party

- Is the local spill cooperative (Delaware Bay River Cooperative (DBRC)) responding?
    - If yes, confirm which boom sites have been ordered deployed?

- If the local cooperative is not responding, what organization(s) will be doing the protective booming? Note that the DBRC's response equipment is only available to co-op members unless the Coast Guard hires DBRC
    - Confirm which boom sites have been ordered deployed
    - Where will resources, materials and personnel come from?
    - Are the personnel familiar with the booming plans?
    - What is the time frame for accomplishment?

- Provide information to Waterways Management in order to issue a Notice to Mariners for protective boom sites. Ensure that the most up-to-date information is provided so that adjustments can be made to the broadcast(s)

- Ensure that the Incident Action Plan includes any necessary special instructions that deployed booms are to be lighted and/or attended

- Monitor and maintain the activities at boom sites and report back daily to Operations with observations.

- Based on overflight information:
    - Determine additional sites that will have to be boomed and establish priorities
    - Identify other potential sites (other than openings to wetlands) that may require protective booming

- Identify additional staging areas to mobilize
- Identify resources to be mobilized (equipment and personnel)
- Repeat above until no further protective booming is needed

- Determine protective boom sites to be removed, decontaminated, or disposed of, if necessary

Oil Recovery Group

General responsibilities include the need to:

- Advise the Operations Section Chief of the amount of oil that can be recovered based upon the amount of oil on the surface of the water; offshore, near shore and on the riverbanks and shorelines. Based on experience, suggest the types of resources that can be used.

- Obtain dedicated helicopter for on water recovery operations (the efficiency of the on water recovery will be severely impacted without air support)

- Establish communications with helicopter and/or on-water resources

- Obtain latest spill information to verify that the on-water resources are the best location to recover oil

- Provide feedback to the Operations Section Chief on the ongoing adequacy of the resources deployed

- Look at methods to enhance the recovery operations
  - Review the planned collection booming schemes in the ACP's Environmental Sensitivity Maps or ASAMAP data layer
  - Consider the possibility of using V-booms to enhance the encounter rates

- Determine the temporary storage required for the spill and the type required:
  - In the upriver area, Delaware City and above, land facilities, vacuum trucks, and/or barges may all be viable solutions for temporary storage to offload OSRVs
  - Below Delaware City, the temporary storage will be limited to barges to which OSRVs can transfer recovered oil

- Monitor the location of on-water resources and, if direct air support is not available, provide the OSRVs with the latest observations from any sources. Review the latest trajectory information to assist in keeping the OSRVs in areas where there is recoverable oil

- Consider the use of a vessel identification system (Automated Identification Systems (AIS)) to track the location of oil spill recovery vessels or vessels of opportunity

USCG District 5's District Response Advisory Team (DRAT) may be able to provide an Equipment Specialist/On Water Group Supervisor. Request the DRAT resources through the District 5 Command Center.

Submerged Oil Group (established when submerged oil is determined to exist)

- Develop a Submerged Oil Assessment Plan [Link to attachment 9756 Submerged Oil Assessment Plan for the ATHOS I Oil Spill]

- Locate and quantify recoverable submerged oil with remote sensing and or divers certified to dive in contaminated waters. Explore remote sensing options with NOAA and the USCG Research and Development Center. The local cooperative, DBRC, has some capability to detect submerged oil.

- Develop appropriate site safety plan

- Identify required resources based on quantity, viscosity, water depth and temperature

- For large quantities of submerged oil consider:
    - Platform (vessel, barge, etc.)
    - Contaminated water divers
    - Pumping equipment
    - Oil/water separation or decanting (Ensure actions are approved by the UC and permits are received prior to implementation)
    - Temporary storage
    - Transfer equipment
    - Disposal needs

- Small quantities of submerged oil:
    - Weighted snare or VSORS (Vessel Submerged Oil Recovery System)
    - Diver assisted recovery with viscous oil pom poms

Decontamination Group

- Identify types and amounts of equipment to be decontaminated
    - Large vessels (ships and barges) on water
    - Small vessels (See "Considerations and Actions of the CGIC/UC" to verify how cleaning of recreational vessels will be handled)
    - Oil Containment boom (Working with interested parties, determine if it is more cost effective to dispose of contaminated boom)
    - Skimmers

- Identify and locate suitable facility for decontamination activities
    - Suitably sized area for decontamination operation
    - Suitable area for staging equipment prior to and post decon
    - Consider location based on public use and access, preferably in a industrial area
- Work with the Safety Officer to develop an appropriate site safety plan considering approved cleaning agents (include information on the Material Safety Data Sheet)

- Identify and locate required resources
    - Decontamination pools
    - Pressure washers
    - Pumps
    - Water source
    - Wash water temporary storage
    - Wash water transport to disposal facility in accordance with waste disposal plan
    - Equipment handling (fork lift, crane)

- Develop appropriate tracking and documentation of equipment as it enters and departs decontamination facility

Source Control Group

The Source Control Group Supervisor is responsible for coordinating and directing all source control activities related to the incident. The Source Control Group can also be organized as the Salvage/Source Control Group, if necessary. Source Control activities include but are not limited to:

- Coordinating the development of the Source Control Plan

- Determining Source Control resource needs

- Directing and coordinating implementation of the Source Control Plan

- Managing the dedicated Source Control resources

Waterways Management Branch (WMB) The WMB within the Operations Section works closely with the Marine Transportation System Recovery Unit (MTSRU) within the Planning Section. The WMB actively ensures the safe movement of vessels within the established safety zone and the prioritized commercial facilities and vessels are decontaminated as quickly as possible to limit the impact to the port. All WMB activities and decisions should be briefed back to the MTSRU.

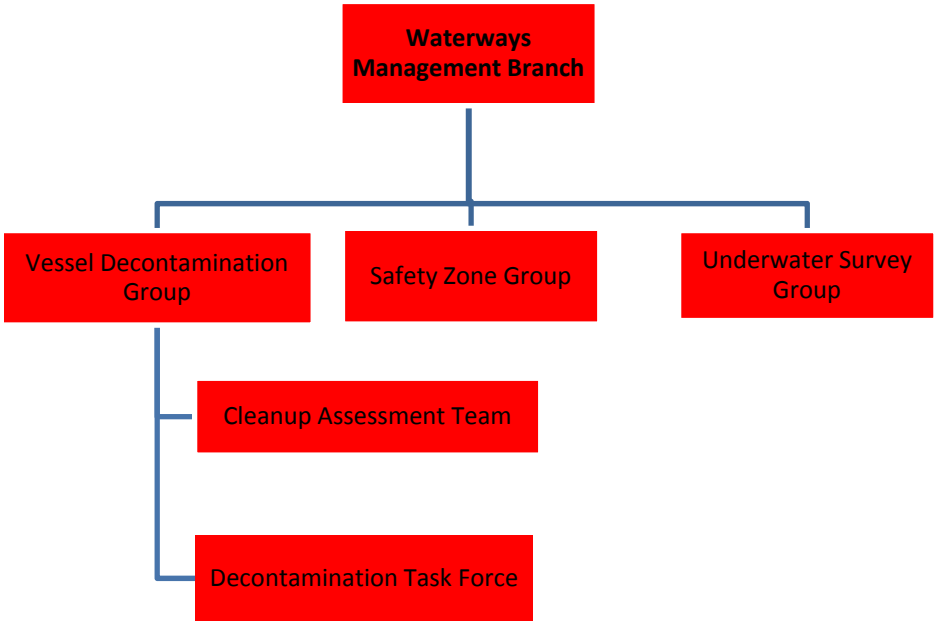

Figure 3. The Waterways Management Branch organization oversees the safe movement of vessels within the established safety zone.

Vessel Decontamination Group. The Supervisor oversees the implementation of the facility and vessel decontamination plan. Duties include:

- Utilize the daily decontamination priority list (received from the MTSRU) to coordinate decontamination priorities
- Assign and coordinate decontamination work assignments
- Ensure that safety briefings are conducted prior to each shift
- Ensure that decontamination schedule is communicated daily to the impacted Stakeholders

Cleanup Assessment Teams. Assessment Teams conduct assessments of facilities and vessels within the spill area to determine extent of oil contamination and if decontamination efforts meet established criteria for cleanliness. Activities and actions include:

- Receive daily work assignment from the Decontamination Group
- Document (written and photographic) findings for each facility and vessel assessed

- [Assessment Form Section 9728]
- [Sketch Map Section 9729]

- Check integrity of deployed boom around facility piers. Notify Decontamination Group Supervisor if boom is not performing as required

- Check vessels within the safety zone for oiling. Notify Decontamination Group Supervisor of vessel(s) status (contaminated or not contaminated)

Decontamination Task Force. Provide personnel and equipment to conduct commercial facility and vessel decontamination.

- Receive daily tasking and safety brief from the Decontamination Group Supervisor

- Clean facilities and vessels in accordance with the Vessel Decontamination Plan [Link to an sample Vessel Decontamination Plan Section 9736]

- Upon completion of decontamination efforts, coordinate with the Decontamination Group Supervisor to have the Cleanup Assessment Team inspect the vessel and verify that the decontamination meets established guidelines for cleanliness

Underwater Survey Group. The Survey Group is to conduct bottom survey activities within the established safety zone(s) to assure the overall safety of on-water activities. Activities include:

- Coordinate all diving and survey operations within the established safety zone

- Approve/disapprove dive safety plans

- Coordinate all dive and survey operations with the Vessel Traffic Management Group, Safety Zone Group and the Oil Recovery Group

Safety Zone Group. Utilize waterborne resources to enforce integrity of the safety zone.

- Enforce requirements of the safety zone

- Coordinate with the Vessel Traffic Management Group and the Decontamination Group to monitor and enforce all movement of vessels (commercial cleanup) that are arriving, departing or shifting berths within the safety zone

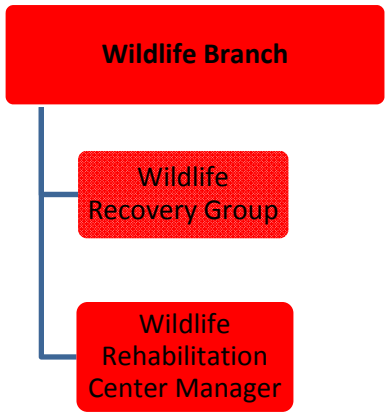

Figure 4. The Wildlife Branch within the Operations Sections is charged with actually conducting "field operations".

Wildlife Branch. When oiled wildlife is present or there is a possibility that wildlife will become impacted, the Operations Section Chief should standup the Wildlife Branch. This Branch deals with all operational wildlife issues, such as actually conducting; wildlife field assessments and surveys, deterrence, recovery, and rehabilitation of the impacted animals. The Wildlife Branch within the Operations Section works closely with the Environmental Unit and specifically the Wildlife Team within the Planning Section. The interaction between these groups helps to determine the best course of action for the response.

During a response, one or more of the following positions may be activated. In addition to the assigned tasks, each activated group is responsible for providing daily activity reports. Helpful references: Best Practices for Migratory Bird Care during Oil Spill Response (USFWS); Best Practices for Marine Mammals (NOAA).

- **Wildlife Branch Director**: The Wildlife Branch Director oversees efforts to minimize wildlife impacts during the emergency response including, but not limited to:
    - Coordinates teams for:
        - Field assessment and surveys
        - Live animal capture and carcass collection.
    - Establishes a facility for wildlife rehabilitation as appropriate
    - Consults on wildlife protection strategies
    - May provide input on potential impacts of response protection strategies on wildlife
    - Knowledgeable of all aspects of a wildlife response.
    - Responsible for ensuring that plans are executed and for day to day operations.
    - Ensures overall safety of the wildlife efforts
    - Ensures storage or disposal as appropriate is arranged for oiled carcasses

- Ensures wildlife responders possess appropriate state and federal permits for wildlife response activities

- **Wildlife Recovery Group**: This group coordinates the priorities and daily activities of all units with field assignments and is responsible to ensure that all assigned personnel adhere to safe work practices. The group follows the response organization's agreed upon procedures to order necessary equipment and supplies. This group may also be further divided according to impacted species (birds, marine mammals, sea turtles) with each unit below ramped up for species type.

    - Wildlife Assessment Unit
        - Collects accurate field data (number and location of oiled and non-impacted wildlife)
        - May be done via land, water and air resources

    - Hazing Unit
        - Executes the deterrence plan
        - Ensures deterrents are not displacing clean animals into oiled areas

    - Recovery Unit
        - Collects impacted wildlife (by land or water)
            - Live wildlife and carcasses
        - Utilizes trained personnel experienced in the capture of oiled wildlife
        - Follows transportation and stabilization guidelines
        - Ensures accurate records and chain of custody
        - Timely communication with Wildlife Rehabilitation Group

    - Wildlife Morgue Unit
        - Often staffed by agency law enforcement personnel
        - Ensures accurate records and chain of custody
        - Ensures appropriate storage of carcasses
        - May be co-located with rehabilitation facility when appropriate
        - References : Best Practices for Migratory Bird Care during Oil Spill Response (USFWS); Best Practices for Marine Mammals (NOAA)

- **Wildlife Rehabilitation Group**: This group coordinates the safe work practices of the day to day activities of the wildlife rehabilitation facilities and is responsible for the site safety plans of each facility. It is essential that this group utilizes trained personnel experienced in the rehabilitation of oiled wildlife. Responsibilities include but are not limited to:

    - Ensure accurate records and timely reporting to the Situation Unit and Joint Information Center (JIC)
    - This group may be divided according to species impacted (birds, marine mammals, sea turtles) with dedicated facilities for each
    - Identifies the need for and establishes stabilization sites as appropriate

- Secures equipment, supplies and specialized wildlife rehabilitation items as per the response organization's agreed upon procedures
- Maintain a status database of all wildlife (living or deceased) passing through the facility
- Ensures stabilization and rehabilitation protocols adhere to published guidelines accepted by federal and state natural resource managers.
  - References : Best Practices for Migratory Bird Care during Oil Spill Response (USFWS); Best Practices for Marine Mammals (NOAA)

Air Operations Branch. There is no specific number of aviation assets that will trigger when the Air Operations Branch is established. In order to schedule the aircraft best suited for the missions, the Air Operations Branch Director (AOBD) should discuss overflight mission objectives with the Operations Section Chief (and with the Liaison Officer, if necessary). Overflight missions may include:

- Mapping the distribution and appearance of the oil
- Verifying modeled forecasts of the oil movement
- Providing responders with an overview of the incident
- Directing cleanup operations
- Providing equipment/personnel
- Wildlife Surveys
- Monitor and document integrity and effectiveness of deployed booming
- VIP observers (e.g. Agency Administrators, Governors, etc)

Aerial Observation Considerations:

- In the early morning or early evening there is often not enough contrast to see some oils clearly
- The flight track should be set up to minimize the glare with the optimum schedule for mapping oil distribution depending on the angle of the sun in mid-latitudes. The middle of the morning or afternoon is usually a good viewing time. Personnel selected to conduct observations of oil spills should consult the Guidance for Aerial Observation of an Oil Spill [Link to Guidance for Aerial Observation of an Oil Spill Section 9740]

Planning Section Organization

The Planning Section is responsible for the collection, evaluation, dissemination and use of incident information and maintaining the status of assigned resources. In addition to the traditional ICS Planning Section Units, response to an oil spill may require additional units be added (Figure 4) to enable the Planning Section to support incident operations.

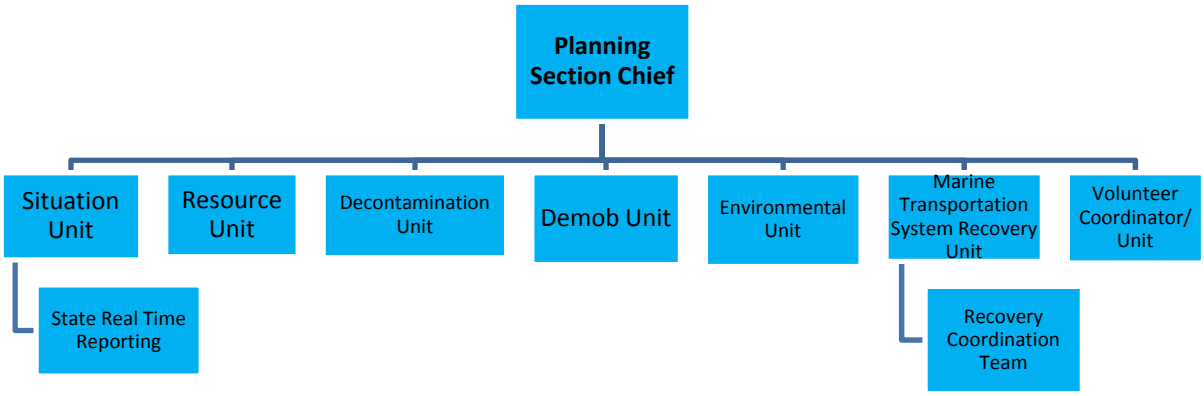

Figure 4. The Planning Section may require additional units not normally associated with the traditional ICS organization to enable the Planning Section to support response operations.

Planning Section Chief:

Depending on the size and complexity of the oil spill response, the Planning Section Chief should determine the need to establish various Units, such as the ones mentioned below, or to establish additional Units such as a Geographic Information System (GIS) Unit. In addition, the Planning Section Chief needs to determine the need to develop other supporting plans such as:

- Tarball and Debris Plan [Link to Tarball Plan Section 9744]
- Commercial Vessel Decontamination Plan
- Waste Disposal Plan
- Wildlife Recovery Plan
- Water Column Monitoring Plan
- Dispersant Plan
- In-situ Burn Plan

USCG District 5's District Response Advisory Team (DRAT) may be able to provide expertise and technical assistance to the FOSC during oil spills. Request the DRAT resources through the District 5 Command Center.

Planning Section Chief References:

- [Link to U.S. Coast Guard, Incident Management Handbook, August 2006]
- [Link to Planning Section Chief Job Aid]
- Various ICS Job Aids for positions or "tools" normally found in or used by the Planning Section can be found on the Coast Guard's HomePort website (HomePort> Library> Incident Command System ICS>)
- See "Special Teams" at the end of this Annex
- The U.S. Coast Guard's Contingency Preparedness System which is a repository of lessons learned from exercises and real world events.

Situation Unit

The Situation Unit is responsible for gathering incident information and ensuring that the information is 'pushed out' and shared throughout the entire command team. Helpful information can be found in:

- [Link to Section 4100 of the ACP]
- [Link to USCG Incident Management Handbook]
- [Link to Situation Unit Leader Job Aid]

State Utilization of "Real Time" Reporting Systems

Should the states of PA, NJ or DE, and their corresponding counties or municipalities utilize a web based, "real time" reporting system, such as Knowledge Center, eTeam, Incident Master, or Web-EOC to report oil sightings or impacted wildlife; the states are to supply the response organization with access to the systems and state specialists to enter data into the systems. These steps are to ensure smooth information flow "up and down" the reporting systems and between the response organization and the states of PA, NJ, and DE.

Prior to utilizing any state real time reporting system during the response, state Incident Commanders are to ensure that officials and representatives from their respective states know the Unified Command's agreed upon reporting procedures.

Resource Unit

The Resource Unit Leader (RESL) is responsible for maintaining the check-in, and tracking the current status (assigned, available, out of service) and location of all resources at an incident. Helpful information can be found in:

- [Link to Section 4200 of the ACP]
- [Link to USCG Incident Management Handbook]
- [Link to Resource Unit Leader Job Aid]

- [Link to Resource Tracking Flowchart – Resources from Other Federal, State or Local Governments]
- [Link to Resource Tracking Flowchart – Resources from Contractor]

Documentation Unit

The DOCL is responsible for the maintenance of accurate, up-to-date files. Helpful information can be found in:

- [Link to Section 4400 of the ACP]
- [Link to USCG Incident Management Handbook page]

For assistance in standing up the Documentation Unit, contact; Chuck Anglin, Response Documentation Specialist, TRACEN Yorktown, (757) 856-2920 Office, (757) 561-9275 Cell.

To ensure that UC decisions are formally documented, consider assigning a "Recorder" to the Unified Command.

Demobilization Unit

[Link to Section 4500 of the ACP]

Environmental Unit

[Link to Environmental Unit Leader Job Aid]
[Link with USCG Incident Management Handbook page 8-9]

The Environmental Unit responds to the changing demands of oil spills by developing with stakeholders a number of teams that execute specific tasks. The organization chart in Figure 6 includes several of the most common teams that work under the Environmental Unit during an oil spill response.

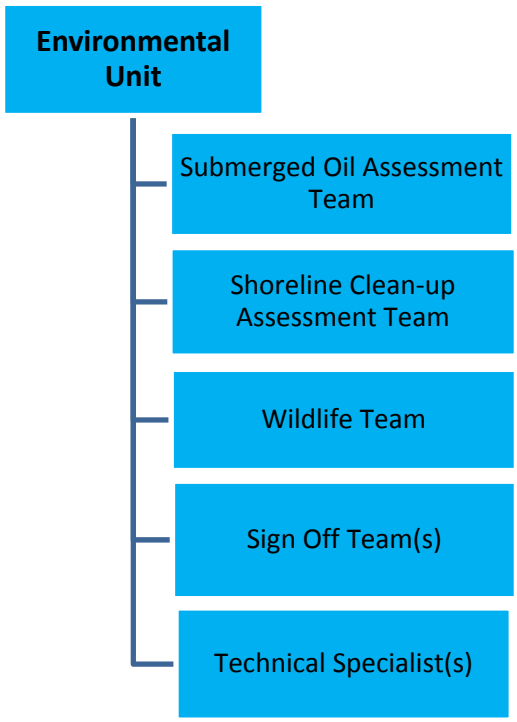

Figure 5. The Environmental Unit oversees a wide range of technical disciplines.

Environmental Unit Leader Responsibilities (not all inclusive)

- Assess the chemistry of the spilled oil to determine the oil's fate and effect in the environment

- Provide support to the Safety Officer in development of the Site Safety Plan

- Provide expertise on living marine resources and their habitats and information on associated cleanup and mitigation methods
    - Coordinate with Federal and State Resource Agencies and Trustees on the collection and dissemination of information on the environmental resources at risk, including marine resources

- Develop strategies to minimize environmental impact of the spill based on stakeholder consensus
    - Participate with State responders in the development of priority protection areas based on sensitive habitats [Link to Sensitive Area Maps]
    - Coordinate consultation with the State Historic Preservation Officers concerning the location of cultural and historic resources

- Develop environmental monitoring strategies that will help decision-makers understand the impact of response countermeasures that have been implemented

- Provide technical support to the FOSC during negotiations with representatives from the oil industry, the Port, the Nuclear Power Plant, and the Nuclear Regulatory Commission

- Provide information on meteorological, hydrological, ice, and oceanographic conditions
    - Provide technical report on future ice conditions
    - Provide technical report forecasting movement of the spilled oil

- Assemble and coordinate environmental stakeholders to reach consensus on protection priorities and cleanup strategies and endpoints
    - Consider establishing a Science Team that includes State representation and technical specialists to evaluate the technical issues and reach consensus
    - Through the Science Team, coordinate with stakeholders the development of endpoints [Link to sample End-points Section 9737] [Link to Delaware Estuary Science Directory]

- Work with Trustee agencies to begin the process of the Endangered Species Act Section 7 consultation [Link to example Informal Consultation Section 9735]

- Provide timely and complete status reports to the Planning Section Chief
    - Prepare environmental data for the Situation Unit
    - Provide weather, shoreline oiling, mapping and graphics for use in all briefings and situational updates, media briefings and public outreach forums

- As directed by the Unified Command, participate in news conferences, media availabilities, open houses and town hall meetings

- Establish and maintain the Response Link website for internal communications with response agencies

- Act as the liaison between the Unified Command and the Regional Response Team (RRT) providing the RRT with daily updates

- Coordinate requests from the Unified Command to conduct testing of alternative response strategies with the RRT

- Coordinate requests from vendors to evaluate a product's appropriateness for use during an incident using the Alternative Response Tool Evaluation System (ARTES). The process can be accessed through:
    - NOAA's website
    - Regional Response Team III's website

- Coordinate the activities of wildlife agencies and development of a Wildlife Recovery Plan

- Coordinate and support Unified Command requests for conducting hydrographic surveys

Submerged Oil Assessment Team

- Supports Submerged Oil Group activities

- Design submerged oil assessment strategies

- Ensure sample techniques are approved by the State(s)

- Coordinate placement of water column monitoring devices with the State(s)

- Provide leadership in the development of monitoring strategies for submerged oil [Link to example Submerged Oil Report Section 9756]

- Compile data reports

- Assess recovery techniques

- Identify potential impacts of oil and recovery techniques

Shoreline Cleanup Assessment Team (SCAT)

Shoreline Cleanup Assessment Team(s) are critical to supporting response operations by visually assessing impacted areas and determining the best methods of removal, enabling the Operations Section Chief to focus their response resources and refine their tactical plans [Link to NOAA Shoreline Assessment Manual]. The SCAT Team Leader responsibilities include:

- Determining the number of SCAT teams required

- Configuring the teams with members possessing proper training and skill sets to ensure appropriate stakeholder representation. At a minimum the team make-up should include:
    - Coast Guard Representative
    - Impacted State Representative
    - Responsible Party Representative
    - Land Management Agencies

  .

  All members of the SCAT shall have completed the NOAA SCAT course or an alternately accepted course. All members of the SCAT shall have the Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) as specified

by 1910.120(a)(1)(i-v) and 1926.65(a)(1)(i-v). For more information link to: http://www.osha.gov/html/faq-hazwoper.html

- Coordinating SCAT activities
- Developing the SCAT process that would meet the objectives of the Unified Command and the data collection/documentation requirements of the Natural Resource Damage Assessment (NRDA) teams.

- Establishing on-scene Geographic Information System (GIS) mapping capabilities to capture SCAT results and provide information to Situation Unit and stakeholders

- Coordinating with the Responsibility Party's spill management team to ensure that SCAT information is shared with their scientific personnel

Wildlife Team

The Wildlife Team within the Planning Section is responsible for developing guidelines and advising on wildlife issues including but not limited to; wildlife protection strategies, capture techniques, handling of wildlife, handling of carcasses, and the employment of hazing measures. This team works closely with the Wildlife Branch within the Operations Section to minimize wildlife injuries. The Wildlife Team should:

- Ensure all wildlife recovery personnel are properly trained and authorized to capture and handle wildlife and are adhering to accepted or incident-specific health and safety guidelines.

- Ensure wildlife capture plans outline incident specific techniques to be utilized in the approved plan.

- Advise FOSC of the presence of any federally or state-listed species, and/or their supporting habitats.
    - Make recommendation to minimize or avoid adverse impacts to the species or the supporting habitat, in coordination with the appropriate Endangered Species biologists [Link to Fish and Wildlife Protection Options Section 9738]
    - Assist the FOSC with initiation and implementation of emergency consultation under the Endangered Species Act as warranted

- Advise FOSC of the presence of populations of migratory birds, sensitive species and/or their habitats and offer recommendations to minimize or avoid adverse impacts

- Mobilize federal and/or state wildlife personnel for oversight or to assist in the collection or capture of oiled wildlife [Link to Wildlife (bird) Recovery Operations/Procedures Section 9739]

- Prepare a written oiled Wildlife Recovery Plan to include, but not limited to:
    - Establishment of a hotline to report oiled wildlife
        - Establish process to ensure hotline information gets to Situation Unit and Wildlife Recovery Unit
    - Advising cleanup contractors of wildlife reporting and recovery protocols
    - Ensuring stabilization and rehabilitation protocols adhere to published guidelines accepted by federal and state natural resource managers
    - Establishing protocols to report daily wildlife numbers to the UC
    - Establishing protocols for:
        - Wildlife survey and assessments
        - Capture and transportation of wildlife
        - Deterrence of clean wildlife from an impacted environment
        - Carcass collection and processing of dead wildlife
    - References:
        - Best Practices for Migratory Bird Care During an Oil Spill Response (USFWS)
        - Best Practices for Marine Mammals (NOAA)

- Provide technical assistance in the prioritization of sensitive areas for clean-up

- Provide technical assistance to minimize or avoid adverse impacts to trust species or lands held by any State, Tribes or the United States

- Ensure the Wildlife Rehabilitation Group is aware of the clean up products used on wildlife and that the Material Safety Data Sheets (MSDS) for each product is provided

- Provide support information to Situation Unit and Public Affairs on wildlife information

- Identify release locations

- Provide technical assistance on clean-up end points and shoreline assessment techniques

- Establish and maintain a Wildlife Impact Status Database to document and track impacted wildlife from impact to grave/release

- Prepare a daily Wildlife Branch summary for the Unified Command

- Prepare a Wildlife Branch demobilization plan

- For potential support resources consult the Fish and Wildlife Response Facilities and Resources in Section 9743 [Link to Section 9743]

Sign Off Team (SOFT)

The Sign Off Team is responsible for providing documentation to the Unified Command stating that areas impacted by the oil spill have been cleaned to agreed upon standards. SOFT members usually include representation from the State, local land trustee managers, Coast Guard, Scientific Support Coordinator and the responsible party. SOFT responsibilities include:

- Evaluating areas identified by Operations as 'clean' to ensure that the agreed upon cleanup endpoints are met or "no further action is required" at a particular location
- Working with Operations to identify areas that require further cleaning
- Providing signed documentation to the Unified Command that the area evaluated met the cleanup standard [Link to Sec. 9797 Shoreline Sign Off Example]
- Coordinating any field activities with the Operations Section Chief
- Providing Documentation Unit Leader with the original copy of the SOFT Documentation

Technical Specialists

Technical Specialists may function in the Planning Section or anywhere their skills are needed in the Response Organization. They should report to the Planning Section prior to going to their response assignment.

Disposal Technical Specialist

The Disposal Technical Specialist is responsible for developing a Waste Disposal Plan that meets the requirements of municipal, state and federal regulations. Specific responsibilities include:

- Contact Operations Section Chief to assess disposal needs for types and magnitudes of materials to be handled
- Identify available tankage for interim recovered liquids storage and location(s) for interim storage of solid wastes and tank waste accumulations at each location
- Prepare a Waste Disposal Plan and submit to the Planning Section Chief and Operations Section Chief for review [Link to Waste Disposal Plan 9782]
- Contact appropriate waste transportation contractors to determine capabilities and availability

- Designate liquid waste transfer locations and ensure compatibility of equipment with vacuum/tank trucks and/or skimmers/barges

- Ensure accurate waste accounting and tracking systems are in place

- Make initial determination on hazardous nature of material through knowledge of material spilled and/or chemical analyses

- Contact potential waste treatment and disposal facilities to determine acceptance criteria and any additional characterization/testing requirements

- Collect representative samples of oil/oily wastes if required by the treatment or disposal facilities for additional characterization

- Waste should be segregated:
    - Oil and oil water mixtures recovered from the water and shoreline
    - Oiled organic debris (wood, aquatic vegetation)
    - Oiled sorbents (pads, booms, snares, sweeps)
    - Oiled sediments
    - Oiled PPE, containment boom, general trash
    - Non-oiled and non-hazardous waste materials

- Document all waste collection, segregation, handling, transportation, and treatment/disposal activities to enable accurate tracking and ensure regulatory compliance

- Consult the General Waste Containment and Disposal Checklist [Link to Disposal Checklist 9781]

Other Technical Specialist Technical specialist can be added to the response organization as necessary. The below is not an all inclusive list [Link to Technical Specialist phonebook].

- Wetland Ecology – Freshwater Tidal Wetlands

- Wetland Ecology – Salt Marshes

- Conservation Biology

- Water Quality – Contaminants, Toxicologists

- Water Quality – Biogeochemistry

Natural Resource Trustees

- Natural Resource Trustees generally serve as key advisors, rather than as designated representatives on Unified Command

- Trustees need to immediately select a Federal Administrative Lead to represent the Trustees to the Unified Command

- The lead trustee should coordinate their concerns through the Liaison Officer. If there is no Liaison Officer, the lead trustee must coordinate directly with the Unified Command

Historic Property Specialist

- Assesses potential effects of emergency response strategies on archeological/historic properties in consultation with the parties identified in the ACP

- Recommends to the FOSC response actions and policies developed in consultation with parties identified in the ACP to help minimize potential impacts to historic properties

Marine Transportation System Recovery Unit (MTSRU)

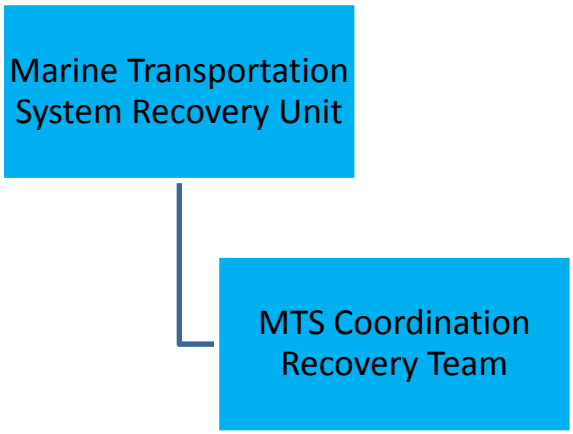

Figure 6. New Marine Transportation System Recovery Unit

The Marine Transportation System Recovery Unit is responsible for planning infrastructure recovery as a result of incidents that significantly impact the marine transportation system.

The MTSRU function during an oil spill is to identify gaps, evaluate the incident and report possible courses of action to reduce the impact on the marine transportation system. This is done by utilizing the MTSRU Recovery Coordination Team.

In addition, the MTSRU will report the conditions of the port to CG District 5 and HQ simultaneously, to ensure an accurate "on the spot" report. Common Assessment Reporting Tool (CART) system has been pre-loaded with the current port condition under normal operations, known as Essential Elements of Information. A few examples of "EEI's" are waterways availability, facilities within the AOR, domestic vessel operations, and oil spill

activity within the AOR. The system enables the IC to track the progress of certain operations and utilize this data to assign priorities for the next operational period.

Marine Transportation System Recovery Coordination Team (Formerly - Facility and Vessel Decontamination Prioritization)

The MTSRU Coordination Team is responsible for supporting the Waterways Management Unit's efforts to prioritize the decontamination of commercial facilities and vessels. The information provided by this Team is one of several variables used in the final determination. Primary responsibilities include:

- Assemble port partners from the maritime industry to determine the variables (i.e. type of cargo, impact on community, etc.) to be used when prioritizing decontamination. Port partners may include but not limited to:
    - Delaware Bay and River Pilot's Association
    - Mariner's Advisory Committee
    - Maritime Exchange
    - Delaware River Maritime Enterprise Council
    - Philadelphia Regional Port Authority
    - Delaware River and Bay Authority
    - Representative sample of port facilities impacted by the spill
- Develop a mathematical model based on the economic impact that would result from delaying a return to normal operations [Link to sample Facility and Vessel Decontamination Priority Model Section 9748]
- Use the results of the model to rank order facilities and vessels
- Provide ranked outcome to Waterways Management within Operations to assist with their scheduling of facilities and vessels for decontamination.
- Approve or disapproves vessel movement based on the following criteria:
    - Cargo prioritization
    - Location of oil spill
    - Tides
    - Berth availability
    - Vessel determined to be clean by the Decontamination Group
    - Facility piers determined to be clean by the Decontamination Group
    - Transit times
    - Vessel movements through or within the safety zone(s)
- Coordinate all vessel arrivals, departures, and request from vessels to shift berths [Link to the Commercial Vessel Traffic Movement Criteria Section 9730]

- Instructions for vessels requesting entry into the safety zone [Link to sample Entry Instruction Section 9731]
- Instructions for vessels requesting to shift berths within the safety zone [Link to sample Shifting Instruction Section 9732]
- Instructions for vessels requesting to depart the safety zone [Link to sample Departure Instruction Section 9733]

- Coordinate vessel movements with the Safety Zone Enforcement Group

- Provide the following information to the Situation Unit and the Marine Transportation System Recovery Unit, if established, prior to the Unified Command Planning Meeting:
  - Number of vessels awaiting berth
  - Number of vessels authorized inbound transit through the safety zone
  - Number of vessels departed
  - Number of vessels awaiting decontamination
  - Number of vessels actively being decontaminated
  - Total number of vessels decontaminated
  - Number of vessels awaiting inspection
  - Total number of vessel inspections completed

Volunteer Coordinator or Unit (as necessary)

Volunteers may want to participate in a spill response. As such, the response organization has to prepare for their arrival. Depending on various factors, the UC, may mange the volunteers utilizing a Coordinator, Unit or Officer position. Available tools to manage them include:

- Section 4300 of the Sector Delaware Bay ACP
- Guideline developed by the National Response Team (NRT)
- MOU - USCG, EPA & Corporation for National and Community Service

Finance Section Organization

The Finance Section is responsible for all financial, administrative and cost analysis aspects of the incident. Utilize the U.S. Coast Guard, Incident Management Handbook and Finance Section Chief Job Aid to build the appropriate Finance Section.

Finance Section Chief:

The FSC may have Deputy FSC's, who may be from the same agency or from an assisting agency. USCG District 5's, District Response Advisory Team (DRAT), may be able to provide expertise and technical assistance to the FSC during oil spills. Request the DRAT resources through the District 5 Command Center. Additionally, the USCG's Director of Operational Logistics (DOL) provides mission support logistics during contingency operations. Contact DOL for available resource support.

Finance Section Chief References:

- [Link to U.S. Coast Guard, Incident Management Handbook, August 2006]
- [Link to Finance Section Chief Job Aid]
- See the U.S. Coast Guard's Contingency Preparedness System which is a repository of lessons learned from exercises and real world events.
- [Link to Resource Tracking Flowchart – Resources from Other Federal, State or Local Governments]
- [Link to Resource Tracking Flowchart – Resources from Contractor Resources]
- Various ICS Position Job Aids for positions or "tools" normally found in or used by the Finance Section can be found on the Coast Guard's HomePort website (HomePort> Library> Incident Command System ICS>)

Ensure that Pollution Removal Funding Authorizations (PRFA) are completed for agencies providing response assistance.

Logistics Section Organization

The Logistics Section Chief is responsible for providing facilities, services, and material in support of the incident. Utilize the U.S. Coast Guard, Incident Management Handbook and Logistics Section Chief Job Aid to build the appropriate Logistics Section.

Logistics Section Chief

The LSC may have Deputy LSC's, who may be from the same agency or from an assisting agency.

Logistics Section Chief References:

- [Link to U.S. Coast Guard, Incident Management Handbook, August 2006]
- [Link to Logistics Section Chief Job Aid]
- The U.S. Coast Guard's Contingency Preparedness System which is a repository of lessons learned from exercises and real world events.
- [Link to Resource Tracking Flowchart – Resources from Other Federal, State or Local Governments]
- [Link to Resource Tracking Flowchart – Resources from Contractor Resources]

Coordinate with the Operations Section Chief on dispersant requirements [Link to Dispersant and Equipment Sources Section 9746]

Special Teams

The following are some of the agencies, special teams and other technical experts that can be utilized during a spill response:

- National Oceanic Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC)
- National Strike Force Atlantic Strike Team
- National Strike Force Public Information Assist Team
- NOAA National Marine Fisheries Service
- NOAA Navigational Response Team (access through NOAA SSC)
- Coast Guard Atlantic Area Incident Management Assist Team
- Coast Guard Public Information Assist Team
- District 5 District Response Advisory Team (DRAT)
- District 5 Public Affairs Detachment
- EPA On-Scene Coordinators from Region II and III
- Environmental Protection Agency (EPA) Environmental Response Team
- Navy Supervisor of Salvage [Link to NAVSUPSALV example request message Section 9745]
- Army Corps of Engineers Philadelphia District, Emergency Manager
- [Link to Pollution Removal Funding Authorization for Army Corps of Engineers]
- Occupational Safety and Health Administration
- United States Fish and Wildlife Service
- United States Department of Agriculture Animal Plant Health Inspection Service
- National Park Service
- Historic Property Specialist
- [Link to Special Teams Manual]

- [Link to Delaware Estuary Science Directory]
- [Link to Pollution Removal Funding Authorization for the States]
- [Link to Delaware DNREC capabilities]
- [Link to CG Pollution Response First Aid Trailer locations]
- Coast Guard Auxiliary

Shoreline Assessment Form

9728 ASSESSMENT FORM for _____ Spill Page __ of __

1. GENERAL INFORMATION	Date (dd/mm/yy)	Time (24h standard/daylight)	Tide Height
Segment ID:			L/M/H
Segment Name:		hrs to hrs	H/M/L
Survey By: Foot / Boat / Helicopter / Overlook /_____		Sun / Clouds / Fog / Rain / Snow / Windy	

2. SURVEY TEAM No. ___	Name	Organization	Phone Number

3. SEGMENT Total Length _____m/yd Length Surveyed _____m/yd Differential GPS Yes/No

Start GPS: LAT _____ deg. _____ min LONG _____ deg. _____ min

End GPS: LAT _____ deg. _____ min LONG _____ deg. _____ min

4. SHORELINE TYPE Select only ONE Primary (P) and ANY Secondary (S) types present

	Rocky Cliffs		Riprap
	Exposed Man-made Structures		Exposed Tidal Flats
	Wave-cut Platforms		Sheltered Rocky Shores
	Fine-Medium grained Sand Beaches		Sheltered Man-made Structures
	Coarse-grained Sand Beaches		Sheltered Tidal Flats
	Mixed Sand and Gravel Beaches		Wetlands
	Gravel Beaches		Other _____

5. OPERATIONAL FEATURES Oiled Debris? Yes / No Type_____ Amount_____ bags

Direct backshore access? Yes / No Access restrictions _____

Alongshore access from next segment? Yes / No Suitable backshore staging? Yes / No

Zone ID_____ Description of oil in: Supra / Upper / Mid / Lower Tidal Zone (circle oil location)

Oil Band Dimensions	Surface Oil Distribution	Surface Oil Thickness	Surface Oil Type	Subsurface Oil Penetration	Subsurface Oil Burial
	<1%	Film	Fresh Oil	<1 cm / in	Clean Layer
Width:_____m/ft	1-10%	Stain	Mousse/Tar	1-5 cm / in	____cm / in
	11-50%	Coat	Tarballs/Patties	5-10 cm / in	
Length: _____m/ft	51-90%	Cover	Surface Oil Residue	>10 cm / in	Oiled Layer
	91-100%	Pooled	Asphalt Pavement	___ cm / in	____ cm / in
	_____%	_____cm / in	Other_____		

Zone ID_____ Description of oil in: Supra / Upper / Mid / Lower Tidal Zone (circle oil location)

Oil Band Dimensions	Surface Oil Distribution	Surface Oil Thickness	Surface Oil Type	Subsurface Oil Penetration	Subsurface Oil Burial
	<1%	Film	Fresh Oil	<1 cm / in	Clean Layer
Width:_____m/ft	1-10%	Stain	Mousse/Tar	1-5 cm / in	____cm / in
	11-50%	Coat	Tarballs/Patties	5-10 cm / in	
Length: _____m/ft	51-90%	Cover	Surface Oil Residue	>10 cm / in	Oiled Layer
	91-100%	Pooled	Asphalt Pavement	___ cm / in	____ cm / in
	_____%	_____cm / in	Other_____		

8. COMMENTS **Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Obs.**

Sketch: Yes / No Photos: Yes / No (Roll#_____Frames_____) Video Tape: Yes / No (Tape#_____)

Form to Sketch Map of Contamination

9729 Sketch Map to Document Extent of Contaminated Facilities and Vessels

SKETCH MAP

Site Name_____
Site No. _____
Date _____
Time_____
Names _____
_____

Checklist
___North Arrow
___Scale
___Oil Distribution
___High Tide Line
___Low Tide Line
___Substrate Types
___Trench Locations

Legend

1 △
Trench Number
No. Subsurface Oil

2 ▲
Trench Number
Subsurface Oil

#●→
#●
Photographs

Example of Real-World Clean-up Endpoints

9737 Example Cleanup Endpoints (ATHOS I Oil Spill 2004)

Conduct cleanup with minimal damage to environmental resources. i.e. Do not drive spilled oils into sediments by foot / mechanical traffic

A SCAT Special Issue Team (SIT) will evaluate historic, special environmental, or high-public access areas to provide more detailed and additional cleanup requirements.

Shoreline Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Flats (hard surface e.g. Tinicum I. NJ side)	General: No recoverable surface oil, buried oil layers or tarballs larger than dimes; no more than stain on sand	Manual removal with shovels/rakes and squeegees; small equipment (bobcat) to remove oil and oiled surface and subsurface sand; minimize removal of clean sand on and under oiled layers; Minimize equipment (bobcat) travel over oiled surfaces.
	Special: TBD by SIT (Special Issue Team)	
Sand Beaches; Mixed Sand and Fine Gravel Beaches	General: No recoverable surface oil, buried asphalt pavements or tarballs larger than dimes; no more than stain on gravel	Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers; small equipment (bobcat)to remove oil and oiled surface/subsurface sand and gravel. Minimize small equipment (bobcat)travel over oiled surfaces. Mechanical relocation of fine gravels into piles for flushing, including use of high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval.
	Special: TBD by SIT	
Course Gravel Beaches/Fill (e.g. cobbles, and larger)	No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Manual removal of surface oil using low pressure flushing and high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval by the SIT.
	Special: TBD by SIT	
Riprap/Stone Seawalls **Solid Seawall, Bulkheads and Docks**	General: No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Flushing and high-pressure/hot-water washing (hotsie), as needed. Containment/recovery of released oil.
	Special: No more recoverable or potential mobile oil on surface; Stop cleanup efforts when all oil is removed other than a stain. Additional cleaning or replacement of riprap to be considered by SIT.	In high-public access or special environmental / historic areas (e.g., Ft. Mifflin, eagle nesting, others to be determined): may request use of SWAs (surface washing agents) or special cleanup efforts for use as need to meet endpoint.

9737 Example Cleanup Endpoints (ATHOS I Oil Spill 2004)

Mud Flats (e.g. soft surface, steps will push oil in sediments)	General: No potentially mobile oil.	To be determined on a site-specific basis by SIT.
Marshes	General: Oil on vegetation no longer wipes off on contact. No remaining recoverable or potentially mobile oil in accessible areas. (Accessible areas will be identified by SIT.)	To be determined on a site-specific basis by SIT. Options (cutting, In-situ-Burn, flushing, manual pickup of pooled oil, monitoring) to be determined on site-specific basis.
	Special: Other removal options will be considered by Environmental Unit.	

Debris Recovery Guidelines[1]

- Report dead and live wildlife to triage center at 215-365-1558. Collect and bag all dead wildlife.
- Manual removal of oiled debris that can be easily picked up and bagged.
- For small unoiled debris that can be easily picked up, move to the supra tidal zone if it has the potential to become oiled in its current location.
- Leave unoiled debris in place if it does not have the potential to become oiled.
- Cut and remove oiled logs < 6 inches in diameter (cut in into lengths < 6 feet).
- Manual removal of oiled debris (other than logs) < 6 inches in diameter and < 6 feet in length.
- Clean large (> 6 inches in diameter and/or 6 feet in length) oiled debris in place. Recover oil using appropriate sorbents. Approved cleaning methods for large oiled debris are presented below:

Method	Handling	RRT Approval	Special Permits
Scraping	No	No	No
Wiping	No	No	No
Hotsie	No	No	No

The following options require special approval

Method	Handling	RRT Approval	Special Permits
SWAs	No	Yes	No
Burning	Yes	Yes	Yes

For questions regarding environmental issues, contact the Environmental Unit Leader.

[1] Non-living oiled debris

Oil Spill Observation Checklist

9741 Oil Spill Observation Checklist

Record your observations of spilled oil either in a notebook or directly on a chart of the area under observation. Here is a checklist for organizing your observations.

General Information

___ Date

___ Time

___ Case name

___ Observers' names

___ Observers' affiliations

___ Location of oil's source (if known)

___ Stage of tide (flood, ebb, slack)

___ On-scene weather (wind, sea state, visibility)

___ Platform (helicopter, fixed-wing aircraft, boat)

___ Flight path/track line

___ Altitude where observations taken

___ Areas not observed (e.g., foggy locations, restricted air spaces, shallow water areas)

Note: When following a flight path or track line, travel beyond known impacted areas to check for oil beyond these areas and to minimize the number of observations made while facing into the sun.

Note: Include the name and phone number of the person making the observations.

Oil Observations

___ Slick location(s)

___ Slick dimension(s)

___ Orientation of slick(s)

___ Distribution of oil (e.g., as windrows, streamers, pancakes, or patches)

___ Color and appearance (e.g., rainbow, dull or silver sheen, black, or brown in color, or mousse)

___ Percent coverage (see Percentage Coverage Chart)

___ Is oil recoverable (Y/N)? (examples of recoverable oil types include black oil, mousse, and heavy dull- or dark-colored sheens)

Note: Clearly describe the locations where oil is observed, as well as the areas where no oil has been seen.

Other Observations
Response Operations...

___ Skimmer deployment (general locations where skimmers are working. Are they working in the heaviest concentrations of oil?)

___ Boom deployment (general locations of boom(s). Does the boom contain oil? Is oil entraining under the boom?)

___ Source of oil (describe the status of the source. Is oil still being released?)

Environmental Observations...

___ Locations of convergence lines, rip tides, and sediment plumes

___ Locations of kelp beds, sea grass beds, and other features that could be mistaken for oil

___ Wildlife present in area (locations and approximate numbers of birds and marine mammals)

Revised: July 17, 2001
Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration

Example of Navy Supervisor of Salvage Request Message

9745 Navy Supervisor of Salvage Example Request Message

P_____Z JAN 05
FM COMCOGARD SECTOR DELAWARE BAY
TO CNO WASHINGTON DC//N3N5/N311/N312//
INFO CCGD _____//M//
COMCOGARDGRU_____//OPS//
JCS NMCC WASHINGTON DC//00C//
JOINT STAFF WASHINGTON DC//J3/DDATHD/JDOMS//
COMNAVSEASYSCOM WASHINGTON DC//00C//
USNORTHCOM
COM_____AREA COGARD_____//M//
COMDT COGARD WASHINGTON DC//MOR/OPD//
BT
UNCLAS
SUBJ: REQ FOR USN SUPSALV ASSIST ISO RESPONSE TO SUNKEN TANK BARGE (TB) EMC423 ON CHICAGO SANITARY AND SHIP CANAL
REF/A/AA/USCG-USN/15SEP1980//
REF/B//40 CFR PART 300//
NARR/REF A IS USN/USCG INTER-AGENCY AGREEMENT FOR POLLUTION CLEAN-UP AND SALVAGE CONTINGENCY PLAN, ARE THE FEDERAL REGULATIONS PROVIDIDING FOR INTER-AGENCY POLLUTION RESPONSE COORDINATION.//
1. IAW REFS A AND B, COAST GUARD FEDERAL ON-SCENE COORDINATOR (OSC), MSO CHICAGO, **REQUESTS IMMED NAVSEA-00C, USN SUPERVISOR OF SALVAGE (SUPSALV), SUPPORT** IN RESPONSE TO SINKING OF TB EMC423 ON CHICAGO SANITARY AND SHIP CANAL, STICKNEY, IL. SINKING HAS CAUSED LIMITED CLOSURE OF SANITARY AND SHIP CANAL DUE TO NAVIG HAZARDS AND OIL SPILL CLEAN-UP OPS. **REQ SUPPORT IN FOLLOWING AREAS: SALVAGE, DIVING, OIL SPILL CONTROL CONSULTATION, EVALUATION, PLANNING, AND OPERATIONAL SVCS. SPECIALIZED SALVAGE AND OIL SPILL CONTROL EQUIPMENT MAY BE REQUESTED AT LATER DATE. ANTICIPATED DUR OF DEPLOYMENT IS 14 DAYS. FUNDING WILL BE UNDER THE OIL SPILL LIABILITY TRUST FUND, FPN_____APPLIES.**
2. POC IS
BT

[Notes: Modify above sample to meet your particular needs/situation. Be careful when modifying highlighted addressees and language, because most of that is necessary to satisfy DoD requirements for favorable action on request.]

Shoreline Sign-off

Inspection Form

9755 INCIDENT RESPONSE

SHORELINE SIGN-OFF INSPECTION FORM

GENERAL INFORMATION

Zone & Segment ID:	Date: (mm/dd/yy)	Tide Height: Ebb H / M / L Flood L / M / H	Air Temp: °F °C	Water Temp: °F °C
Inspection No. (circle one): 1 2 3 4 5 ….. ____	Time:	Weather (circle one): Sun / Clouds / Fog / Rain / Snow / Windy		

SURVEY TEAM

Printed Name	Organization	Phone Number

CLEANUP STATUS

Endpoint Assessment		Agree	Disagree	Signatures
❑ Segment meets cleanup endpoint criteria	FOSC	❑	❑	
	PA SOSC	❑	❑	
	NJ SOSC	❑	❑	
❑ Segment does not meet cleanup endpoint criteria	DE SOSC	❑	❑	
	Other (write-in)	❑	❑	
	Other (write-in)	❑	❑	

RECOMMENDATIONS

❑ Active Cleanup (see reverse) ❑ Passive Cleanup (see reverse) ❑ Monitoring (see reverse)

GENERAL COMMENTS

Shoreline sign-off shall not be construed as a waiver of NRDA liability.
Forms must be completed in blue ink.
Attach additional sheets as needed.
Return to Planning Section Chief upon completion.

ADDITIONAL ACTIONS

Attach additional sheets as needed

	Description of Work	OPS Use Only
Item 1	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 2	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 3	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 4	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 5	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude

ADDITIONAL WORK NOT FEASIBLE

Comments & rationale for decision

MONITORING RECOMMENDATION

❑ Tarballs / oiled debris	❑ Weekly	Notes (rationale, duration, hot-spots, etc.)
❑ Mobilization of residual oil	❑ Bi-weekly	
❑ Exposure of buried tar mats	❑ Monthly	
❑ Other:	❑ Other:	

Shoreline sign-off shall not be construed as a waiver of NRDA liability.

Forms must be completed in blue ink.

Attach additional sheets as needed.

Return to Planning Section Chief upon completion.

GENERAL INFORMATION

Division:	Segment:	Inspection No. (circle one): 1 2 3 4 5 ….. ____	Date: (mm/dd/yy)

ADDITIONAL ACTIONS

OPS Use Only

Item 6	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 7	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 8	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 9	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 10	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 11	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 12	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names Photo File Names	❑ Completed Date Latitude Longitude Longitude

Shoreline sign-off shall not be construed as a waiver of NRDA liability.
Forms must be completed in blue ink.
Attach additional sheets as needed.
Return to Planning Section Chief upon completion.

GENERAL INFORMATION

Division:	Segment:	Inspection No. (circle one): 1 2 3 4 5 ….. ____	Date: (mm/dd/yy)

ADDITIONAL ACTIONS

OPS Use Only

	Description of Work	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____	Photo File Names	❑ Completed	Date	Latitude	Longitude
Item 13							
Item 14							
Item 15							
Item 16							
Item 17							
Item 18							
Item 19							

Shoreline sign-off shall not be construed as a waiver of NRDA liability.
Forms must be completed in blue ink.
Attach additional sheets as needed.
Return to Planning Section Chief upon completion.

Real World Example of
Submerged Oil Assessment Report

9756

SUBMERGED OIL ASSESSMENT – *ATHOS 1* OIL SPILL

Submerged Oil Assessment Unit
Planning Section
***Athos 1* Oil Spill Unified Command**

11 December 2004

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APPENDIX 1 – Maps showing the results of the submerged oil monitoring

SUBMERGED OIL ASSESSMENT – ATHOS 1 OIL SPILL

I. INTRODUCTION

At 9:30 pm on 26 November, the *T/V Athos* 1 struck a submerged object while preparing to dock at the Citgo facilities, resulting in two holes in the No. 7 port and center tanks. It was carrying a heavy Venezuelan crude oil. The initial report was that 30,000 gallons were released; on 30 November, the volume was increased to a maximum potential of 473,500 gallons. The final estimate will be available once the oil from the holed tanks has been offloaded from the tanker.

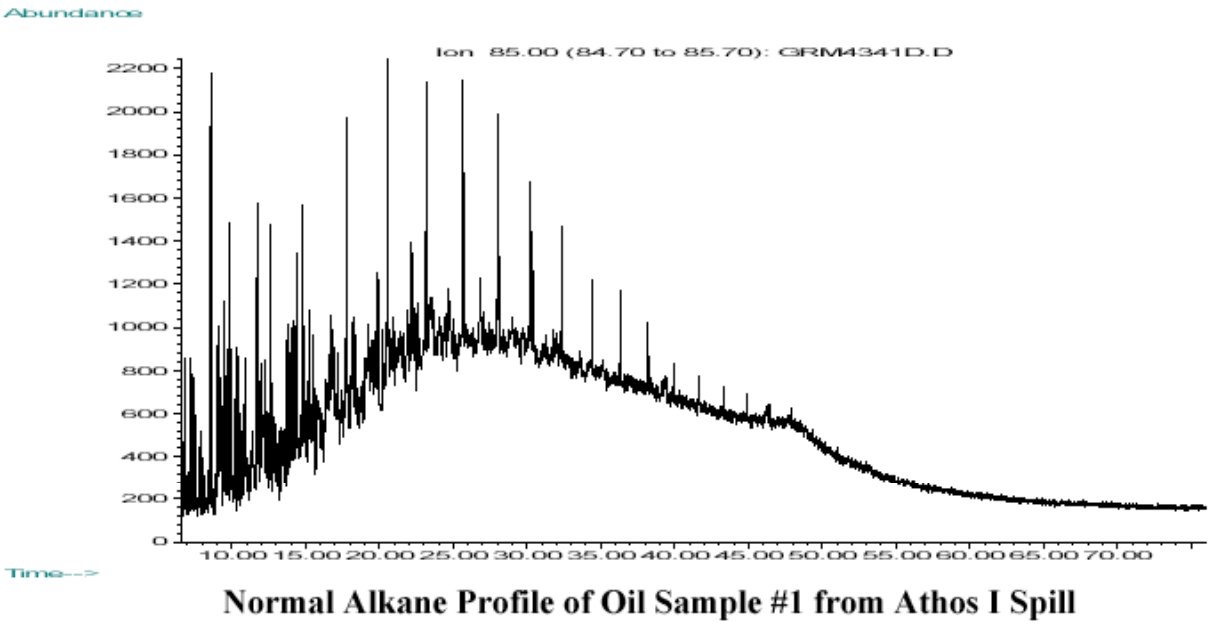
There was concern that some of the heavy oil would mix with sediment and not float. Pooled oil was reported on the bottom at the collision site, and shoreline assessment teams reported that oil stranded on the intertidal zone had started to become submerged during the rising tide. Therefore, the Unified Command formed a Submerged Oil Assessment Task. The Submerged Oil Task Force, comprised of members from The O'Brien Group, U. S. Cost Guard, and the National Oceanic and Atmospheric Administration, was assigned to assess the extent and degree of submerged oil and develop recovery options. The Salem Nuclear Power Plant started shutdown procedures for the No. 2 unit on 3 December and No. 1 unit on 4 December because of the threat of oil contamination of the circulation and service water intake systems. The Logan Power Plant in New Jersey stopped using water from the river for a day. Other utility and industrial water intakes along the river have been concerned about the impacts on the oil on their water intakes and water use within the facility, though none have reported shut-downs. The submerged oil also posed risks to shellfish resources in Delaware Bay.

II. CHARACTERISTICS OF THE SPILLED OIL

A. Physical Properties of Source Oil

Two samples of the oil from hold No. 7 center (the source oil) were analyzed for physical properties and chemical characteristics, with the following results:

- Density: 0.973 and 0.978 grams per milliliter; fresh water is 1.00 and oceanic sea water is 1.025 g/ml. Therefore, the oil is lighter than both fresh water and sea water.
- Viscosity: greater than 5,000 centiStokes (cSt) at 100°F and at ambient water temperature greater than 50,000 cSt, meaning that the oil's viscosity is similar to cold honey;
- Composition: the oil is composed of a large amount of asphaltenes and other high molecular weight compounds. The aromatic hydrocarbon content is very low (0.06%), and the oil has a very low dissolved fraction. Figure 1 is the normal alkane distribution in the fresh oil. Note that there are few individual peaks and a large "hump" of unresolved hydrocarbons. This oil can be characterized as a heavy, degraded crude oil.



Normal Alkane Profile of Oil Sample #1 from Athos I Spill

Figure 1. Normal alkane profiles of the source oil from hold No. 7 center. Note there are few identifiable peaks and a large "hump" of unresolved compounds.

B. Behavior of the Spilled Oil

One of the key concerns was whether the oil would not float after release to the environment and loss of the light fractions due to evaporation. The fresh source oil was "evaporatively weathered" by heating it to 90°C under vacuum and less than 3 % was lost by evaporation after 4 hours. Therefore, the weathered oil (after evaporation) is still expected to float. Using the National Oceanic and Atmospheric Administration (NOAA) oil weathering model ADIOS, up to 13% of the oil could have evaporated within 5 days of the release. Based on the chemical analysis and model results, the amount of oil lost via evaporation is likely 3-13%.

With only 0.06% aromatic hydrocarbons (which are the primary compounds in the oil that dissolve), lost via dissolution was estimated as less than 1%. The oil is very viscous and did not form a stable emulsion even when exposed to high wave energy. The model ADIOS estimated less than 1% of the fresh oil dispersed into the water column. The Delaware River contains a high suspended load, but due to the viscous nature of the oil, very little of the oil (less than 1%) adhered to particles in the water column (as opposed to sandy sediments on the shoreline).

While the exact amount released is unknown, the amount lost to oil weathering processes (evaporation, dissolution, emulsification, dispersion, and adsorption to suspended particulate matter) is likely tens of thousands of gallons (Table 1).

The shoreline cleanup assessment teams provide some indication of the length of shoreline oiled. However, the technology does not exist to accurately measure shoreline thickness. This information is needed to calculate oil volume. The amount of oil recovered from the shoreline is mixed with debris and sediments, and the oil content of the oily waste is unknown.

As discussed later, some of the oil that stranded on the shoreline picked up sediment. Samples collected from the oil stranded on the shoreline and recovered from the water column had a few % sand. Even 2-3 % of sand is enough to make the oil slightly heavier than fresh water.

A preliminary mass balance of the spilled oil is shown in Table 1.

Table 1. Preliminary mass balance of the spilled oil.

Physical Process	Estimates
Evaporation	3 – 13% of total volume spilled minus volume of oil in trench #1 and #2
Dissolution	< 1% of total volume spilled
Emulsification	0%
Dispersion	1% total volume spilled
Sedimentation (due to river load)	Unknown but likely < 1%
Oil on shoreline	~ 100 miles
Oil recovered from shoreline	Unknown
Oil floated off shoreline	Unknown
Oil with sediment mobilized off shoreline	Unknown
Tarballs in water column	Unknown
Tarballs on bottom	Unknown
Pooled oil (located in Trench #1 and #2)	~ 4000 gallons

III. PHYSICAL PROCESSES AND TRANSPORT

A. Oil Trajectory and Physical Processes during the Spill

The primary forcing function for currents in both the Delaware River and Bay are the semidiurnal tides. Near the spill site, maximum currents are about 2 knots with a tidal excursion of about 8 miles. In the middle of Delaware Bay, maximum currents are about1 knot with a tidal excursion about 4 miles. The river inflow into the system results in a net displacement down river over each 12 hour cycle. The currents from the river outflow are small compared to the tidal currents but it is the major factor in any net down river displacement of subsurface oil.

Water levels in the River and Bay rise and fall as function of onshore/offshore winds. This can raise the water levels in the river 1 – 2 feet above or below predicted tide levels. Severe storm events, much stronger than reported during the spill event and more intense than the usual storm, could have a significant effect on the currents and oil transport.

In the Chesapeake – Delaware Canal, the tide wave moves from the Chesapeake into the canal towards Reedy Island in the Delaware River. Water level differences between Chesapeake Bay and Delaware River due to meteorological events and river discharge can result in water flowing from the Delaware into the Chesapeake.

For the most part, the River and Bay are well mixed vertically. The U.S. Environmental Protection Agency collected salinity measurements from the spill site to Raccoon River entrance and reported values of 1 to 2 ppt. In addition, NOAA measured salinity and conductivity near the Commodore Barry Bridge, which indicated the river, was well mixed. There is a broad salinity gradient or mixing zone in the lower river and in the bay. The gradient of mixing in winter and spring is largest near Ship John Lighthouse (39° 19'N, 75° 23'W). The gradient moves seaward with increases freshwater. The interface between the freshwater and saline water may be a collection area for floating oil. Since the mobile subsurface oil contains sediment, the density differences along the saltwater – freshwater mixing zone are less likely to cause submerged oil to refloat.

Outside the Bay, the circulation on the inner continental shelf is primarily controlled by winds and water density differences. Off the northeast coast, freshwater input from rivers such as the Hudson and Delaware result in a near shore density flow from the north to south. Currents due to density differences in the water will be within 10 miles of the shoreline, follow the shoreline and typically move to the south at speeds between 0.1 and 1 knot. Superimposed are the regional winds, which will generate a coastal current to the north with southerly winds and southward with northerly winds. At the Bay entrance, there is a net flow of fresh water along the south side and net inflow along the bottom of the north side.

Initially, the spill formed a thick film and moved upriver with the flood tide. A southeast wind moved oil to the Pennsylvania side of the river. With the second flood tide, the oil was transported as far north as the Petty Island area. Several days later, stronger winds transported oil to the New Jersey side. After the storm, the oil weathered and formed tarballs. By 28 November, oil extended down river to the Delaware Memorial Bridge. Overflight observations of the floating oil have consistently been within the uncertainties of the NOAA trajectory model predictions. The 24-48 hour forecasts of the floating oil will continue until the overflight observer is no longer able to detect the leading edge of the spill.

B. Long-term Transport

With the type and quantity of oil spilled, tarballs are expected to persist for several months in the Delaware River system. Over the next few weeks, scattered tarball are expected to contact shoreline anywhere along Delaware Bay. There is a possibility of oil movement through the Chesapeake – Delaware Canal into upper Chesapeake Bay. The exact location and amount of oil depends on the wind, oil fate, and amount of oil mobilizing upstream. Within several weeks of the initial spill, tarball contact is anticipated along the outer coast. The mean current along the outer coast is southward and anticipate most of the contacts south of Delaware Bay. Local wind events could push tarballs to the north up to 50 miles north of Cape May and as far south as the entrance to Chesapeake Bay. While the general trend for the number of tarballs contacting the outer coast is expected to decrease within a month or two, the amount of subsurface oil in the Delaware River remains unknown. Thus, there remains a possibility that a strong meteorological event or vessel movement could mobilize oil resulting in an episodic increase of tarballs.

IV. SPILL INFORMATION

A. Floating Oil

Weather permitting, overflights of the spill area have shown a general decline in floating oil. Observer have reported mostly scattered sheens with tarballs ranging from < 0.5 cm (pea size) to about 20 cm (dinner plate). The few exceptions occurred when the on-scene winds were calm or at slack tide. Without any waves or strong tidal mixing to disperse the sheening tarballs, large areas of continuous sheens were reported from the observers. Any increase in the wind generated waves dispersing the sheens. Without associated sheens, it is extremely difficult to track the tarballs. A decrease in the wind speed or at slack tide would allow the observer to once again see the sheens. This pattern repeated itself several times during the spill event. Finally, observers indicated that some of the tarballs had weathered to the point of not sheening.

For the long term, tarballs are very persistent in the environment and can travel hundreds of miles. They are expected to move out of Delaware Bay and through the C&D Canal into the upper Chesapeake Bay. Natural collection areas, such as the surface interface between the freshwater and saltwater and convergence zones on ebb tides, are good locations for finding the tarballs. If tarballs appear on the shoreline, it is likely they were nearshore, difficult to detect and onshore winds brought them ashore.

B. Non-floating Oil

a. Pooled Oil

i. Survey Methods

Pooled oil is defined as oil that has accumulated in depressions and is not readily mobilized by normal riverine and tidal currents. Both NOAA and EPA used different sonar systems to detect areas of pooled oil. Experts from NOAA, EPA, and Navy Supervisor of Salvage reviewed these data and determined the systems could not identify pooled oil. Therefore, coring and sorbent probes were used to search for pooled oil in likely accumulation areas. The US Army Corps of Engineers bathymetric maps of the channel and adjacent areas (generated from data obtained on 5 December 2004) were used to identify targets for the pooled oil survey teams. Divers were also used to observe areas where pooled oil was found. The locations that were searched for pooled oil included:

- The shallow bay north of Tinicum Island, including two deep depressions
- Four depressions on the south side of the channel across from Tinicum Island (Tinicum Range channel)
- Tinicum Range channel
- Shallows around Chester Island

ii. Locations

Pooled oil was found only at the collision site, in a trench described as 6-8 ft wide, 2 ft deep, and 41 ft long. On 9 December, a diver surveyed the trench area and measured the oil thickness as between 1.5-2 ft deep. A second trench was also detected and estimated to be 2 ft wide by 2 ft deep by 15 ft long.

iii. Volumes

The volume of pooled oil in the trenches at the collision site was estimated to be approximately 3,390-3,610 gallons, depending on the assumed oil thickness in the second trench (Table 2).

A sample of the oil from the trench (density of 0.943 g/ml) floated in fresh water. It was tested for cohesiveness and found to adhere to sediments. Based all the information available, the oil in the trench at the collision site was "injected" into the sediment under the pressure of the release, creating it's own trench. The viscous oil adhered to the sediments and not refloated, even though it should based on density. The oil is immobile due to highly cohesive forces exerted by the viscous oil.

Table 2. Estimated volume of oil on the bottom at the collision site.

Length	Trench Width (feet)	Depth of Trench (feet)	Depth of Oil (feet)	Amount of Oil (gallons)
Trench 1				
0+00	6	2	1.5	910
0+10	8	3	2	310
0+13	6	2.67	2	890
0+23	6	2.5	1.5	610
0+33	5	2.5	1.5	450
0+41	0	0	0	3,170
Trench 2				
15	2	2	If assume 1	220
			If assume 2	440

iv. Pooled Oil Recovery Methods

Several methods were evaluated for recovery of the pooled oil in the trench. The viscous oil is expected to float when disturbed, therefore special containment systems are needed. Options include:

- Diver-directed pumping systems with positive displacement pumps that can move viscous oils
- Dredging systems of different sizes
- Subsurface recovery using sorbents, either by divers or remote techniques

Divers using viscous oil pumps will begin oil recovery on 12 December. Booms and sorbents will be used to recover any floating oil; a submerged bottom filter fence will recover any oil transported in the water column downcurrent from the recovery site. The oil recovery is estimated to be completed in four days.

b. Mobile Oil

i. Survey Methods

Mobile oil is defined as oil that is negatively buoyant and subject to transport by riverine and tidal currents. It is present throughout the water column, though it appears most of the mobile oil is within a few feet of the bottom. To track the vertical distribution of the oil and the geographical extent over time, two survey methods were used:

- Snare Samplers: These samplers consist of an anchor, 50 ft of snare on a rope, and a float (shown in Fig. 2). The snares are composed of thin sheets of polypropylene, and viscous oils readily adhere to them, even under water. They are visually inspected for the presence of oil with depth, and the amount of oil is estimated as a percent coverage. The snare/rope is replaced when oiled, and they are monitored over time, weather permitting.

- V-SORS: The Vessel-Submerged Oil Recovery System (V-SORS) consists of a pipe with attached chains and snare (Fig. 3). The V-SORS is towed behind a vessel on the bottom at slow speeds. It is pulled up regularly and inspected for oil. Five V-SORS were used to both identify areas of submerged oil (including in the navigation channels where it was not possible to place the snare samplers) and to recover oil in all potential accumulation areas.

ii. Locations

Figures 4-6 shows all the locations where snare samplers were deployed at any time. The spill area was divided into three monitoring zones: MA extends from the Tacony-Palmyra Bridge to the Delaware Memorial Bridge; MB extends from the Delaware Memorial Bridge to just below the Salem Nuclear Power Plant; MC extends from the Salem Nuclear Power Plant to mid-Delaware Bay. Appendix 1 includes the results plotted for each monitoring division for the different deployment and retrieval periods. Weather and logistics prevented inspection of all snare samplers every day. In areas with strong currents, the snares would often be lost between inspections. Existing samplers in areas with strong currents are being replaced with heavier anchors, more visible buoys, and better attachment methods.

Figure 2. The snare sampler system consists of an anchor, a 50 ft string of snare on a rope, and a float. The samplers are inspected regularly and the percent oil coverage at different intervals is recorded. Most of the time, the heaviest oiling is on the bottom several feet.

Figure 3. The Vessel-Submerged Oil Recovery System (V-SORS) that is being used to search for and recover submerged mobile oil on the river bottom. The chains keep the sorbents along the bottom. The oil readily adheres to the snares underwater.

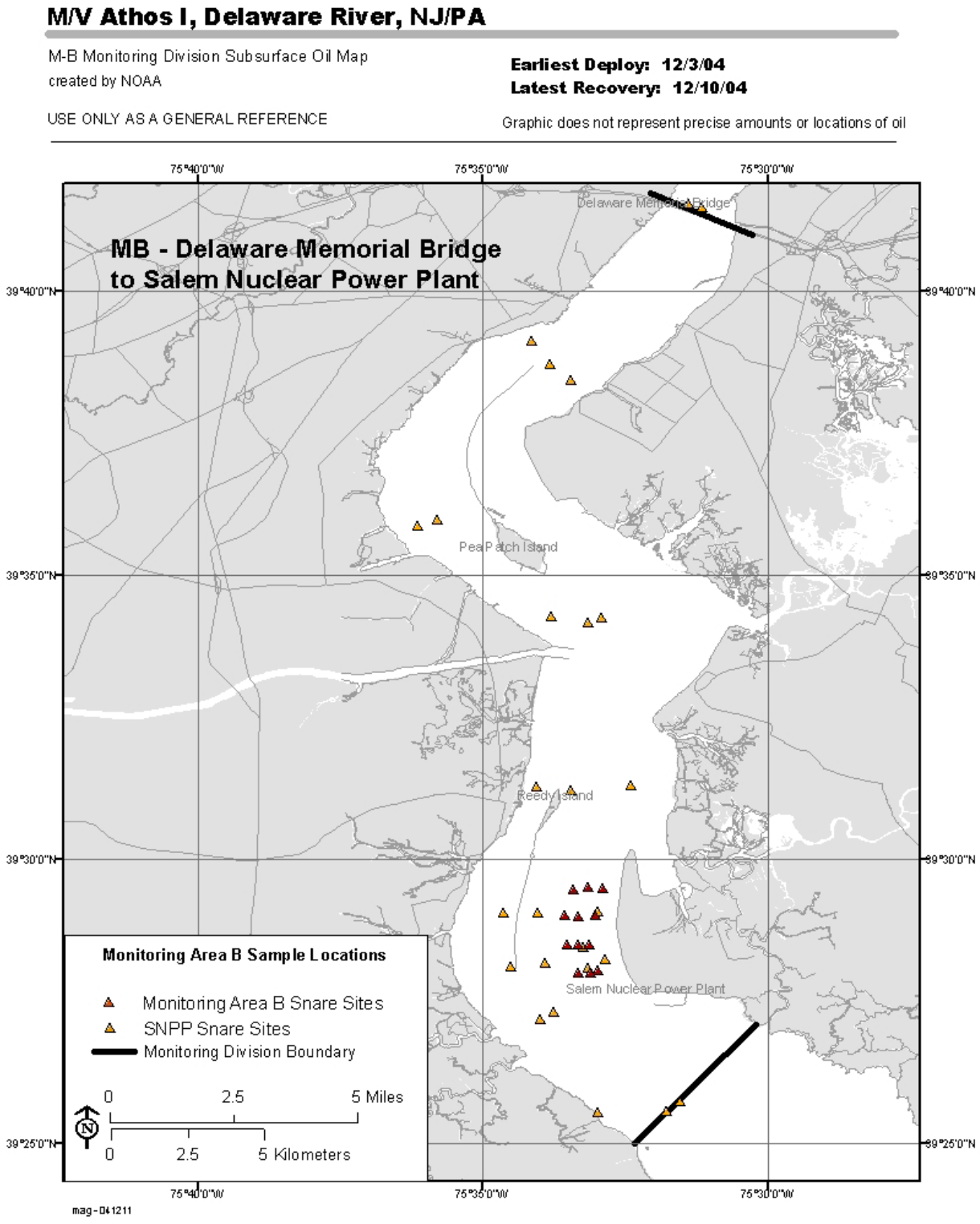


Figure 5. Location map showing the distribution of the snare sampling locations in the middle part of the spill zone (Division B).

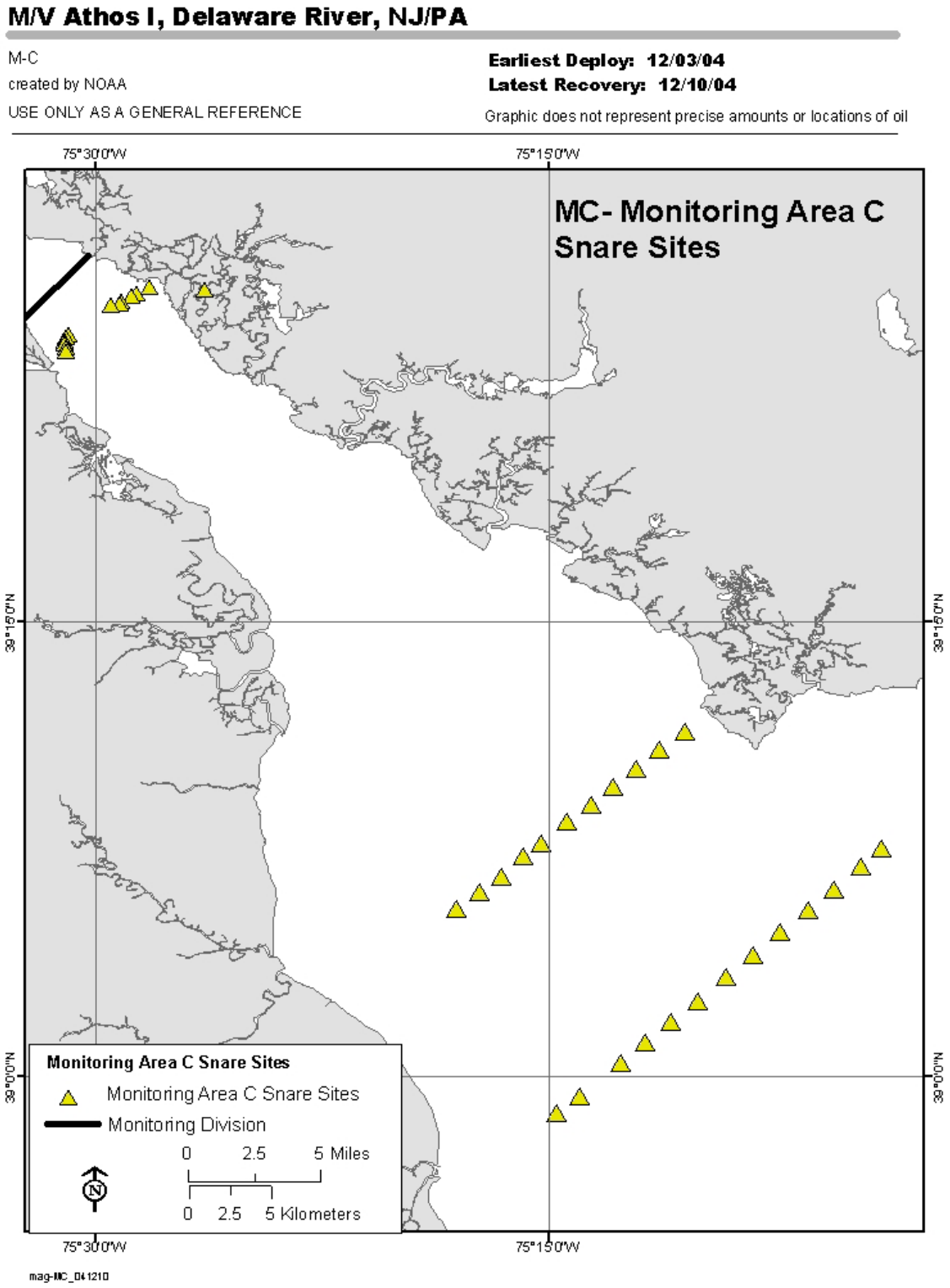


Figure 6. Location map showing the distribution of the snare sampling locations in the lower part of the spill zone (Division C).

iii. Results

Most of the submerged, mobile oil occurred several feet off the bottom, though small amounts of oil were present on the snares suspended in the middle and upper water column. Highest amounts of oil were detected around Tinicum Island. Refer to the maps in Appendix 1 for detailed data presentation for all monitoring sites. Figure 7 shows the temporal trend for station MA-1A that is located just north of Tinicum Island and consistently had the highest amount of oil on the snare. The snare was first deployed on 4 December and recovered on 5 December, and there was 50% oil coverage of the lower snares. The next day, the oil coverage was 30%. The snare was inspected two days later, on 8 December, and the coverage was 65%. For the next three days, the oil coverage was less than 15%. The steady decline for the last three days is consistent with the V-SORS tows, which also show decreasing amounts of oil recovery around Tinicum Island over the same period. There were scattered stations with high oil coverage observed on one day over the period 3-8 December. Many of the other snare samplers in the upper river never were oiled. Since 9 December, the maximum oil coverage on snares in this area was 10-15% (near Tinicum Island). It appears that the submerged oil in this upper spill zone has decreased significantly.

Figure 8 shows the temporal trend for station MB-3B, which is west of Pea Patch Island, and the detailed maps are included in Appendix 1. The distribution of the submerged oil in this area is difficult to assess because of the spotty data.

No oil or less than 1% was observed on any of the snare samplers in Division MC, which covers the upper Delaware Bay. Again, the data are spotty because many of the original stations were lost due to the strong currents in this area. However, it appears that little to no submerged oil has entered the upper bay as of 11 December.

iv. Mobile Oil Recovery Methods and Results

The V-SORS were towed in a wide range of locations that were identified as likely areas of submerged oil. The highest oil recovery was in the vicinity of Tinicum Island. Figure 9 shows the track lines of the V-SORS tows near Tinicum Island, color-coded with the amount of oil observed on the snares for each tow track. A large amount of oil stranded on the sandy tidal flat on the southern side of Tinicum Island. Oil stranded on many other shoreline areas but the shoreline types upstream of Tinicum Island are mostly seawalls, riprap, and mixed sand and gravel beaches. Tinicum Island is the main area with a largely sandy substrate. The oil is very sticky and would pick up sand, and only 2-4 % sand by weight would be enough to make the oil slightly negatively buoyant. By 30 November, oil on Tinicum Island did not re-float with the rising tide, and pieces of oil were being eroded from the shoreline by wave action. This area is thought to be the major source of the oil that became submerged and moved with the currents along the bottom of the river. Most of the oil recovered by the V-SORS was from the subtidal areas south of Tinicum Island. Very little oil was detected in the shallow area north of the island, both by the V-SORS tows and the pooled oil surveys.

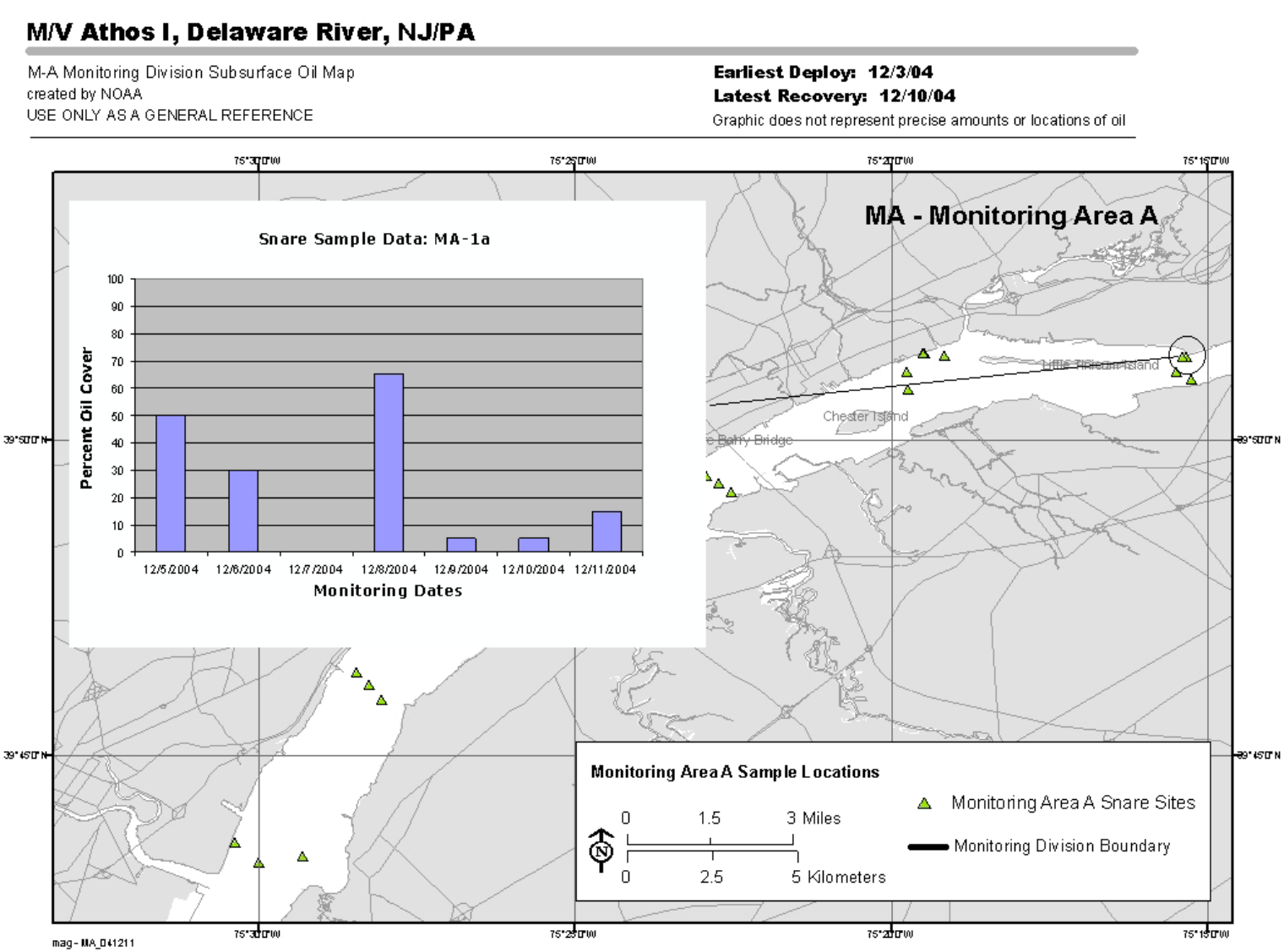


Figure 7. The oil coverage on the snare sampler just north of Tinicum Island (the location with the highest amount of oil consistently) over time. The oil coverage on 8 December represents two days of deployment, compared to the one-day deployment of the other dates. The amount of oil has been below 15% for the last three dates.

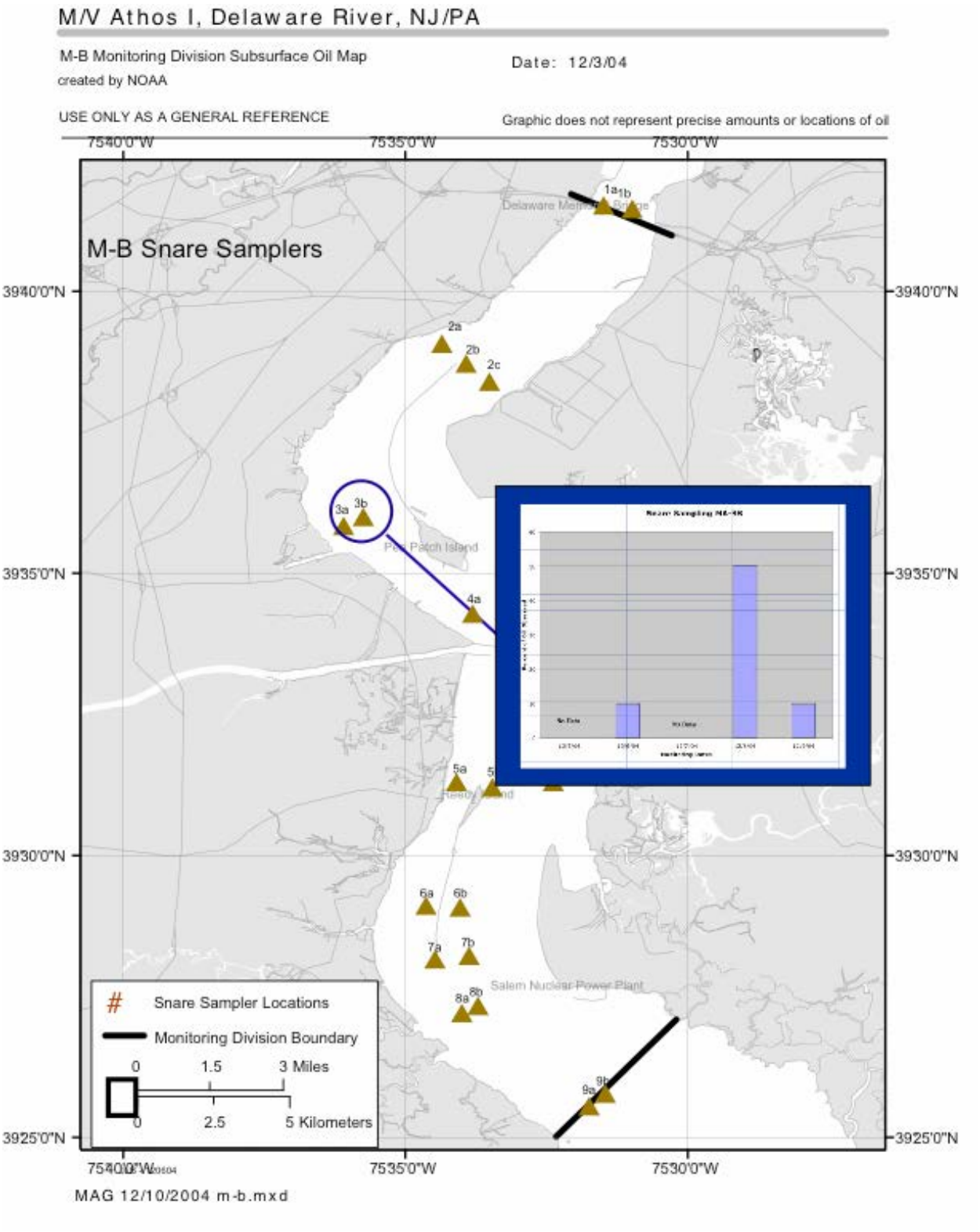


Figure 8. The oil coverage on the snare sampler west of Pea Patch Island. There was a peak on 8 December, representing two days of deployment.

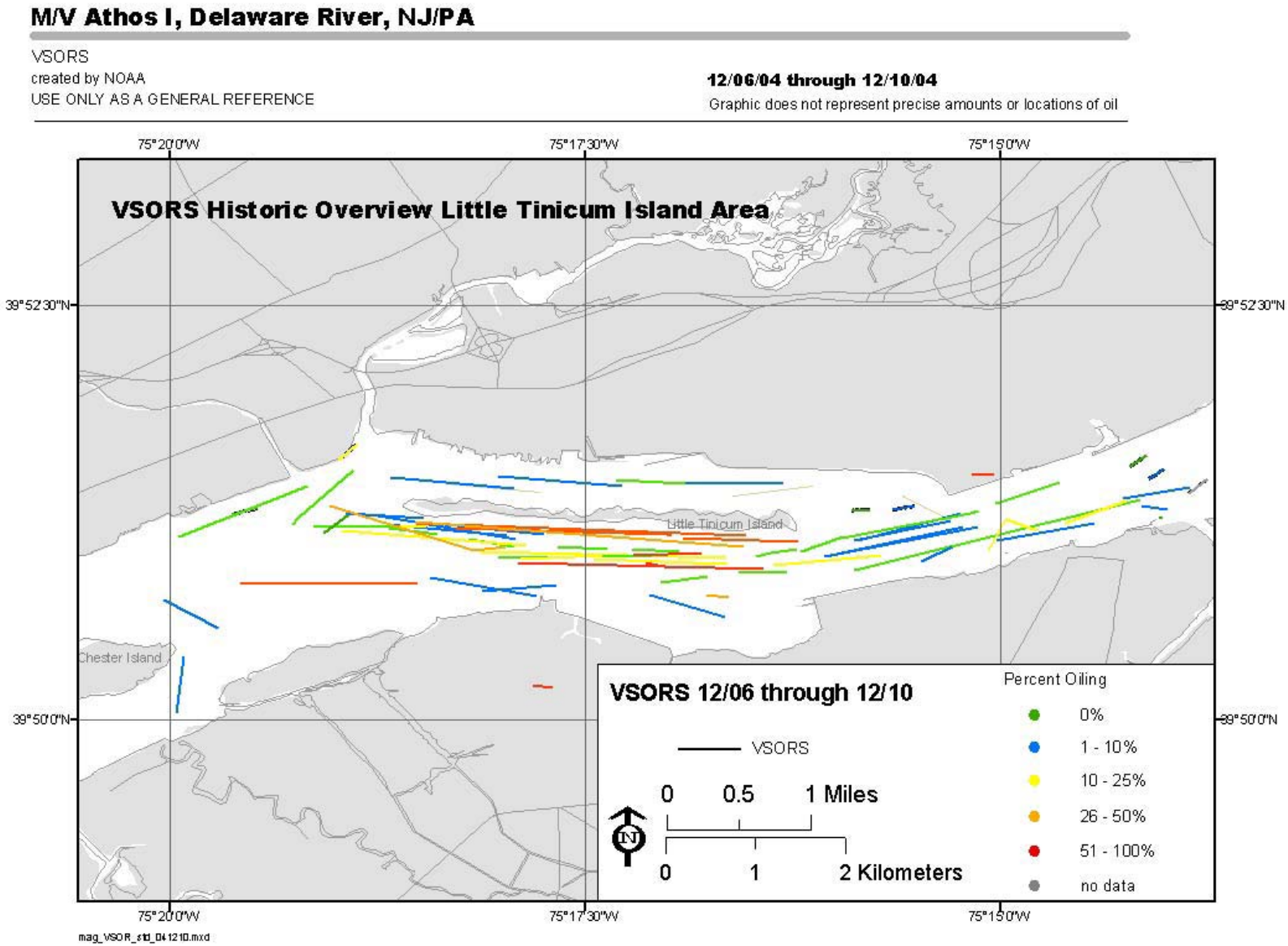


Figure 9. Track lines for the V-SORS coded according to the percent of visual oil coverage on the snares.

Additional V-SORS tows were conducted off the Salem Nuclear Power Plant on 8 December, with no oil detected. Small amounts of oil (~10%) were detected in Division MA, between the Commodore Barry Bridge and the Delaware Memorial Bridge on 8 December. Little to no oil was detected in the main shipping channel.

On 11 December, the V-SORS were directed to search for and recover oil in seventeen potential accumulation areas. Table 3 is a summary of these results. Oil was detected in the Marcus Hook Anchorage 7; a trace amount was found near Penns Grove, New Jersey (Cherry Flats).

Table 3. V-SORS results for potential submerged oil accumulation sites on 11 December 2004.

Potential Oil Accumulation Site	Percent Oil on Snares
Camden	0
Pier slip in Philadelphia	0
Pier slip in Philadelphia	0
Philadelphia airport 1	0
Philadelphia airport 2	0
Philadelphia airport 3	0
Marcus Hook Anchorage 7	50
Cherry Flats DE side	0
Cherry Flats NJ side	2
DE Memorial bridge	0
Travis Cove	0
Pea Patch Island NJ side	0
Pea Patch Island anchorage	0
Delaware City	0
Reedy Island NJ side	0
Reedy Island DE side	0
Hope Creek jetty	low tide-did not survey

V. SUMMARY

A significant but unknown amount of oil from the *Athos 1* oil spill did not float. The oil itself is buoyant, even after weathering, however two different mechanisms caused the oil to become submerged:

1. During the initial release, the oil was released under high pressure, cutting it's own trench in to the bottom. The highly viscous oil was held in the trench by cohesive forces. This is the only location where "pooled" oil was found.

2. The rest of the released oil initially floated and formed thick slicks. Most of the heavy oil stranded on man-made shorelines (seawalls and riprap), coating the intertidal zone. However, some thick slicks stranded on sandy shorelines (e.g., the wide intertidal sand flats on Tinicum Island) where the sticky oil picked up enough sandy sediments to make the oil slightly negatively buoyant. When this oil was eroded from the shoreline, it moved

along the bottom with the tidal currents. The mobile oil has not accumulated in significant amounts in depressions along the upper river.

The recovery of the oil in the trench will remove the only known area of pooled oil. There have been significant efforts to remove as much of the mobile oil as possible through shoreline cleanup of the re-floatable oil stranded on the intertidal zone and recovery of mobile, submerged oil using the V-SORS. Data from both the snare samplers and the V-SORS tows indicate that the amount of submerged oil has decreased over time.

For more technical information, please contact:

Hazardous Materials Response Division
Office of Response & Restoration
National Oceanic and Atmospheric Administration
Seattle, Washington
(206) 526-6317

APPENDIX 1

Maps Showing the Results of the Submerged Oil Monitoring

Lightering Request Form

9798 USCG SECTOR DELAWARE BAY UP RIVER AND BIG STONE BEACH
LIGHTERING REQUEST / NOTIFICATION FORM

THE FOLLOWING INFORMATION MUST BE SUBMITTED TO AND APPROVED BY THE CAPTAIN OF THE PORT 4 HOURS PRIOR TO COMMENCING LIGHTERING OPERATIONS

LIGHTERING VESSEL INFORMATION

VESSEL NAME	CALL SIGN	IMO NO.	FLAG	PRODUCT

LIGHTERING LOCATION	ETA	AMOUNT ON BOARD	AMOUNT TO LIGHTER

RECEIVING VESSEL INFORMATION

VESSEL NAME	CALL SIGN	IMO NO.	FLAG	ETA

DATE/TIME/DURATION OF EACH TRANSFER OPERATION
1ST TRANSFER
2ND TRANSFER
3RD TRANSFER
REASON FOR REQUEST:

SPILL RESPONSE PLAN	
LIGHTERING VESSEL:	
AGENT (Name/Tel/Fax):	
QUALIFIED INDIVIDUAL (Name/Tel):	
P & I Club (Name/Tel):	
OSRO (Name/Tel):	
OSRO CONTACTED PRIOR TO LIGHTERING OPERATION:	
RECEIVING VESSEL:	
AGENT (Name/Tel):	
QUALIFIED INDIVIDUAL (Name/Tel):	
P & I Club (Name/Tel):	
OSRO (Name/Tel):	
OSRO CONTACTED PRIOR TO LIGHTERING OPERATION:	

****IN THE EVENT THE ESTIMATED TIME OF ARRIVAL IN THE LIGHTERING LOCATION CHANGES BY MORE THAN SIX HOURS, THE MASTER, OWNER, OR AGENT MUST ADVISE THE CAPTAIN OF THE PORT (COTP) OF THE CHANGE AS SOON AS POSSIBLE.**

****WHERE LIGHTERING OPERATIONS ARE CONDUCTED AS A RESULT OF COLLISION, GROUNDING, TANK RUPTURE, OR ANY SIMILAR EMERGENCY, IMMEDIATE NOTICE MUST BE GIVEN TO THE COTP.**

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SUBMITTED BY:	TITLE:	DATE:
APPROVED:	TITLE:	DATE:

***For lightering notifications at Big Stone Beach, fax to USCG Marine Safety Detachment Lewes Delaware at 302-644-1933**
***All upriver lightering requests, fax to USCG Sector Delaware Bay at 215-271-4807**

API Sunken Oil

Ops Guide

Sunken Oil Detection and Recovery Operational Guide

API TECHNICAL REPORT 1154-2
FIRST EDITION, FEBRUARY 2016

AMERICAN PETROLEUM INSTITUTE

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Sunken Oil Detection and Recovery
Operational Guide

1 Scope

1.1 Introduction and How to Use This Guide

This Operational Guide is a companion document to the technical report, *Sunken Oil Detection and Recovery*, which identifies and documents current best practices and alternative technologies possessing the potential to more effectively detect, contain, and recover sunken oil, defined as the accumulation of bulk oil on the bottom of a water body. The technical report includes summaries and lessons learned for 36 case studies of oil spills where a significant amount of the oil sank. For each technology, it includes a detailed description of the method, advantages and disadvantages, and summary tables—the kinds of information needed to select the most effective approaches to sunken oil detection and recovery. Please refer to the technical report for supporting information not in this guide.

Most oil spill response strategies, tactics, and equipment are based on the simple principle that oil floats. However, oil does not always float. Sometimes it suspends in the water column; sometimes it sinks to the bottom of the water body. Sometimes it does all three: floats, suspends, and sinks. Furthermore, oil that has sunk to the bottom can become re-suspended and spread by currents. Terminology to describe these various behaviors can be confusing; thus, in this guide, the following terminology is used.

— **Floating oil**—Spilled oil that is on the surface of the water.

— **Submerged oil**—Spilled oil that is in the water column, below the water surface, including oil that is in temporary suspension due to turbulence and will refloat or sink in the absence of that turbulence.

— **Sunken oil**—Spilled oil that is on the bottom of the water body.

This guide addresses only sunken oil.

1.2 Section Descriptions

There are six subsequent sections to this guide.

— **Section 2: Determine the Potential for the Oil to Sink under the Spill Conditions**

This section provides guidance on when to expect that an oil may sink, either initially or later due to processes such as weathering and sediment interactions. It includes a chart to help determine if an oil can sink initially based on its density or API gravity and the salinity of the receiving water. It also includes a chart that shows how turbulence and sediment interaction can cause a floating oil to submerge or sink over time.

— **Section 3: Select Sunken Oil Detection, Delineation, and Characterization Techniques**

This section includes a checklist of the types of information you will need about the oil and spill conditions to start evaluating which sunken oil detection options may be effective for the spill. There is a list of action items to guide the development and approval of a sunken oil detection plan. It also includes tabular summaries of the advantages and limitations of possible options, along with a matrix to guide selection of the best combination of options.

It is important to note that oftentimes multiple detection, delineation, and characterization methods should be used, in combination and/or in sequence. All remote detection methods require ground truthing or need bottom sampling to determine the oil thickness on the bottom or determine the oil’s viscosity and thus pumpability.

— **Section 4: Determine if there are Feasible Sunken Oil Containment Techniques**

This section notes that containment of sunken oil may not always be feasible. It includes summaries of the advantages and limitations of possible options under mostly low-flow conditions.

— **Section 5: Select Sunken Oil Recovery Techniques**

This section includes a checklist of the types of information you will need about the oil and spill conditions to start evaluating which sunken oil recovery techniques may be effective for the spill. There is a list of action items to guide the development and approval of a sunken oil recovery plan. It also includes tabular summaries of the advantages and limitations of possible recovery techniques, along with a matrix to guide selection of the best combination of techniques.

— **Section 6: Waste Stream Management**

Because waste generation during sunken oil recovery operations is a very important consideration in both selection of the removal method and the types of waste stream treatment methods to be implemented, this section provides guidance on best practices for handling the oil, liquids, and solids generated during a response.

— **Section 7: Safety Considerations**

Safety is of paramount importance during all phases of sunken oil detection and recovery, as it is during any response. Therefore, this section includes safety considerations throughout the response. It also includes a checklist of the issues to consider when developing a plan to conduct sunken oil detection and recovery operations, including:

- general safety;
- equipment mobilization and heavy lift operations;
- hydraulic submersible pumps and transfer operations;
- diving operations.

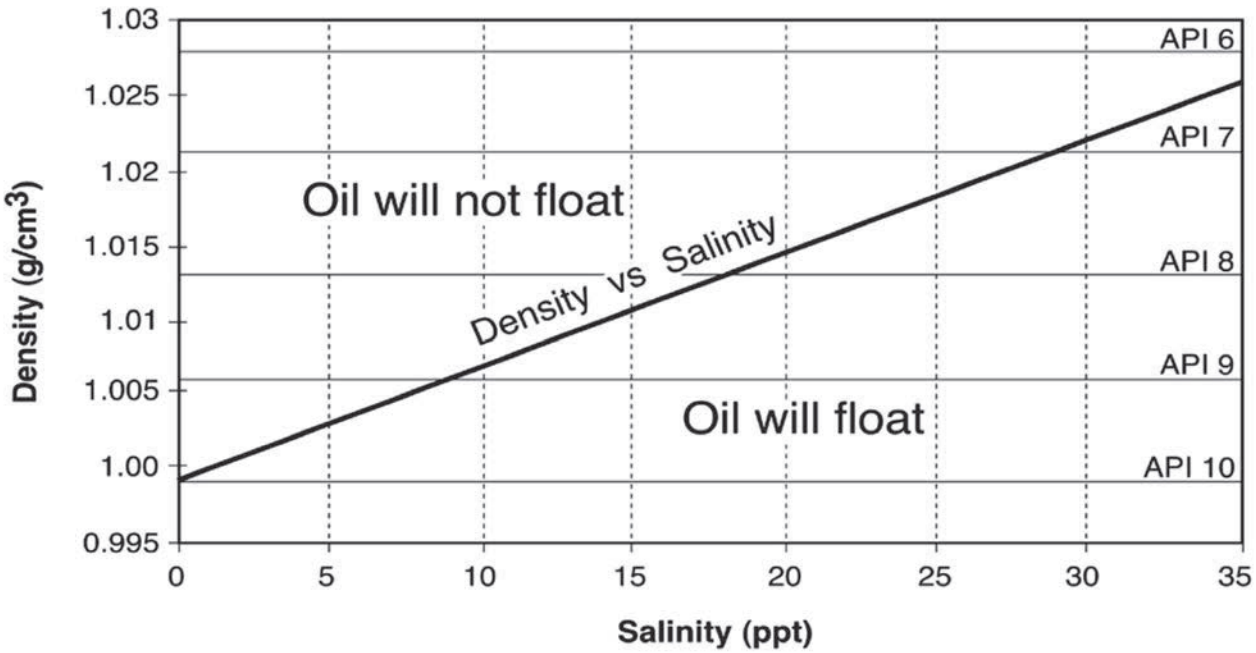
2 Determine the Potential for the Oil to Sink Under the Spill Conditions

Key points include the following.

- The API gravity or density of the oil relative to that of the receiving water will determine if the oil will sink initially after release to a water body.
- Over time, weathering or interaction with sediment can cause a floating oil to sink.
- Floating oils that may sink are generally very heavy crude oil, heavy fuel oils, or diluted bitumen products.

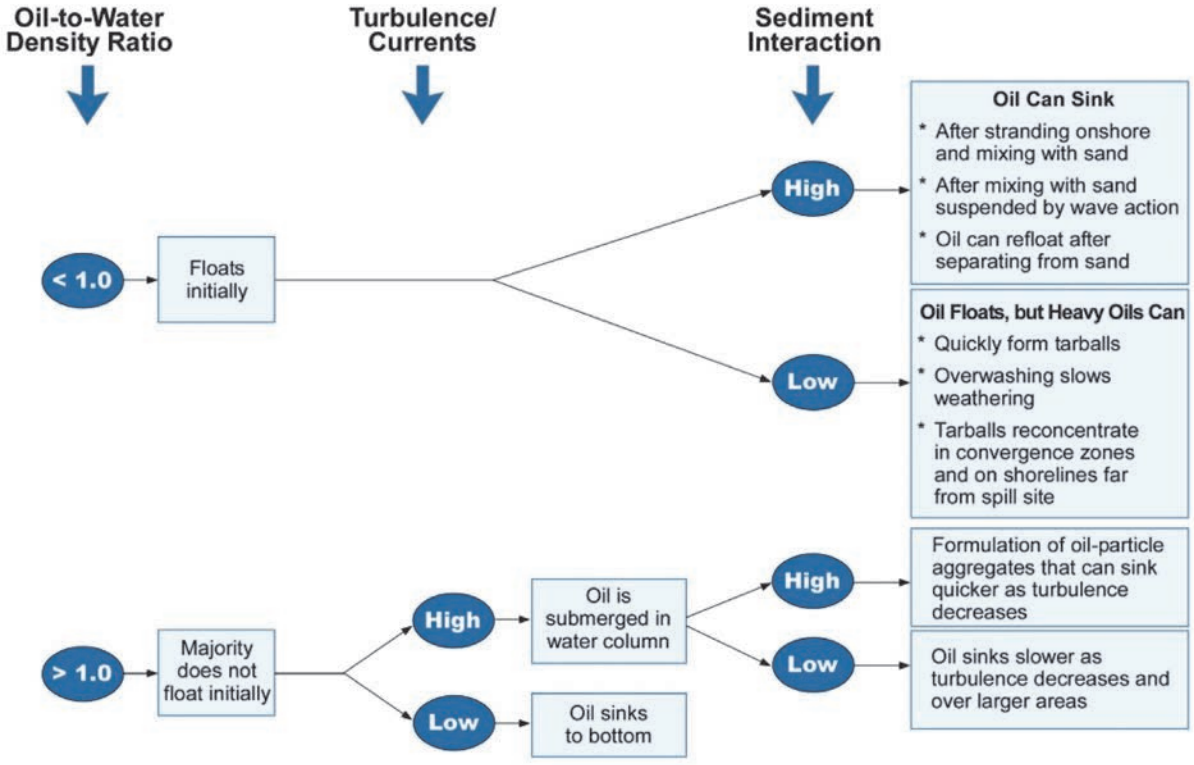
Determine the potential for the spilled oil to sink initially.

- Determine the API or density of the fresh oil and use Figure 1 and Figure 2 to determine if it will sink initially in the receiving water.
- In freshwater, oils with an API of less than 10 or a density of greater than 1.0 g/cm^3 will sink if the currents are weak or turbulence is low.



NOTE Oils with values below the line will float initially; oils with values above the line with not float initially (modified after NRC, 1999).

Figure 1—Relationship Between Density and API Gravity and Water Salinity



NOTE Modified after NRC, 1999.

Figure 2—Conditions by Which Oils Can Sink Based on the Density of the Oil Relative to the Receiving Water, Turbulence, Currents, and Sediment Interaction

— In seawater, oils with an API of less than ~6.5 or a density of greater than 1.03 g/cm^3 will sink if the currents are weak or the turbulence is low.

— In estuarine waters, be aware that the oil might be suspended in the water column in the freshwater part of the estuary or river, then refloat once it reaches the higher salinity water closer to the mouth of the estuary.

— Conversely, oil that floats or is submerged in estuarine waters may become submerged or sink if transported into less dense freshwater.

— If the currents or turbulence are strong, oils heavier than the receiving water will become suspended in the water column and only sink in low-flow areas downcurrent of the release. These low-flow and low-energy areas should be targets for searching for sunken oil.

Determine the potential for the spilled oil to sink over time.

— Experience has shown that oils that initially float can sink after mixing with sediment. This can occur by two pathways.

  — Floating oil that mixes with sediment after being stranded on a beach can be reworked and moved seaward by wave action to sink in the adjacent nearshore waters.

  — Floating oil can mix with sand in the surf zone and sink, without ever stranding onshore.

— Some oils are lighter than water initially but become close to or even heavier than the density of freshwater once the lighter fractions are lost by evaporation. These oils can sink as either bulk oil or oil-particle aggregates on the bottom of the water body.

— Highly viscous oils can have an increased risk of sinking over time.

  — They can entrain a lot of free water, which can increase their density.

  — They tend to be stickier, which can increase the amount of sediment uptake if stranded on the shoreline or mixed with sediments in the water column, which can increase their density.

3 Select Sunken Oil Detection, Delineation, and Characterization Techniques

Key points include the following.

— Stand up a Sunken Oil Detection, Delineation, and Characterization Group responsible for methods evaluation as soon as it is determined that there is a risk of oil sinking.

— Start mobilizing equipment as soon as possible.

— Recovery should be closely coupled with detection because sunken oil can quickly become remobilized, reducing the overall effectiveness of the response. Thus, evaluation of recovery methods should start as soon as it is confirmed that the oil may sink.

— Include equipment redundancy and alternatives to the preferred method(s) in the plan because of frequent breakdowns, changing conditions, and uncertainty in which methods are likely to be most successful.

— Refer to the matrices in Table 1 and Table 2 on the advantages and disadvantages of sunken oil detection, delineation, and characterization options and the summaries in Table 3 to guide selection of the best options for the spill conditions.

Table 1—Matrix to Evaluate Techniques for Detection, Delineation, and Characterization of Sunken Oil

Red = not likely effective; yellow = may be effective; green = most likely effective

	Sonar Systems	Camera/ Video	Acoustic Camera	Diver Observations	Towed Sorbents	Stationary Sorbents	Visual Observations	Bottom Sampling	Manual Shovel Pits	Laser Fluorosensor	Water Column Sampling
Water Depth (ft)	**10 to 1000**	**10 to 1000**	**10 to 1000**	**5 to 190**	**5 to 100**	**5 to 100**	**0 to 30**	**0 to 1000**	**0 to 5**	**10 to 100**	**5 to >1000**
Water Visibility											
— >30 ft											
— 5 to 30 ft											
— <5 ft											
Availability											
Substrate Type											
— Sand											
— Silty Sand											
— Mud											
Bottom Obstruction											
Oil Patch Size											
— <0.1 ft^2											
— 0.1 to 1 ft^2											
— >1 to 10 ft^2											
— >10 ft^2											
Oil Thickness											
Buried Oil											
Sensitive Habitat											
False Positives											
Coverage Rate											
Data Turnaround											

Table 2—Advantages and Disadvantages of Sunken Oil Detection, Delineation, and Characterization Technologies

Advantages	Disadvantages
Side Scan Sonar >350 kHz	
— Rapid area coverage. — Good bottom oil detection shown in T/B *Apex 3508* and T/B *DBL-152* spills. — Able to detect oil patch as small as 1 m^2.	— Requires ground-truth for absolute validation of sonar data. — Will not be able to detect buried oil.
Multibeam Echo Sounder >350 kHz	
— Easy to deploy and provides pseudo-imagery of the bottom. — Provides bathymetry maps showing low spots where sunken oil could collect. — Bathy data may be needed to support recovery Ops.	— Resolution is lower than side scan sonar making interpretation/detection of oil difficult.
Sub-bottom Profiler 4 to 24 kHz Chirp	
— Provides potential for detection of oil mats in the shallow sub bottom region when used in conjunction with side scan sonar and multibeam echo sounders.	— Cannot detect sunken oil on the surface. — Data are difficult to interpret due to limitation in resolution of layering in the sub bottom region.
3D Scanning Sonar	
— 3D mapping and tracking of submerged or subsurface oil. — Real-time observation of sunken oil on the bottom for recovery operations.	— Limited availability in the commercial offshore market.
Digital Still Camera	
— Very high resolution images.	— Discrete images do not provide continuous images of the bottom. — Water turbidity limits effectiveness.
Video Camera	
— Provides continuous color or b/w images of the bottom. — Low-light b/w cameras facilitate imaging in high turbidity conditions by eliminating requirement for light sources.	— Water turbidity limits effectiveness for imaging.
SPI Camera	
— Provides digital images of near sub-bottom for identification of sunken or buried oil layers and benthic communities.	— Fouling of SPI window due to oil in water column or sunken oil on the bottom.
Acoustic Camera	
— Provides acoustic imaging in very high turbidity water conditions. — Could be deployed at a site to monitor sunken oil behavior over time or during events such as storms.	— Acoustic images have limited resolution when compared to optical images.

Table 2—Advantages and Disadvantages of Sunken Oil Detection, Delineation, and Characterization Technologies (Continued)

Advantages	Disadvantages
Diver Observations	
— Proven effective in detecting, mapping, and recovering sunken oil. — Quick turnaround on data; divers provide real-time imagery to the surface, may be directed by the diving supervisor and technical specialists while on the bottom, and can immediately communicate observations to the surface. — Often effective in low to no visibility conditions; divers can feel the oil and changes in bottom topography. — Accurate determination of oil on bottom; can provide verbal and visual description of extent and thickness of oil and spatial variations. — Experienced river divers can conduct detection and recovery operations in high current environments that typically restrict ROV operations or towed systems due to bottom obstructions. — Submersibles and one-atmosphere diving suits may be used to increase depths and bottom times. — Low false positives.	— Environmental limitations may include sea state, currents, weather/lightening, water depth, ice/cold water, debris, and dangerous marine life. — Surface-supplied air diving is limited to 190 feet of salt water (fsw) in the US. Mixed gas, saturation systems, and one-atmosphere suits or submersibles may increase bottom time and depth; will increase project complexity and cost. — Coverage rate; the length of the diver's umbilical limits movement away from the dive support vessel. — Contaminated water diving requires special equipment, training, and decon procedures. — Diving in high-current rivers and ice/cold water requires special training, additional equipment (such as hot water suits and dry suits), and experienced divers. — Slow; diver movements may be limited by umbilical length and environmental conditions. — Divers must be replaced routinely to remain within no-decompression limitations and work/rest standards.
Towed Sorbents (Heavy)—Sorbents attached to multiple chains attached to a header bar	
— Can be towed at up to 5 knots, though usually 3 to 4 knots, thus able to cover a large distance. — Area swept is about 8 ft. — Higher confidence that it maintains bottom contact. — Can vary the length of the trawl to refine spatial extent, to some degree. — Good positioning capability with onboard GPS; can load assigned tracks into the vessel navigation system. — Can be used in vessel traffic lanes.	— Requires larger vessel with crane or A-frame and winch to deploy/retrieve. — Lots of concern about pipeline and debris snagging. — Cannot determine where along the trawl the oil occurred; No calibration with actual amount of oil on bottom. — Longer transects because of handling difficulty. — Highly dependent on wave conditions.
Towed Sorbents (Light)—Sorbents attached to a single chain	
— Manually deployed so can be used on smaller boats. — Can have very short trawls, if needed. — Can conduct continuous surveys without stopping, towed at 2 to 3 knots.	— Narrow swath (~1 ft) so less information on patchy oil. — Concerns about it losing contact with the bottom with wave action. — Cannot determine where along the trawl the oil occurred. — No calibration with actual amount of oil on bottom. — Highly dependent on wave conditions.

Table 2—Advantages and Disadvantages of Sunken Oil Detection, Delineation, and Characterization Technologies (Continued)

Advantages	Disadvantages
Stationary Sorbents—Detection of oil in the water column or along the bottom	
— Proven to be effective at detecting oil at various depths in the water column and moving along the bottom. — Time-series data very useful to track trends, though requires a lot of data points to be meaningful. — Can be re-deployed as needed as the oil migrates down current.	— Time and labor intensive for deployment, inspection, and replacement. — Can have high loss rates. — No calibration of the efficacy of oil adsorption and it might change over time. — Can not be deployed in active vessel traffic lanes. — Low temporal data on when the oil was mobilized.
Visual Observations by Trained Observers	
— Aerial surveys can cover large areas quickly. — Data are collected in real time, rather than having to view video post-collection. — Observers can adjust their survey once sunken oil is located for better detail. — During water surface surveys, it is possible to stop to take samples to confirm an observation as oil and take photographs.	— Only effective in clear, shallow water during daylight hours. — Not effective for buried oil. — Aerial observations will only identify general areas for ground truthing and more detailed assessment. — Aerial observations are not effective for small, patchy accumulations. — Water surface observations collect data along narrow transects so of limited spatial detail. — Even trained observers can make false positive or negative observations.
Bottom Sampling	
— Allows collection of samples to confirm the presence of oil, either visually or through chemical analysis. — Can be effective in small areas for rapid delineation of a known patch of oil. — Poling method indicated the relative risk of sheening of sunken oil. — Can detect buried oil and indicate oil thickness.	— Only point sample of a very small area. — Not effective in patchy oiling conditions. — Very slow and labor intensive. — Even slower in deep water, rough sea conditions. — Oil may be buried deeper than the sampler can penetrate into the bottom. — Must use a statistically relevant sampling grid to be useful.
Laser Fluorosensors	
— Highly sensitive to oil. — Generates few false positives once calibrated for the sunken oil. — Can be used during day or night.	— Cannot detect buried oil. — Detection ability decreases with water turbidity, distance from the target, and wave height. — Bright, backscattered light (such as from white sand) may saturate the input. — Only one prototype system available, and the latest model has not been tested.

Table 2—Advantages and Disadvantages of Sunken Oil Detection, Delineation, and Characterization Technologies (Continued)

Advantages	Disadvantages
Water Column Sampling	
— Can provide geo-referenced oil locations in real time and at high spatial resolution. — Once oil is detected, the survey can be adapted to sample above potential targets. — Mass spectrometers can determine hydrocarbon composition, allowing differentiation among sources. — Can map gradients of oil levels in the water column, which could be used to identify areas of higher oil accumulations. — Submersible UV fluorometers are readily available and easily deployed and interpreted. — Submersible mass spectrometer technology and availability are improving. — Other sensors can be added to the vehicle to measure other parameters, e.g. salinity, dissolved oxygen, temperature.	— Only works if there are soluble components or small oil droplets in the water column. — The rate of release of soluble oil may decrease to non-detectable levels quickly. — Submersible mass spectrometers require a specially trained team of operators and interpreters.

Table 3—Summary of Sunken Oil Detection Technologies

	Sonar Systems	Still, Video, and Acoustic Cameras	Diver Observations
Description	Sonar systems are utilized to detect sunken oil on the bottom and in the near sub bottom areas.	Visualization devices including still, video and acoustic cameras are utilized to validate the presence of sunken oil.	Professional commercial divers trained, experienced, and equipped for contaminated water diving operations.
Logistical Needs	Support vessels of sufficient size and sea-keeping capability are required to provide an operational platform for the sonar systems. Different sonar systems have specific platform requirements so care must be taken in platform selection to ensure compatibility.	Visualization systems have definite platform requirements depending on technique selected. Diver-operated video devices have specific diver-related logistic requirements as noted for Diver Observations, which must be adhered to.	Diving support vessel/platform; heavy-lift equipment to load compressors, dive control rooms, and other equipment onboard. Emergency transportation to a medical facility with a multi-place decompression chamber. Decompression chamber located on-site as a contingency.
Operational Limitations	Water depth of 10 ft or less establishes an operation limitation on acoustic techniques, although operations in shallower water are possible in certain situations.	Water turbidity limits the functionality of visualization devices with the exception of the acoustic camera which will function in zero visibility water conditions with lesser resolution than optical devices.	Surface-supplied air diving is restricted to 190 fsw. Diving operations are limited by depth, bottom time, visibility, currents, and other environmental conditions.
Pros	Sonar systems are easy to use and have a high area coverage rate for fast establishment of sunken oil locations on the bottom.	Visualization techniques and devices provide visual validation of the presence of sunken oil without the requirement for ground truth of images.	Accurate, immediate observations can be conveyed to the surface. If visibility permits, real-time video can be viewed in the dive control house.

Table 3—Summary of Sunken Oil Detection Technologies (Continued)

	Sonar Systems	Still, Video, and Acoustic Cameras	Diver Observations
Cons	For absolute detection, sonar systems require a ground truth of the detected contact on the bottom to provide positive identification of sunken oil.	Water turbidity limits the capability of visualization devices with increasing turbidity creating decreasing visibility until the acoustic camera is required which provides images of lesser resolution than optical techniques.	Diving in contaminated water is considered a “high-risk” operation requiring thorough planning, safety oversight, trained and equipped personnel, and specialized equipment. The operational limitations noted above combined with diver decontamination requirements often result in a relatively high cost and time-consuming operation.
	Towed Sorbents	**Stationary Sorbents**	**Visual Observations by Trained Observers**
Description	Snares attached to chains are dragged on the bottom at set intervals then pulled up for observation of oiling amount.	Sorbents are suspended in the water column and/or placed in pots/cages on the bottom and inspected at set intervals.	Observers visually detect and record oil on the bottom as seen from aircraft or boats.
Logistical Needs	Light tows (1 chain) can be deployed on small boats. Heavy tows (multiple chains with a header bar) require a vessel with a crane or A-frame and pulley to deploy/ retrieve the tows.	In shallow water, requires minimal support. In deep water, requires davits or winches to deploy and retrieve them.	Aircraft or boat; GPS units to record locations and geo-reference photos; field computers to record descriptions.
Operational Limitations	Standard safety limits for boat operations. No use possible in the surf zone or where snagging on the bottom is of concern. More difficult to deploy/retrieve in >100 ft water depths.	Standard safety limits for boat operations. No use possible in the surf zone or vessel traffic lanes. More difficult to deploy/retrieve in >100 ft water depths.	Can only be used during daylight periods. Standard safety limits for aerial and boat operations, including no surveys possible in the surf zone.
Pros	Effective in low visibility conditions; can be used in vessel traffic lanes; can vary the tow length to refine spatial extent; can be used to confirm removal.	Proven effective at detection of oil moving at various depths in the water column; time-series data are useful to track trends; can be re-deployed as the oil migrates down current.	Aerial surveys can cover large areas quickly and can be adjusted once oil is found to get more detail.
Cons	Do not know where along the tow the oil occurred or how much oil is present (one larger patch or lots of small patches); cannot determine duration of bottom contact or efficacy of oil adhesion; labor intensive.	Very time and labor intensive; can have high loss rates, no calibration of the efficacy of oil adsorption and changes over time; cannot be deployed in active vessel traffic lanes; low temporal data on when the oil was mobilized during the deployment.	Cannot detect buried oil; effective only in clear water and daylight; aerial surveys require ground truth; boat surveys are slow; not safe for work in surf zone, strong currents.

Table 3—Summary of Sunken Oil Detection Technologies (Continued)

	Grab or Core Sampler	Wading-Depth Manual Shovel Pits	Laser Fluorosensors	Water-Column Sampling
Description	Point locations are surveyed with sediment grabs or cores to bring a sample to the surface for description.	A narrow blade shovel is used to dig shallow pits underwater, bringing the sediments to the surface for oil description.	Laser is used to excite the aromatic compounds in the oil to emit light with a unique pattern.	Underwater unit (fluorometer and/or mass spectrometer [MS]) is towed above the bottom to detect oil dissolved/ dispersed in the water.
Logistical Needs	In shallow water, requires minimal support. In deep water, requires a winch, A-frame, etc.	Can require a large team, depending on safety issues and access. Requires safety boat/crew at site, boats for access to sites with no land access.	Unit must be towed close to the bottom; could be deployed on ROV as well.	Units are deployed from boats; navigation system used to record location and measurements in 3D.
Operational Limitations	Standard safety limits for boat operations. No surveys possible in the surf zone.	Many safety limits. Requires wading water depth, low waves and currents, light wind, no lightning, and warm water.	Detection decreases with water turbidity, distance from the target, and wave height. Bright light can interfere. Water depths accessible by boat.	Standard safety limits for boat operations. No surveys possible in the surf zone. Water currents must be low enough to minimize transport of the plume.
Pros	Samples can be collected for confirmation; can detect buried oil and oil thickness; poling can indicate the risk of sheen generation.	May be best option to detect buried oil in the surf zone; can work closely with Operations to achieve rapid removal after delineation of treatment area.	Highly sensitive, few false positives; can be used day or night.	Can map at high spatial resolution and differentiate among oil sources in real time, allowing detailed mapping of targets.
Cons	Slow, labor intensive, not effective for patchy oil; weather and sea limits.	Narrow operational limits, slow coverage rate, and limited to depth of digging.	Cannot detect buried oil; not effective in turbid water; not proven operationally.	Only effective if there is oil in the water; currents can transport the oil away from source; MS requires special teams and gear.

The following is a checklist of actions and information needs for the Sunken Oil Detection Group.

Site Characteristics

- ❑ Survey area (highest priority, next priority): _____
- ❑ Distance from shore: _____
- ❑ Water depth range: _____
- ❑ Water visibility range: _____
- ❑ Water current speed and direction:

  Surface: _____

  Subsurface: _____
- ❑ Wave conditions: _____
- ❑ Substrate type: _____
- ❑ Bathymetry (oil accumulation areas): _____
- ❑ Sensitive habitats in survey area: _____

  Biological resources: _____

  _____

  Cultural/historic resources: _____

  _____
- ❑ Types of obstructions on the bottom: _____
- ❑ Other restrictions to be considered: _____
- ❑ Landowner issues: _____

Evaluate/select the best detection techniques.

1) Select possible detection techniques based on water depth.

2) For the selected techniques, filter them based on water turbidity.

3) Factor in substrate type, presence of bottom obstructions, patch size, whether there is sensitive habitat, and potential for false positives.

4) Refer to the technical report for coverage rates for different sonar systems to estimate the number of days needed to complete the survey.

5) Determine availability and mobilization time. Remember, experienced operators will greatly improve the effectiveness and timeliness of the results.

6) Involve potential qualified contractors in the planning process as they can provide valuable feedback on applications of various techniques. In discussions with potential qualified contractors, provide the site characteristics listed above. Be clear about expected turnaround time, deliverables, and what logistics will be provided.

7) The Sunken Oil Detection Group reviews the detection techniques that are most likely to be effective for the spill conditions and the qualifications of potential contractors to provide the equipment and trained operators.

8) Results of the review are documented in a draft Sunken Oil Detection Plan that is submitted to the Environmental Unit for review and compliance with federal and state permitting and consultation requirements, including:

   a) Section 7 of the Endangered Species Act (ESA),

   b) Essential Fish Habitat (EFH) under the Magnuson Stevens Fisheries Conservation and Management Act,

   c) Section 106 of the National Historic Preservation Act (NHPA),

   d) State Historic Preservation Office,

   e) federally recognized Native American Tribal Governments.

9) After review by the Environmental Unit and with appropriate changes, the Planning Section Chief submits the final Sunken Oil Detection Plan to the Unified Command for review and approval.

10) Once the Unified Command has approved the plan, prepare a ICS 213 resource request form and route through Finance and Logistics for approval and notification of the selected contractor(s).

11) Once approved, contact the contractors to start the planning for the survey.

4 Determine Whether There Are Feasible Sunken Oil Containment Techniques

Oil usually accumulates on the bottom where currents and turbulence are low. However, sunken oil can be remobilized when turbulence increases, such as during higher-flow conditions in rivers and higher-wave conditions in nearshore areas. Containment of sunken oil may not always be feasible. If containment is being considered, use the information on site conditions in Section 3 to determine if there are feasible techniques to contain the oil under the spill conditions. Only those sunken oil containment techniques that have shown to be effective are listed in Table 4.

5 Select Sunken Oil Recovery Techniques

Key points include the following.

— Stand up a Sunken Oil Recovery Group responsible for methods evaluation as soon as it is determined that there is a risk of oil sinking.

— Start mobilizing equipment as soon as possible.

— Safety of the responders and public should remain the top priority throughout the recovery operation (reference Section 7 of this guide).

Table 4—Advantages and Disadvantages of Sunken Oil Containment Technologies

Advantages	Disadvantages
Filter Fences or Gabion Baskets Filled with Sorbents	
— Constructed of readily available materials. — Effective at removal of oil droplets in the water column. — Can be deployed at and just below the surface or on the bottom, depending on water depth and where the oil is moving in the water column or along the bottom. — Closed-loop snare may be more effective.	— If currents are >1 ft/s, there can be scouring of the bottom in front of the baskets and less effective oil recovery. — Not feasible to deploy in high-flow areas. — Can completely fail and be swept downstream if flows suddenly increase. — Can only filter the entire water flow in small streams.
Sediment Curtains	
— Curtains constructed of hydrophilic materials can sorb oil as well as slow the flow and increase sedimentation. — Half-curtains or partial currents can be deployed at angles to the flow in moderate-flow areas to slow currents and increase deposition of oiled sediments.	— Full curtains are only effective in low-flow areas, where the curtain can maintain contact with the bottom, where risk of oil mobilization is also low. — Requires measurement of current speeds at surface and/or bottom and knowledge of hydraulics for proper design. — -Can interfere with navigation.
Air Curtains	
— Does not interfere with navigation. — Could help bring oil in the water column to the surface.	— Only effective in very low-flow areas, where risk of oil mobilization is also low.
Enhanced Passive Sediment Accumulation	
— Builds on natural processes and uses natural materials that can be left in place. — Does not interfere with navigation.	— Restricted to areas of natural accumulation, which may be sensitive or high-public use areas such as impoundments. — Requires dredging or excavation to remove the accumulated sediment. — Need a good understanding of seasonal flow patterns so sudden floods don’t flush the oiled sediments out.

— Recovery should be closely coupled with detection because sunken oil can quickly become remobilized, reducing the overall effectiveness of the response. Thus, start evaluation of recovery methods as soon as it is confirmed that the oil may sink.

— Include equipment redundancy and alternatives to the preferred method(s) in the plan because of frequent breakdowns, changing conditions, and uncertainty in which methods are likely to be most successful.

— Develop and get consensus on cleanup endpoints, which will greatly influence selection of removal techniques and validation methods.

— Refer to the matrices in Table 5 and Table 6 on the advantages and disadvantages of sunken oil recovery techniques; and see Table 7 to guide selection of the best techniques for the spill conditions.

The following is a checklist of actions for the Sunken Oil Recovery Group.

Table 5—Matrix to Evaluate Techniques for Sunken Oil Recovery

Red = not likely effective; yellow = may be effective; green = most likely effective

	Suction Dredge	Diver Vacuum	Diver Pump	Excavator	Grab Dredge	Environmental Clamshell	Sorbents/ V-SORS	Trawls and Nets	Manual Removal Shallow Water	Manual Removal by Divers	Agitation/Refloat
Water Depth (ft)											
— <5 ft											
— 5 to 40 ft											
— 40 to 80 ft											
— >80 ft											
Water Visibility											
— >5 ft											
— <5 ft											
Water Current											
— <1 kt											
— 1 to 2 kt											
— >2 kt											
Wave Height (ft)											
— <2 ft											
— >2 ft											
Availability											
Oil Pumpability											
— Fluid											
— Not Fluid											
Oil Distribution											
— <10 %											
— 10 to 50 %											
— >50 %											
Oil Patch Size											
— < 0.1 ft^2											
— 0.1 to 1 ft^2											
— > 1 to 10 ft^2											
— > 10 ft^2											
Substrate Type											
— Sandy											
— Muddy											
Bottom Obstructions											
Buried Oil											
Sensitive Habitat											
Removal Rate*											
Waste Generation**											
Environmental Impact**											
Cost **											

* Classified as rapid, medium, or slow.

** Classified as low, medium, or high.

Table 6—Advantages and Disadvantages of Sunken Oil Recovery Technologies

Advantages	Disadvantages
Suction Dredge with Cutter/Auger Head Attachment	
— Common piece of equipment, readily available, easy to transport. — Little to no modifications required for sunken oil recovery. — Can cover large areas quickly with 5 ft to 8 ft swath. — Ability to pump/transport great distances. — Ability to pass large solids, i.e. rocks and debris. — Self-propelled or guide-cable operation. — Adjustable “cut” depth allowing the removal of ±1 in. to several inches in one pass. — Can track and document progress with GPS. — Low manpower requirement to operate. — Amphibious models can operate from 0 ft to 20 ft for small units and up to 40 ft for large units.	— Generates large amounts of water and sediment requiring dewatering, handling of solids, and water treatment. — Only suitable for protected waters. — Non-discriminate recovery, cannot tell the difference between oil and water/sediment. — High rpm pump has the potential to create issues with turbulence that results in oil emulsification and shearing. — Not allowed to work in areas with pipelines, cables, or other obstructions.
Diver-directed Vacuuming	
— Vacuum trucks readily available. — Portable Vacuum Transfer Units (VTUs), while not as prolific as vacuum trucks, are available. — Ability to regulate flow. — Minimal mixing of recovered fluids and solids. — Ability to pass some solids (rocks and debris). — Can handle high viscosity. — Selective recovery provided diver has visibility.	— Rapid loss of effectiveness due to hose distance. — Large, heavy units. — Requires larger vessel or barge if unprotected water. — Small coverage area.
Diver-directed Pumping with Centrifugal Pump	
— Lightweight and portable. — Can pump long distances. — High head pressure, can pump several hundred feet up. — Easily modified to protect from rocks with a “rock box”. — Ability to regulate flow. — Selective recovery provided diver has visibility. — Can introduce steam or hot water to reduce viscosity. — Ability to pass some solids (rocks and debris).	— Not readily available; must locate from dive or dredge contractors, some oil spill response organizations. — Generates large amounts of water and sediment requiring dewatering, handling of solids and water treatment. — High rpm pump has the potential to create issues with turbulence, emulsification, and shearing. — Cannot handle viscous oil other than small amounts moved in large amounts of water. — Small coverage area.

Table 6—Advantages and Disadvantages of Sunken Oil Recovery Technologies (Continued)

Advantages	Disadvantages
Diver-Directed Pumping with Positive-displacement Pump	
— Lightweight and portable. — Can pump long distances. — High head pressure, can pump 100s of feet up. — Easily modified to protect from rocks with rock box. — Ability to regulate flow. — Selective recovery provided diver has visibility. — Can handle very high viscosity oils; can introduce steam or hot water to reduce viscosity. — Ability to pass some solids (rocks and debris). — Low rpm thus minimal mixing of fluids and solids, reducing the potential issues associated with turbulence, emulsification, and shearing. — Can adapt water-injection flange for viscous oil.	— Not readily available; must locate from dive or dredge contractors, some oil spill response organizations. — Lower recovery rates than centrifugal pumps. — Small coverage area.
Excavator	
— Readily available in varying sizes. — Can work from shore for nearshore work. — Can work from vessel or barge. — Amphibious models available but less prevalent. — Can scoop sunken oil with bucket. — Easy addition of a thumb attachment for recovering solid or semi-solid sunken oil. — No issues with rocks or debris. — Can track progress with geo-referenced data.	— Limited to ±20 ft of water. — Difficult to be selective, resulting in additional sediments. — Difficult to manage liquid flowing from bucket during lift. — Large, heavy units. — Requires larger vessel or barge if unprotected water. — Small coverage area.
Grab or Clamshell Dredge	
— Readily available from dredge and construction contractors. — Can work from shore for nearshore work. — Can work from vessel or barge. — No issues with rocks or debris. — Can track progress with geo-referenced data.	— Requires logistical support to store and transport recovered sunken oil and sediment (hopper barge). — Generates large amounts of sediment requiring dewatering, handling of solids, and water treatment. — Liquids not contained, allowing leakage during recovery operation. — Small coverage area.

Table 6—Advantages and Disadvantages of Sunken Oil Recovery Technologies (Continued)

Advantages	Disadvantages
Environmental Clamshell Dredge	
— Available from dredge, construction and environmental engineering contractors. — Can work from shore for nearshore work. — Can work from vessel or barge. — No issues with rocks or debris. — Water-tight seal greatly reduces liquid leakage. — Can track progress with geo-referenced data.	— Not as prevalent as conventional clamshell. — Small coverage area.
Sorbents/V-SORS	
— Can be used in active vessel traffic lanes. — Track lines can be recorded with the vessel's GPS to provide actual survey lines. — Could detect both pooled and mobile oil moving above the bottom, but won't differentiate between them. — Relatively efficient in that large areas could be surveyed. — Readily available; can be sized for the task. — Low tech; easy to train crews. — Can vary the length of the trawl to refine spatial extent.	— Time and labor intensive for deployment, inspection, and replacement. — Susceptible to snagging on the bottom. — Cannot determine where along the trawl the oil occurred. — Difficult to calibrate the effectiveness of oil recovery. — In deeper water, requires a vessel with a boom/pulley and adequate deck space on the stern for handling, inspection, and replacement. — Best suited for recovery of small amounts of oil.
Towed Nets or Trawls	
— Readily available in areas with commercial fisheries. — Experienced operators (fisherman) with vessels capable of effectively towing.	— Difficult to specify size of net openings, have to use what is available. — Leakage of oil through net may occur and hard to monitor. — Cannot be cleaned and returned for intended purpose, thus most likely will be a one-time use. — Will require support to handle/dispose of oiled nets. — May have issues with debris. — May snag on rocks or obstructions.
Manual Recovery Shallow Water	
— Low tech, only requires labor force and hand tools. — Selective recovery, limiting co-collection of water and sediment.	— Slow and labor intensive; requires proper PPE. — Restricted to shallow water <5 ft. — Requires relatively good water clarity for visibility. — Severe weather will suspend operations.

Table 6—Advantages and Disadvantages of Sunken Oil Recovery Technologies (Continued)

Advantages	Disadvantages
Manual Recovery with Divers	
— Relatively low tech, requires divers and hand tools. — Selective recovery, limiting co-collection of water and sediment.	— Slow and labor intensive. — May require extensive logistical support if based off vessel or barge. — Requires properly trained commercial diving crew with contaminated-water diving equipment. — Requires decontamination equipment and trained support personnel. — Severe weather will suspend operations.
Agitation/Refloat	
— Off the shelf items such as pumps and rakes can be used. — Aerators designed for waste water treatment or fish ponds can be modified for sunken oil recovery. — Selective recovery limiting associated recovered water and sediment.	— Slow and labor intensive. — Small coverage area. — Restricted to shallow water <8 ft and relatively low water velocity. — Suspended oil can remain mixed with the sediments and resettle to the bottom after agitation. — Mixes remaining oil deeper into the sediments. — Only effective with liquid oils that are loosely adhered to the sediment and will re-float when separated from the sediment, and where complete containment of the resuspended oil is possible. — Generates high turbidity that can spread downstream.

Table 7—Summary of Sunken Oil Recovery Technologies

	Suction Dredge	Diver-directed Pumping and Vacuuming	Mechanical Removal
Description	Commercially available suction dredge used to recover sunken oil and associated sediments and water. Some models incorporate cutter heads for use in removing sediments.	Divers manually direct a nozzle or stinger at the suction end of a hose to recover sunken oil. System can be based on a vacuum system or pump system utilizing a centrifugal or positive displacement pump.	Mechanical removal involves physically removing sunken oil with an excavator, clamshell dredge, environmental dredge bucket, or other machinery used to grab, scoop, or pick up sunken oil. Works well for recovery of solid or semi-solid sunken oil.
Logistical Needs	Requires the need to handle large quantities of sediments and water associated with recovery.	Contaminated water capable commercial divers, proper diver decon, oil/water/sediment separation and storage.	Platform or barge to work from and hopper barge or suitable storage for recovered sunken oil and associated sediment and water.
Operational Limitations	Smaller units work in depths up to 20 ft, larger units can go as deep as 40 ft. Suited for protected waters only.	Vacuum systems can only lift about 28 ft total. Pumps can push long distances and from great depths.	Excavators are limited to ±20-ft depth. Clamshell and environmental clamshell dredge can work in deeper depths but difficult to control accuracy. All can be operated from shore or from large vessel or barge.

Table 7—Summary of Sunken Oil Recovery Technologies (Continued)

	Suction Dredge	Diver-directed Pumping and Vacuuming	Mechanical Removal
Optimal Conditions	Protected water, relatively shallow, small concentrations of sunken oil.	Larger concentrations "pooled" on the bottom in less than 100-ft depth with good visibility and little to no current.	Viscous or solidified oils in shallow or protected water.
Pros	Effective way to recover small concentrations of sunken oil mixed throughout sediments.	Selective recovery, diver can distinguish between sediment and oil limiting the recovery of associated sediment and water.	Effective way to recover solidified oil with little associated water.
Cons	Generates large amounts of associated water and sediments. Requires sophisticated oil water separation, and treatment/ disposal of oiled sediments and water.	Vacuum systems effectiveness decreases with hose length, centrifugal pumps tend to emulsify and shear oil, complicating separation after recovery; positive displacement pumps recover at slower rates.	Requires geo referenced program to control accuracy. Can end up with large amounts of associated sediments. Disturbs bottom, so may be restricted in sensitive benthic habitats.
	Sorbents/V-SORs	**Manual Removal**	**Agitation/Refloat**
Description	Sorbent material are weighted or attached to a pipe/chain and dragged along the bottom allowing sunken oil to adhere to oleophilic material.	Hand and hand tools are used to pick up viscous oil on the bottom. Can be conducted in shallow water by wading; in deeper water by divers in gear appropriate for contaminated water.	Bottom sediments are agitated by physical disturbance or air injection to refloat the oil for recovery using skimmers or sorbents. Can be conducted from boats or by wading in shallow water.
Logistical Needs	Small V-SORs systems can be worked from smaller vessels; large V-SORs systems require larger vessel or platform.	For wading depths working from shore, need shoreline access, trafficable substrate, hand tools, and standard waste handling facilities. For diving depths, will need all logistics for contaminated water diving as well as waste handling and management.	May need sediment curtains or other containment methods to prevent oil migration down current. Other needs are standard: boats, pumps, booms, sorbents, etc.
Operational Limitations	While effective at any depth, accuracy and bottom contact suffer as water depth increases.	For wading depths, safety will drive wave, wind, rain, and lightning restrictions. Diving may be limited by depth and environmental conditions.	Limited to shallow water <8 ft, low-flow conditions, and standard limitations for on-water operations.
Optimal Conditions	Small or trace amounts of oil distributed along the bottom in less than 50 ft of water with little or no current.	Shallow water, good visibility, low currents, viscous oil that can be readily removed by hand.	Static water conditions, fresh oil that will be more easily liberated, and areas with good containment/recovery access.
Pros	Required materials are readily available. No associated recovered water or sediments.	Individual pieces of oil can be removed. Selective recovery, limiting co-collection of water and sediment. Can be low-tech, except where diving logistics are complicated.	May be the only alternative to dredging or excavation of oiled sediments. Does not require sediment or water handling and treatment.
Cons	Low recovery volumes, oiled solid waste generated for disposal. Placement accuracy decreases as water depth increases. Must contact oil/ bottom.	Slow and labor intensive. Requires relatively good water clarity for visibility. Diving may require extensive logistical support if work is offshore on vessel or barge. Will require contaminated water diving gear and decontamination of divers and gear. Severe weather will suspend operations.	Liberated oil may suspend in the water column and settle back to the bottom, with potential to spread down current. Can mix the oil deeper into the sediments during agitation.

Site Considerations

- ❑ Water depth range:_____
- ❑ Water visibility range: _____
- ❑ Water current speed and direction:

  Surface: _____

  Subsurface: _____
- ❑ Wave conditions: _____
- ❑ Water temperature: _____
- ❑ Substrate type:_____
- ❑ Bathymetry (oil accumulation areas):_____
- ❑ Sensitive habitats in survey area:_____

  Biological resources: _____

  Cultural/historic resources:_____

  Water intake/discharge locations: _____

Oil Property Considerations

- ❑ Oil viscosity/pumpability: _____
- ❑ Bulk oil on the surface:_____
- ❑ Volume of bulk oil on the surface: _____
- ❑ Risk of mobilizing oil into water column:_____

Equipment Considerations

- ❑ Sorbents/V-SORs
  - ○ Source of snare/pom poms (best with white sorbent materials)
  - ○ Fabricate chain and pipe
  - ○ Identify suitable vessel/platform
  - ○ Proper waste stream for oiled snare/sorbent
  - ○ GPS or tracking for proper documentation
  - ○ Photo documentation

- ❑ Manual removal
  - ○ Select suitable and ADCI certified commercial diving contractor(s) in full compliance with regulatory and industry standards (reference commercial diver safety checklist).
    - ▪ Minimum five-member diving team
    - ▪ Supplemental divers to ensure continuity of operations and adherence to work/rest requirements
    - ▪ Surface-supplied diving operations with CCTV and surface communications
    - ▪ Contaminated water diving capabilities
    - ▪ Decontamination equipment and procedures
    - ▪ Emergency plan that identifies on-site first aid and decompression capabilities
    - ▪ Adequate working platform to support safe entry and exit from the water
  - ○ Identify suitable support vessel/platform. Storage barges must be approved by the Unified Command prior to operations.
  - ○ Consider waste stream for recovered oil to include handling and storage. Decanting must be approved by the Unified Command in advance.
- ❑ Agitation/Refloat
  - ○ Options for agitation; pumps, compressors, aerators etc.
  - ○ Segregate areas with containment and sorbent boom.
  - ○ Identify method of recovering refloated oil.
  - ○ Waste stream considerations for recovered oil to include handling and storage.
  - ○ Storage barges and decanting procedures must be approved by the Unified Command in advance.
- ❑ Suction Dredge
  - ○ Identify suitable dredge type and qualified contractors.
  - ○ Determine estimated volume of water/sediment/oil to be recovered.
  - ○ Identify suitable site for handling separation of sediment/oil/water retention ponds, geotubes.
  - ○ Waste stream considerations for water/oil/solids to include separation and storage. Storage barges and decanting procedures must be approved by the Unified Command in advance.

- ❑ Diver-directed Pumping and Vacuuming
  - ○ Determine whether vacuum will work (hose lengths to be used) or pumping.
  - ○ Select suitable and ADCI certified commercial diving contractor(s) in full compliance with regulatory and industry standards (reference commercial diver safety checklist):
    - ▪ Minimum five member diving team
    - ▪ Supplemental divers to ensure continuity of operations and adherence to work/rest requirements
    - ▪ Surface-supplied diving operations with CCTV and surface communications
    - ▪ Contaminated water diving capabilities
    - ▪ Decontamination equipment and procedures
    - ▪ Emergency plan that identifies on-site first aid and decompression capabilities
    - ▪ Adequate working platform to support safe entry and exit from the water
  - ○ Select appropriate vacuum system/truck or centrifugal and positive displacement pumps.
  - ○ Identify suitable vessel/platform to work from if not accessible from shore.
  - ○ Waste stream considerations for water/oil/solids to include separation and storage. Storage barges and decanting procedures must be approved by the Unified Command in advance.
- ❑ Mechanical Removal
  - ○ Identify method; excavator, clamshell, environmental clamshell.
  - ○ Identify suitable vessel/platform to work from if not accessible from shore.
  - ○ Waste stream considerations for water/oil/solids to include handling and storage.

6 Waste Stream Management

Managing the oil, water, silt, sediment, and debris waste stream collected during sunken oil response operations is often complex given the multiple variables involved, including oil characteristics, temperature, volumes, recovery system, and pumping method and pumping rates. Unfortunately, there is not a one-size-fits-all decanting or waste stream management system to address all types of oils and environmental conditions. Historically, waste stream management systems have been designed ad-hoc following the discovery of a submerged oil incident and tailored to the specific conditions encountered throughout the operation. As such, adaptability and variability can be expected in the development of a waste stream management system for sunken oil recovery.

Table 8 provides an overview of options for the treatment and management of waste streams associated with sunken oil recovery techniques. The most common and proven system used during sunken oil recovery operations involves the process of phase separation using a series of decanting tanks with the final water phase entering a filtration or “polishing tank” prior to discharge.

NOTE The waste management and decanting plans must be approved by the Unified Command prior to commencing operations.

Table 8—Options for Treatment of Waste Streams from Sunken Oil Recovery Operations

Process Phase	Description	Comments
Phase Separation	Solid Separation	Baffled/Gravity Settling Tank
		Lamella Clarifier
	Liquid Phase Separation	Heat or air may be applied
		Diffused Air Flotation
	Oil Skimmer	
Centrifuge	Physical Separation	
Voraxial Separator	Cyclonic Separation	
Electrocoagulation	Electrical/electron separation	
Media Filtration	Sorbent Material	
	C.I. Agent	
	Imbiber Beads	
Emulsion Breakers	Demulsifier to improve oil-water separation	Consider environmental trade offs
Storage	Regulatory approved tank vessels	Sufficient capacity to store pumping discharge

The following key points should be considered when developing a waste stream management plan.

— The use of tanks with baffles will reduce the free surface effect, speed up oil/water separation, and prevent re-mixing.

— All waste management system tanks should be inspected prior to operation to ensure no residual contamination is present.

— If any part of the waste stream management system is overwhelmed, response operations may be suspended or delayed until sufficient capacity becomes available. The waste stream management plan should consider sufficient back-up storage capacity to ensure continuity of operations.

— Agitation of the system, through vessel movement or pumping, can result in oil emulsions that hinder effective separation and delay waste stream processing. Waste stream management systems should be placed on a stable platform such as a spud barge or jack-up rig. Pumping systems should be regulated to minimize agitation. Additionally, contingency plans should identify receiving vessels with sufficient capacity to store pumping discharge.

— Regional decanting policies vary. For example, many states permit direct decanting of oil into a boomed area on-site while others require media filtration or “polishing” of the effluent with analysis of the outflow. Periodic or continuous analysis of effluent may also be a requirement of a discharge permit. The decision when to decant may also be dependent on whether or not sensitive resources could be affected by the discharged water.

— The state or regional specific decanting checklist should be completed under the direction of the Unified Command in advance of operations.

— Standard phase separation with final water filtration has proven effective on sunken oil recovery operations. Pump selection, pumping rates, and phase separation tanks can be modified to improve system efficiency. As such, responders should consider mobilizing various pump options to expedite operations.

7 Safety Considerations

The detection and recovery of sunken oil require equipment and technical specialists not used during surface oil recovery operations. As the safety of life is consistently the top priority and objective during every oil spill response, responders should focus on taking proactive measures to ensure the safety of response personnel and the public throughout the operation.

The following safety checklists provide an overview of safety issues to address when developing a plan to conduct sunken oil detection and recovery operations.

General Safety Checklist

- ❑ Designate an Assistant Safety Officer with experience in diving, subsea, and offshore operations to oversee on-site operations and to support the Unified Command's safety planning efforts.
- ❑ In addition to reviewing the site-specific safety plan, decontamination plan, medical plan, communications plan, waste disposal plan, and heavy weather contingency plan, personnel must complete a Job Hazard Analysis (JHA) prior to every operational period and when work tasks or environmental conditions change.
- ❑ Personnel assigned to the sunken oil recovery project should be experienced and properly trained. For example, personnel conducting the mobilization of equipment and heavy lift operations should maintain OSHA rigger and signalperson certifications, and the crane operator should also maintain a recognized crane operator certification. Personnel working on-site should maintain certifications in accordance with the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard found in Title 29 of the *Code of Federal Regulations* (*CFR*) 1910.120.
- ❑ All personnel working on-site should wear the required personal protective equipment to prevent exposure and injury, including hard hats, hearing protection, safety glasses, boots, coveralls/Tyvek®, appropriate gloves, and approved life jackets or work vests when working near water.
- ❑ Air monitoring operations should be conducted for respiratory protection and to collect data for daily reports.
- ❑ Respiratory protection should be available and used by properly trained personnel, as required.
- ❑ Personnel should not work alone on shore or on deck and workers should be equipped with adequate communications equipment for emergency purposes.
- ❑ The site-specific medical and safety plans must identify adequate nearby medical facilities and the best travel routes from the project site.
- ❑ First aid equipment must be readily available on the project site.
- ❑ Workers should have current first aid, CPR, and AED certifications and receive a briefing on the safety and medical plans prior to commencing operations.
- ❑ An adequate work/rest cycle should be implemented in an effort to prevent fatigue and accidents.
- ❑ Environmental conditions must be reviewed and considered daily in an effort to ensure workers are properly protected and remain comfortable to perform the required work.

- ❑ Vessels and equipment should be certified for their intended use with up-to-date inspection and/or certification records.
- ❑ Onboard lifesaving and firefighting equipment may need to be supplemented to support additional project personnel and equipment.
- ❑ Aerial heavy lift and personnel transfer operations should also be reviewed to ensure alignment with Office of Aviation Services (OAS) guidelines.

Equipment Mobilization and Heavy Lift Operations Checklist

- ❑ Review crane certification records and annual inspection reports.
- ❑ Ensure all rigging and slings are certified and in good condition.
- ❑ Ensure all Riggers and Signalpersons have completed OSHA required training.
- ❑ Ensure all personnel operating heavy lift equipment are Certified Crane Operators.
- ❑ If lifting operations will be completed from a barge or lift boat, ensure the crane's load chart reflects the integration of the vessel and lifting device and that the vessel's stability letter supports the addition of the crane.
- ❑ Prepare a lift plan that includes the lifting device load chart.
- ❑ Personnel must wear PPE, specifically hard hats when working around lifting operations and hearing protection when working around energized equipment.
- ❑ All personnel operating forklifts should have completed the OSHA required training and maintain a current certification.
- ❑ Prior to lifting, ensure overhead and intended lifting path are clear and safe for operations. The swing radius of the crane should be barricaded to prevent personnel from walking through the area.
- ❑ Conduct pre-use equipment inspections prior to operations in association with the daily JHA process.
- ❑ Weather is a primary source of dynamic loading and should be considered prior to conducting heavy lifts.

Hydraulic Submersible Pumps and Transfer Operations Checklist

- ❑ Equipment should have annual equipment inspection documents and an on-site inspection prior to each transfer operation.
- ❑ Inspect discharge hoses prior to each use and review documentation of the annual static liquid pressure test to 1.5 MAWP.
- ❑ Hose connections must be 4-bolted, full-threaded, or a quick-connect coupling approved by the U.S. Coast Guard.

- ❑ Face shields should be worn when connecting/disconnecting hydraulic lines.
- ❑ To prevent hydraulic oil spills, drip pans should be placed below hose connections and the hydraulic power unit should be placed within containment.
- ❑ Hydraulic hoses should be routed to prevent slips, trips, and falls.
- ❑ Complete a Declaration of Inspection in accordance with 33 *CFR* 156.150 prior to transfer operations.
- ❑ Review emergency shutdown procedures as part of the DOI and JHA.
- ❑ Personnel should wear eye and hearing protection, gloves, boots, and coveralls when working in the vicinity of hydraulic power units and pumping systems.
- ❑ Respiratory protection should be worn in hazardous atmospheres by properly trained and fit-tested personnel as required by on-site air monitoring.

Diving Operations Checklist

- ❑ Conduct all diving operations in accordance with 46 *CFR* 197, 29 *CFR* 1910 and Association of Diving Contractors International (ADCI) standards.
- ❑ Obtain Unified Command approval of Diving Operations Plan, Site Safety Plan, Decontamination Plan, and Disposal Plan, among others.
- ❑ The dive team should consist of at least five members, including an ADCI certified non-diving Supervisor and four ADCI certified divers.
- ❑ Each diver should have documentation of current HAZWOPER, CPR, O_2 administration, first aid certifications, and ADCI Certification Card.
- ❑ Conduct diving operations with a surface-supplied breathing gas supply and an umbilical that includes communications, CCTV, and a pneumo-fathometer.
- ❑ All equipment should have at least annual inspection documents with the exception of depth gauge calibrations and compressor air quality analysis that must be completed every six months.
- ❑ Breathing gas supply hoses must have a rated bursting pressure of four times the rated working pressure and tested annually to 1.5 MAWP.
- ❑ The Diving Supervisor should conduct a pre-dive inspection of all equipment in association with the JHA. The Diving Supervisor must brief the dive crew on the planned diving operation and risk mitigation procedures.
- ❑ Maintain a dive log that includes a depth-time profile for each diver including: diver name and designated person-in-charge; date, time and location; diving mode used; nature of work performed; surface and subsurface conditions; and maximum depth and bottom time. For each dive outside no-decompression limits, greater than 100 fsw, or using mixed gas, record the following: depth-time and breathing gas profile; decompression table designation and any modifications; and elapsed time since last pressure exposure if less than 24 hours or repetitive dive designation for each diver. If decompression sickness is suspected or symptoms are evident, the decompression sickness, depth, and time of onset, and description and results of treatment should be recorded.

- ❑ Locate compressor intakes away from hazardous atmospheres. Conduct continuous air monitoring to confirm air quality is safe for diving operations.
- ❑ Mark umbilicals at 10-ft increments to 100 ft and then every 50 ft thereafter.
- ❑ Conduct diving operations in accordance with U.S. Navy standard or approved contractor decompression tables.
- ❑ Limit surface-supplied air diving operations to 190 fsw, with brief excursions of less than 30 minutes permitted to 220 fsw.
- ❑ Divers must carry a reserve breathing gas supply and be continuously tended from the surface.
- ❑ First Aid equipment, including a hand-held resuscitator, must be located on site. An on-site Automated External Defibrillator (AED) is also recommended.
- ❑ Provide a diving ladder or stage to allow the diver safe access to the water.
- ❑ A decompression chamber must be on-site for diving operations of 100 fsw or more, or for diving operations outside the no-decompression limits. A decompression chamber should also be considered for conducting operations in remote locations or offshore where access to on-shore treatment is not readily accessible.
- ❑ Procedures must be implemented and strictly enforced to prevent oil and other contaminants from entering a hyperbaric chamber. Oil contamination is a fire hazard in a hyperbaric chamber. Additionally, oil contamination poses a respiratory hazard for personnel in a hyperbaric chamber.
- ❑ Display an Alpha Flag at least 3 ft in height to warn other vessels of diving operations.
- ❑ Provide contaminated water diving equipment for at least the diver and standby diver. Additionally, dive support personnel should be provided sufficient PPE to prevent contamination.
- ❑ Divers operating in contaminated water should be sufficiently trained and experienced in dry-suit diving and the required decontamination and emergency response procedures.
- ❑ Set up a decontamination station that is properly equipped and attended with personnel in the appropriate PPE prior to conducting diving operations.
- ❑ Hand-held tools and hydraulic submersible pumps must be de-energized before entering and exiting the water. Underwater tools and pumps should only be energized at the request of the diver.
- ❑ Diving in contaminated water, rivers/high currents, and arctic/cold water conditions are considered hazardous operations. Divers should be properly trained and experienced prior to attempting these operations. Refer to the Technical Report for additional recommendations and guidance on diving in these high-risk environments.
- ❑ As this checklist is not all-inclusive, for additional information on diver life support systems, please refer to the *ADCI Consensus Standards*, Section 6.0, entitled “Life Support Equipment: Requirements, Maintenance, and Testing”.

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Crude Oil Study

2018

Final Bakken Crude Oil: Worker Health and Safety Pilot Scale Studies (April 30, 2018 Rev 0.1)

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Executive Summary

Due to an increase in the amount of crude oil transported by rail in the United States over the past 10-years, more oil spills have occurred by rail. The geographic reach of rail transport creates a greater need to develop information to assist first responders with safety concerns during early actions at these spill sites. In support of this effort the US Environmental Protection Agency (EPA) designed and conducted cold and warm weather scenarios involving "spill" episodes to water.

Two ambitious study scenarios were designed as trial studies to determine several seasonal differences in chemical emissions from water, compare real-time air monitoring screening instrument results with definitive air sampling results, compare crude oil weathering in salt water with cold weather, and compare the impact of turbulent vs still water conditions on emission rates from the oil spill. The cold weather and warm weather scenarios generated many important results. These results in turn help to inform the direction for follow-up studies that EPA and/or other federal agencies may consider.

The composition of the Bakken Crude Oil used for the Cold and Warm Weather Scenarios was consistent with other crude oil samples from the same region; however, Bakken Crude Oil is not a consistent product and crude oil can show different flashpoints depending on the fraction of highly volatile organic compounds (VOCs) present in the crude oil. Although field measurements immediately adjacent to the spill and just after the release of the Bakken Crude Oil did not produce total VOC concentrations that pose an explosion concern for first responders, oxygen levels were identified that would necessitate the need for first responders to use supplied air during this relatively brief period.* Additionally, it is critical for first responders to approach oil spills with a combustible gas meter for measurement of oxygen and explosive levels. While not noted in this study, hydrogen sulfide should also be monitored, as its content can vary by shipment. Initial approach from the upwind side of the oil spill is highly recommended. When monitoring indicates acceptable oxygen levels, the first responders may then consider the use of air-purifying respirators with appropriate cartridges.

There were significant differences in airborne benzene concentrations as indicated by air monitoring and co-located air sampling equipment. These differences were more pronounced in the Warm Weather Scenario than the Cool Weather Scenario. The emission rate of VOCs including benzene as determined by air monitoring and sampling were greater in warm weather than in cool weather. Benzene levels under all study conditions declined to less than 0.1 parts per million (ppm) within 4-hours of the oil release to water, while airborne total VOC levels remained elevated at low ppm numbers for nearly 24-hours. Based on the common VOCs present, their airborne concentrations were not above identified worker exposure limits; however full-face air purifying respirators with appropriate cartridges wore worn throughout the initial 24 hour period. The emission rate of VOCs including benzene determined by similar air monitoring and air sampling methods was greater in turbulent water conditions than in still water conditions as investigated during the Warm Weather Scenario.

As part of potential future work, EPA would like to further investigate additional real-time monitoring equipment for use during oil spill episodes and further characterize emissions during the first several hours following an oil spill. Current results indicate that the flame ionization detector shows significantly higher emission rates than for the photoionization detector. This is particularly evident during the initial hours after the spill. This suggests appreciable emissions of short-chain VOCs may be present and contain gases that cannot be measured by the photoionization detector that was used but are measured by the flame ionization detector.

* Note, these tests were of a small spill and in open air conditions. For larger spills and non-open air conditions such as culverts and tunnels, etc, atmospheric concentrations may be much higher.

1. Background/Purpose

Response to inland oil spills that threaten waters and sensitive environments is one of the responsibilities of the EPA. Two studies were performed by EPA's Environmental Response Team (ERT) with the assistance of the Scientific, Engineering, Response and Analytical Services (SERAS) contract program to further the knowledge base for those responding to oil discharges that pose a threat to human health and/or the environment. While significant testing has been performed by different organizations on crude oil produced from the Bakken formation, the testing is generally comprised of standard petroleum characteristic analyses and characterization for proper transportation based on Department of Transportation (DOT) classifications. The data from these testing programs have provided critical knowledge for classifying and understanding standard properties of hazardous materials – in this case, a light, sweet crude oil. However, many questions require additional attention and study. These oil discharge occurrences have resulted in a loss of human life and damage to the environment. The response community continues to raise concerns at all levels of government in light of the spills, well blowouts, major derailment events and associated fires, oil releases to the environment, and loss of life and damage that have occurred.[1] [2] [3]

The DOT and Department of Energy (DOE) recently published findings from an extensive literature review focused in part on Bakken Crude Oil that supports Bakken oil samples containing a high gas content and typically containing more light volatile fractions than many other light crude oils.[4] The potential for more oil spills is a reality due to greatly increased railcar transport of crude oil in recent years in the United States. In 2008, railroads transported approximately 10,000 railcars of crude oil. By 2014, the railroad industry transported approximately 500,000 railcars of crude oil.[5] This dramatic increase in railcar transportation of crude oil is among the factors that has led to many more crude oil accidents. The transportation of Bakken Crude Oil poses a greater fire concern than heavier crude. Aside from the fire concern, oil spills pose a health concern to responders, the community, and the environment.

Two studies were performed, a Cold Weather Scenario in February 2015 and a Warm Weather Scenario in June 2016. Personnel from multiple EPA Regions, EPA ERT, and their contractors worked together to conduct air monitoring and sampling, initial bulk sampling of the Bakken Crude Oil and sampling at time periods subsequent to spill episodes. Limited sampling of the water column at several depths was performed for crude oil components during the Warm Weather Scenario. The primary purpose of these Pilot Scale Studies was to determine air concentrations, under observed meteorological conditions, of benzene in Bakken Crude following spills to water. The resulting information helps to inform initial decision-making and thereby better protect workers involved in a Bakken Crude Oil release response.

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[1] B Weinhold, Emergency Responder Health: What Have We Learned from Past Disasters? (2010), Environ Health Perspect, 118 (8): A346-A350.
[2] S Chavkin, OSHA Head Agrees: Gulf Cleanup Workers Need More Training, ProPublica: Journalism in the Public Interest, June 17, 2010.
[3] C Profita, Emergency Responders Prepare for Higher Risk of Oil Spills in the Northwest, Oregon Public Broadcasting, November 19, 2015.
[4] D. Lord et al., Literature Survey of Crude Oil Properties Relevant to Handling and Fire Safety in Transport, DOT/DOT Tight Crude Oil Flammability and Transportation Spill Safety Project, Sandia Report, SAND2015-1823, March 2015.
[5] C. Krauss and J. Mouawad, Accidents Surge as Oil Industry Takes the Train, New York Times, reported, January 25, 2014,

Benzene was the main contaminant of concern, as it has the lowest worker exposure limits among common VOC emissions from crude oil. Baseline benzene concentrations were measured in the Bakken crude prior to and after the Bakken Crude Oil emissions studies. The benzene concentrations in the crude can then be used to correlate with the benzene air concentrations. Monitoring and sampling methodologies were chosen based on the air monitoring and sampling instruments that first responders commonly use. Additionally, benzene has the lowest exposure limits of common volatile emissions from crude oil and would drive several respiratory protection and personal protective equipment (PPE) decisions.

General study conditions for the Pilot Scale Studies are provided in **Table 1** including a comparison of conditions along with the monitoring and sampling performed during each study. In addition to providing some initial information that may help First Responders in their decision making process, this report also details sampling and analytical methods relevant to oil spill episodes and identifies issues worthy of additional study. Note that monitoring and sampling parameters differed for the two different scenarios.

1.1 Cold Weather Scenario

The Oil and Hazardous Materials Simulated Environmental Test Tank (OHMSETT) Facility in Leonardo, New Jersey (NJ) was used as the site of a simulated oil spill during cold weather. (See **Figure 1**, below.) One week before the cold weather study, approximately 1,675 gallons (11,280 pounds) of Bakken Crude Oil was loaded on to a tanker truck in Eddystone, Pennsylvania (PA). A pre-shipment sample of that oil was collected. When the tanker truck arrived at the OHMSETT Facility in Leonardo, NJ, a sample of post shipment oil was collected during the transfer from the tanker truck to the storage totes. The oil in the tanker truck was transferred to five 330-gallon steel totes.

On the release day, 330 gallons of Bakken Crude Oil was released at 10:11 hours and again at 10:23 (for a total of 660 gallons or two totes) into a boomed section of the OHMSETT salt water tank. The tank and boomed area measured 100 feet (ft) by 65 ft by 7 ft deep. Just prior to the release an oil sample was collected. The oil was allowed to spread and move in accordance with ambient meteorological conditions. Weathering of the oil continued in to the next day (February 12, 2015) when at 8:31 a sample of the weathered oil was collected. (In a water spill, weathered crude oil has lost many of its more volatile components and some mixing occurs with surrounding water.[6])

Air monitoring and sampling were performed on three days: background (February 10, 2015), release (February 11, 2015) and skimmer test day (February 12, 2015).

[6] NIEHS, Oil Spill Cleanup Initiative: Safety and Health Awareness for Oil Spill Cleanup Workers, version 7, June 2010, OSHA 3388-062010, p. 39.

Table 1
Cold and Warm Weather Scenario Comparison
Bakken Crude Oil: Worker Health and Safety Pilot Scale Study

Scenario	Cold Weather Scenario	Warm Weather Scenario
Dates	February 11 to February 12, 2015	June 14 to June 16, 2016
Air Temperature Range	21 to 39 degrees F (ºF)	54 to 85 ºF
Spills & Description	1 Spill of 660 gallons - Ambient (still) conditions	1 Spill of 55 gallons - Ambient (still water conditions) & 1 Spill of 55 gallons (induced turbulent conditions) in 2 different tanks
Location	OHMSETT Facility, Leonardo, NJ	Somerset County ESTA, Hillsborough, NJ
Size	100 ft by 65 ft	10 ft by 10 ft
Pool Type	Concrete and boom wave tank	Portable Fire Department drafting tank
Water type	Salt	Fresh
Depth of water	~7 feet	18 to 21 inches
Fixed Air Monitoring	Perimeter VOCs by PID, H_2S	Perimeter VOCs by PID, H_2S
	Perimeter LEL calibrated to methane	Perimeter LEL calibrated to pentane
Fixed Air Sampling	NIOSH Charcoal Tube Method	None
Mobile Air Monitoring (based on wind direction)	Benzene (on UltraRAE)	Benzene (on UltraRAE)
	None	VOCs by PID, H_2S
	None	LEL calibrated to pentane
	None	LEL calibrated to methane
	None	VOCs by FID
TAGA, Benzene	Air Monitoring was performed on line to west of pool spill and above the ASTM skimmer tests.	Air Monitoring performed at three different lines downwind of the tanks.

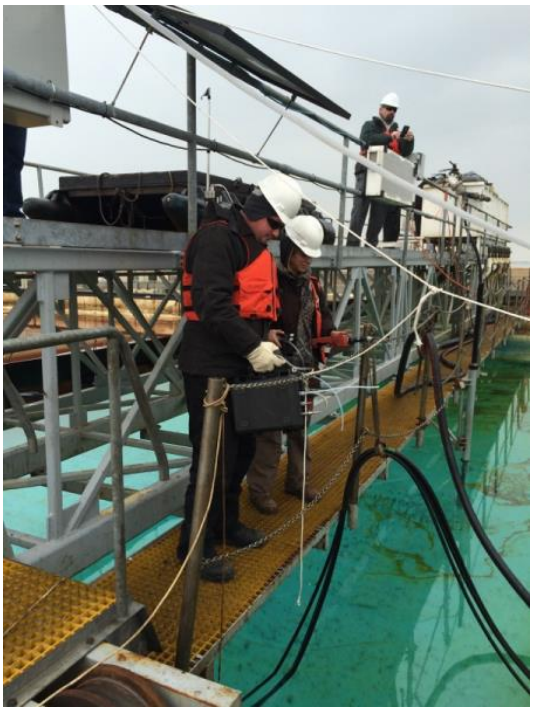


Figure 1- Cold Weather Scenario, OHMSETT

1.2 Warm Weather Scenario

After the February 2015 study, three totes of this Bakken Oil remained at the OHMSETT Facility in Leonardo, NJ. The viability of the stored oil was tested in May 2016 and based on the results, EPA determined that the oil was suitable to perform the study.

On June 14, 2016, the Bakken Crude Oil stored in Tote 3 at the OHMSETT Facility in Leonardo, NJ was transferred into 55-gallon drums, transported to the Somerset County Emergency Services Training Academy (ESTA) arriving at approximately 10:00.

Two folding frame tanks manufactured by Husky Portable Containment (Bartlesville, Oklahoma) were used for the study scenarios. These particular tanks are capable of holding 1,500 gallons of water and measured approximately 10 ft by 10 ft and 29 inches (in) in depth. For the Still Water scenario the average depth was approximately 21 inches giving an approximate volume of 1300 gallons. A fire hydrant on the ESTA facility provided the necessary fresh water to fill the two tanks.

The Still Water scenario started on June 14, 2016 and approximately one 55-gallon drum of Bakken Crude Oil was released between 11:45 and 11:54 into the tank at the northwest corner. Just prior to the release, an oil sample was collected at 11:45 during the transfer of the oil to the tank. The oil was allowed to spread and move in accordance with ambient meteorological conditions.

Figure 2- Warm weather event at Somerset County ESTA at the beginning of the introduction of the Bakken Crude Oil to one of the folding frame tanks.

The oil weathering continued into the next day (June 15, 2016). At 13:15 on June 15, 2016, SERAS personnel collected another oil sample. This sample was collected at the oil surface from the southeast corner of the tank and transferred to sample jars by utilizing pipettes.

For the Turbulent Water scenario, water depth measurements were not collected. The water level was observed to be lower in the second tank when compared to the first tank and it was estimated that the second tank contained between 1,100 and 1,200 gallons of water. The Turbulent Water scenario was used to simulate conditions of a flowing stream. It was hypothesized that these conditions would enhance volatilization.

Submersible pumps were placed in the northwest and the southeast corners of the tank to generate turbulence. The northwest pump (Everbilt), was manufactured by Homer TLC, Inc. (Wilmington, Delaware) and was capable of a flow rate of 1,400 gallons per hour. This pump's outflow was directed to the southeast. The southeast pump was manufactured by Flotec (Delavan, Wisconsin) and was capable of moving 1,320 gallons of water per hour. This pump's outflow was directed to the west. Both pumps were started prior to the oil release.

On June 15, 2016, the Turbulent Water scenario began as one 55-gallon drum of Bakken Crude Oil was released between 10:30 and 10:35 into the northwest corner of the tank. Just prior to the release, an oil sample was collected at 10:30 as the oil was transferred to the tank. The oil moved in accordance with water flow and ambient meteorological conditions. The oil weathering and sampling continued into the next day. At 7:58 on June 16, 2016, SERAS personnel collected another oil sample. This sample was collected from the northeast corner of the tank and was transferred from the surface of the oil to sample jars utilizing pipettes.

Table 2 presents a comparison of oil sample results along with the flashpoint results from each study.

Table 2
Oil Sampling and Flash Point Results
Bakken Crude Oil: Worker Health and Safety Pilot Scale Study

	Cold Weather Oil Samples			Warm Weather Oil Samples	
Initial Conditions	at Eddystone, PA	Arrival OHMSETT		From Tote 3	
Collected	2/4/2015 8:48	2/4/2015 10:30		5/17/2016	
Benzene Concentration (µg/g)	1720	1720		1200	
Percent Lost	--	0.0		--	
Flashpoint (°F)	32*	32*		--	
Immediately prior to release		Prior to Release		Start of still water event (1)	Start of turbulent event (1)
Collected		2/11/2015 10:09		6/14/2016 11:45	6/15/2016 10:30
Concentration (µg/g)		1700		1200	1300
Percent Lost		1.2		--	--
Flashpoint (°F)		83		< 23	< 23
Approximately 1 day after release		From pool after ~22.5 hours		From pool after 25.5 hours	From pool after ~21.5 hours
Collected		2/12/2015 8:31		6/15/2016 13:15	6/16/2016 7:58
Concentration (µg/g)		13.8 U		170 U	170 U
Percent Benzene Lost		99.2		> 85.8	> 86.9
Flashpoint (°F)		132		168.8	161.6
Extended		7 Day weathering			
Collected		2/18/2015 8:00			
Concentration (µg/g)		U			
Percent Lost		100			
Flashpoint (°F)		155 to 165			

(1) Drum sample from OHMSETT Tote 3, delivered to Somerset County Emergency Services Training Academy 6/14/16.

µg/g = micrograms per gram. U = Not detected.

-- = Not applicable or not analyzed.

* - From the MSDS which lists the flash point at 32 degrees Fahrenheit (°F).

Note: High post Reporting Limits from the June 2016 samples does not allow for comparison to Feb 2015 samples

2. Monitoring/Sampling Equipment and Technique Overview

Monitoring and sampling of Bakken crude, Bakken Crude Oil emissions, and water column analysis for Bakken Crude were performed in the course of the Bakken Cold and Warm Weather Scenarios. The weathered Bakken Crude was analyzed for benzene content as part of crude oil fingerprinting.

2.1 Crude Oil Sampling

All oil samples were collected in a manner consistent with SERAS Standard Operating Procedure (SOP) #2010, *Tank Sampling*. Bakken Crude Oil samples were collected prior to the first spill and then "weathered" crude oil samples were also collected 24 hours following the spill.

For the Cold Weather Scenario a weathered crude oil sample was also collected 7-days after the initial spill for oil fingerprinting and flashpoint determination. The pre-spill, one-day weathered and seven-day weathered oil samples were submitted to a laboratory for flash point testing by American Society for Testing and Materials (ASTM) D92 - 12b, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester*. While attempting to determine the open cup flashpoint of the pre-spill sample, it caught fire and was lost. The lab utilized ASTM D93 - 15, *Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester* to determine the flashpoint of the remaining samples. The pre-spill and seven-day weathered oil samples were re-submitted to the laboratory for flash point testing by ASTM D93 – 15. The results for these two samples did not logically agree with what would be expected. Due to a likely laboratory mix-up with sample identification flashpoint results for these two samples were interchanged.

For the Warm Weather Scenario, the concentration of benzene was determined for each sample in accordance with EPA Method 8260B, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). The percentage of benzene lost was calculated by comparing the first sample from each scenario against weathered samples from each scenario.

Oil samples were submitted for flash point testing by ASTM International D56, *Standard Test Method for Flash Point by Tag Closed Cup Tester*. The flash point results should be considered screening data.

2.2 UltraRAE 3000 for Benzene

Point monitoring for benzene using the UltraRAE 3000 was done in tandem with grab air sampling using Tedlar® (Tedlar) bags. The UltraRAE 3000 (UltraRAE) manufactured by RAE Systems (San Jose, CA), was operated in a manner consistent with SERAS SOP #2134, *Operation of the UltraRAE 3000 Specific Compound Monitor.*

Air monitoring was performed using the UltraRAE at locations where co-located Tedlar bags were collected. Upon collection the Tedlar bags were analyzed on site. The monitoring duration was dictated by the ambient air temperature, as determined by the UltraRAE, and ranged from 40 to 90 seconds, while the sampling time was 60 seconds to fill the one-liter (L) Tedlar bags.

The UltraRAE is a portable, hand-held, programmable compound specific PID monitor designed to provide instantaneous exposure monitoring of benzene. The UltraRAE was calibrated using a 5 ppm standard of benzene in accordance with the manufacturer's specifications. The unit was configured with a 9.8 eV gas discharge lamp and a benzene separation tube. A new benzene separation tube was opened and inserted just prior to each monitoring event. The range of detection for benzene is 0.05 parts per million (ppm) to 200 ppm.

2.3 Tedlar Bags for Benzene

Grab air samples using Tedlar bags were collected in accordance with SERAS SOP #2102, *Tedlar Bag Sampling*. These were analyzed for benzene aboard the onsite TAGA Mobile Laboratory using SERAS SOP #1741, *Field Analysis of VOCs in Gaseous Phase Samples by GC/MS Loop Injection.* An Agilent®7890 and 5975C Triple Axis GC/MS was used to perform the analysis, with results provided the day samples were collected. All analytical data were verified per definitive data (DD) requirements.

2.4 Trace Atmospheric Gas Analyzer (TAGA) Monitoring

Air monitoring for benzene was performed in accordance with the SERAS SOP #1711, *Trace Atmospheric Gas Analyzer (TAGA) IIe Operations*. Real-time monitoring for benzene was performed using a selected ion technique. The TAGA IIe is based upon the Perkin-Elmer API 365 mass spectrometer/mass spectrometer (MS/MS) and is a direct air-monitoring instrument capable of real-time detection of trace levels of many organic compounds in ambient air. The technique of triple quadrupole MS/MS is used to differentiate and quantitate compounds.

2.5 Charcoal Tubes

Charcoal tube samples were collected in a manner consistent with SERAS SOP #2103, *Charcoal Tube Sampling in Ambient Air*. The 8-hour samples were analyzed in a manner consistent with SERAS SOP #1816, *Indoor Air Analysis of Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry.*

2.6 AreaRAE

The AreaRAE (PGM-5020) was used for continuous monitoring near the oil spill area. VOCs, lower explosive limit (LEL), carbon monoxide (CO), hydrogen sulfide (H_2S), and oxygen (O_2) were measured. The AreaRAE was used in a manner consistent with SERAS SOP #2066, *Operation of the Area RAE Wireless Multi-Gas Monitor.*

2.7 MultiRAE Pro

The MultiRAE Pro units were utilized in accordance with SERAS SOP #2139, *Operation of the MultiRAE Pro Wireless Multi-Gas Monitor.* For VOCs (by PID) the MultiRAE Pro units were calibrated using either a 10 ppm or 100 ppm standard of isobutylene. Two units were utilized, one was calibrated with 0.75 percent (%) pentane and the other was calibrated to 2.5% methane (both respond as 50% of the LEL) in accordance with the manufacturer's specifications prior to deployment. Field calibrations were performed if instrument performance necessitated it. The MultiRAE Pro was only used during the Warm Weather Scenario.

2.8 TVA 1000B

The TVA-1000B Toxic Vapor Analyzer is a portable organic/inorganic vapor monitor used to survey for toxic gases during environmental and hazardous material responses. The analyzer uses either a photoionization detector (PID) or a flame ionization detector (FID), or both types of detectors to sample and measure gas concentrations. The PID was configured with a 10.6 electron volt (eV) gas discharge lamp. The range of detection for the PID is 0.5 ppm to 2,000 ppm. The range of detection for the FID is 1 ppm to 50,000 ppm. The TVA 1000B was only used during the Warm Weather Scenario.

2.9 Water Sampling and Analysis

Water samples were collected only during the still water Warm Weather Scenario. Samples were collected at five different locations within the folding frame tanks at different water depths and several different time points. The water sampling was conducted in a manner consistent with SERAS SOP #2013, *Surface Water Sampling*. The samples sent to the SERAS Analytical Laboratory were analyzed by SERAS SOP #1806, *Volatile Organic Analysis in Water by Gas Chromatography/Mass Spectrometry (GC/MS)*. The samples analyzed by the fixed and mobile laboratories were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling, and Storage*, and all samples were stored on ice immediately after sample collection until analyses were performed or samples were transferred to a fixed refrigeration unit awaiting analysis.

3. Site Monitoring/Sampling Activities

The approaches, study parameters, and conditions were often different for the Cold Weather and Warm Weather scenarios, but some activities were done in a similar manner for both studies. These include:

Benzene Monitoring and Sampling

Air monitoring using the UltraRAE and sampling for benzene with Tedlar bags were conducted simultaneously. To ensure a complete data set collection, two Tedlar bag sampling trains were set up side-by-side; however, only one sample was submitted for analysis. Sampling information was documented on Tedlar bag sampling worksheets. Upon sample completion, each bag was placed into an opaque bag for transfer to the on-site GC/MS in groups of one to three samples along with the corresponding documentation. The grab air samples were collected in accordance with SERAS SOP #2102, *Tedlar Bag Sampling*.

TAGA Monitoring

Air monitoring for benzene was performed utilizing the TAGA. Both stationary and mobile monitoring were performed during each of the Cold and Warm Weather Scenarios.

Stationary Air Monitoring

For stationary monitoring, the AreaRAEs were either calibrated with 0.75% pentane or 2.5% methane (both respond as 50% of the LEL) in accordance with the manufacturer's specifications prior to deployment. Field calibrations were performed if instrument

performance necessitated it. For the cold weather scenario, the majority of the AreaRAE Units were calibrated to 2.5% methane. For the warm weather scenario, the majority of the AreaRAE Units were calibrated to 0.75% pentane.

All AreaRAEs were connected to ERT's wireless data acquisition system (VIPER). The VIPER system utilizes EPA ERT's VIPER Survey Controller application to manage data collection using Safe Environment Engineering's LifeLine (Valencia, California) wireless monitoring system. LifeLine is comprised of a Lifeline Interoperable Network Communicator (LINC) that is physically connected to an AreaRAE and connected to a Gateway via Wi-Fi. The Gateways provide a data connection from Survey Controller to the LINC through internet access using cellular air cards and Wi-Fi. The data were presented and archived on the ERT VIPER Deployment Manager website. The regional OSCs and ERT personnel were provided with access to site-specific monitoring data through the VIPER Deployment Manager website.

The VIPER Survey Controller application and the Deployment Manger website for this site were monitored by EPA and SERAS personnel while on-site to monitor for hardware or software issues. If a hardware or software issue was detected that needed on-site attention, SERAS personnel responded to the issue as quickly as possible.

3.1 Cold Weather Scenario

Benzene Monitoring and Sampling

During the Cold Weather Scenario, 25 Tedlar bag air samples were collected and analyzed for benzene on-site by SERAS personnel. Thirteen samples were collected on February 11, 2015 (Release Day) and 12 samples were collected on February 12, 2015 (Skimmer Test Day).

The same number of monitoring events with the UltraRAE were performed concurrently with the Tedlar bag sampling on February 11, 2015. Monitoring and sampling initially occurred next to the tote from which the oil was released. Monitoring and sampling locations were moved as meteorological conditions and MultiRAE Pro monitoring results warranted. One independent benzene air monitoring event occurred (without a Tedlar bag being collected) at the conclusion of the February 11, 2015 activities.

TAGA Monitoring

For the Cold Weather Scenario, the TAGA air monitoring events were conducted on February 11, 2015 and February 12, 2015, and were used for screening VOCs. Mobile TAGA air monitoring was performed at ground level on the western side of the OHMSETT tank on February 11, 2015. (See **Figure 3**.)

Stationary TAGA air monitoring was performed directly over the skimming operations at the OHMSETT tank on February 12, 2015. The TAGA was used to analyze outdoor air at the testing tank during stationary monitoring and mobile monitoring events. During mobile monitoring, one end of a 4-foot corrugated Teflon™ (Teflon) sampling hose was attached to the TAGA source inlet, while the other was attached to a glass transfer tube passing through the wall of the bus during the monitoring event. Mobile monitoring took place along the west side of the testing tank while the oil was released and collected using a skimmer. Stationary monitoring utilized a 300-foot corrugated Teflon sampling hose. The

proximal end was attached to the TAGA source inlet, while the distal end was taken over the testing tank and skimmer. In both cases, air was continuously drawn through the hose at a set flow rate and transported to the TAGA source during the monitoring event.

Stationary Air Monitoring

AreaRAE monitoring was initiated the day prior to the release (February 10, 2015) and continued through the afternoon of February 12, 2015. Eight locations were selected for air monitoring. As the focus of this study was nearby worker exposure, four points were located as close to the study area as possible, to the north (North Deck), east (East Deck), south (South Mobile Bridge) and west (West Deck). The remaining four points (North Fence line, OHMSETT Office, Southwest Corner of the Deck and South Fence line) were chosen as potential on-site and off-site migration or background locations. Two AreaRAEs were positioned on the South Mobile Bridge; these units were configured with the same sensors, one of the unit's LEL sensor was calibrated with methane and the other unit's LEL sensor was calibrated with pentane. **Figure 3** depicts the air monitoring locations.

Skimmer Tests with Weathered and Fresh Crude Oil

On February 12, 2015 (Skimmer Test Day), 12 benzene monitoring events were performed concurrently with the Tedlar bag grab sampling. Air monitoring and sampling occurred during four activities:

- During the recovery of the weathered oil from the initial 100 ft by 65 ft boomed area,
- Prior to and during the first ASTM Skimmer Test using recovered oil in a 10 ft by 10 ft boomed area near the northwest corner of the original test area,
- Prior to and during the second ASTM Skimmer Test using recovered oil from the same 10 ft by 10 ft boomed area, and
- Prior to and during a third ASTM Skimmer Test using only fresh oil in the same 10 ft by 10 ft boomed area.

On the morning of February 12, 2015, OHMSETT personnel collected the weathered oil from the 100 ft by 65 ft study area for a skimmer test. The skimmer test area was located in the northwest corner of the original study area and measured 10 ft by 10 ft. At 12:24 the collected weathered oil was dispensed to a 10 ft by 10 ft skimmer test area producing a three inch thickness of oil.

The first skimmer test of the weathered oil ran from 12:36 to 12:41. The second skimmer test of the weathered oil ran from 13:06 to 13:10. Prior to the third skimmer test the remaining weathered oil was removed from the 10 ft by 10 ft test area. From 13:39 to 13:42, fresh Bakken Crude Oil was dispensed into the skimmer test area. The third skimmer test ran from 13:46 to 14:00.

Approximately 60 gallons of oil that was collected during the skimming operations was returned to a smaller area within the tank and allowed to continue to weather. At 8:00 on February 18, 2015, OHMSETT personnel collected a sample of weathered oil into a mason jar. SERAS personnel were requested to retrieve this sample. On February 27, 2015, SERAS personnel traveled to the OHMSETT facility and transferred that sample into 40-milliliter (mL) vials at 9:00. **Attachment A** contains the report from the OHMSETT facility on the weathering and recovery of Bakken Crude Oil.

Figure 3- OHMSETT aerial, TAGA monitoring occurred on the west side of the pool.

Charcoal tube sampling for benzene

Charcoal air tube sampling for benzene was performed only as part of the Cold Weather Scenario. Time-integrated 8-hour samples were collected in accordance with the procedures referenced in Section 2. For this pilot scale study, the analysis was limited to benzene. Air sampling was performed on three days: February 10, 11, and 12, 2015. On all three days, the sampling was performed next to 7 of the 8 AreaRAE monitoring locations and are indicated in **Figure 3**. The only location where samples were not collected was at the OHMSETT Building Entrance. On February 12, 2017, additional sampling was performed during skimmer testing. At the end of each sampling day, the charcoal tube samples were collected and documented electronically in EPA's Scribe database. After documentation, the samples were stored in the refrigerator on EPA Mobile Laboratory Bus 1553 until they were hand delivered under chain of custody to the SERAS Laboratory on February 13, 2015.

3.2 Warm Weather Scenario

Benzene Monitoring and Sampling (under two water conditions)

During the Warm Weather Scenario, 31 grab air samples were collected in Tedlar bags and analyzed for benzene on-site by SERAS personnel. These grab air samples were collected as indicated previously. As with the Cold Weather Scenario, grab air sampling for benzene analysis occurred at the same time as point monitoring with the UltraRAE unit.

The "still water scenario" was conducted on June 14, 2016 and 14 benzene monitoring events were performed concurrently with the Tedlar bag grab air sampling. The final monitoring/sampling event occurred on the morning of June 15, 2016 and completed the still water scenario. Monitoring and sampling locations were based on meteorological conditions.

The "turbulent water scenario" was conducted on June 15, 2016 and 15 benzene monitoring events were performed concurrently with the Tedlar bag grab air sampling. The final monitoring/sampling event occurred on the morning on June 16, 2016 and closed out the turbulent water scenario. The monitoring and sampling event did not occur at the same time. Both Tedlar bags from one sample location did not fill and were not submitted for analysis; however, UltraRAE benzene monitoring was conducted at this time point.

TAGA Monitoring

For the Warm Weather Scenario TAGA air monitoring events were conducted on June 14, 2016 and June 15, 2016 for screening purposes. During each outdoor air monitoring event, the distal end of the 300-foot corrugated Teflon TAGA sampling hose held at breathing height and moved at a walking pace along a predetermined downwind path at ground level. (See **Figure 4**.) On each day, air was continuously drawn through the hose at a set flow rate and transported to the TAGA source during the monitoring event.

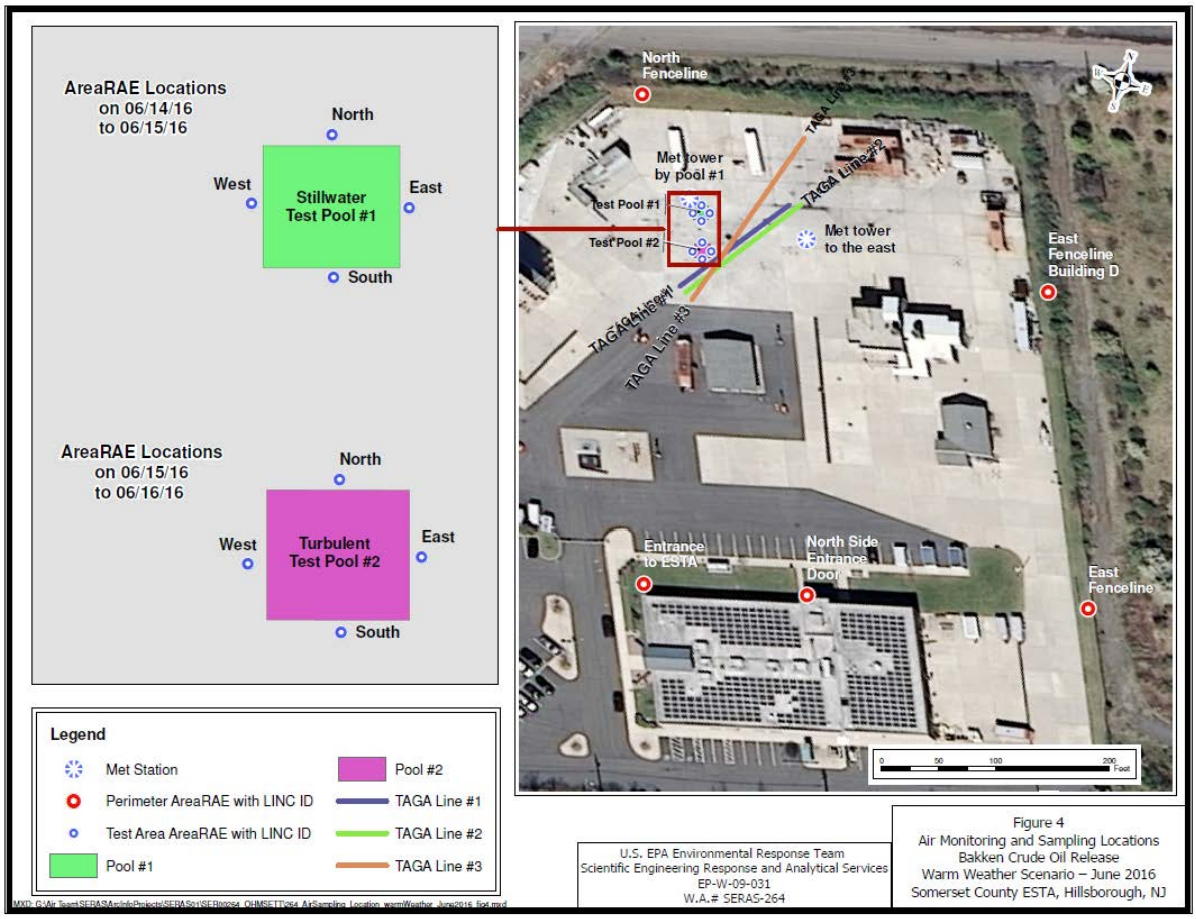


Figure 4- Somerset County ESTA, Three TAGA Monitoring Lines indicated south to east (downwind) of foldable tanks.

Stationary Air Monitoring

AreaRAE monitoring was initiated the day prior to the release (June 13, 2016) and continued through the morning of June 16, 2016. Nine locations were selected for air monitoring. As the focus of this study was nearby worker exposure, four monitoring points were located as close to the study area as possible; one each to the north, east, south and west of each tank. Prior to the Turbulent scenario the monitors were moved to the north, east, south and west of the second tank. The remaining five points (North Fence line, Entrance to ESTA, North Side Entrance Door, East Fence line and East Fence line Building D) were chosen as potential on-site and off-site migration or background locations. These last five locations remained the same for both scenarios. All AreaRAE LEL sensors were calibrated with pentane.

Water Sampling and Analysis

Water samples were only collected during the warm weather study during the Still Water sampling event. To establish a balanced spatial distribution, water sample locations were assigned to the center and four corners of the 10 ft by 10 ft pool. The water sample locations were designated Corner 1 (Northwest Corner), Corner 2 (Northeast Corner), Corner 3 (Southeast Corner), Corner 4 (Southwest Corner), and Center. To establish a

vertical profile within the pool, water samples were collected at two different depths at the Corner 1, Corner 2, and Center locations and three different depths at the Corner 3 and Corner 4 locations. The vertical profile water samples were designated shallow (S), mid-point (M), and deep (D). At the Corner 1, Corner 2, and Center locations, sample depths were approximately two inches below the surface and 18 inches below the surface (or two inches above the bottom of the pool). At the Corner 3 and Corner 4 locations, sample depths were approximately two inches below the surface, ten inches below the surface and 20 inches below the surface (or two inches above the bottom of the pool).

To ensure that samples were collected simultaneously from multiple depths at each sampling location, Teflon sample tubing was mounted to a wooden stand, and the height of the sample tubing was positioned below the top of the water column in the pool. Sample tubing was identified by color-coded labels that indicated the sample location and sample depth for the sampling team. Prior to conducting the Still Water sampling event, the sample tubing for each sampling location was briefly purged with a peristaltic pump to establish a flow pathway and subsequently capped to maintain pressure in the sample tubing lines. Sampling was performed via siphon where each sampling line was filled with water to promote the free flow of water. Each line was cut to the same length in order for the sample purge time (10 seconds) to be the same at each location. Each line was capped between sample times and was removed for purging and sampling. Background water sampling occurred approximately 30 minutes before the controlled release. Post-spill water sampling occurred at approximately 15, 30, 45, 60, 120, 240, 300, and 1440 minutes after the spill.

A total of 96 water samples were collected for field screening. The screening results from the procedure were not reliable and are not included in this report.

A subset of 11of the 96 samples had an additional set of three 40-mL vials, which contained hydrochloric acid (HCl) as a preservative, collected for analysis by the SERAS Analytical Laboratory. Two matrix spike/matrix spike duplicates (MS/MSDs), each consisting of a set of six 40-mL vials with HCl preservative, were collected for quality control analysis by the SERAS Analytical Laboratory. In addition, two field blanks and two trip blanks (both collected at a frequency of one per day) were collected for quality control analysis by the SERAS Analytical Laboratory.

Additional Mobile Monitoring

Mobile air monitoring for VOCs, $\%O_2$, LEL, H_2S and CO were performed utilizing a RAE Systems MultiRAE Pro PGM 6248. Mobile air monitoring for VOCs was also performed using the TVA-1000B. This mobile monitoring was conducted (to the best extent possible) at the same location and time as the benzene monitoring and sampling.

4. Results

Air Monitoring and Tedlar Bag Sampling for Benzene

SERAS prepared the report, *GC/MS Analytical Report, Bakken Crude Release: Worker Health & Safety Pilot Scale Study, Leonardo, New Jersey from March 2015,* which provides the on-site analytical results from the Cold Weather Scenario.

SERAS prepared the report, *GC/MS Analytical Report, Bakken Crude Release: Worker Health & Safety Pilot Scale Study, Hillsborough, New Jersey from August 2016,* which provides the on-site analytical results from the Warm Weather Scenario.

Table 3 contains a comparison of benzene air monitoring and sampling results from the cold and warm weather studies in parts per million by volume (ppmv) from February 11, 2015, June 15, 2016 and June 16, 2016. A comparison of benzene air monitoring and sampling results during the skimmer tests on February 12, 2015 are presented in **Table 4**. The results from **Table** 4 are presented for information purposes only as this scenario was only conducted during the cold weather study.

Benzene air concentrations during the Cold Weather Scenario were below the National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) of 0.1 ppm after approximately 95 minutes of the spill in the immediate vicinity based on the GC/MS results. While benzene air concentrations during the Warm Weather Scenario were below The NIOSH REL of 0.1 ppm after 240 minutes during the still water scenario and after 180 minutes after the turbulent water scenario in the immediate vicinity based on the GC/MS results.

Benzene air concentrations during the Cold Weather Scenario were below American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of 0.5 ppm after approximately 45 minutes of the spill in the immediate vicinity based on the GC/MS results. While benzene air concentrations during the Warm Weather Scenario were below The ACGIH TLV of 0.5 ppm after 180 minutes during the still water scenario and after 120 minutes after the turbulent water scenario in the immediate vicinity based on the GC/MS results.

The time difference between the Still Water and the Turbulent Water scenarios support the hypothesis that an active waterway would drive off the benzene (and other volatile organics) more quickly than an undisturbed body of water.

The UltraRAE monitor was used for real-time screening for benzene while the Tedlar bag generate definitive results. The UltraRAE results can also be found in **Table 3** and **Table 4**. These results relate to the comparability of the UltraRAE monitoring results to the Tedlar bag sampling results.

Table 3

Benzene Air Monitoring and Sampling Results from Cold and Warm Weather Studies in ppmv
Bakken Crude Oil: Worker Health and Safety Pilot Scale Study

February 11, 2015 Sample ID	Location	Start Time (T=10:11)	End Time	Tedlar Bag GC/MS	UltraRAE 3000
54940	By Release Tote	T+1	10:13	2.7	5.5
54941	By Release Tote	T+5	10:17	0.87	0.1
54942	By Release Tote	T+10	10:23	0.95	0.1
54943	SW Corner Boom	T+20	10:33	1.8	0.7
54944	South Mobile Bridge	T+30	10:42	0.53	0.2
54945	South Mobile Bridge	T+45	10:57	0.44	0.25
54946	South Mobile Bridge	T+60	11:12	0.19	0.25
54947	South Mobile Bridge	T+79	11:31	0.34	0.1
54948	South Mobile Bridge	T+95	11:47	0.044	0.1
54949	South Mobile Bridge	T+155	12:48	0.075	1.45
54950	South Mobile Bridge	T+215	13:48	0.028	0.9
54951	South Mobile Bridge	T+265	14:49	0.02	0.1
54952	East Deck	T+330	15:53	0.023	0.15

6/14/16 Sample ID	(Still Water) Location	Start Time (T=11:54)	End Time	Tedlar Bag GC/MS	UltraRAE 3000
--	Southside of Pool	Background	9:41	--	ND
55612	Southside of Pool	T+1	11:55	5.9 J	3.75
55613	Southside of Pool	T+5	11:59	4.8 J	--
55614	Southside of Pool	T+10	12:04	3.3 J	1.45
55615	Southside of Pool	T+15	12:08	3.1 J	2.75
55616	Southside of Pool	T+30	12:24	5.7 J	69.35
55617	Southside of Pool	T+45	12:39	6.2 J	23.45
55618	Southside of Pool	T+60	12:54	2.2 J	11.6
55619	Southside of Pool	T+75	13:09	4.0 J	28.45
55620	Southside of Pool	T+90	13:24	1.6 J	1.85
55621	Southside of Pool	T+120	13:54	0.8 J	55
55622	Southside of Pool	T+150	14:24	0.58 J	2.95
55623	Southside of Pool	T+180	14:54	0.19 J	0.25
55624	Southside of Pool	T+240	15:54	0.072 J	4.05
55625	Southside of Pool	T+300	16:54	0.042 J	16.25
55626	Southside of Pool	T+1257	8:51 6/15	0.00061	0.15

6/15/16 Sample ID	(Turbulent) Location	Start Time (T=10:36)	End Time	Tedlar Bag GC/MS	UltraRAE 3000
55627	East of Pool	T+1	10:37	4.6	18
55628	East of Pool	T+5	10:41	3.6	25
55629	East of Pool	T+10	10:46	3.4	2.45
55630	East of Pool	T+15	10:51	6.4	4.1
55631	East of Pool	T+30	11:06	2.9	17.1
55632	East of Pool	T+45	11:21	2.7	7.85
55633	East of Pool	T+60	11:36	0.91	6.85
55634	East of Pool	T+75	11:51	2.6	2.15
55635	East of Pool	T+90	12:06	1.6	1.35
55636	East of Pool	T+120	12:36	0.43	0.6
55637	East of Pool	T+150	13:06	--	29.55
55638	East of Pool	T+180	13:36	0.013	25.65
55639	East of Pool	T+240	14:36	0.084	0.45
55640	East of Pool	T+300	15:36	0.053	1.9
55641	East of Pool	T+360	16:36	0.022	12.2
--	Southside of Pool	T+1317	8:33 6/16	--	1.15
--	East of Pool	T+1319	8:35 6/16	--	11
55642	Southeast of Pool	T+1331	8:47 6/16	0.0052 J	--

ppmv = parts per million by volume, -- = Not collected, J = concentration is estimated, Below ACGIH TLV of 0.5 ppm, Below NIOSH REL of 0.1 ppm, ND - not detected above 0.05 ppmv detection limit for the Benzene Tube

Table 4

Comparison of Benzene Air Monitoring and Air Sampling Results from Skimmer Tests
(Cold Weather Scenario) in ppbv
Bakken Crude Oil: Worker Health and Safety Pilot Scale Study

February 12, 2015		Comments	End Time	Tedlar Bag GC/MS Concentration	UltraRAE 3000 Concentration
Sample ID	Location				
54960	Weathered Oil Collection by Skimmer - 1	Initial Collection	9:04	ND (1)	ND (2)
54961	Weathered Oil Collection by Skimmer - 2	Initial Collection	9:22	0.76	ND (2)
54953	Prior to ASTM Skimmer Test 1	Position 2	12:18	2.6	ND (2)
54954	ASTM Test 1A	Position 2	12:37	0.68	ND (2)
54955	ASTM Test 1B	Position 2	12:42	0.92	ND (2)
54956	Prior to ASTM Test 2	Position 2	13:00	0.99	ND (2)
54957	ASTM Test 2A	Position 2	13:07	1.6	ND (2)
54958	ASTM Test 2B	Position 2	13:09	4.1	ND (2)
54963	Prior to ASTM Test 3	Position 2	13:33	1.4	ND (2)
54964	ASTM Test 3A	South Mobile Bridge (3)	13:47	15	750
54965	ASTM Test 3B	South Mobile Bridge (3)	13:49	11	ND (2)
54966	ASTM Test 3C	South Mobile Bridge (3)	13:56	1.2	ND (2)

GC/MS – Gas chromatography/Mass Spectrometry

ND (1) - Concentration not detected above 0.50 ppbv detection limit for the GC/MS Analysis

ND (2) - Concentration not detected above 50 ppbv detection limit for the Benzene Separation Tube

(3) - Final Position

ppbv = parts per billion by volume

ASTM Tests 1 and 2 utilized 24 hour weather oil. ASTM Test 3 utilized fresh Bakken Oil Crude.

Charcoal Tube Sampling

As indicated previously charcoal tube sampling was only conducted during the Cold Weather Scenario. The daily time-integrated charcoal tube benzene air sampling results are presented in **Table 5** based on the hours of operation each day of the study. The highest time-integrated concentration of 75.1 parts per billion by volume (ppbv) was observed on the release day at the south mobile bridge location.

The time-integrated charcoal tube benzene air sampling results near the skimmer test are presented in **Table 6**. The highest time integrated concentration of 50.4 ppbv was observed after the third skimmer test with fresh oil on the south side of the north mobile bridge location.

All sampling results were below the National Institute for Occupational Safety and health (NIOSH) REL for benzene of 100 ppbv.

Table 5

Daily Time-Integrated Charcoal Tube Benzene Air Sampling Results

Location	Sublocation	Background 2/10/2015 Time* 10:38 - 16:44 (ppbv) Result	Release Day 2/11/2015 Time* 9:30 - 16:49 (ppbv) Result	ASTM Skimmer Test 2/12/2015 Time* 8:48 - 15:52 (ppbv) Result
North Fence line	Behind Garage	2.57 U	1.63 U	2.11 U
North Deck	By North Fixed Control Room	2.08 U	1.68 U	0.50 J
East Deck	At 150' Mark-Mid boom	2.19 U	NS	3.88
West Deck	At 150' Mark-Mid boom	2.17 U	36.6	4.50
West Deck Colo	At 150' Mark-Mid boom	2.18 U	32.4	4.41
South Mobile Bridge	West Door of Control Room	2.38 U	75.1	3.49
SE Deck corner	At Far SE Corner of Deck	NS	1.81	0.43 J
Southern Fence line	One post over from corner	1.93 U	5.20	1.58 U

Time* - of first pump start and last pump shut-off

ppbv - parts per billion by volume

U - Not detected above the Reporting Limit listed

J - Value is estimated

NS - No Sample

Table 6

Time-Integrated Charcoal Tube Benzene Air Sampling Results Near Skimmer Tests on February 12, 2015

Location	Sublocation	Result(ppbv)	Start Time	Stop Time
ASTM Skimmer Test Weathered				
Position 1 & 2	North Mobile Bridge North & South Sides	2.65 U	9:08	13:20
Skimmer Adjacent	At 115 ft Mark by compressor	2.61 U	9:07	13:23
ASTM Skimmer Test Fresh				
Skimmer Adjacent	At 115 ft Mark by compressor	9.51	13:27	15:40
Position 2	North Mobile Bridge South Side	50.4	13:22	15:28

ppbv - parts per billion by volume
U - Not detected above the Reporting Limit listed.
NS - No Sample

TAGA

During the February 11, 2015 TAGA mobile monitoring the highest instantaneous benzene concentration of 552 ppbv was observed along the TAGA monitoring path aside the western wall of the tank. The highest set of path readings averaged over a mobile monitoring run (one complete set of readings from the round-trip path along the tank) was 100 ppbv. On February 12, 2015, the highest fixed point instantaneous benzene concentration of 1,341 ppbv was observed directly above the skimmer test area. This occurred just after the third ASTM skimmer test following the addition of Bakken Crude Oil to the OHMSETT pool. Prior to the addition of the fresh oil the highest instantaneous benzene concentration was 83 ppbv. During the first two skimmer tests of 24-hour weathered oil, fixed point monitoring showed that all results were below 100 ppbv. During the third skimmer test on fresh oil, all of the monitoring results during the monitoring period were above 500 ppbv.

The report, *Final Analytical TAGA Report, Bakken Crude Release: Worker Health & Safety Pilot Scale Study, Leonardo, New Jersey from May 2015,* was prepared by SERAS and submitted under separate cover.

During the June 14, 2016 TAGA mobile monitoring the highest instantaneous benzene concentration of 1,400 ppbv occurred along TAGA monitoring path #1 located to the southeast of the still water tank approximately 15 minutes after the release of the oil. All TAGA monitoring results for this scenario were below 500 ppbv approximately 150 minutes after the release and below 100 ppbv approximately 240 minutes after the release.

On June 15, 2016 the highest instantaneous benzene concentration of 2,200 ppbv was observed along the TAGA monitoring path #2 located to the southeast of the turbulent tank approximately 30 minutes after the release of the oil. All TAGA monitoring results for this scenario were below 500 ppbv approximately 135 minutes after the release and below 100 ppbv approximately 270 minutes after the release.

The report, *Final Analytical TAGA Report, Bakken Crude Release: Worker Health & Safety Pilot Scale Study, Hillsborough, New Jersey from March 2017,* was prepared by SERAS and submitted under separate cover.

Water Sampling and Analysis

The water samples collected the day of the spill and analyzed by the SERAS Laboratory were all from different locations and different depths. Benzene concentration ranged from 237 micrograms per liter (ug/L) to 315 ug/L on the day of the spill. The two samples collected the day after the spill ranged from 216 ug/L to 218 ug/L. Dissolution of benzene into the water column occurred rapidly as the concentration of benzene in the first sample was 315 ug/L after 25 minutes after the oil was introduced to the tank. The benzene concentration remained above the maximum contaminate level of 5 ug/L throughout the 24-hour period of the study. **Table 7** shows the SERAS Laboratory water sampling results.

Stationary Ambient Air Monitoring

During the Cold Weather Scenario, total VOC concentrations in the ambient air, in the immediate vicinity of the spill (North Deck, East Deck, South Mobile Bridge and West Deck) remained above 0.1 ppm from the beginning of the spill until the next morning based on results from the AreaRAE monitoring. The total VOC results from locations away from the spill perimeter (North Fence line ~250 ft, OHMSETT Office ~190 ft and Southwest Corner of the Deck ~540 feet) were below 0.1 ppm within approximately 6 hours. The data from the AreaRAE located at South Fence line has been excluded as instrument drift rendered the data unreliable.

Table 7
Results of the Analysis for VOC Compounds in Water in µg/L
Bakken Crude Release: 11:45 on 6/14/16

Sample Number	Sample Location	Time Collected	Benzene
264-0001	NW Corner 1 – Shallow	11:16	5.00 U
264-0019	NE Corner 2 - Shallow	12:10	315
264-0028	Center - Shallow	12:13	264
264-0037	SE Corner 3 - Shallow	12:29	311
264-0048	NW Corner 1- Deep	12:54	248
264-0055	SW Corner 4 - Shallow	13:00	237
264-0066	NE Corner 2 - Deep	13:55	244
264-0083	SE Corner 3 - Mid-point	15:58	239
264-0090	Center - Deep	15:56	261
264-0101	SW Corner 4 - Mid-point	17:05	278
264-0117	SW Corner 4 - Deep	6/15/16 12:02	218
264-0126	Field Blank	6/14/16 14:30	5.00 U
264-0127	Trip Blank	6/14/16 17:20	5.00 U
264-0128	Field Blank	6/15/16 8:30	5.00 U
264-0129	Trip Blank	6/15/16 8:30	5.00 U

µg/L - micrograms per liter
U - not detected above the reporting limit listed

During the Warm Weather Still Water scenario, total VOC concentrations in the immediate vicinity of the spill (at the east and west locations) remained above 0.1 ppm from the beginning of the spill until the next morning (when they rose to between 1 and 3 ppm) based on results from the AreaRAE monitoring. The total VOC results from locations away from the spill perimeter at locations North Fence line, Entrance to ESTA and North Side Entrance Door were below 0.1 ppm throughout the Still Water scenario. VOC air monitoring results at the East Fence line were below 0.1 ppm approximately 8 hours after the spill. Results from East Fence line Building D were below 0.1 ppm from the beginning of the spill for the first 10 hours. From that time until the conclusion of the monitoring run the next morning, total VOC concentrations ranged from 0.1 ppm to 1.1 ppm.

During the Warm Weather Turbulent Water scenario, total VOC concentrations in the immediate vicinity of the spill (at the east, south and west locations) remained above 0.1 ppm from the beginning of the spill until the next morning (between 0.1 and 3 ppm) based on results from the AreaRAE monitoring. The total VOC results from locations away from the spill perimeter at locations East Fence line, Entrance to ESTA and North Side Entrance Door were below 0.1 ppm throughout the Turbulent Water scenario. The majority of the VOC air monitoring results at the East Fence line and the North Fence line were below 0.1 ppm. There were 12 instantaneous readings collected at these locations ranging from 0.1 to 0.6 ppm over the duration of the monitoring period.

For detailed graphs of the stationary monitoring, please refer to reports *Bakken Crude Oil: Worker Health and Safety Pilot Scale Study from February 2015* and *Bakken Crude Oil: Worker Health and Safety Pilot Scale Study from June 2016* prepared individually by SERAS and submitted under separate cover.

Additional Mobile Monitoring

Table 8 contains the results for the additional air monitoring that was conducted during the Warm Weather scenario. The benzene results are repeated here for comparison.

The NIOSH immediately dangerous to life or health (IDLH) for oxygen is 19.5%. At oxygen concentrations below the NIOSH IDLH supplied air is necessary for the first responder. Oxygen deficient atmospheres of less than 19.5 % were observed immediately adjacent to each spill. During the Still Water condition, three hours passed before the percentage of atmospheric oxygen rose above 19.5 % and for the Turbulent Water condition, two hours passed before oxygen reached 19.5%.

There were large discrepancies between the FID and PID readings with the FID readings higher for VOCs than the PID readings. This was particularly evident during both the Still and Turbulent Water conditions for the first 90 minutes following the spill. The highest VOC reading by the FID occurred 35 minutes after the spill for Still Water condition (7300 ppm) and one minute after the spill for the Turbulent Water condition (9400 ppm).

Total VOC concentrations measured along the perimeter of the tanks on both the PID and FID remained above the benzene NIOSH REL of 0.1 ppm and the ACGIH TLV of 0.5 ppm after nearly 24 hours of the initial release for both the still water and turbulent water scenarios.

Table 8A Mobile Air Sampling and Monitoring Results from June 14, 2016
Bakken Crude Oil: Worker Health and Safety Pilot Scale Study, Still Water Condition

Time	Description	Sample ID	Location	Benzene	Benzene	VOCs	VOCs	VOCs	CO	H2S	LEL Methane	LEL Pentane	%O2
				SOP #1741	UltraRAE 3000	MultiRAE	TVA FID	TVA PID	MultiRAE	MultiRAE	MultiRAE	MultiRAE	MultiRAE
				GC/MS	B09924	B09921	13199	13199	B09921	B09921	B09921	B09922	B09921
				ppmv	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
9:41	Background	--	South of Pool	--	0	0	--	--	0	0	0	0	20.6
11:55	T+1	55612	South of Pool	5.9 J	3.75	123.42	1100	70	0	0	0	4	19.4
11:59	T+5	55613	South of Pool	4.8 J	--	48.9	700	34	0	0	0	0	19.4
11:59	T+10	55614	South of Pool	3.3 J	1.45	312	2700	72	0	0	0	0	19.4
12:04	T+15	55615	South of Pool	3.1 J	2.75	79	3370	173	0	0	0	0	19.4
12:24	T+35	55616	South of Pool	5.7 J	69.35	15.25	7300	545	0	0	0	0	19.1
12:39	T+45	55617	South of Pool	6.2 J	23.45	97	1200	152	0	0	0	0	18.9
12:54	T+60	55618	South of Pool	2.2 J	11.6	113.9	3200	372	0	0	0	0	18.9
13:09	T+75	55619	South of Pool	4.0 J	28.45	60.35	2900	296	0	0	0	0	18.4
13:24	T+90	55620	South of Pool	1.6 J	1.85	49.98	1940	235	0	0	0	0	18.5
13:54	T+120	55621	South of Pool	0.8 J	55	18.7	790	179	0	0	0	0	18.4
14:24	T+150	55622	South of Pool	0.58 J	2.95	4.938	1700	296	0	0	0	0	18.6
14:54	T+180	55623	South of Pool	0.19 J	0.25	41.66	1100	218	3	0	0	0	19.6
15:54	T+240	55624	South of Pool	0.072 J	4.05	45.8	370	89	0	0	0	0	20.6
16:54	T+300	55625	South of Pool	0.042 J	16.25	27.6	380	67	0	0	0	0	20.9
8:51	T+1257	55626*	South of Pool	0.00061	0.15	4.56	32	17	0	0	0	3	20.9

VOCs - volatile organic compounds, FID – Flame Ionization Detector, PID - Photoionization Detector CO - Carbon Monoxide, H2S - Hydrogen Sulfide, LEL - Lower explosive level, %O2 - Percent oxygen, ppmv - Parts per million by volume, T = End time of initial release (11:54) , T+value = initial release time plus defined minutes, J = concentration is estimated, * = Collected June 15, 2016, -- Not Collected

Table 8B Mobile Air Sampling and Monitoring Results from June 15, 2016

Bakken Crude Oil: Worker Health and Safety Pilot Scale Study, Turbulent Water Condition

Time	Description	Sample ID	Location	Benzene	Benzene	VOCs	VOCs	VOCs	CO	H2S	LEL Methane	LEL Pentane	%O2
				SOP #1741	UltraRAE 3000	MultiRAE	TVA FID	TVA PID	MultiRAE	MultiRAE	MultiRAE	MultiRAE	MultiRAE
				GC/MS	906703/906623*	B09921	13199	13199	B09921	B09921	B09921	B09922	B09922
				ppmv	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
10:37	T+1	55627	East of Pool	4.6	18	187	9400	200	0	0	0	0	19.3
10:41	T+5	55628	East of Pool	3.6	25	141	3700	140	0	0	0	3	19.3
10:46	T+10	55629	East of Pool	3.4	2.45	133	1700	48	0	0	0	2	19.3
10:51	T+15	55630	East of Pool	6.4	4.1	154	340	75	0	0	0	3	19.3
11:06	T+30	55631	East of Pool	2.9	17.1	67.08	3000	137	0	0	0	0	19.2
11:21	T+45	55632	East of Pool	2.7	7.85	42.8	1200	130	0	0	0	0	18.9
11:36	T+60	55633	East of Pool	0.91	6.85	31.7	710	58	0	0	0	0	18.8
11:51	T+75	55634	East of Pool	2.6	2.15	30.8	1100	76	0	0	0	0	18.5
12:06	T+90	55635	East of Pool	1.6	1.35	33	500	120	0	0	0	0	18.4
12:36	T+120	55636	East of Pool	0.43	0.6	23.41	140	22	0	0	0	0	19.6
13:06	T+150	55637	East of Pool	--	29.55	26.4	650	75	0	0	0	0	19.9
13:36	T+180	55638	East of Pool	0.013	25.65	1.4	1300	125	0	0	0	0	20
14:36	T+240	55639	East of Pool	0.084	0.45	21.48	172	36	0	0	0	0	20.1
15:36	T+300	55640	East of Pool	0.053	1.9	22.8	200	49	0	0	0	0	20.2
16:36	T+360	55641	East of Pool	0.022	12.2	13.9	120	29	0	0	0	0	20.2
8:33	T+1317	55642	South of Pool	0.0052 J#	1.15	1.75	14	5	0	0	0	3	20.6
8:35	T+1319	--	East of Pool	--	11	22.3	96	24	0	0	0	3	20.6

VOCs - volatile organic compounds, FID – Flame Ionization Detector, PID - Photoionization Detector CO - Carbon Monoxide, H2S - Hydrogen Sulfide, LEL - Lower explosive level, %O2 - Percent oxygen, ppm - Parts per million, -- Not Collected, T + 1 = Time of spill plus one minute, UltraRAE 3000 - 906703 used through collection at 14:36 or T+240,*- UltraRAE 906623 used from 15:36 or T+300 and after, # collected at 8:47 or T+1331 on 6/16/16

5. Discussion of Variability

When the Cold Weather and Warm Weather scenario results are compared there are some notable differences in analytical results. Some of the differences in results are expected, others are likely the result of differences in study methodologies.

- Surface area differences of 6,500 square feet (ft^2) for cold versus 100 ft^2 for warm along with the volume of oil difference causing a difference in the calculated thickness of oil of 0.16 inches of oil for cold versus 1.13 inches for warm. The thinner, larger slick allowed for the benzene to be liberated readily during the Cold Weather scenario. For the Warm Weather scenario, the thickness of the oil layer inhibited the release of benzene into the air from the crude oil.
- During the Cold Weather scenario the wind speeds during the sampling were between 1.7 and 9 miles per hour (MPH). For the Warm Weather scenario the wind speeds during the sampling were between 1.6 and 6.3 MPH. Based on the wind speed and incoming solar radiation atmospheric stability can be calculated. The majority of weather observations during the Cold Weather scenario would fall within slightly unstable atmospheric condition category while the weather observations during the Warm Weather scenario would fall within the unstable to very unstable atmospheric condition categories. The more stable the atmosphere, the more consistent and tighter a pollutant plume would be. The more unstable the atmosphere the more mixing and less consistent a pollutant plume would be. [7]
- There were differences in benzene and VOC sampling heights for the two scenarios. The sampling height for the cold weather operation was approximately 5 to 6 feet above the tank, while for the warm weather operation air monitoring/sampling was performed at approximately 1-foot above tank level.
- The available sampling perimeters were different for the two scenarios and this affected the choice of sampling locations. During the Cold Weather scenario, the sampling area was more wide open, whereas, during the Warm Weather scenario, space was limited.
- A review of photographs indicates that there were differences in the co-location differences for UltraRAE monitoring and Tedlar bag sampling both within a scenario and between the Cold and Warm scenarios.

6. Conclusions

Benzene airborne concentrations dropped more quickly to levels below the ACGIH TLV TWA of 0.5 ppm and the NIOSH REL of 0.1 ppm during the Cold Weather Scenario than the Warm Weather Scenario. These differences are likely the result of the larger surface area and thinner spill thickness for the Cold Weather Scenario providing a quicker pathway for the transfer of benzene to the atmosphere. With regard to the Warm Weather Scenario, the rapid mixing of the surface crude oil in the turbulent water condition relative to the still water condition is the likely explanation of the quicker disappearance of benzene in the turbulent water condition than the still water condition.

In proximity to the crude oil release during a Warm Weather scenario the oxygen level declined to 18.4% and remained at levels below the below the NIOSH IDLH limit of 19.5% for approximately 4 hours. First responders must be in Level B personal protective equipment with full-facepieces and supplied air. The use of real-time monitoring equipment to determine airborne oxygen concentrations is critical for all first

[7] SE Gryning et al, Applied dispersion modelling based on meteorological scaling parameters, Atmospheric Environment, (1987), Vol 21: 1, 79-89.

responders in proximity to the oil spill. The monitoring results should be carefully reviewed before any downgrading of respiratory protection occurs.

7. Items for Further Investigation

- Eliminate differences between study conditions for Cold Weather scenario and Warm Weather scenarios when possible. This effort will strengthen the conclusions drawn from the study results for the two scenarios.
- In an effort to arrive at better agreement in benzene monitoring and collocated sampling results, suggested sampling changes include minimizing the collection devices. One possibility would be to collect a larger sample aliquot over a longer period. Upon collection, bag(s) could first be run by GC/MS followed by screening with monitoring instruments. This would ensure that the same parcel of air is being quantified. Alternatively, collect a larger sample volume (for screening with air monitors) and separate Tedlar bags for GC/MS analysis. This option would minimize the chain of custody documentation requirements and allow for the screening and analysis to occur simultaneously.
- Other readily available real-time benzene specific air monitoring devices could be researched and considered for inclusion in future studies.
- For comparable results between the field monitoring and the laboratory analysis, a benchtop or a Performance Evaluation (PE) Study (Tedlar bag versus field monitoring) using known concentrations of benzene in a similar complex matrix could be performed.
- Investigate additional real-time monitoring equipment for use during oil spill episodes and further characterizing emissions during the first several hours following an oil spill; better equipment may be identified and additional important information on VOC levels and oxygen levels will be gained during the initial time period following the oil spill. Based on the results of the current studies, depleted oxygen levels and elevated VOC levels may pose a real concern for first responders.

Current results indicate that the FID shows significantly higher emission rates than for the PID. This is particularly evident during the initial hours after the spill. This suggests appreciable emissions of VOCs with ionization potentials greater than 10.6 eV may be present and contain gases that cannot be measured by the PID that was used but are measured by the FID. The introduction of Tedlar bag air sampling will provide the important identification and quantities of VOCs that account for the elevated VOC levels as measured by the FID.

ATTACHMENT A - OHMSETT FACILITY, WEATHERING AND RECOVERY OF BAKKEN CRUDE OIL

EXECUTIVE SUMMARY

WEATHERING AND RECOVERY STUDY OF BAKKEN CRUDE OIL FOR THE U.S. E.P.A.

Background:

During the week of 2/9/2015 an evaluation of rheological properties, Volatility (VOC emission rate) and recoverability of Bakken crude oil was performed at the Ohmsett Test Facility. As a relatively new crude oil to the market place which is widely transported, there is an increased risk of spills into the environment. Crude oil spills pose a threat to human health and the environment, quantitative data related to the oil physical properties is needed to define risks.

Response to inland oil spills that threaten waters and sensitive environments is one of the responsibilities of the US Environmental Protection Agency (EPA). In an effort to add to the knowledge base for responding to a discharge of Bakken crude oil, this evaluation focused on multiple factors and conditions that exist from the time of release to a number of days later. Namely, due to known high vapor pressure and volatility the corresponding emissions were measured; and second, due to the low viscosity when fresh evaluate the ability to recover the oil using oleophilic type skimmers.

While significant testing has been performed by different organizations on crude oil produced from the Bakken formation, the testing is generally comprised of standard petroleum characteristic analyses and characterization for proper Department of Transportation (DOT) classification for transportation. The data from these testing programs have provided critical knowledge for classifying and understanding standard properties of the light sweet crude. Questions continue to be raised by the response community and all levels of government as oil releases into the environment through spills, well blowouts, major derailment events, and associated fires have caused damage and the loss of life. The potential for more oil spills is a reality with the increasing volume of oil being moved across the country from the Williston Basin production to the refineries. As of July 2014, the volume of oil from the Williston Basin being shipped by rail on unit trains is approximately 766,000 barrels per day, and the volume transported in pipelines is approximately 432,000 barrels per day (EPR, Inc November 2014).

Little quantitative testing has been performed with this oil with respect oil recovery equipment or various physical and chemical property changes that occur once released into the environment. Information obtained from this test provides some quantitative evaluation of the crude oil relative to spill response considerations. This information will be used to support spill response planning relative to responder safety and effective oil recovery procedures to protect the environment.

Test Objectives:

1. Perform air monitoring (VOC emission rate) to determine health and safety risks to responders.

2. Determine the change in basic physical properties over time due to weathering (density, viscosity and interfacial tension).
3. Determine if weathered and fresh Bakken crude oil is recoverable using an oleophilic type skimmer.

Air Monitoring/Weathering Tests: (Objectives 1 & 2)

Setup:

To meet the objectives of the air monitoring/weathering study, a large defined surface area on the water was required where the Bakken Crude oil was dispensed and contained. The rectangular area provided was 65 feet wide x 100 feet long within the test basin and was formed using the tank walls and containment booms. The 6500 foot^2 area provided a sufficient surface area from where emissions could emanate for air monitoring data. Additionally, the large volume dispensed provided a sufficient volume of oil for subsequent weathered crude mechanical recovery testing. Figure 1 shows the test area with Bakken Crude oil dispensed, the containment booms, and the auxiliary bridge with a skimming barrier.

Figure 1 Bakken Crude oil dispensed

Preparation for air monitoring and all related data collection was performed by the USEPA and US Coast Guard (USCG) teams. Detection and emissions monitoring equipment was positioned around the spill zone. In addition, hand held detection monitors were in use for real-time measurements. Ideally a large volume of oil would be dispensed, approximately 600 to

1000 gallons. The volume to be released on the surface was dependent on real-time readings for the LEL and benzene levels obtained during the process. If threshold readings were reached, the dispensing would halt. In the event that a hazardous condition developed, the remediation procedure was to reduce the oil slick surface area using the auxiliary bridge skimming barrier that was pre-positioned within the test area. The water within the test basin is salt water and the water properties are reported in the lab analysis section of this data summary binder.

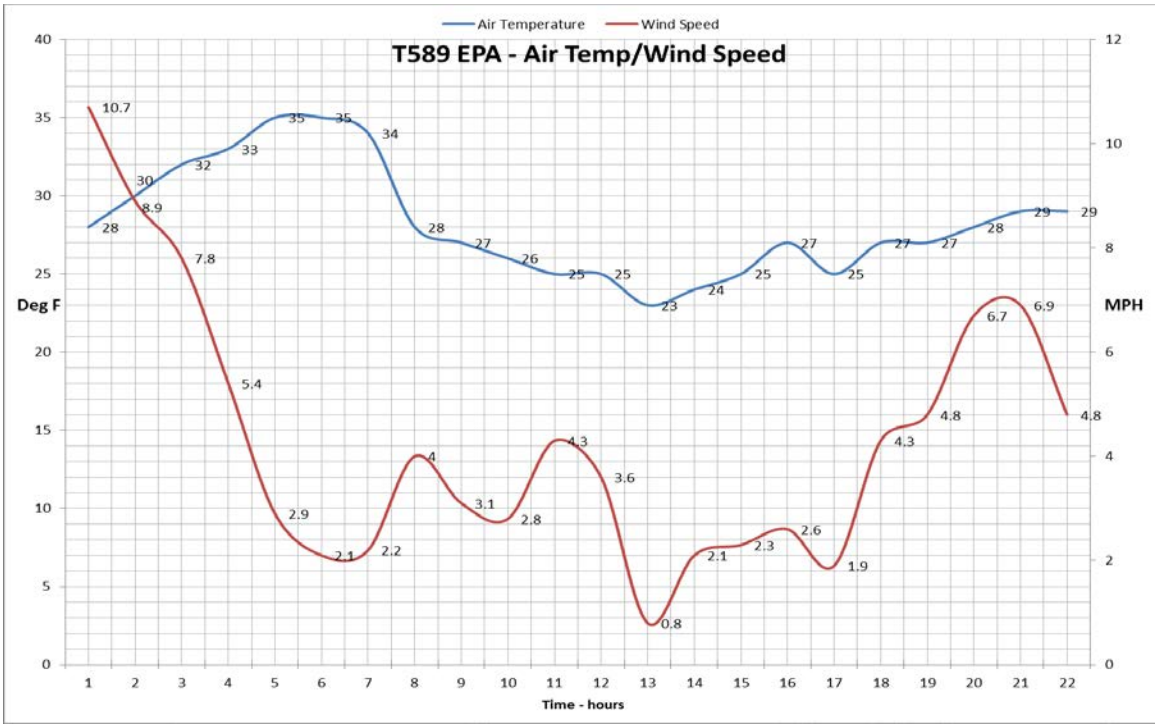
In addition to obtaining air monitoring data, the purpose of this evaluation was to study the rate at which spilled Bakken crude oil weathered in terms of basic oil properties. This was accomplished by obtaining surface samples of the crude oil at timed intervals for analysis in the Ohmsett laboratory. The surface oil sample analysis included viscosity, density, interfacial tension, and bottom solids and water (BS&W).

Procedure:

The air monitoring/weathering test started on 2/1/2015. With all instruments and personnel ready, oil was delivered to the confined area. The crude oil was gravity fed directly into the test area from 330 gallon totes that were elevated on a forklift. A fanning nozzle was employed at the end of a 2-inch hose and was positioned at the water surface. The total amount dispensed was 662 gallons at an average rate of 47 gpm. The resulting volume equated to an average slick thickness of 0.16 inches (4mm) for the 6500 $ft.^2$ area. Volumes were calculated based on soundings obtained from the storage totes.

While continuous air sampling was taking place, Ohmsett technicians obtained surface samples of the oil for laboratory analysis. Samples were obtained at half-hour intervals for the first three hours, and hourly until the conclusion of the work day. The samples are sequentially numbered and identified; for example, as 589-R01 (R-indicating "recovered sample). The Bakken crude oil remained on the test basin surface until the following morning when after 22 hours, a surface sample was obtained and the slick then consolidated into a smaller area using the auxiliary bridge barrier. Once consolidated, an Elastec TDS-118G (grooved drum) skimmer was used to recover the oil into totes.

Once collected, the recovered fluid was allowed to gravity separate and free water was decanted from the bottom of the totes. Final soundings resulted in 448 gallons of the 662 dispensed having been recovered indicating a 32% loss of oil by volume after approximately 22 hours of weathering. During this 22-hour period, the average water temperature was 30.8^0F, average air temperature 28^0F and average wind speed 8 mph. Graph 1 shown below provides wind speed and air temperature readings for the 22-hour period. The recovered oil would later be used for mechanical skimmer recovery testing.



Graph 1 Wind Speed and Air Temperatures during 22 Hours of Weathering.

Additional weathered oil samples were obtained two and five days later. These samples were obtained by dispensing the previously weathered oil into a boomed area after the skimmer testing had concluded. Figure 2 shows the recovery operation at the conclusion of the weathering test.

Figure 2 Oleophilic skimmer recovering oil after weathering period.

Weathered Bakken Crude Oil Results:

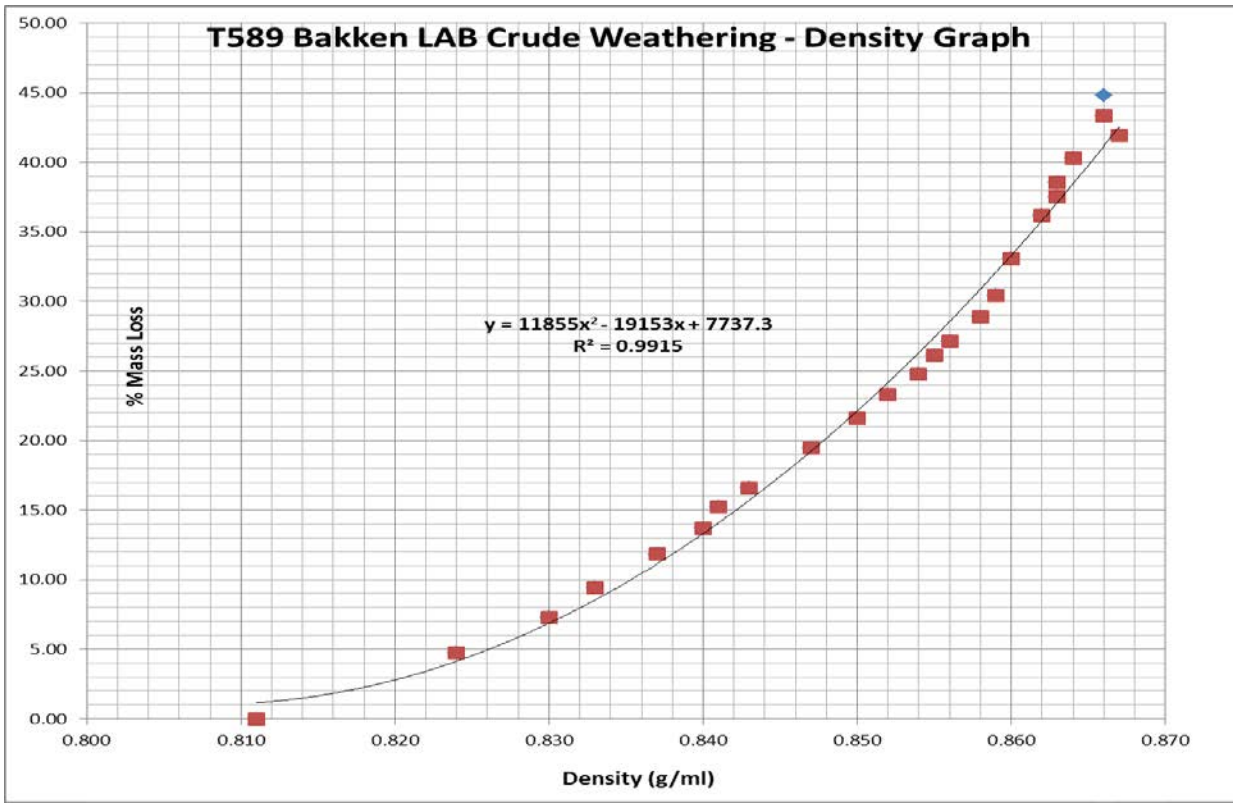
The Bakken crude oil (662 gallons) was completely dispensed into the defined test area at 10:41 am on 2/11/15. Surface samples were obtained at half-hour intervals until 1:10 pm. Two hourly samples were obtained ending at 3:10 pm. The oil remained in the test basin until 8:30 am the following day when sample 589-R09 was obtained. After using the oil for skimmer testing, 60 gallons was reintroduced into a smaller test area for extended weathering. The sample obtained for this oil was identified as 589-R010 and the duration recorded as the total time in use.

The properties measured in the Ohmsett laboratory are presented in a table "USEPA Bakken Crude Oil Spilled Oil Properties Analysis" provided in the "Spreadsheet Data/Results" section of this data summary binder. At 0^0C the viscosities did increase due to weathering from initially 29.7 to 42.9 cPs (at 20^0C 13.4 to 24 cPs). The test basin water temperature during the weathering ranged from 29.7^0F and 30.9^0F. The density consistently increased over time from 0.807 g/ml to 0.865 g/ml. Interfacial tension increased from 17.3 to 20 dynes/cm.

Laboratory Weathered Oil Data:

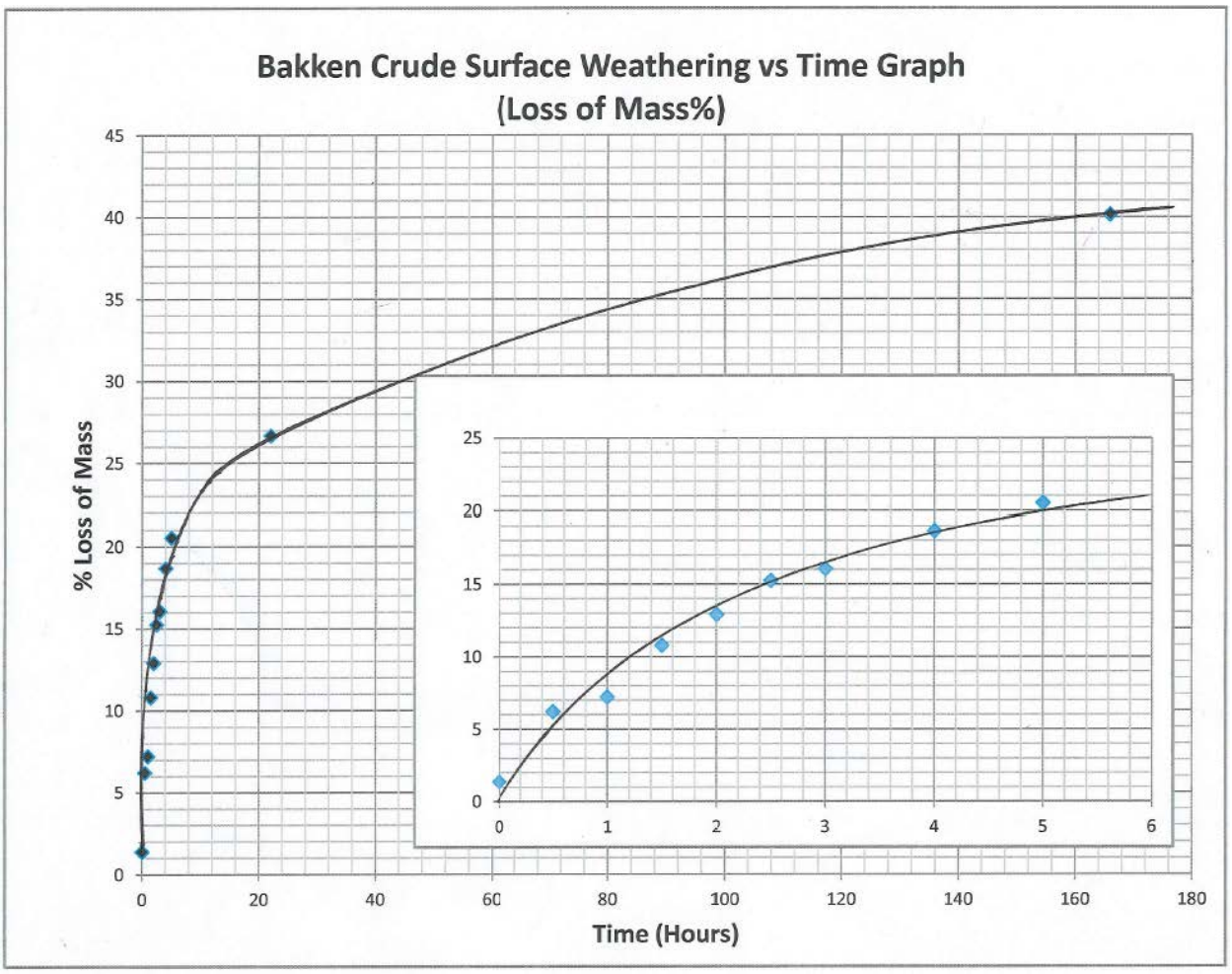
A physical indication of the extent of oil weathering typically sighted is the loss of mass as a function of time. In order to determine the loss of mass directly for the free floating crude oil, it would have been necessary to gather all the oil periodically and somehow weigh it. The scale of this operation is likely to have introduced error due to handling as well as the interruption of the time line. Therefore, the following surrogate method was used as opposed to the direct weighing approach.

A representative sample of the fresh, unaltered Bakken crude oil was weathered in a vented bubbler under controlled conditions in the laboratory. At various time intervals, more closely spaced at the beginning of the experiment, the bubbler was stopped and sealed, and the time, net oil mass, oil density, and temperature recorded. This provided data equating "loss of mass" to oil "density". The results of this effort are presented in the "Spreadsheet Data/Results" section of this binder and "Laboratory Weathering Data" in table form, "% Mass Loss versus Density" and "% Loss of Mass versus Time" (lab time) shown graphically. The "time" during laboratory weathering was recorded as a "sanity check", it is understood that this time has no relationship to the time recorded while weathering the crude oil on the tank surface. However, the laboratory curve of "% Mass Loss" as a function of density change could be used to correlate the extent of weathering on the test basin in terms of "% Mass Loss" given density values and times obtained from surface samples. An equation for the relationship of "% Mass Loss versus Density" has been generated and is shown on the Graph 2 below.



Graph 2 Laboratory % Mass Loss versus Density Curve

Using this equation and substituting the density values measured from the surface samples, yields a corresponding "% Mass Loss value". Time was then reintroduced into the relationship and resulted in the "% Mass Loss versus Time" for weathered Bakken crude oil given the ambient conditions. Graph 3 below is the result of the correlation and is also provided within the "Spreadsheet Data/Results" section of this binder.



Graph 3 %Loss of Mass versus Time from Test Basin Surface Samples

Oil Recovery Testing: (Objective 3)

The primary goal of objective 3 was to determine if the Bakken crude oil is recoverable using an oleophilic type skimmer. Tests were performed in which the recovery rate (RR) and corresponding recovery efficiencies (RE) were quantified while in a slick of weathered Bakken crude oil. The test method followed was ASTM F2709 "Standard Test Method for Determining Nameplate Recovery Rate for Stationary Skimmer Systems". The weathered oil from the emissions testing was collected and used for this test. Additionally, a recovery test was performed using fresh crude in a one inch slick.

Setup/Procedure:

A 10-foot x 10-foot boomed test area (Figure 3) was setup along the west wall of the test basin that provided for three times the footprint area of the skimmer, per ASTM 2709. A preload volume of weathered Bakken crude test oil was added to create the required nominal slick thickness of 3 inches plus an additional amount allowed for system startup to establish steady state operation and hold-up volume in the 2-inch x 50-foot cargo hose.

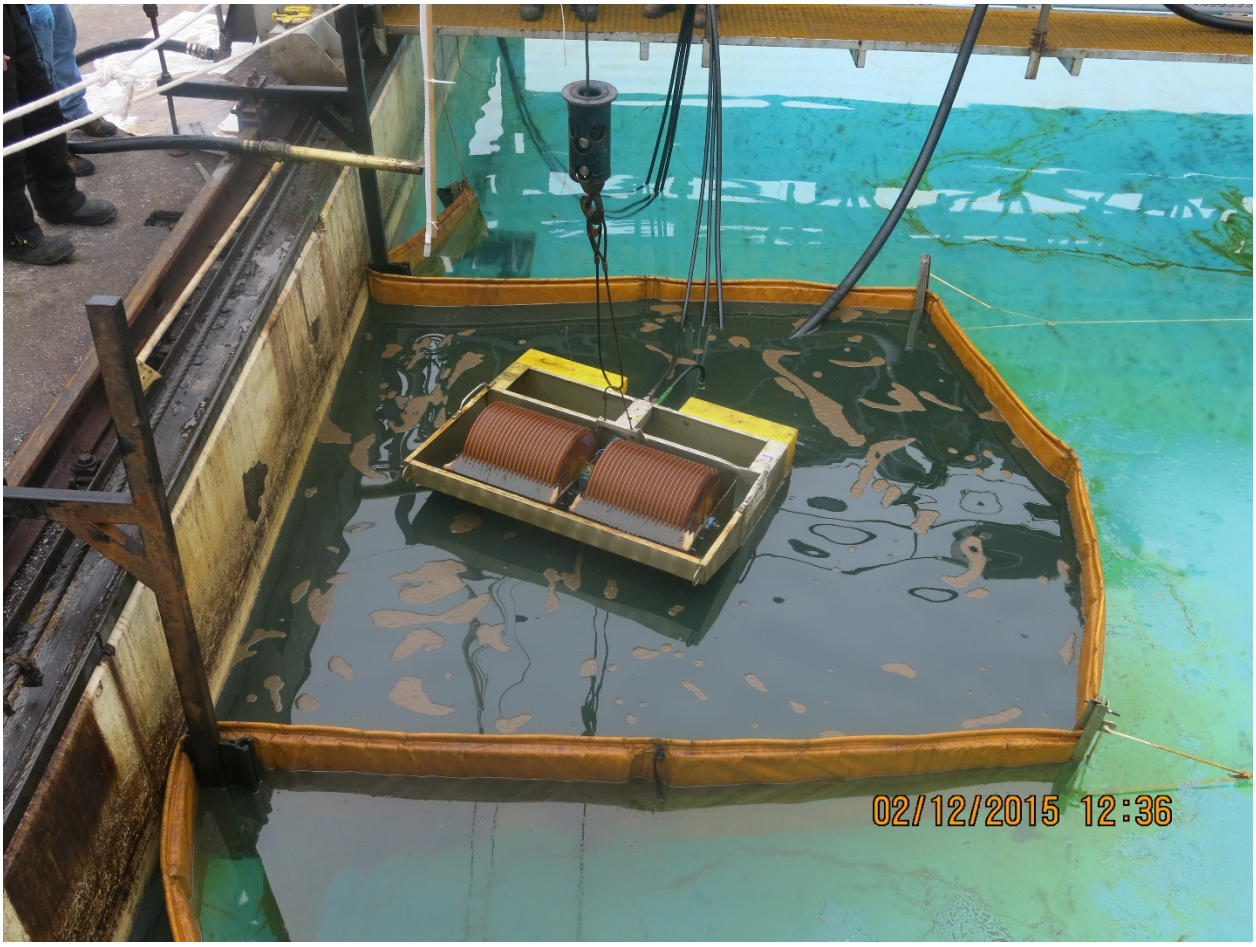


Figure 3 Skimmer Test Area

The 2-inch cargo line discharge outlet was elevated 14 feet above waterline meeting the minimum static head requirement of 3.5 m (11.5 feet) per the ASTM standard. The recovered fluid was directed into compartmented recovery tanks for measurement and sampling purposes.

The skimmer used was an Elastec TDS-118G. It is constructed of marine-grade aluminum and is 53 inches wide, 36 inches long, and uses two 17-inch diameter x 17-inch wide oleophilic grooved drums to recover oil. As the drums rotate through the slick, oil adheres to the surface of the drums and is scraped off by contour conforming scrapers located on the grooved face of the drums and the flat ends. The recovered oil flows into a perimeter trough and continues into a sump where recovered fluid is offloaded with an Elastec E150 transfer pump. An Elastec American Marine D-10 HPU (hydraulic power unit) provided the hydraulic power to the drum motor and the E150 offload pump.

Due to time restraints, preliminary testing was not performed in which multiple operational speeds of the skimmer are investigated to optimize recovery and efficiency. For this study, the operational speed of the skimmer was adjusted to a speed that visually appeared to provide the best performance.

At test start up, the skimmer operator started the power pack and ran at full throttle. The drum speed and pump controls were adjusted to visually achieve the best recovery rate. The system was

allowed to attain steady state operation, establish flow, purge fluid in the cargo line, and collect the holdup volume to a "slop" tank.

Initially, flow was directed to a 'slop' compartment in the recovery tank until the holdup volume was collected; then a three-way valve was swung to divert recovered fluid to a selected recovery compartment where it was timed by the engineer. Recovery continued until 62 gallons, equivalent to 1 inch of slick was recovered and total collection time recorded.

Oleophilic Skimmer Recovery Results:

While recovering weathered Bakken crude oil (drum rotational speed 58 rpm), the skimmer achieved an average recovery rate (RR) of 21.5 gpm with a corresponding recovery efficiency of 97.4%. The actual test oil viscosity (determined at average recovered fluid test temperature of 36.3^0F) was 48 cPs.

The primary objective of this test was to determine if the fresh Bakken crude oil was recoverable using an oleophilic skimmer; a "go"- "no go" event. The oil was found to be recoverable albeit at a lower rate than the weathered oil. At 52 rpm in a 1-inch slick, the skimmer RR was 5.6 gpm. The skimmer performance data sheet is provided below and in the results section in this data summary binder.

BAKKEN CRUDE OIL RECOVERY TEST USING AN ELASTEC TDS 118G SKIMMER

Test #	Test Oil	Collection Time	Drum Spd	Depth Recovery Tank (initial)	Depth Recovery Tank (after decant)	Recovery Tank Fluid Volume (Gross)	Fluid Collect Rate	% BS&W Recovery Tank	Initial BS&W in Preload	Volume of Oil Collected to Recovery Tank	RE Oil Recovery Efficiency	RR Oil Recovery Rate
		(min)	(rpm)	(inches)	(inches)	(gal)	(gpm)	(%)	(%)	(gal)	(%)	(gpm)
1	Weathered Bakken Crude	3.01	58.0	12.00	12.00	69.96	23.24	2.80%	0.00%	68.00	97.20	22.59
2	Weathered Bakken Crude	3.60	58.0	12.75	12.75	74.33	20.65	2.40%	0.00%	72.55	97.60	20.15
Test 1 & 2 description -- stationary skimmer recovery test, rates determined while recovering a deminishing slick from 3 to 2 inches.												
3	Fresh Bakken Crude	3.11	52.0	3.00	3.00	17.49	5.62	0.00%	0.00%	17.49	100.00	5.62
Test 3 description -- stationary skimmer recovery test, rates determined while recovering a deminishing slick from 1 to 0.7 inches. Note RE was not quantified.												

Table 1. Oleophilic Skimmer Recovery Rates of Bakken Crude Oil

Although not a directly comparable recovery rate due to the difference in oil type and viscosity, the following information is offered. When testing as per the ASTM method using the same skimmer system and recovering an Ohmsett stock oil (comparable to a refined lube oil; approximate viscosity 180 cPs), the skimmer achieved an approximate 100 gpm RR.

Within this data binder and on the digital thumb drive included are supporting documentation and include the engineer daily test logs, laboratory analysis of oil and water properties, performance calculations, manually recorded logs, video, and still photos.

Pollution Incident QRC

POLLUTION INCIDENT

Case Title:	**Date/Time:**
Watchstander:	**MISLE:**
	CIC ☐ Time:

INITIAL INFORMATION COLLECTION – AWARENESS

Incident type:	**Location:**

REPORTING SOURCE INFORMATION

Name/Unit:	**Phone:**	**Address:**

VESSEL INVOLVED (Actual or Suspected Responsible Party, if different from R/S)

Vessel Name:		**Type:**
Flag:	**Reg/Doc#:**	**POB:**
Length:	**Color:**	**Make:**

LPOC:	**NPOC:**

RESPONSIBLE PARTY (Actual or Suspected Responsible Party, if different from R/S)

Full Name:	**DOB/Age:**	**Nationality:**
Address:	**Role:**	**Phone Number:**

ON SCENE WEATHER

VISIBILITY	WIND	SEA CONDITION		TEMPERATURE	
	Direction/ Speed	Height	Direction	Air	Water
SUNRISE/ SUNSET	**TIDAL CURRENT**	**NEXT TIDE**		**MISCELLANEOUS**	
	Direction/ Speed	High/ Low	Time/ height		

ACTUAL OR SUSPECTED SOURCE INFORMATION

HAS NRC BEEN NOTIFIED? IF NOT, REQUEST THAT RS OR RP NOTIFY NRC at 1-800-424-8802.

NRC #:	**UN ID Number:**
Cause of Incident:	**First Responders On-Scene: Y / N**
Source Type:	
Name of Spilled / Released Material:	
Actual Spilled / Released Amount:	**Total Potential Amount:**
Sheen Dimensions:	**Source Secured: Y / N**

Rate of Spill / Release: **Gallons per Minute / Hour / Day**	**Mitigation Actions in Progress: Y / N**

Affected Medium: ☐ **Air** ☐ **Water** ☐ **Land**

Name of Navigable Waterway Affected:

More than 3 NM Offshore: Y / N **River: Y / N** **River Mile Marker:**

Water Intake/outfall in Vicinity: Y / N

Aquaculture or Fisheries Area Contaminated: Y / N

VESSEL INFORMATION **Block N/A** ☐

Vessel Aground: Y / N	**Propulsion or Steering Disabled: Y / N**	**CG Inspected Vessel: Y / N**

All Types of Oil Onboard:	**Total Oil Capacity:**
Cargo Onboard:	**Total Cargo Capacity:**

Have Tanks Been Sounded: Y / N **If no, direct them to be sounded**

Last Port of Call:	**Next Port of Call:**

FACILITY INFORMATION **Block N/A** ☐

Name:	**Facility Representative:**
Address:	**Phone:**

Describe actions being taken by RP or First Responders to mitigate the spill or release:

Mystery Drum: Y / N **Drum Leaking: Y / N** **Note: DO NOT TOUCH MYSTERY DRUMS!**

Exact Particulars of Drum:

Plastic, Steel, Fiberboard **Condition** **Labels or Markings** **Dead Wildlife in Vicinity?**

INITIAL ACTIONS

_____ Determine On-Scene Coordinator Jurisdiction in accordance with Area Contingency Plan
☐ Coast Guard - Coastal ☐ EPA – Inland

_____ Issue Appropriate Broadcast (if applicable)

_____ Initiate CIC (if applicable)

_____ Ensure NRC is notified

_____ Collect and distribute information from all LE databases (if applicable)

_____ Make initial notifications IAW the briefing matrix

_____ Establish safety/security zone as appropriate

_____ Open MISLE case

PLANNING

_____ In accord with Duty PR, classify oil discharge as: **Inland:** ☐ **Minor** ☐ **Medium** ☐ **Major**
Coastal: ☐ **Minor** ☐ **Medium** ☐ **Major**

_____ Receive or develop response plan

_____ Review and update Command Center RM IAW GAR 2.0 worksheet, document in MISLE

_____ Make notifications IAW the briefing matrix

_____ Brief assets. Discuss mission objectives and risks/hazards identified using PEACE model

OPERATIONAL EXECUTION

_____ Dispatch appropriate asset (if applicable)

_____ Receive RM hazards and mitigation with Risk vs Gain from all assets

_____ Brief situation, response plan and RM IAW briefing matrix

_____ Actively monitor case, review/update RM as situation evolves

CONCLUSION

_____ Make notifications IAW briefing matrix

_____ Release all assets (if applicable)

POLICY/PROGRAM INFORMATION

References:

a. Coast Guard Marine Safety Manual, COMDTINST 16000.14 (series)
b. National Response Framework
c. 40 CFR part 300

Annex HH

Port Information

Delaware River & Bay

Oil Spill Advisory Committee

Report

2008-2010

Delaware River and Bay Oil Spill Advisory Committee Report

December 2010

This report is submitted by the Delaware River and Bay Oil Spill Advisory Committee (DRBOSAC) to the Commandant of the U.S. Coast Guard, the Governors of the States of New Jersey, Pennsylvania, and Delaware, the Committee on Commerce, Science, and Transportation of the U.S. Senate and the Committee on Transportation and Infrastructure of the U.S. House of Representatives as directed by the committee's charter dated October 1, 2007, and the revised charter dated December 2010.

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Acknowledgement

On behalf of the entire Committee, we are very pleased to submit the *Delaware River and Bay Oil Spill Advisory Committee Report, 2010*.

As a Committee we were charged to "provide advice, recommendations, and a ranking of priorities for measures to improve the prevention and response to future oil spills in the Delaware River and Delaware Bay" and to present a report detailing those recommendations and priorities to the Commandant of the U.S. Coast Guard, the Governors of the States of New Jersey, Pennsylvania, and Delaware, the U.S. Senate Committee on Commerce, Science, and Transportation, and the U.S. House of Representatives Committee on Transportation and Infrastructure. This report reflects the conclusions as agreed upon by the Committee members through majority vote.

On behalf of the entire Committee, we are thankful for the opportunity to support this effort. Over the past two years. Committee members have worked long and hard to conduct the extensive review and discussions that made this report possible. Committee members contributed countless hours researching, conferring and debating the issues, meeting tight deadlines, providing insight and education to one another, and unselfishly working to develop a consensus report. Thus, we would like to thank the Committee members who were active in this process for their outstanding professionalism, their knowledgeable and highly productive attitude, and their hard work to advance the state of spill prevention, response, and recovery in the Delaware River and Bay.

Additionally, special thanks goes to those members of the public, the governmental agencies, and the oil spill professionals and community who attended the meetings and contributed to subcommittee education sessions and discussions. Their efforts greatly assisted in the Committee's understanding of various topics.

It is also important to emphasize that this Committee and the report could not have been completed without the support of all U.S. Coast Guard Sector Delaware Bay personnel. CAPT Meredith Austin, CAPT David Scott, LCDR Nakeisha Hills and Mr. Gerald Conrad assisted throughout the entire process.

Thank you for the opportunity to assist in advancing oil spill prevention, response, and recovery in the Delaware River and Bay and for the chance to serve as the Chair and Vice Chair for such a remarkable group.

Sincerely,

CAPT Michael Linton, Chair

Edward T. Doyle, Jr., PhD, Vice Chair

Executive Summary - Delaware River and Bay Oil Spill Advisory Committee Report

The Delaware River is one of the highest volume oil ports in the United States and a critical environmental habitat. Therefore, minimizing disruptions in normal port operations and throughout the Delaware Valley estuary due to oil spills is a priority for the entire region. Since 1974 there have been 27 significant oil spill events on the Delaware River (significance being defined by the amount spilled, level of response, or the notoriety of the event). In ten of those events, more than 100,000 gallons of oil were spilled.

The Committee launched its efforts by developing an oil spill history for the River and Bay area, and members were somewhat surprised to discover how difficult it was to gather consistently accurate information on spills into the River or Bay. This was mostly due to the fact that there is no single depository of such information that is consistently managed and kept up to date. However, the history which members were able to piece together clearly shows that operational, vessel vetting, and vigilance issues, along with weather-related and navigational obstruction issues, have contributed to the occurrence these spills.

Overall, the Committee believes that many port stakeholders can within their scope of responsibility make individual process that will benefit the general spill prevention and response mission. The Committee's findings are detailed in the Recommendations section of this report. Although many of the recommendations will require congressional action, others can be handled by the local Area Committee, the States of Delaware, New Jersey, and Pennsylvania and the Mariners' Advisory Committee.

Congressional action will be needed for two main areas:

1) Legislation to allow the Captain of the Port greater authority for directing vessels in need of a place of refuge, and
2) Legislation to enable the Oil Pollution Liability Trust Fund or another mechanism to provide funding for the Area Committee to enhance its role and responsibilities in the prevention, preparedness, response, and recovery issues outlined in various recommendations.

There was much discussion of funding, and it is accurate to say the Committee would rather not mention money. However, it is a reality that must be addressed. Today, port security and counter terrorism issues command a lot of stakeholder attention, and rightfully so. But these issues also are accompanied by funding mechanisms to implement identified and needed prevention, response, and recovery measures. However, oil spill issues do not have a funding mechanism to help advance the identified preparedness needs, i.e., updating booming strategies, submerged oil research, periodic updates of Environmental Sensitivity Index (ESI) maps, establishing and

maintaining port-specific oil spill web sites, and maintaining a Geographic Information System (GIS) Spill Management Database.

Congressional funding also is needed to support the submerged and floating debris missions recommended for the port, to support Department of the Interior and National Oceanographic Atmospheric Administration (NOAA) updates to ESI mapping, to support reauthorization and maintenance of the Natural Resource Damage Assessment (NRDA) Type A computer models, and to increase the cap on damages that are recoverable after small spills to $1 million to reflect current restoration costs.

Area Committee action will be required for a variety of issues. The Area Committee is a standing Oil Pollution Act (OPA '90) group in Sector Delaware Bay whose primary role is preparedness and planning. The Area Committee is made up of various stakeholders including the States of Delaware, New Jersey, and Pennsylvania.

The DRBOSAC recommends enhancing the role of the Area Committee to encourage new active committee membership and funding of the committee for program development in the following areas:

- Submerged oil research, including both detection and recovery,
- Periodic updates of Environmental Sensitivity Index (ESI) maps,
- Establishing and maintaining national and port-specific oil spill web sites,
- A Geographic Information System (GIS) Spill Management Database,
- Protective and preventative booming strategies,
- Information gathering and identification of restoration needs projects,
- A spill of opportunity testing policy,
- Enhancement and maintenance of the Physical Oceanography Real-Time System (PORTS®),
- Collecting, housing, and maintaining oil spill information, and
- The use of volunteers during an oil spill.

The Area Committee, with proper funding and active leadership, can dramatically improve and/or provide the necessary guidance for improvements in these areas. Moreover, it can fill the gap that historically the industry-funded Delaware Bay and River Cooperative (DBRC) has provided, such as the booming of sensitive areas, revising booming locations, and developing booming strategies. With the recent closing of two local refineries and another's future reported to be in question, the DRBOSAC is uncomfortable that the industry co-op's funding in these areas will continue at an adequate level.

In addition, the Area Committee, with support from the states of Pennsylvania, New Jersey and Delaware, should prioritize the sensitive areas in the Area Contingency Plan and provide guidance for the capabilities and timeliness of response required.

State action should focus on reviewing the effectiveness and suitability of protective (pre-booming) of docked vessels and on strategies around pre-cleaning beaches and shoreline in order to minimize the amount of debris which could become contaminated in a spill area. These actions would reduce responder time, disposal needs, and cost in general.

The U.S. Coast Guard in consultation with the Area Committee, should look at the guidelines used for review of Facilities Response Plans required by 33 CFR Part 154. In addition, USCG Headquarters should strengthen the language of 33 CFR 155.1030 (h) so that the Tank Vessel Response Plans and the geographic appendices address the requirements of the Area Contingency Plans (ACP) for protecting fish and wildlife and sensitive environments.

The Mariners' Advisory Committee for the Bay and River Delaware (MAC) should spearhead discussions with the U.S. Army Corps of Engineers and USCG Sector Delaware Bay regarding reinforcing the responsibilities for reporting materials or equipment lost overboard or found during surveys and should evaluate the information exchange necessary among a much wider population of port users. It appears that the *Athos I* incident was caused by submerged debris which was unknown to several key parties. Routine information exchange among a much larger group of port users/mariners may significantly preclude incidents like this re-occurring. It would seem reasonable that the Mariners' Advisory Committee would want to be at the center of these discussions and to help find a process that will work for all parties involved.

Delaware River and Bay Oil Spill Advisory Committee – Overview

Purpose and Description of Duties

The DRBOSAC's Purpose

The purpose of the Delaware River and Bay Oil Spill Advisory Committee (DRBOSAC), as stated in its charter, is to "provide advice, recommendations, and a ranking of priorities for measures to improve the prevention and response to future oil spills in the Delaware River and Delaware Bay". Within 24 months of their appointment the members of the DRBOSAC are to present a report detailing those recommendations and priorities to the Commandant of the U.S. Coast Guard, the Governors of the States of New Jersey, Pennsylvania, and Delaware, the U.S. Senate Committee on Commerce, Science, and Transportation, and the U.S. House of Representatives Committee on Transportation and Infrastructure. This report will reflect only those conclusions as agreed upon by the Committee members through majority vote, and will not in any way be directed by the Coast Guard.

Overview of Membership

The DRBOSAC originally consisted of 27 voting members who have particular expertise, knowledge, and experience regarding the transportation, equipment, and techniques that are used to ship cargo and navigate vessels in the Delaware River and Delaware Bay, as well as those representing environmental and oil spill response organizations, fishing interests, academia, and the private sector. There are also five non-voting members who represent federal agencies and the state agencies of New Jersey, Pennsylvania, and Delaware that have an interest in oil spill prevention. The members of the DRBOSAC are appointed by the Commandant of the Coast Guard and approved by the Secretary of the U.S. Department of Homeland Security.

If, for any reason, a designated member is either unable to continue service on the Committee, or becomes a non-participant, the Commandant of the Coast Guard will appoint an alternate member to serve for the remainder of the absent member's term.

Membership on the DRBOSAC's subcommittee(s), if established, is open to the public; however, the chair of the subcommittee must be a current member of the DRBOSAC.

Meetings

The DRBOSAC is anticipated to meet in Philadelphia, PA, at least twice throughout the course its 18-month operational period with the first meeting being administrative in nature. The number of meetings held and the establishment of subcommittees are to be determined by the needs of the Committee.

Objectives and Scope

The DRBOSAC shall provide advice, recommendations and a ranking of priorities for measures to improve the prevention of and response to future oil spills in the Delaware River and Delaware Bay.

Method of Operation

The initial meeting of the Delaware River and Bay Oil Spill Advisory Committee took place on December 17, 2008. The meeting agenda included:

- A welcome and opening remarks from the then-Commanding Officer, Sector Delaware Bay, Captain David Scott,
- Introduction and swearing in of Committee members,
- Federal Advisory Committee Act and new member orientation by Mrs. Georgia Abraham, Committee Management Office, Department of Homeland Security,
- Special government employee recognition and certificates, Melanee Libby, USCG Headquarters,
- Chair and Vice-Chair elections,
- An oil spill response presentation,
- Establishment and purpose of subcommittees,
- Closing remarks.

The organizational meeting was lead by LCDR Sampson Stevens, LCDR Nakeisha Hills and Mr. Gerald Conrad, Sector Delaware Bay.

The Committee elected Captain Michael Linton, President of the Pilots Association of the Bay & River Delaware as Chair and Edward T. Doyle, Jr. PhD, Chair of Delaware County Local Emergency Planning Committee as Vice-Chair.

The Committee originally agreed to tentatively meet on a bi-monthly basis. The meeting schedule was adjusted in May 2009 to add an additional Committee meeting for September 2009 to accommodate a field trip to Lewes, DE, to board the Delaware Bay and River Cooperative (DBRC) vessel, *DELRIVER,* for an equipment and capabilities demonstration. All meetings were held at Sector Delaware Bay, the John Heinz Wildlife Refuge or the Marcus Hook, PA, Community Center. The schedule is immediately following.

Meeting Schedule 2008
December 17, 2008

Meeting Schedule 2009
Wednesday, January 21
Wednesday, March 18
Wednesday, May 20
Wednesday, June 17
Wednesday, August 19
Wednesday, September 9
Wednesday, October 21
Wednesday, November 18

Meeting Schedule 2010

Wednesday, January 20
Wednesday, February 17
Wednesday, March 17
Wednesday, April 7
Wednesday, April 28
Thursday, December 16

Typical Committee meetings were two or three hours in length generally beginning at 10:00 am and completing by 1:00 pm. Meeting agendas were posted on the Coast Guard web site Homeport and/or sent to members and non-members by email. Typically, an agenda included:

- Administrative items and updates
- Guest speakers or Informational Presentations
- Subcommittee Reports
- General Items for Discussion
- Public Comments

Meetings were open to the public and the public was given an opportunity during meetings to comment or make a request to make a presentation to the Committee or a subcommittee. In addition, some other public persons were asked to take part in subcommittee meetings because of their request to do so or because of their particular expertise, background, or knowledge that could benefit the subcommittee. These individuals were not part of the voting membership of the Committee or subcommittee and were strictly information resources.

Committee Membership

Vignuli, Frank	voting	Director Operations, Diamond State Port Corporation
Balzano, Joseph	voting	Executive Director, South Jersey Port Corporation
Walsh, James	voting	Director Operations, Philadelphia Regional Port Authority
Iuliucci, Fredrick	voting	General Manager , The Vane Brothers Co.
Gazzola, John, CAPT	voting	Vice-President, General Manager, Moran Towing of PA
Schuck, Gregory	voting	Chester Port Manager, Independent Container Line
Merbach, Kurt	voting	Safety Manager , Valero Refining Co.
Kelly, William	voting	Fire & Emergency Manager, Sunoco NE Refineries
Linton, Michael, CAPT	voting	President, Pilots Association of Bay & River Delaware, DRBOSAC Chair
Cuff, John, CAPT	voting	River Pilot, Pilots Association of Bay & River Delaware

Butler, Boise	voting	President, International Longshoreman's Association, Local 1291
Flimlin, George	voting	Marine Extension Agent, East Coast Grower's Association
Van Rossum, Maya	voting	Executive Director, The Delaware River Keeper Network
Maxwell-Doyle, Martha	voting	Deputy Director, Barnegat Bay National Estuary Program
VanDusen, William	voting	Manager, Merck & Co. (Representing Recreational Fishing Alliance)
Bushek, David, Dr.	voting	Asst. Professor., Rutgers Institute of Marine and Coastal Sciences, Haskin Shellfish Research Lab
Kreeger, Danielle, Dr.	voting	Asst. Professor, Biosciences and Biotechnology, Drexel University
Mosley, James	voting	Director of Public Safety, City of Wilmington, DE
O'Neal, Marilyn	voting	Interim Chair Sussex County, DE. Local Emergency Planning Committee
Clark, Leonard	voting	Deputy County Emergency Management Coordinator, Gloucester County, NJ
Barber, Vince	voting	Sr. Environmental Specialist, Hazardous Substance, Camden County, NJ, Department of Health
Doyle, Edward, Dr.	voting	Chair, Delaware County, PA, Local Emergency Planning Council, DRBOSAC Vice-Chair
Johnson, Eugene	voting	President, Delaware Bay and River Cooperative
Roales, Judith	voting	Retired Journalist (Representing General Public)
Mulvenna, Kathleen	non-voting	Emergency Manager, U.S. Army Corps. of Engineers, Philadelphia
Anderson Sr., Bennett	non-voting	Watershed Assessment Branch, Division of Water Resource, DE Department of Natural Resources and Environmental Control
Bauer, Robert	non-voting	Water Quality Spec. Supervisor, PA Department of Environmental Protection
Levine, Edward	non-voting	Scientific Support Coordinator, NOAA, Office of Response
Van Fossen, Robert	non-voting	Assistant Director Emergency Management, NJ Department of Environmental Protection

Yagecic, John	non-voting	Supervisor, Delaware River Basin Commission, Standard Assessment Section

Subcommittees

At the inaugural meeting Committee members were asked to sign up for a specific subcommittee assignment. Although all Committee members were allowed to attend and participate in multiple subcommittees, initial assignments were needed to ensure a mixture of expertise, interest, and discussion of possible concerns and issues. All Committee members volunteered for a primary subcommittee assignment, and some opted to sign on to other subcommittees because of interest or to monitor other subcommittee work and discussions.

Originally, the Committee established four subcommittees – Prevention, Response, Recovery, and Mitigation. Each subcommittee established a lead person and a mission statement for its work which followed general guidance provided by the Committee:

Prevention Subcommittee
This subcommittee will cover topics relative to planning for and prevention of oil spills to the Delaware River and Bay including but not limited to Port Community preparedness, planning activities, response plan fitness and area of coverage, navigation, OPA 90 requirements, new technologies, governmental/industry commitment, and port management issues along with the encouraging aspects of prevention activities.

Response Subcommittee
This subcommittee will cover topics related to the initial response to any and all oil spills in the Delaware River and Bay including but not limited to response capabilities, equipment inventories, equipment availability and fitness, regional support, volunteer issues and solutions, coverage of Average Most Probable Discharge (AMPD), crude oil typing and tracking, safety, and the positive aspects of response within the Sector along with potential recommendations.

Recovery Subcommittee
This subcommittee will cover topics related to the ability to recover from a spill to the Delaware River and Bay, including but not limited to application of advanced technologies, an inventory of recovery issues, preparation and research relative to recovery planning, recommendations for planning strategies, funding recommendations for recovery planning, plan implementation, and securing needed resources.

Mitigation Subcommittee
This subcommittee will cover topics related to the ability among Delaware River and Bay stakeholders to mitigate or lessen the impact of an oil spill on the environment, the area economy, and the area in general, including but not limited to the safe refuge for a stricken vessel, waterway management, new technologies, state and other governmental agency and responsible party activities, salvage, wildlife rehabilitation, special operations, and booming strategies.

After initial subcommittee meetings it became apparent that the Recovery and Mitigation subcommittees were following similar paths and had interest in similar issues so it was

decided at the March 2009 meeting to merge the subcommittees into one – the Mitigation-Recovery Subcommittee.

Report Timeline

As stated earlier, the Delaware River and Bay Oil Spill Advisory Committee (DRBOSAC) originally was chartered in October 2007; however, it was November 2007 before the Federal Register Notice establishing the DRBOSAC and requesting members was published. Solicitation for members ended in late January 2008 with more than sixty people willing to serve. The Commandant of the Coast Guard completed vetting and appointing 27 voting and six non-voting members in October 2008, and the first meeting was held on December 17, 2008, more than a year into the 18-month timeframe provided in the charter.

Although the window for work was greatly reduced, the committee worked diligently to review and discuss the issues surrounding oil spills in the Delaware River and Bay. To further complicate the Committee's efforts, in October 2009 official work was suspended because the DRBOSAC's charter expired. The new charter had to be reviewed and renewed by the new administration. However, to the credit of all Committee members, the subcommittees continued their work. Although Committee efforts were hampered by long governmental administrative delays, the Committee completed its work as outlined in both the original and subsequent charters.

The Committee conducted its final meeting on Thursday, December 16, 2010, at Sector Delaware Bay. All Committee members were notified of the meeting and 17 voting members were present representing a quorum of the 24 voting members who were still members of the Committee. The final vote was unanimous to accept the final report with minor changes to emphasize funding for oil spill preparation, response, planning and mitigation efforts in the Delaware River and Bay and to outline the reason for the report being completed in December 2010 rather than within the18 months of the original charter.

Committee Charters

As discussed in the previous paragraphs, delays in start up of the Committee and the charge of administrations resulted in two charters for the Delaware River and Bay Oil Spill Advisory Committee. Both the October 2007 and the December 2010 charters are found in Appendix A
.

Delaware River and Bay Oil Spill Advisory Committee: Recommendations

Lessons Learned - Oil Spill History (R-1)

Recommendation: Information relative to oil spills should be housed with the Area Committee. This information should be kept current and include lessons learned.

Since 1974 there have been 27 significant oil spill events on the Delaware River (significance being defined by the amount spilled, level of response, or the notoriety of the event). Ten of those exceeded 100,000 gallons of oil spilled. A matrix of these spills in included as an appendix to this report.

The Delaware River is a high volume oil port. However, in attempting to develop an oil spill history for the river and bay area, the Committee was somewhat surprised to discover how difficult it was to gather consistently accurate information on spills to the river or bay. The difficulty was due primarily to the fact that there is no single depository of such information.[1]

The Committee utilized the information gathered to reflect on the varying causes of spills, to establish a point of reference on the occurrence and magnitude of spills, and to determine if there were common causes or contributing factors.

The following list demonstrates the types of information gathered:
January 1975: The *Corinthos*, a 754-foot crude oil tanker was offloading 315,000 barrels of Algerian crude oil at the BP Refinery terminal at Marcus Hook, PA, when it was struck by the *Edgar M. Queeny* which was maneuvering away from the dock at the Monsanto Chemical Plant across the river. An explosion and fire resulted and twenty six persons aboard the *Corinthos* lost their lives. Inspections of the *Queeny* for four years before the incident had shown that the stern engine had a damaged turbine and was only able to drive the ship at 50% of its rated power.

March 1986: The *Intermar Alliance*, a crude oil tanker carrying some 500,000 barrels of Ninian crude, lost steerage while striking the dock at the BP refinery in Marcus Hook. The vessel's #1 port tank sustained a 30-foot-long gash, spilling 189,000 gallons of oil into the river.

November 1989: The Chevron *World Radiance* was transferring oil at the Chevron Hog Island facility when severe weather struck. Shortly after the vessel began transfer operations, the National Weather Service had issued a Severe Thunderstorm Warning for the area. Winds of 40 knots were experienced, and the *World Radiance's* mooring lines failed; the vessel was pushed away from the pier; and 4,200 gallons of oil spilled into the river.

[1] Since the time when the DRBOSAC held their initial meetings, the Coast Guard posted on its HomePort Website an Oil Spill Compendium. The Compendium contains pollution related data and graphics from 1969 to 2008. See http://homeport.uscg.mil> Investigations – Marine Casualty/Pollution Investigations – Oil Spill Compendium 1969 to 2008.

July 1995: 56,000 gallons of West African Rabbi crude oil spilled into the river when the tanker *Jahre Spray* ruptured a transfer hose and manifold due to strong winds during transfer operations at the Coastal Oil Eagle Point terminal on the river at West Deptford, NJ.

November 26, 2004: The *Athos I*, coming into port, struck three submerged objects. As a result 265,000 gallons of heavy crude oil were released into the Delaware River affecting 115 miles of river and 280 miles of shoreline as well as fish, shellfish, and wildlife, including an estimated 16,500 birds. On January 20, 2006, the U.S. Coast Guard released its report on the *Athos I* oil spill. The report titled "Investigation into the Striking of Submerged Objects by the Tank Vessel *Athos I* in the Delaware River on November 26, 2004, with a Major Discharge of Oil" found, among other things:

- *"If Athos I had a double-bottom in place, the marine casualty would probably still have occurred, but it is very probable that the cargo tanks would not have been penetrated, thus avoiding a major oil spill. Evidence indicates the anchor penetrated the bottom of the hull on the Athos I a maximum of 18". The minimum void space in a double bottom as required under OPA 90 for a vessel of this design would have been 6'."*
- *"During the past year, 38 vessels had drafts greater than 35' (Athos I's draft was 36.5'). Investigators then compared the time of arrival with regards to the tidal stage (1 ½ hrs past slack tide with a flood current) for the Athos I to the other vessels and found that all other 38 (sic) vessels had arrived at a later tidal stage."*

Clearly, operational, vessel vetting, and vigilance issues, along with weather-related and navigational obstruction issues, have contributed to the circumstances surrounding spills in the river and bay. The Area Committee and the Maritime Advisory Committee should review and make recommendations relative to transit issues—requirements for when to transit and the circumstance for transit, weather advisories, and mariner notifications. Among the questions that should be addressed are the following:

- How are vessels/mariners advised of potential adverse weather conditions that should cause operations to cease?
- What effect does speed of a passing ship and its suction/surge have on tankers moored alongside docks?
- What are the basic guidelines for vessel vetting?
- Who should lead an outreach effort to restate the rules and requirements for mariners regarding notifying the USCG of navigational hazards?

Place of Refuge (R-2)

Recommendation: Congress should consider legislation that would give the Captain of the Port greater authority for directing vessels in need of a place of refuge. The Sector Delaware Bay Area and Maritime Committees jointly should develop a Place of Refuge Guide for the Sector Delaware Bay Area. Funding for technical assistance should be provided for this effort. The local port authorities and waterfront facilities must be part of this effort, and ideally could identify and maintain a facility as a Place of Refuge in the Port.

A place of refuge is a location to which a vessel needing assistance can be moved temporarily and where actions then can be taken to stabilize the vessel in order to protect human life, sensitive natural and cultural resources, historic properties, national defense, security, economic interests, and critical infrastructure, and to reduce or eliminate a hazard to navigation. For example, a place of refuge could be used during an actual release or threatened release of oil or hazardous material from a tank vessel. It could also be used for any vessel as the result of a threatened or actual terrorist attack.

There is no simple solution to bringing a stricken vessel into port. However, there are tools available from the Commandant of the Coast Guard, the National Response Team, and the International Maritime Organization that can be used by decision makers to deal with safe refuge requests. The Port of Houston/Galveston has developed a comprehensive Harbor of Refuge Plan that could be used as a template for any port.

There are two safe refuge circumstances that the Response Subcommittee considered. The first is when the vessel in need of assistance may be destined for some other port but requests safe refuge within Sector Delaware Bay's Area of Responsibility (AOR). The second circumstance is when a vessel traveling to or from a port on the Delaware River encounters a problem that requires actions to be taken to stabilize the vessel. In these circumstances, the Captain of the Port (COTP) has the authority to order vessels into and out of port or to an anchorage. However, the COTP does not have the authority to order a waterfront facility to accept a stricken vessel. This limits the options for the COTP. Additionally, there is no waterfront facility within the port that is "set aside" and designated as a "place of refuge facility" that will accept a stricken vessel. All available waterfront facilities are conducting business, and a stricken vessel moored to any of the facilities would disrupt that facility's operations. The issue of place of refuge is one that concerns the entire port community (federal, state, and local governments, port administrations, and private industry), not just the COTP.

There are several actions that should be pursued in addressing the place of refuge problem:

- Congress should pass legislation to give the Captain of the Port authority to direct a vessel to a waterfront facility which would work in coordination with state agencies when public safety or resources are threatened. The legislation should include at least the following:

  - Compensation to the facility for use by the vessel,
  - Responder immunity from claims brought by third parties and the vessel for losses allegedly caused by the facility during the vessel's usage,
  - A dedicated source of funding to provide the required compensation, and
  - An administrative process to promptly adjudicated claims for compensation.

- Request funding for a "Places of Refuge Guide for the Sector Delaware Bay Area". This guide should use the "Harbors of Safe Refuge Guide for the Houston-Galveston Area" as a model and should be developed with broad public participation of Delaware Bay area communities as well as all state and federal agencies with responsibilities for public safety and resources. Both the Sector Delaware Bay Area Committee and Maritime Security Committee need to be involved in this effort and will require strong leadership from the COTP.

- Recommend that local port authorities and waterfront facilities work together to identify and maintain a facility -- not located within sensitive habitats -- that is continuously available as a place of refuge facility.

- Pre-identify and establish a core group of personnel who will complete the Places of Refuge Risk Assessment Job Aid within Commandant Instruction 16451.9. This group can be modeled after the Maritime Transportation System Recovery Unit.

Enhance the Role and Responsibilities of the Area Committee and Provide the Committee with Funding for Oil Spill Prevention, Response, and Recovery Programs (R-3)

Recommendation: Consider enhancing the role of the Area Committee and expanding membership in the Area Committee to include all facets of the port community, and provide a funding mechanism through the Oil Pollution Liability Trust Fund to enable the Area Committee to enhance prevention, response, and recovery programs and activities.

Sector Delaware Bay is susceptible to oil spills as outlined in the Committee's spill history research (recommendation R-1). The Sector, however, does enjoy a cooperative environment among local industry including six major refineries, response organizations such as Delaware Bay and River Cooperative (DBRC) and Tri-state Bird Rescue and Research, experienced and professional mariners such as the Pilots Association of the Bay & River Delaware, state environmental agencies from the three states, and watch groups such as the Delaware River Keepers. This provides a positive climate for spill prevention and response.

The Committee wrestled with many of the issues that lead to the various recommendations. But the most difficult is the issue of funding of recommendations and future work to enhance spill prevention, response, and recovery. Funding seems to be the common thread in many issues the Committee reviewed. Too many times the Committee debated points and worked to consensus only to find that funding is the basis of moving forward to resolve the issues. It would be irresponsible to say "Here is the issue and here is the solution; let's move forward," without discussing cost and funding concerns.

The Committee recommends that the Area Committee should work with its membership to identify projects that are needed to enhance oil spill prevention and response. For example, the area Environmental Sensitivity Index (ESI) mapping should be updated. The Area Committee, with proper funding and continued COTP leadership, should designate the updating criteria and upgrading cycle for ESI maps and fund the project accordingly. Another example is booming strategies. Historically, the DBRC, using industry funding, has researched the booming of sensitive areas, reviewed and revised booming locations, and updated booming strategies along the Delaware River and Bay. However, the recent closing of two local refineries – and the future of a third in question -- calls into doubt the availability of funding for these activities in the future.

In the years since September 11, 2001, funding for security issues relative to the Sector and in ports across the nation has increased immensely. Likewise, oil spill prevention, response, and recovery should be funded appropriately. The Committee recommends funding through the National Oil Spill Liability Trust Fund. This trust fund is a mechanism which already exists, which is dedicated, in part, to research and development, and which has been used for oil spill prevention, response, and recovery projects in other areas of the country.

The Committee has found many issues relative to oil spills that could be resolved with adequate funding and leadership. The regional port community as a whole has worked well together to

foster prevention, response, and recovery ideas and methodologies. The Committee also found an attitude of wanting to foster a proactive oil spill response environment among its members. The Committee feels this environment can be accomplished by enhancing the role of the Area Committee, working to encourage new active committee membership, and funding the committee for program development in the areas of submerged oil research, periodic updates of ESI maps for all coastal areas, establishing and maintaining national and port-specific oil spill web sites, developing a Geographic Information System (GIS) for oil spill response including protective and preventative booming schemes, and enhancing and the Physical Oceanography Real-Time System (PORTS®).

Levels of Communication/Communication Operating Procedure (R-4)

Recommendation: Provide for an enhanced communication to mariners relative to navigational hazards and reiterate to mariners their role and responsibility to report material and equipment lost overboard.

Questions were raised during discussions about the level and types of notification to mariners regarding navigational hazards. Discussion involved the various means and the federal agencies mariners would look to for navigational information. The obvious two agencies are the U.S. Coast Guard and the U.S. Army Corps of Engineers (USACE), with the communication of navigational hazards being the responsibility of the USCG. Today, more and more methods of communication are available to facilitate the exchange of information between individuals and organizations. These methods should be explored and communication procedures updated accordingly.

Currently, the U.S. Army Corps of Engineers, Philadelphia District, maintains and updates a website which provides the latest surveys of navigation channels. This is a public access website (http://www.nap.usace.army.mil/channel/index.htm) that allows anyone to view and download the latest channel exams. The District should evaluate the practicality of adding a channel survey schedule to the website to further inform the public of upcoming or proposed surveys. The website should be more user friendly for public use; for example, channel surveys should be named for ease of access.

With regard to communication of navigation hazards to the public, as stated above, ER1130-2-520, NAVIGATION AND DREDGING OPERATIONS AND MAINTENANCE POLICIES, 29 Nov 96, Paragraph 5.c. specifically addresses the public notification responsibility and states "The Coast Guard has authority to disseminate and maintain navigation safety information pertaining to obstructions and is the lead agency responsible for this type of information." The USCG will issue Marine Safety Information Bulletins (MSIB) when a hazardous navigation situation exists, and they will rescind/update that MSIB when conditions have changed. USACE will support the USCG, whenever possible within the constraints of authority and vessel availability, with supporting data to determine the nature and extent of the navigation hazard.

The USCG is the correct federal agency to communicate Marine Safety Information. Having a single federal agency responsible for communicating navigation hazards and restrictions to the public prevents the distribution of incorrect or differing information. The maritime community should be aware that the USCG is the single source for the status of navigation safety and restrictions. The USACE Philadelphia District information is viewed as providing a supplemental source of channel condition data via its website and the latest channel exams.

Another part of this issue concerns the amount of knowledge mariners have regarding their responsibilities to notify the USCG of materials or equipment lost overboard. It would seem, as a result of the *Athos I* incident, where submerged debris was a prime contributor to a major spill, that mariners may not know or understand their responsibility or the consequences of not

reporting materials or equipment lost overboard. It would seem prudent that the Mariners' Advisory Committee consider an outreach program to reiterate to mariners their responsibility to report, the consequences for not reporting, and the potential navigational impacts of unreported debris.

Debris Removal Program (R-5)

Recommendation: All efforts should be made to enhance detection of submerged objects and to strengthen lines of communication to mariners regarding hazards to navigation.

There was much discussion regarding submerged objects, floating debris, and communication of navigational hazards to mariners, especially since the 2004 *Athos I* incident was reported to have been caused by a submerged object in the vicinity of the ship's docking area.

Submerged objects in the channel or in the vicinity of the channel are hazards or potential hazards to navigation conflicting with the potential safe passage of all vessels including crude oil tankers. Through discussion, the Committee recognized that there are three requirements for a successful submerged debris program:

- Those responsible must report lost or sunken objects such as vessel equipment or cargo lost overboard;
- Channels and anchorage areas must be surveyed for submerged objects that pose a hazard to navigation (which is the mission of the U.S. Army Corps of Engineers); and USACE should communicate the information with other maritime stakeholders;
- Commercial dock operations, including marine transfer facilities, must communicate berth conditions, including draft, to vessels.

ER1130-2-520, NAVIGATION AND DREDGING OPERATIONS AND MAINTENANCE POLICIES, 29 Nov 96, specifically addresses the procedures and authorities of the U.S. Coast Guard and the U.S. Army Corps of Engineers (USACE) with regard to submerged obstruction in the navigation channel. Appendix B of that document is a signed Memorandum of Agreement (MOA) between USCG and USACE that defines how hazards to navigation are determined and the action that should take place to deal with them. Paragraph 5 of the MOA explains the required actions, including assessment of the impact to navigation.

The USACE Philadelphia District generally surveys all active navigation channels at least twice annually. Some areas that experience higher than average shoaling rates are surveyed more frequently. Additionally, the District will survey areas upon request of the USCG or port users if there is a suspected issue with regard to navigation safety.

Following the *Athos I* spill, the USACE Philadelphia District did perform a target obstruction survey of the Delaware River which identified hundreds of "hits" on the river bottom; however, none of these was within channel limits. Obstructions outside of the federal navigation channel limits pose a limited threat to safe navigation. To address submerged debris hazards outside the federal navigation channel limits (such as in private berthing areas), the DRBOSAC recommends that Congress fund a competitive grant program for submerged debris identification, prioritization, and removal. Such a program would enhance port community efforts to ensure safe berthing areas.

Although there are numerous submerged objects throughout the Delaware River, the USACE and the USCG currently have no authority or responsibility to remove or report them unless the objects are impacting the federal navigation channels or anchorages or creating a pollution threat. As demonstrated during the *Athos I* spill, however, objects adjacent to or below the plane of the federal navigation channel and anchorages could pose an increased risk during certain navigational or operational conditions. The Mariners' Advisory Committee or the Local Area Committee should be tasked with investigating whether an expanded submerged debris removal mission and capabilities would reduce the risk of spills caused by ships striking submerged debris. The MOA should be reviewed to ensure there is proper procedure for the reporting of potential navigational hazards and that such hazards are documented and charted, that action is taken, and that reports to mariners are accomplished in an efficient and timely manner.

Another issue that should be addressed is the importance of commercial dock operators, including marine transfer facilities, establishing safe berth guidelines and communicating those guidelines to vessels that call on them. In addition, operators should be required to periodically survey their berths as appropriate and communicate findings to vessels in a timely manner to ensure that ships come up the river at the appropriate draft.

Update NOAA Environmental Sensitivity Index Maps (R-6)

Recommendation: Update the 1996 edition of the Delaware Bay Environmental Sensitivity Index (ESI) maps and provide funding for this update and periodic updates of all coastal regions in the future.

The current edition of the Delaware Bay ESI Maps was produced in 1996. It is out of date and new environmental data and information should be incorporated. Data supporting the 1996 edition predated advanced Geographic Information System (GIS) capabilities now utilized by the natural resource agencies at the state and federal level, by non-governmental organizations, and academia.

The ESI maps are used by responders during the time of an oil spill incident to identify and assign protection and mitigation priorities. Watershed-based local industries likewise utilize Environmental Sensitivity Index (ESI) maps to identify required resource protection priorities and strategies during planning, drills, and real incident response. ESI maps are used as the basis for identifying sensitive areas for inclusion in the Area Contingency Plan (ACP) and as a further basis for completing the Sensitive Area Sheets contained within the ACP.

Since their creation, ESI maps have evolved and the version produced for the Delaware Bay no longer reflects the state of the art. Additionally, the current version does not contain up-to-date capabilities such as digital geo-referenced aerial photography produced by NOAA.

In view of the outdated nature of the existing edition of the ESI maps, it is imperative to update the maps to the current level of environmental natural resource data and information in order to adequately protect the natural resources of the Delaware River and Bay and the Atlantic Ocean Area of Responsibility for the USCG Sector Delaware Bay. With the development of a GIS Spill Management Database, the ESI mapping database should become an integral component of the ACP.

There should also be a national requirement that all ESI maps be updated on a regular and ongoing basis. The DRBOSAC recommends that updates be produced not more than every ten years, to ensure the accuracy of the maps and their ability to provide maximum response assistance and value. Congress should provide funding to NOAA to carry out the updating and to fund states and other federal agency participation.

Development and Maintenance of Area Protection and Countermeasure Plans (R-7)

Recommendation: The Sector Delaware Bay Area Committee should assume control of the existing protective booming plans and develop additional countermeasure plans for the entire Sector area. With the development of a Geographic Information System Spill Management Database, Protection Strategies and Countermeasure Plans should become an integral component of the Area Contingency Plan. Dedicated funding for the development of plans, testing of plans, and maintenance of plans must be provided. This same type of planning and testing should be provided nationally for all area plans.

Starting in the mid-1970s, the Delaware Bay and River Cooperative (DBRC) began developing protective booming plans for openings to wetlands along the Delaware River in the Philadelphia area where DBRC member refineries are located. This effort continued through 1990 when 16 plans had been developed and equipment to implement the plans had been procured and stored at member facilities. During this time frame the protective booming plans were tested and refined and used during spill responses. In 1992, DBRC contracted to have booming plans developed for all openings into wetlands of the Delaware River and Bay from the Betsy Ross Bridge in northern Philadelphia to the mouth of the bay. In 1993, DBRC contracted the preparation of an appendix to DBRC's response plan that contained all known environmental data (Environmental Sensitivity Index Maps, member company-specific information, and any other available information) and the protective booming plans into a single document which all member companies could reference to satisfy the OPA 90 regulatory requirements. Copies were provided to the states of Delaware, New Jersey, and Pennsylvania, the USCG Marine Safety Office Philadelphia, and the Environmental Protection Agency. The annex was four inches thick, printed in color, and weighed ten pounds. It could not be incorporated into the Area Contingency Plan (ACP) because of the cost to reproduce -- $350 per copy!

In 2000, DBRC contracted the conversion of the paper annex to electronic format in PDF documents, and copies were given to all who had the paper copies and to nonmembers of DBRC who requested them. Between 2000 and 2006, DBRC worked with New Jersey and Pennsylvania to develop plans for Delaware River openings into wetlands from the Betsy Ross Bridge to Trenton, NJ, which is the upper end of navigable waters. DBRC also worked with New Jersey to transform paper plans for ocean inlets into electronic format. In 2006, when the ACP was converted to electronic format, the protective booming plans were included.

DBRC continues to maintain the master plans and reviews the plans after every deployment. Major changes to the plans also were made based on lessons learned after the *Athos I* spill. The booming plans are now in a Geographic Information System (GIS) database, which DBRC has provided to the Coast Guard, the states, and member companies.

While DBRC has historically developed, maintained, and exercised the protective booming plans, it is a voluntary activity. The recent closing of two refineries in the Delaware Valley indicates that the industry may be going through significant changes, and DBRC may not be able

to fund such efforts in the future. The Area Committee should assume control of protective booming plans using the DBRC-provided GIS software. If a GIS system is developed for the Sector (recommendation R-10), the booming plans should become part of that system and should be supported and maintained by contracted resources.

The protective booming plans for openings to wetlands along the Delaware River and Bay are an important component of the oil spill response plan, but there is also a need for other countermeasure plans for resources at risk in the river, bay and ocean. The Area Committee should address this need. The Ecological Risk Assessment of lower Delaware Bay performed in 2006 as part of a consensus workshop sponsored by the Sector Delaware Bay Area Committee was the type of systematic approach that needs to be used throughout the area. The report of this workshop can be found at www.ecosystem-management.net/c/7/project-reports/. Such work will require a long-term effort.

Funding from the Oil Spill Liability Trust Fund should be dedicated to accomplish these long-term efforts to develop countermeasures as well as to maintain and exercise all protective plans.

New Recovery and Treatment Technology (R-8)

Recommendation: Funding should be allocated for additional research into new treatment technologies such as chemical agents for dispersants, surface washing, bioremediation, surface collecting, and miscellaneous oil spill control agents in fresh water as final clean up techniques for future oil spills within the Delaware River. The Area Committee should develop a section for chemical agents in the Area Contingency Plan.

During oil spill cleanup, mechanical techniques are used to remove most of the oil at a shoreline. However, such techniques leave behind small quantities of residual oil. This remaining oil still may be biologically available and may continue to cause damage to the environment, so it needs to be removed, and bioremediation may be the appropriate tool.

The use of various chemical agents can be an effective cleanup option. However, the chemical agents currently on the National Contingency Plan (NCP) Product Schedule (40CFR § 300.900 Subpart J—Use of Dispersants and Other Chemicals) have not undergone testing that provides sufficient information on their efficacy in fresh water and varying temperatures.

Under 40 CFR § 300.910 (a) (Authorization of use*) "…the Area Committees shall address, as part of their planning activities, the desirability of using appropriate dispersants, surface washing agents, surface collecting agents, bioremediation agents, or miscellaneous oil spill control agents listed on the NCP Product Schedule. ACPs shall, as appropriate, include applicable preauthorization plans and address the specific contexts in which such products should and should not be used. In meeting the provisions of this paragraph, preauthorization plans may address factors such as the potential sources and types of oil that might be spilled, the existence and location of environmentally sensitive resources that might be impacted by spilled oil, available product and storage locations, available equipment and adequately trained operators, and the available means to monitor product application and effectiveness."*

Based on these requirements, the Area Committee should:

- Research and catalogue the types of petroleum products that transit through the Delaware Bay and River, and
- Develop additional testing protocol for the Swirling Flask effectiveness test methods (described in appendix C to CFR § 300) to require using the types of oil that might be spilled in the Area, fresh water, and varying water temperatures.

After completion of the cataloging, the following tasks should be completed:

- Notification of the chemical manufactures on the NCP Product Schedule about the preauthorization plans and additional testing protocol for the Swirling Flask effectiveness test methods,
- Evaluation of the various petroleum products to determine which products are amenable to bioremediation,

- Determination of the different types of shorelines present throughout Delaware Bay and River and evaluation of which shoreline types would be amenable to bioremediation,
- Evaluation of the shorelines amenable to bioremediation and determination of what nutrients or biological conditions are needed to increase the natural attenuation rate of the petroleum products through bioremediation,
- Establishment of protocol for testing various chemicals during a spill of opportunity.

Without this research it is unknown which biologically-available petroleum products could be further removed after the completion of traditional mechanical removal techniques, thereby further reducing the overall impact to the environment.

Modernize and Update the Natural Resource Damage Assessment Type A Model Used for Small Spills (R-9)

Recommendations: Congress should reauthorize and provide funding to the Department of the Interior and NOAA for updating the Natural Resource Damage Assessment Type A computer models to reflect advances in computer modeling, in the effects of contaminants on the eventual return of natural and social resources to their pre-spill baseline conditions, and in current restoration procedures. Congress also should increase the damage cap from $100,000 to $1 million to realistically reflect today's restoration costs for small, but high value, habitats.

The Natural Resource Damage Assessment (NRDA) is the process by which Trustees of the resource management agencies document injuries and losses and determine damages when oil or hazardous material spills harm natural resources. Certain categories of parties responsible for a release or discharge, known as "responsible parties" (RPs), are liable for natural resource damages if the release or discharge results in injury to natural resources. Natural resources include land, fish, wildlife, plants, air, and water which the Trustees manage on behalf of the public.

Trustees must use the recovered damages to fund restoration, rehabilitation, or replacement of injured natural resources, or acquisition of equivalent natural resources. These actions, often referred to collectively as "restoration," are principally designed to return injured resources to baseline (i.e., the primary condition that would have existed if the release or discharge had not occurred). Compensatory restoration also can compensate for the public's interim loss of injured resources or services during the time period from the onset of injury until baseline is restored.

The NRDA Type A computer model procedure was designed for minor spills in coastal or marine areas and incorporates the Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME). Users supply limited data, such as basic physical environmental conditions and the amount, location, and duration of the spill; then the NRDAM/CME model computes the physical fate of the spilled substance and estimates acute lethal effects (injury). The model then estimates and sums the cost (damage) of restoring to baseline pre-spill conditions and the value of certain lost interim public uses and services, such as hunting, fishing, bird watching, and beach visitation.

The existing Type A NRDA/CME model was last updated very early in 2000 and runs on the Windows 95 operating platform which is now completely out of date and not available to run this Type A model. The only alternative is the Type B model which entails assessing and calculating injury and damages in a labor-intensive and time-consuming process. This generally requires hiring specialized contractors and using massive amounts of resource agencies' staff time in compiling the required restoration plan and in its implementation. For small spills, this process is an unnecessary burden on both Trustee agencies and Responsible Parties.

Also, because Type A procedures are intended for minor spills, the regulations currently place a $100,000 cap on their use if Trustees intend to obtain a rebuttable presumption. In addition to the outdated operating platform, this $100,000 cap on restoration costs also is outdated. Under today's standards, that amount would not restore even one acre of high value wetlands. The cap should be increased to at least $1 million while still maintaining the rebuttable presumption option.

The practical value of this Type A program is that it is aimed at small spills and provides a low cost, fair, and scientifically defensible evaluation of resource injury, damages, and restoration costs, thus saving both the responsible party and Trustees time and money in coming to agreement on final restoration specifics. However, because of the loss of Type A computing capabilities, the result across the nation generally has been that small spills go unresolved, to the detriment of the public interest and the impacted environment and ecology. An updated program would enable an efficient resolution to small spills and finality to the Trustees' responsibility in those small spills.

Geographic Information System Spill Management Database (R-10)

Recommendations: Procure a spill management database using the Environmental Response Management Application jointly developed by NOAA and the University of New Hampshire as the framework. This system would be suitable for oil spill activities and Maritime Security activities. Activities include planning, exercises, and response to real events both natural and human induced. Funding for the initial development and for ongoing maintenance must be provided. A continuing source of funding could be the Oil Spill Liability Trust Fund.

Increasingly, more spill related data and tools are digital in nature. Tying data to a geographical map-based format is becoming commonplace and the three states in Sector Delaware Bay employ the same software platform. Recently the Sector has begun to transition to Geographic Information System (GIS) capability as well. What is lacking at this point is a centralized GIS spill management database platform. This GIS platform is needed to bring all spill related data into one centralized location, allowing responders access to the latest real-time data in a quick, user-friendly manner. A web-based portal offers many advantages as a tool to bring real-time data to responders. Real-time weather, tides, and current databases, to name a few, are available 24/7. Maps of natural resources also are maintained to varying degrees on the web. Many of these portals can be viewed in a Google Earth format making it easy to visualize in a typical GIS layering manner. One example is the National Wetlands Inventory maps of the whole United States which are available to the public with free access on the U.S. Fish and Wildlife Service website at www.fws.gov/wetlands/. Many spill management teams also have their own proprietary version of GIS-based spill management systems.

NOAA is ready to release a PDA version of the electronic Shoreline Cleanup Assessment Team (eSCAT) documentation that is digital except for the sketch function, which is still in paper/hard copy format. SCAT data captured digitally in the field can be transmitted into a digital access database at the command post for use by planning, operations, and natural resource damage assessment units. This digital data can be exported into a functional spill response GIS platform to establish and analyze situational awareness and spill progress and to target trouble areas in need of additional support.

The states within Sector Delaware Bay have GIS databases of their natural resources. Many of the federal agencies also have similar digital databases. The Delaware Bay and River Cooperative (DBRC) likewise has its version of a digital database that forms the core of a portion of the Sector Area Contingency Plan and the DBRC's own response management program. A centralized GIS database that can pull various existing disparate data into a real-time access portal to supply spill related decision making information is critical for a successful spill response.

There are a number of approaches to addressing this centralized GIS spill database platform issue. One approach is to use the Environmental Response Management Application (ERMA)

jointly developed by NOAA and the UNH. ERMA is a data platform capable of interfacing diverse spatial data sets into an internet-based mapping format in order to enhance decision making for hazard responses (such as oil spills) and restoration. ERMA is a web-based GIS application that combines real-time web databases and uses Google Earth as the basis of its GIS platform. This system has been successfully implemented and used in Southern New England and Puerto Rico[2]. Using this framework would save considerable development and implementation costs.

[2] Since this recommendation was originally written, ERMA was also successfully used in the Gulf of Mexico for the DEEPWATER HORIZON incident response.

Facility and Vessel Oil Spill Response Plans (R-11)

Recommendation: In consultation with the Area Committee, USCG Sector Delaware Bay should review the guidelines used for review of Facilities Response Plans required by 33 CFR Part 154. Sector Delaware Bay Area Committee should prioritize the sensitive areas in the Area Contingency Plan and provide guidance to the plan review staff as to the capabilities and timeliness of response required for sensitive areas. USCG Headquarters should strengthen the language of 33 CFR 155.1030 (h) so that Tank Vessel Response Plans address the requirements of the Area Contingency Plan for protecting fish and wildlife and sensitive environments. The local Captain of the Port should review the tank vessel geographic appendices for compliance with the local Area Contingency Plan.

33 CFR Parts 154 and 155 require facilities and certain vessels to prepare Oil Spill Response Plans. The regulations have very detailed requirements on how the plans are to be prepared and what they must contain. 154.1035 (b) (4) requires facilities to plan for protecting fish and wildlife and sensitive environments identified in the Area Contingency Plan (ACP). For tank vessels, 155.1030 (h) requires that information contained in the response plan be consistent with the most recent ACP. However, it does not require planning for wildlife and sensitive environments. 155.1045(i) requires geographic-specific appendices for each Captain of the Port zone but only requires listing of Oil Spill Response Organizations (OSROs) that are under contract for the Area.

As part of the investigation of these requirements, the Sector Delaware Bay Facility Plan Review staff was asked to explain the process used during review of facility plans in the Sector. The Sector was utilizing guidelines put out in the 1993 time frame before the Area Contingency Plans were developed. The plans for the facilities were not being reviewed to see if the requirements of 154.1035 (b) (4) were being met. The plans for vessels are reviewed at USCG Headquarters and the Sector has no role in that review. In fact, the local ACPs are not used in that review. The required geographic appendices merely list the response organizations under contract and do not take into consideration the local requirements for protecting sensitive areas and the contractors' ability to protect the areas as required by the ACP.

It appears that Sector Delaware Bay has now revised its guidelines for review of facility plans. Subsequent to the Sector presentation, at least one facility within the Sector was required during an inspection to have the information showing how the requirements of 154.1035 (b) (4) were being met. The Sector Delaware Bay Area Committee should review the guidelines used by the Facility Plan Review staff and provide guidance to plan reviewers as to what should be required in the specific areas above and below a facility's location on the river or bay and what should be reflected in the facility's response plan.

The Area Committee should establish a procedure for the evaluation of the Environmentally Sensitive Areas identified in the ACP for Sector Delaware Bay and develop a ranking system to protect fish and wildlife and sensitive environments. The ranking system should take into

consideration seasonal variations and weather conditions. The ranking should establish maximum response times for the deployment of the required booming strategies and commencement of recovery and mitigation activities. In accordance with 33CFR154 Subpart F Section 154.1045, *"The resources and response methods identified in a facility response plan must be consistent with the required resources and response methods to be used in fish and wildlife and sensitive environments, contained in the appropriate ACP. Facility owners or operators shall ensure that their response plans are in accordance with the ACP in effect 6 months prior to initial plan submission or the annual plan review required under §154.1065(a). Facility owners or operators are not required to, but may at their option, conform to an ACP which is less than 6 months old at the time of plan submission."* The Area Committee should update the ACP upon the completion of the ranking system and required response times and should provide guidance to the USCG facility plan reviewers. Facility Response Plan holders should be notified of the ACP revisions and Sector Delaware Bay should revise its guidelines for review of facility plans to ensure that the necessary revisions have been incorporated.

The majority of the large spills in the Sector Area involve tank vessels as shown in the Sector Delaware Bay Significant Spill Events document in the appendix of this report. The Sector and the Area Committee have no control over tank vessels and their capabilities to meet the requirements of the Sector Delaware Bay Area Contingency Plan. The Coast Guard needs to strengthen the language in 33CFR Part 155 to require that the geographic appendices for each Captain of the Port zone transited show how the vessel response plans will satisfy the ACP for the zone. The geographic appendix for a vessel plan should be forwarded to the Captain of the Port for the geographic area for review.

Submerged Oil (R-12)

Recommendation: Fund USCG research and development efforts for detecting, tracking, and recovering submerged oil. Use the Oil Spill Liability Trust Fund to fund the research and development effort as was done in the past for other oil spill research and development. When the detecting, tracking, and recovery technology is developed, the Area Committee should determine the quantities of detecting and recovery equipment required in a Sector depending on the volumes and types of heavy oil transported in the Sector.

Submerged oil is oil that sinks below the water surface. It may float submerged in the water column anywhere from just below the surface to just above the bottom. Submerged oil also may sit upon the bottom or even become imbedded in bottom sediments. The Delaware River and Bay has a history of submerged oil spills going back at least to the *Presidente Rivera* spill in July 1989 in which the spilled #6 bunker oil lost its buoyancy shortly after being discharged in the Delaware River near Claymont, DE. It was theorized that the normally just-barely-buoyant oil picked up sediment to the point that it sank in the brackish water. As the submerged oil moved down river into the bay and entered denser saltwater, some of the oil started to regain its buoyancy and resurfaced. Likewise some of the denser oil continued submerged down the bay and out into the ocean, and some of it was later found resurfaced as far away as the Carolinas, where chemical tests identified it as *Presidente Rivera* oil.

Once oil becomes submerged it can no longer be contained and recovered by conventional methods. Likewise, booming is no longer effective to protect industrial and public drinking water intakes and other sensitive areas. This became an issue at the Salem, NJ, nuclear power plant cooling water intakes during the *Athos I* spill, resulting in a shutdown of the nuclear power plant.

There are two submerged oil issues that must be addressed. First is the detection and tracking of the submerged oil in the water column (speed, direction and depth) or its location on or just above the bottom. Detection techniques must be able to differentiate oil on or near the bottom from the bottom sediments themselves and any benthic community inhabitants, such as sea grasses, algae, coral or other colonial assemblages. Second is the challenge of recovering the submerged oil. Methods must be developed that will recover the oil with minimal adverse impact upon the benthic community. Even in clear water, as was the case in the 1994 *Morris J. Berman* spill in Puerto Rico, recovery of submerged oil is costly and an environmental challenge.

There are a number of research studies directed at the submerged and heavy oil problem. Existing off-the-shelf as well as emerging technologies are being evaluated. The intent of USCG R&D is to develop detection and recovery technologies so that industry then can be required to provide these response capabilities where heavy oils are transported or stored.

Protective (Pre-booming) (R-13)

Recommendation: Booming docked vessels that are engaged in product transfer or loading/off loading activities should be a basic requirement in order to enhance spill response and containment of spilled material.

Booming as a protective strategy has been a constant in spill preparedness and spill response. Booming is a basic industry strategy to minimize and contain spilled material. Booming, the placement of protective or containment barriers in strategic areas, is one of the first response measures taken to help prevent the spread of a spill and to collect as much material as possible. Booming strategies are often outlined and discussed in Area Contingency Plans, Facility Response Plans, and Spill Prevention and Countermeasures Plans. In Sector Delaware Bay, response after a spill relies heavily on the booming strategies that have been developed. But protective (pre-booming), in the form of deploying boom around a vessel that is transferring, loading, or offloading its cargo, could further enhance the ability to contain and minimize the spread of materials should a spill occur. At present, only the state of New Jersey transfer of hazardous liquids regulations (58:10-23.11f2) requires protective booming or containment of docked vessels with cargoes. The regulation basically requires that *"no owner or operator of a refinery, storage, transfer terminal, or pipeline facility, or a vessel while in the waters of the State, shall transfer, or authorize or allow to be transferred any hazardous liquid between any such facility and a vessel, or among two or more vessels, unless, as prescribed by the department, either a boom or other containment device is in place as hereinafter provided, or the containment device is available, along with trained personnel, at the site of transfer operations on a standby basis for immediate deployment in the event of a discharge, spill or release during the transfer."*

Protective (pre-booming) of all docked vessels engaged in the transfer/loading or offload of product should be a consistent requirement among Delaware, Pennsylvania, and New Jersey. This requirement should cover oil cargoes including crude oil and materials with a flash point below 100. Specifications for booming requirements can be developed by the individual states but every attempt should be made for consistency to avoid misunderstanding of the requirements and to achieve consistent application of booming protocols throughout the estuary.

The State of Washington, for example, requires pre-booming of vessels transferring over water. There are two classes of transfer based on rates of transfer and the type of facility. Requirements include:

- Pre-booming a transfer, which means completely surrounding the vessel(s) and/or facility dock area directly involved in the oil transfer operation, or
- The use of alternate measures, which could include access to boom long enough to surround the vessel(s) and dock area involved in the transfer.

Although pre-booming of a docked vessel was not an issue in the *Athos I* spill or response, assuming the *Athos I* had successfully docked and was pre-boomed, the containment of product would have occurred; therefore, dramatically reducing the impact of the spill.

Physical Oceanography Real-Time System Enhancement (R-14)
Recommendation: Fund the upgrade, continued operation, and maintenance of the Physical Oceanography Real-Time System.

The Physical Oceanography Real-Time System (PORTS®) is a decision support tool that improves the safety and efficiency of maritime commerce and coastal resource management through the integration of real-time environmental observations, forecasts, and other geospatial information. PORTS® measures and disseminates observations and predictions of water levels, currents, salinity, and meteorological parameters, such as winds, atmospheric pressure, and air and water temperatures, which mariners need to know in order to navigate safely. The objectives of the PORTS® program are to promote navigation safety, improve the efficiency of U.S. ports and harbors, and ensure the protection of coastal marine resources.

The real-time tide and current data provided through PORTS® represent one component of NOAA's National Ocean Service (NOS) integrated program to promote safe navigation. PORTS® data, when combined with up-to-date nautical charts and precise positioning information, can provide the mariner with a clearer picture of the potential dangers that may threaten navigation safety. NOS fulfills its navigation safety mission in close concert with other federal agencies, such as the U.S. Coast Guard and the U.S. Army Corps of Engineers.

The prevention of maritime accidents is the most cost-effective measure that can be taken to protect fragile coastal ecosystems. In 2004 alone, NOS's Office of Response and Restoration responded to more than 120 events, including the release of 270,000 gallons of crude oil into the Delaware River near Philadelphia, and the spill of more than 400,000 gallons of bunker oil in Alaska. One major oil spill such as the 1989 *Exxon Valdez* accident can cost billions of dollars and destroy sensitive marine habitats critical to coastal ecosystems. PORTS® provides information to make navigation safer, thus reducing the likelihood of a maritime accident. The system also provides information to mitigate damages from a spill, should one occur. Additionally, PORTS® provides real-time data input to trajectory modeling, helping to enhance the predictive capabilities that can improve response decision making and outcomes.

PORTS® has the potential to prevent shipping accidents and subsequent environmental damage and save millions of dollars in response, restoration, and damage claims. PORTS® is accessible to maritime users in a variety of user-friendly formats, including telephone voice response and the internet. PORTS® also provides forecasts via numerical circulation models. Telephone voice access to accurate real-time water level information allows United States port authorities and maritime shippers to make sound decisions regarding loading of tonnage based on available bottom clearance, maximizing loads, and limiting passage times without compromising safety.

Continuous funding of the operation and maintenance of PORTS® is not part of NOAA's budget and relies on funding from various state and local agencies. These funding sources are not guaranteed. In uncertain economic times like the present, they may be reduced or eliminated. Therefore, Congress should authorize and fully fund federal maintenance of the PORTS® system.

Also, the PORTS® system should be upgraded to include new and emerging technologies. One specific example is the CODAR system for ocean current and wave monitoring. A transmitter sends out a radio frequency that scatters off the ocean surface and back to a receiver antenna. Using this information and the principles of the Doppler shift, this system is able to calculate the speed and direction of the surface current. This capability, when applied to spill response, would greatly enhance the effectiveness and efficiency of strategies for controlling surface oil and recovering it.

Use of Volunteers during Oil Spill Emergencies (R-15)

Recommendation: Modify the Sector Delaware Bay Area Contingency Plan to coordinate with and benefit from Affiliated Volunteers and Convergent Volunteers cooperating with the Unified Command during an oil spill response.

At the national, state, and local level there has been much discussion on the use and management of volunteers during a major oil spill incident. There are two distinct volunteer types:

- Affiliated Volunteers (AVs), who are those associated with a government agency (federal, state, local and/or tribal) or non-governmental organization (NGO) and who have been trained for a specific role. (i.e., Tri-State Bird Rescue and Research Organization, Oil Wildlife Care Network [OWCN], and the Coast Guard Auxiliary); and
- Convergent Volunteers (CVs), who are those with no connection to a government agency or NGO (e.g., those who walk in to the Incident Command Post to volunteer and those with no response training, background, or previous experience who undertake activities on their own).

While the Area Contingency Plan (ACP) Sections 4300, 4310, 4320, 4330, 4340 and 4350 have established the framework for volunteers and volunteer coordination, the Committee believes that the issue of convergent volunteers should be clarified to enhance their use, to ensure the safety of these volunteers, and to provide Unified Command with a set of guidelines for using volunteers.

To date, the issue of a massive influx of volunteers at a spill has not been a major problem in Sector Delaware Bay. Though volunteers do make themselves available, it has not been an issue that has adversely impacted a response. This is due mainly to the small number of volunteers, the areas impacted, and the agencies and organizations that have been associated with volunteers.

Among the issues to be resolved (and beyond the scope of the DARBOSAC) are coordination of the practices of the individual states—Delaware, New Jersey, and Pennsylvania—regarding their general requirements for volunteer use, training requirements (such as Community Emergency Response Team (CERT) training), and potential liability issues. While working with the Area Committee, each state should decide the best approach for its particular situation.

The Committee recommends that Affiliated Volunteer Groups establish a task list and associated training for convergent volunteers. CVs should follow the guidelines for training and task assignment established by the Affiliated Volunteer Group to which they are assigned. In addition, CVs should not be assigned to tasks that could be considered hazardous and that would require extensive Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) or other specialty-type training. AVs and CVs can perform a variety of important functions such as checking creeks and shallow areas for oil, observing boom and sorbents locations for issues, meeting with the public to explain why an area has been deemed off limits, and assisting with supplies and transportation.

As outlined in the publication "Training Marine Oil Spill Response Workers Under OSHA's Hazardous Waste Operations and Emergency Response Standard" (OSHA Booklet 3172, 2001), all personnel should be "trained to the highest level of responsibility you may assign them." This guidance should hold true for all personnel including volunteers.

The Sector Delaware Bay Area Committee should review the Volunteer Section of the ACP and consider including the following:

- Minimum training should be established for all AVs that would anticipate working on an oil spill under the direction of the UC in accordance with the National Response Framework, National Incident Management System (NIMS) and the Incident Command System (ICS). For AVs, this training should include, at a minimum, IS-100, "Introduction to Incident Command System", IS-700 "Introduction to NIMS", and ISC 800 "Introduction to National Response Framework". IS-100 would be the minimum training requirement for all CVs and individual AVs.

- Within the Incident Command structure a position should be established to coordinate volunteers, or an existing position within the planning or operations sections should be given duties as the Volunteer Group Coordinator (VGC). The role of the VGC should include establishing a volunteer organizational structure as needed, developing the integration of AVs into the structure and directing CVs to appropriate AV groups; and ensuring effective communication and interface between the AV group leaders, Incident Command, and the operations being conducted.

- A list of jobs/activities that AVs and CVs can perform should be developed and AVs should be assigned to develop a job safety analysis (JSA) for each. The JSA should include a description of the job/activity, a detailed list of tasks to be performed in a particular activity, potential hazards for each task outlined, identification of required personal protective equipment and protective measures, and establishment of training requirements.

The issues of utilizing volunteers and volunteer coordination should be addressed in every region and included in all ACPs in a way that best identifies and integrates specific local resources, opportunities, and differences that may exist. Volunteer issues should be resolved prior to a spill. These are not issues that are best handled during the agitated state of a response.

The following language is presented for consideration as an addition to the Position Checklist in the ACP or the USCG Incident Management Handbook (IMH):

> ***Volunteer Group Coordinator (VGC)***
> *The Volunteer Group Coordinator's function is to establish a volunteer organization structure and recommend measures for assuring appropriate Affiliate Volunteer Groups are engaged. The VGC will provide direction for developing the integration of AVs into the structure and directing convergent volunteers to appropriate AV groups. The VGC*

will ensure that effective communication and interface is established between the AV group leaders, Incident Command, and the operations being conducted.

The major responsibilities include:

a) Obtain a briefing from the Planning Section Chief,Ensure all Affiliate Volunteer (AV) groups are briefed on response needs and the Safety Plan,
b) Prepare an Organizational Assignment List (ICS-203) and Organization Chart (ICS-207) for the volunteer organizations,
c) Establish a meeting schedule with the AVs,
d) Maintain a list of the current status and location of all AV group resources,
e) Review each AV group's Safety Plan, including personal protective equipment needs and requirements,
f) Review task lists prepared by AV groups for their own members and CVs and approve the associated training, safety procedures, and required protective equipment for each task,
g) Assure that applicable state requirements for volunteer registration be maintained for state- or federal-organized and managed volunteers,
h) Determine the need for dedicated AV group volunteers,
i) Brief the Planning Chief on current status of the volunteer organization,
j) Provide advice on volunteer usage to the Planning Chief,
k) Participate, as required, in the tactical meeting and other meetings.

Pre-Cleaning Beaches and Shorelines (R-16)

Recommendation: In order to maximize spill response resources, increase efficiency of the clean up, and minimize disposal cost, the Sector Delaware Bay Area Contingency Plan should be modified to identify sites where pre-cleaning of beaches and/or shorelines prior to oil impact is an option. The Area Contingency Plan also should identify available resources that can perform the function and identify possible disposal options.

During an oil spill, such as the *Athos I*, there are typically thousands of tons of contaminated debris that has to be recovered, transported, and disposed. These tasks require that trained responders spend countless hours dressed in the appropriate Personal Protective Equipment (PPE) because the debris, such as wood, branches, trees, trash, etc., must be handled and disposed of as contaminated material. Typically, this operation is very expensive, time consuming, and wasteful since disposal sites are typically already overburdened . In addition, it removes from the shoreline the natural wrack which is important to the ecosystem.

In order to maximize responders' time and save the cost of PPE and disposal, "clean" debris that is expected, due to tide and wind projections, to be in the path of spilled oil should be identified, removed and disposed of before it can be contaminated by the oil. Due to their importance for the natural ecosystem, natural debris, such as logs, twigs, algae mats etc., should be relocated on site out of the path of expected oiling so as not to remove these elements from the environment. Garbage and other man-made waste should be disposed of properly. Disposal options will be greater since much of this uncontaminated debris can go to local landfills or other re-use needs within the area.

Debris removal can be accomplished by groups of volunteers or paid contractors who would not need specialized training under that Hazardous Waste Operations and Emergency Response Standard. Ideally, groups should be organized ahead of a spill.

Debris Removal Program (R-17)

Recommendation: Consideration Should Be Given to a Floating Debris Removal Mission for Sector Delaware Bay

Floating debris, though it may not cause an imminent danger to larger vessels, has the potential to place smaller vessels at risk. In addition, the accumulation of this debris has required extensive clean-up efforts after a spill has occurred. Large, significant, and potentially damaging debris is regularly observed in the Delaware River especially after storms and flood events. This debris has the potential to impact navigation and poses a pollution risk.

The EP 1165-2-1, DIGEST OF WATER RESOURCES POLICIES AND AUTHORITIES, 30 Jul 99, Paragraph 12-15 states "Action by the Corps in removing drift or debris from navigable waterways is generally limited to the removal and disposal from the authorized project limits and immediate adjacent waterway areas in the interest of general navigation." This reference further clarifies that harbor debris missions are specifically authorized by Congress only in designated harbors. Philadelphia and the Delaware River currently are not listed by Congress as an authorized debris mission harbor. The U.S. Army Corps of Engineers, Philadelphia District, currently does not have floating debris collection equipment in contrast to New York and Baltimore districts which have authorized debris collection missions and have equipment, staffing, and funding to support debris collection activities.

In order for Philadelphia District to perform a debris collection mission, capital investment in equipment and facilities, increased staffing, logistical planning, and possibly real estate acquisitions would be required. A general assumption, without performing an in depth study to quantify the amount of floating debris in the Delaware River, would estimate a capital investment cost to prepare for a debris mission as:

- One debris collection vessel (New York has three debris collection vessels; Baltimore and Norfolk each have one vessel) -- depending on vessel specifications, $10 million to $15 million.
- Land-based equipment to handle debris retrieved from the river, such as a crane, dump trucks, loaders, etc. -- $500,000 to $1million.
- Facilities for the mission, such as a debris offloading pier -- $3 million to $5 million.

Using these estimates and assumptions, the capital cost to stand up a floating debris collection mission could be in the range of $14 million to $21 million.

Additional cost to routinely carryout the mission would include an increase in staff to operate a debris collection vessel with a minimum crew of five -- operator, engineer, crane operator, and two deckhands -- and staff to manage the land-based disposal operation with possibly three or four field personnel and supervision.

The debris collection mission also would require an additional annual Operations and Maintenance funding allocation in order to support the labor, equipment and facility costs. The annual funding required to perform this mission likely would run several million dollars.

Identify, Obtain, and Catalogue Completed and Ongoing Scientific Research on the Delaware Estuary. Provide Public Access to these Data and Utilize these Data to Ensure the Protection of Environmentally Sensitive Areas throughout the Delaware Estuary. (R-18)

Recommendation: Provide dedicated funding to an appropriate agency or organization, such as the Congressionally-authorized Delaware Estuary Program, to catalogue and share existing data on oil-associated environmental effects, including effects of spills, and on the ecological status of the Delaware Estuary; to identify information gaps; and to work with all Delaware Estuary program partners to support oil spill-related scientific analysis and research to fill vital information needs. Develop a mechanism for ensuring that all present and future research is catalogued and made publicly available.

An inclusive and open process involving federal, state, and local agencies and academia should be used, and efforts should include:

- An inventory of all existing data associated with the Delaware Estuary, its health, habitats, impacts, and needs;
- A gap analysis to ensure a thorough understanding of all research needed to understand and address concerns about the Delaware Estuary and the individual and cumulative effects and impacts of oil spills;
- A strategy and dedicated funding for filling data gaps, including possible baseline monitoring for oils in the system;
- An open process by which all existing and new data are made available in a readily-accessible format; and
- Ensuring that this work is revisited on five-year cycles.

There are a variety of strategies for accomplishing these tasks, including white papers, symposia, work groups, and grants.

Identification and Prioritization of Restoration Needs and Mitigation Projects (R-19)

Recommendation: Provide dedicated funding to an appropriate agency or organization, such as the Congressionally-authorized Delaware Estuary Program to identify and prioritize restoration needs for mitigating the harm of oil spills large and small and to identify existing and/or emerging restoration projects that can be implemented.

In the event of a spill on the Delaware River there is always a need for mitigation, the use of beneficial environmental projects to restore health to the ecosystems that have been harmed There is a need to identify projects that are ready for implementation that would serve as suitable mitigation of the ecological harms resulting from pollution incidents and oil spills. These environmental projects can then be utilized to address the injured resources and ecological harm through processes such as the Natural Resources Damage Assessment (NRDA) program.

There are initiatives ongoing in the Delaware River community that are already identifying beneficial environmental activities and projects that could serve as effective mitigation opportunities for all areas and types of injury. However, these prioritization efforts and the projects identified are largely unfunded.

The Committee recommends that Congress:

- Provide dedicated funding through the Delaware Estuary Program to support the Regional Restoration Initiative to identify, catalogue, and prioritize needed restoration activities and projects in Sector Delaware Bay and to ensure that science-based tools are provided to NRDA and to restoration decision makers.

- Provide a competitive grants program through the Delaware Estuary Program to support initiatives and entities to fill project gaps by cultivating new project development as well as cataloguing restoration efforts currently underway or being planned in the region.

- Provide a competitive grants program that supports needed restoration activities and projects within the Delaware Estuary that do not meet the constraints of the NRDA program (spill restoration of direct damages by a responsible party).

Media/Public Relations (R-20)

Recommendation: The Coast Guard should increase public education about and access to information about oil spills before, during, and after spills by developing an official, comprehensive Delaware River and Bay oil spill information web site to which the public and all stakeholders have access. Information on the web site should be updated on an ongoing basis.

The Coast Guard should be more proactive, on an on-going, non-emergency basis, in providing the media and stakeholders (industry, other agencies, and interested public) with a wider range of information about oil spills and oil spill response. Aggressive dissemination of pre-spill educational material—in addition to incident news reporting—could increase the accuracy of information in the marketplace and foster understanding of spill-related issues. It also could help assure public acceptance of response activities and cooperation with response personnel during an incident.

One way to achieve such dissemination would be to institute an official, comprehensive oil spill web site that is extremely user friendly, easy to find and access, and easy to use. The site should use layman's language and be regularly maintained. A core site to be used nationwide could be built by the Public Information Assistance Team. That core would include basic information that is common to all Sectors such as: definitions, explanation of laws and duties, roles of different agencies, oil types and how they differ during a spill, links to various studies, etc. Each Sector then could build on that core by adding its Area Contingency Plan, area spill history and damage assessments, sensitive area maps and explanations of booming strategies, local volunteer involvement and ways to help or become trained to help, and a calendar for meetings, etc.

In short, the site should contain everything interested parties might need or want to know and everything a spill response team wants to tell them. It should make generous use of links, including links to Twitter, Facebook, and other social media. If well done, the site should become THE place everyone knows to go for official, accurate spill-related information, whether before, during, or after a spill.

During a spill, the site could be used to disseminate information to the public specific to the ongoing response. It could be used to pass information about the extent and other effects of the spill. For example, the location of protective booming sites and how boaters should react when approaching such sites could be posted.

Such a web site would be valuable in improving the flow of information, in fostering understanding, and in increasing the accuracy of information in the marketplace. Given the status of the media today, this web site would be a more dependable way of getting information out in a more complete and timely manner. It also could encourage aggressive information sharing by all stakeholders. However, this web site would not replace regular press meetings during times of emergency.

Delaware River and Bay Oil Spill Advisory Committee: Other Considerations

The Committee and subcommittees discussed a variety of topics throughout their deliberations. However, some topics did not result in formal recommendations because they may not have been completely researched or developed or because they were not considered to meet the standard for a recommendation. These topics included the following:

Spill of Opportunity Testing Policy

For Consideration: At the local or regional level, a policy should be in place to foster the advancement of scientific research concerning the consequences to the environment from response techniques and countermeasures. This policy should encourage the experimental use of various countermeasures and include guidance for such use in areas that are set aside to be used as control sites.

During an oil spill it is difficult to organize and plan research projects that can have meaningful and defendable results. However, a policy at the local area or regional level could help foster the implementation of such research. Currently, there is no formal guidance available to help direct research. As there are presently no research opportunities to test oil countermeasures in the environment, the only opportunities for such research are during an actual oil spill. Thus, being prepared with a prioritized list of the types of research that could be performed and the knowledge that this is important to the response community will allow the Environmental Unit to address such research during a spill. The opportunity to learn from spill responses could be a major positive outcome that leads to improved spill response and minimizes environmental damage in subsequent events.

Scientific research during an actual oil spill needs to be pre-planned in order to improve spill responses, increase efficiency, minimize damage, and enhance recovery of the environment.. The Area Committee or the Regional Response Team should prepare a policy with regards to scientific research opportunities during an actual oil spill response.

Job Aids for use by Responders Dealing with Oiled Wildlife, Plants and Fish

For Consideration: The Sector Delaware Bay Area Committee should establish a wildlife, plants of interest, and fish database such that, during any spill, information can be provided immediately that will enable responders to protect wildlife, endangered plants, and fish and to take appropriate action if these natural resources are oiled.

During oil spills there are various plans for initiating the notification of bird rescue organizations. However, procedures for aiding responders with the identification, reporting and handling of oiled birds and other common wildlife are not addressed in any detail. Wildlife are

sometimes reported as oiled when they are not in fact oiled but their natural coloring makes it appear to the uneducated observer that they are oiled. The probability of improperly handling already-distressed wildlife increases if the proper information is not provided to people working in the field who will be the first to encounter wildlife. Likewise, responders doing shoreline cleanup will be working in environments where protection of sensitive plants is possible if they have information that makes identification of plants of concern possible.

There are no formal job aids available to provide information to responders in a timely and succinct manner. Various resources are available for compiling the necessary information but no common site or document is available. It would benefit the response effort to have such information readily available in a format that would allow job aides to be generated quickly depending on the specifics of a given spill and location.

The Sector Delaware Bay Area Committee should collect data for all local wildlife, plants of interest, and fish in the area in a format that easily can be accessed and provided to responders in the field. This information even could be housed on the suggested oil spill web site (recommendation R-20). This material should include documentation, reporting, and preservation procedures as well as cautionary information regarding oiled and deceased wildlife, plant life, and aquatic species. General information could be developed on a national basis with important local/seasonal information provided on an Area basis. The establishment of a geographic information (GIS) spill management database (recommendation R-10) would greatly facilitate this effort.

Economic Recovery

Economic recovery also was discussed, but the subcommittees had difficulty coming to a final decision on the issue. The Committee sensed there should be a methodology to better assess and understand the economic impact of an oil spill. However, within the time frame available, the Committee was not able to work out the data elements that should be included or to figure how to collect the data and who would be responsible for developing the methodology.

Committee and Subcommittee Meetings – Overview

The initial meeting of the Delaware River and Bay Oil Spill Advisory Committee (DARBOSAC) was opened with administrative topics by LCDR Nakeisha Hills and opening remarks by CAPT David Scott who welcomed everyone and outlined the mission of the Committee.

An election of officers was held and the following presentations were made to the Committee:

Mrs. Georgia Abraham, who is responsible for organizing Federal Advisory Committees at the U.S. Department of Homeland Security, gave a general presentation on the Federal Advisory Committee Act and the responsibilities and functions of the Committee.

MST3 Weldon James presented Oil Spill 101 which covered oil movement, movement with the current, containment techniques, exclusion and diversion technique, types of skimmers (portable shallow water skimmers, oleophilic skimmers ,Weir skimmers and Vessel Operating Skimming Systems), types of absorbents (natural organics, natural inorganics, and synthetics), clean-up techniques, and the use of in-situ burns, biological agents, gelling agents, and dispersants.

Gerald Conrad, Director, Contingency Planning, U.S. Coast Guard Sector Delaware Bay, gave an overview of the *Athos I* incident, including state requirements for vessel booming, tank vessels arrival drafts (*Athos I* arrived into the channel with a depth of 36.5 feet draft), and the two week time frame to decide on a port of refuge.

Gerald Conrad from U.S. Coast Guard Sector Delaware Bay also gave a presentation on the *Athos I* after action report, which included highlights of multilingual safety briefs, safety incentive programs, and a renewed commitment to developing relationships through participation in area committees and oil spill exercises with local and federal agencies, utilizing local environmental experts to expedite the oil response efforts, state representation in the Unified Command, having predetermine lead agencies for response incorporated into Area Contingency Plans, ongoing effort of the Captain of the Port to identify facilities that will accept damaged vessels, and an intake early warning system that is now included in the Area Contingency Plan.

General Committee meetings early on were utilized as information and educational sessions. The information portion of the meeting was to update the Committee on process issues and the topic each subcommittee was discussing or researching. The educational portion of the sessions was to help inform Committee members on the status of oil spill preparation and response in the Delaware River and Bay and other topics needing a Committee overview.

As an example, the January 21, 2009, meeting featured a presentation entitled Oil Spill 102, which was an Overview of Oil Spill Prevention, Planning, and Response in Sector Delaware Bay by Eugene Johnson, then President, Delaware Bay and River Cooperative (DBRC). The presentation discussed the current status of Oil Spill Prevention, Planning and Response and the roles and responsibilities of DBRC and others.

In addition, Ed Doyle, vice chair of the Committee, provided an Overview of Prevention and Planning which discussed the Area Contingency Plan (ACP) and Facility and Vessel Response Plans. Other topics discussed during that meeting included: planning under the ACP; the Port Community; wetlands; examples of specific booming strategies at Big Timber-Oldmans Creek and Oldmans to Pea Patch Island, Darby Creek; collection booming; and sensitive areas such as Tinicum Island.

The Committee also entertained outside comments and presentation such as that requested by Alfred J. Kuffler of Montgomery McCracken Walker & Rhoads LLP on the topic of safe refuge and a presentation from Kurt Hansen, USCG R&D, on submerged oil.

A typical subcommittee meeting would involve specific areas of interest. The following are examples of how the subcommittee's worked:

Early on the **Prevention Subcommittee** used its meeting to discuss the following areas:

- Research and review previous incidents that resulted in oil spills in the Delaware River and Bay. What caused them, what lessons were learned, what regulations and/or recommendations followed the investigations, how were these enacted and have they worked?
- Investigate debris removal programs that are reportedly in effect in Baltimore and New York harbors. Large, significant and potentially damaging debris regularly is observed in the Delaware River, especially after storms and floods. This debris has the definite potential to impact navigation and poses a pollution risk. Determine whether to recommend that a similar program be funded locally.
- Determine the effective levels of communication down to the hands-on seafarers on vessels using the waterways. Are recommendations, suggestions, and requirements from sources such as the DARBOSAC effectively reaching the people using the river and bay? Conversely, is there an effective conduit for their comments and concerns to be heard by committees such as the DARBOSAC?
- Determine how commercial fisherman play into the overall use of the river and their potential to be a threat to tankers and other vessels that could result in an oil spill (offshore lightering example quoted).
- Investigate the relationship between speed of vessels transiting the river and the surge/suction effect they have on tankers moored alongside docks. Research recent incidents and offer suggestions as to how to mitigate.
- Research the difference in booming strategies in use in Pennsylvania and New Jersey. Determine effectiveness and suitability and make recommendations as to which way to go.
- Suggestion: Investigate USCG's review of Facility Response Plans and how they are integrated with the Area Contingency Plan. Determine if the plans can effectively deliver meaningful and effective responses in terms of both equipment and personnel.

The **Response Subcommittee** at one meeting conducted an overview of OPA ’90 regulations, reviewed how Sunoco provides emergency response to incidents which may occur at the refinery, and reviewed the use of volunteers during an oil spill. In addition, members listed topics for further discussion, such as:

- Spill of opportunity policy for testing response products
- Place of refuge
- Wildlife rehabilitation job aids
- Additional protection strategies and mapping
- Spring bird and horseshoe crab migration issues

The subcommittee also set assignments for collecting further information or starting to develop information for possible draft recommendations for the Committee on topics such as:

- Definition of Response
- Volunteers
- Pre-Cleaning Beaches/Shoreline
- Submerged Oil
- Media/Public Relations
- Safe Refuge
- Wildlife Rehabilitation
- Enhancement of the Physical Oceanography Real-Time System (PORTS®)

The **Mitigation/Recovery Subcommittee** worked to compile information on previous spills and "lessons learned"; members requested information on the "human dimension of spill response" and a presentation on the National Resources and Damage Assessment (NRDA) process.

In addition, members discussed economic concerns in terms of industry economics and business interruption, social and recreational economics, returning a riverbank to pre-incident conditions, opening the river to commerce, and the possible conflict between economic and environmental interests. They discussed what information may be lacking on endangered species and how information could be updated. They also discussed the role of environmental sensitivity maps (ESI), the fact that the maps are not current and discussed a possible recommendation regarding maintenance and sustainability of ESI and the funding and resources necessary to update maps.

The subcommittee’s mission statement was to identify mitigation and recovery recommendations that will minimize or eliminate extended environmental and economic harms that negatively impact the Delaware River and Bay environment, community, and business region in the aftermath of an oil spill.

Differences

As expected, all of the subcommittee discussions took time for participants to understand each topic or issue, to decide the relevance of each topic and to shape a recommendation to be brought before the full Committee. As also would be expected, throughout the various discussions some issues required a more substantial educational process before members could fully appreciate the

concerns, while other issues required more time for discussion and debate in an effort to reach consensus. For example, the use of volunteers during an oil spill and upgrading the Natural Resource Damage Assessment (NRDA) process were both robust discussions.

On the volunteer issue, ultimately two proposals were offered to the full Committee. The proposal that was not adopted recommended that all volunteer activities must strictly conform to the National Framework. Overall, the Committee found this too restrictive for the idea it wanted to promote and adopted the recommendation as written in R-15.

Proposing alternatives or modifications to the NRDA process to address small spills -- spills that individually might not meet established guidelines or thresholds but collectively might add up to a significant quantity -- proved equally challenging. Although the subcommittee came to agreement on a recommendation as written in R-9, the consensus required lengthy discussion.

Report Preparation

Each subcommittee prepared its own recommendations for inclusion in the Committee's final report. All recommendations then were brought to the full Committee where they were discussed thoroughly and each was individually subjected to a vote. This report was then compiled with help from many people and was made available to Committee members for review as a whole document. The report was unanimously approved by the Committee at its final meeting on December 16, 2010.

Appendix A – Delaware River and Bay Oil Spill Advisory Committee Charters

Original Charter (October 2007)

UNITED STATES DEPRTMENT OF HOMELAND SECUTITY
UNITED STATES COAST GUARD
DELAWARE RIVER AND BAY OIL SPILL ADVISORY COMMITTEE

Committee's Official Designation: (Title)
Delaware River and Bay Oil Spill Advisory Committee.

1. Authority:
As provided for in section 607 of the Coast Guard and Maritime Transportation Act of 2006, Public Law 109-241, this charter effects the establishment of the Delaware River and Bay Oil Spill Advisory Committee (DRBOSAC). This Committee is established in accordance with and shall operate under the provisions of the Federal Advisory Committee Act (FACA), 5 U.S.C. App.

2. Objectives and Scope of Activities:
The DRBOSAC shall provide advice, recommendations and a ranking of priorities for measures to improve the prevention of and response to future oil spills in the Delaware River and Delaware Bay. Not later than 18 months after the appointment of member the Committee, it shall provide a report to the Commandant of the Coast Guard, the Governors of the States of New Jersey, Pennsylvania, and Delaware, the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives, detailing those recommendations and priorities.

3. Description of Duties:
The duties of the DRBOSAC are solely advisory in nature.

4. Officials to Whom the Committee Reports:
The DRBOSAC shall report to the Commandant of the Coast Guard through Commander, Sector Delaware Bay; Commander, Fifth Coast Guard District and Commander, Atlantic Area.

5. Agency Responsible for Providing Support:
The Coast Guard shall provide support to the DRBOSAC.

6. Estimated Annual Operating Costs and Staff Years:
The estimated operating cost of the DRBOSAC is $770,000, which includes 1.5 staff years of support and includes the rental costs of the facilities, travel, and accommodations for the Committee members based on per diem rates and contractor support to facilitate meetings and produce the final report.

7. Designated Federal Officer:
A full-time or permanent part-time employee of the Coast Guard shall be appointed the

DRBOSAC Designated Federal Officer (DFO). The DFO or his/her designee shall approve or call the DRBOSAC meetings, approve meeting agendas, attend all Committee and subcommittee meetings, adjourn any meeting when he/she determines adjournment to be in the public interest, and chair meetings when directed to do so by the Assistant Commandant of Response, Office of Incident Management Preparedness (CG-3RPP)

8. Estimated Number and Frequency of Meetings:

The DRBOSAC shall hold its first meeting not later than 60 days after the date on which the Commandant completes the appointment of members of the Committee. Thereafter, additional meetings will be held at the call of the Chairperson with the approval of the Designated Federal Officer. Committee meetings shall be open to the public unless a determination is made by the appropriate DHS official in accordance with DHS policy and directives that the meeting should be closed in accordance with subsection (c) of 552b of title 5, United States Code and announced in the Federal Register at least 30 days in advance.

9. Duration and Termination:

As authorized by section 607 of Public Law 109-241, the DRBOSAC shall terminate 18 months after the date on which the Commandant completes the appointment of the members of the Committee.

10. Chairperson and Vice-Chairperson:

At its first meeting, the Committee shall elect by majority vote one of the members of the Committee to serve as Chairperson and one of the members as Vice-Chairperson. The Vice-Chairperson shall act as Chairperson in the absence of or incapacity of the elected Chairperson or in the event of a vacancy in that office.

11. Member Composition:

The DRBOSAC shall consist of 27 voting members who are appointed by and serve at the pleasure of the Commandant of the Coast Guard and who have particular expertise, knowledge, and experience regarding the transportation, equipment, and techniques that are used to ship cargo and to navigate vessels in the Delaware River and Delaware Bay, as follows:

(A) Three members who are employed by port authorities that oversee operations on the Delaware River or have been selected to represent these port authorities, of whom
  (i) one member shall be an employee or representative of the Port of Wilmington;
  (ii) one member shall be an employee or representative of the South Jersey Port Corporation; and
  (iii) one member shall be an employee or representative of the Philadelphia Regional Port Authority.

(B) Two members who represent organizations that operate tugs or barges that utilize the port facilities on the Delaware River and Delaware Bay.

(C) Two members who represent shipping companies that transport cargo by vessel from ports on the Delaware River and Delaware Bay of whom at least one may not be a representative of a shipping company that transports oil or petroleum products.

(D) Two members who represent operators of oil refineries to the Delaware River and Delaware Bay.

(E) Two members who represent state-licensed pilots who work on the Delaware River and Delaware Bay.
(F) One member who represents labor organizations whose members load and unload cargo at ports on the Delaware River and Delaware Bay.
(G) One member who represents local fishing interests or an aquaculture Organization that depends on fisheries and resources of the Delaware River or Delaware Bay.
(H) Three members who represent environmental organizations active with respect to the Delaware River and Delaware Bay, including a watershed advocacy group and a wildlife conservation advocacy group.
(I) One member who represents an organization affiliated with recreational fishing interests in the vicinity of the Delaware River and Delaware Bay.
(J) Two members who are scientists or researchers associated with an academic institution and who have professional credentials in fields of research relevant to oil spill safety, oil spill response, or wildlife and ecological recovery.
(K) Two members who are municipal or county officials from Delaware.
(L) Two members who are municipal or county officials for New Jersey.
(M) Two members who are municipal or county officials from Pennsylvania.
(N) One member who represents an oil spill response organization located on the lower Delaware River and Delaware Bay.
(O) One member who represents the general public.

The DRBOSAC may also consist of an appropriate number (as determined by the Commandant of the Coast Guard) of non voting members who represent Federal agencies and agencies of the states of New Jersey, Pennsylvania, and Delaware with an interest in oil spill prevention in the Delaware River and Delaware Bay.

The members outlined in (A) can be either Special Government Employees or representatives. Members who are merely employed by port authorities shall be designated as SGEs and members that represent these port authorities shall be designated as representative members.

The members in paragraphs (B), (C), (D), (E), (F), (G), (H), (I), (K), (L), (M), (N) are representative members and not Special Government Employees as defined in section 202(a) of Title 18, United States Code.

The members in paragraphs (J) and (O) serve as a Special Government Employees as defined in section 202(a) of Title 18, United States Code.

The terms of office for members initially appointed to the Committee shall expire 18 months from the date of their appointment.

12. Subcommittees:

The DRBOSAC Chairperson may establish subcommittees for any purpose consistent with this charter subject to the approval of the DFO. Such subcommittees may not working dependently of the chartered Committee an authority to make decisions on behalf of the DRBOSAC and may not report directly to the Federal government or any other entity.

The Chair may appoint subcommittee members from either the Committee of the public. The subcommittee chair shall be a Committee member. The subcommittee shall be required to take minutes which shall contain a record of all persons present, a complete and accurate description of matters discussed and conclusions reached.

September 25, 2007
Agency Approval Date
October 1, 2007
GSA Consultation Date
October 1, 2007
Date Filed with Congress

Revised Charter (December 2010)

Authority:

Section 607 of the Coast Guard and Maritime Transportation Act of 2006, Public Law 109-241, as amended

Purpose:

The DRBOSAC provides advice, recommendations, and a ranking of priorities for measures to improve the prevention of and response to future oil spills in the Delaware River and Bay. Not later than December 31, 2010, it shall provide a report to the Commandant of the Coast Guard, the Governors of the States of New Jersey, Pennsylvania, and Delaware, the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives, detailing those recommendations and priorities.

When this committee was authorized in 2006, the deadline for providing the report required in the above paragraph was 18 months after appointment of the committee's members, April 30, 2010. However, the committee did not complete its work by that date and, because the committee's authority terminated in April, has been unable to meet.

Charter Amendments:

Section 10. Duration, has been amended to reflect the new termination date of not later than December 31, 2010.

Additional amendments have been made to conform to the uniform charter format established for all DHS advisory committees.

Charter filing date:
Remains April 6, 2010.

UNITED STATES DEPARTMENT OF HOMELAND SECURITY

UNITED STATES COAST GUARD

DELAWARE RIVER AND BAY OIL SPILL ADVISORY COMMITTEE

1. Committee's Official Designation:
Delaware River and Bay Oil Spill Advisory Committee

2. Authority:
As provided for in section 607 of the Coast Guard and Maritime Transportation Act of 2006, Public Law 109-241 (as amended), this charter establishes the Delaware River and Bay Oil Spill Advisory Committee (DRBOSAC). This committee is established in accordance with, and operates under, the provisions of the Federal Advisory Committee Act (FACA) (Title 5, United States Code, Appendix).

3. Objectives and Scope of Activities:
The DRBOSAC provides advice, recommendations, and a ranking of priorities for measures to improve the prevention of and response to future oil spills in the Delaware River and Bay. Not later than December 31, 2010, it shall provide a report to the Commandant of the Coast Guard, the Governors of the States of New Jersey, Pennsylvania, and Delaware, the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives, detailing those recommendations and priorities.

4. Description of Duties:
The duties of the DRBOSAC are solely advisory in nature.

5. Officials to Whom the Committee Reports:
The DRBOSAC provides advice and recommendations to the Secretary through the Commandant of the Coast Guard, Commander, Sector Delaware Bay, Commander, Fifth Coast Guard District and Commander, Atlantic Area.

6. Agency Responsible for Providing Necessary Support: The Department of Homeland Security shall be responsible for providing financial and administrative support to the committee. Within DHS, Sector Delaware Bay, United States Coast Guard will provide this support.

7. Estimated Annual Operating Costs and Staff Years:
The estimated operating cost of the DRBOSAC is $90,000.00, which includes 0.75 staff years of support.

8. Designated Federal Officer:
A full-time employee of the Coast Guard is appointed by the Director of Response Policy (CG-53) as the DRBOSAC Designated Federal Officer (DFO). The DFO or the alternate DFO approves or calls DRBOSAC meetings, approves meeting agendas, attends all committee and subcommittee meetings, adjourns any meeting when the DFO determines adjournment to be in

the public interest, and chairs meetings when directed to do so by the Director of Response Policy.

9. Estimated Number and Frequency of Meetings:
Meetings of the DRBOSAC may be held with the approval of the DFO; it is expected the committee will meet twice a year. Members may be reimbursed for travel and per diem expenses, and all travel for DRBOSAC business must be approved in advance by the DFO. Committee meetings are open to the public unless a determination is made by the appropriate DHS official, in accordance with DHS policy and directives, that the meeting should be closed in accordance with Title 5, United States Code, subsection (c) of section 552b.

10. Duration:
The DROBOSAC shall terminate 30 days after it transmits its report, pursuant to Section 3 of this charter, but no later than December 31, 2010, whichever is earlier.

11. Member Composition:
The DRBOSAC shall consist of 27 voting members who are appointed by and serve at the pleasure of the Commandant of the Coast Guard, and who have particular expertise, knowledge, and experience regarding the transportation, equipment, and techniques that are used to ship cargo and to navigate vessels in the Delaware River and Bay, as follows:

(A) Three members who are employed by port authorities that oversee operations on the Delaware River or have been selected to represent these port authorities, of whom--
  (i) one member shall be an employee or representative of the Port of Wilmington;
  (ii) one member shall be an employee or representative of the South Jersey Port Corporation; and
  (iii) one member shall be an employee or representative of the Philadelphia Regional Port Authority.

(B) Two members who represent organizations that operate tugs or barges that utilize the port facilities on the Delaware River and Delaware Bay.

(C) Two members who represent shipping companies that transport cargo by vessel from ports on the Delaware River and Delaware Bay, of whom at least one may not be a representative of a shipping company that transports oil or petroleum products.

(D) Two members who represent operators of oil refineries to the Delaware River and Delaware Bay.

(E) Two members who represent State-licensed pilots who work on the Delaware River and Delaware Bay.

(F) One member who represents labor organizations whose members load and unload cargo at ports on the Delaware River and Delaware Bay.

(G) One member who represents local commercial fishing interests or an aquaculture organization, the members of which organization depend on fisheries and resources of the Delaware River or Delaware Bay.

(H) Three members who represent environmental organizations active with respect to the Delaware River and Delaware Bay, including a watershed advocacy group and a wildlife conservation advocacy group.
(I) One member who represents an organization affiliated with recreational fishing interests in the vicinity of the Delaware River and Delaware Bay.
(J) Two members who are scientists or researchers associated with an academic institution and who have professional credentials in fields of research relevant to oil spill safety, oil spill response, or wildlife and ecological recovery.
(K) Two members who are municipal or county officials from Delaware.
(L) Two members who are municipal or county officials for New Jersey.
(M) Two members who are municipal or county officials from Pennsylvania.
(N) One member who represents an oil spill response organization located on the lower Delaware River and Delaware Bay.
(O) One member who represents the general public.

The DRBOSAC may also consist of an appropriate number (as determined by the Commandant of the Coast Guard) of non-voting members who represent Federal agencies and agencies of the States of New Jersey, Pennsylvania, and Delaware with an interest in oil spill prevention in the Delaware River and Delaware Bay.

The members outlined in (A) can be either Special Government Employees or representatives. Members who are merely employed by port authorities shall be designated as SGEs and members that represent these port authorities shall be designated as representative members. The members in paragraphs (B), (C), (D), (E), (F), (G), (H), (I), (K), (L), (M) and (N) are representative members and not Special Government Employees as defined in section 202(a) of Title 18, United States Code.

The members in paragraphs (J) and (O) serve as a Special Government Employees as defined in section 202(a) of Title 18, United States Code.

The terms of office for members initially appointed to the committee shall expire upon termination of the committee or December 31, 2010, whichever occurs first. A member appointed to fill an unexpired term serves the remainder of the term.

12. Officers

The Committee elects by majority vote one member of the committee to serve as Chair and one member as Vice-Chair. The Vice-Chair will act as Chair in the absence of or incapacity of the Chair or in the event of a vacancy in the office of the Chair. The term of office for the Chair and Vice-Chair shall expire upon termination of the committee or December 31, 2010, whichever occurs first.

13. Subcommittees:

The DFO may establish subcommittees for any purpose consistent with this charter. Such subcommittees may not work independently of the chartered committee and must present their work to the DRBOSAC for full deliberation and discussion. Subcommittees have no authority to

make decisions on behalf of the DRBOSAC and may not report directly to the Federal government or any other entity. The subcommittee chair shall be a DRBOSAC member.

14. Recordkeeping:
The records of the DRBOSAC, formally and informally established subcommittees, or other subgroups of the committee, are handled in accordance with General Records Schedule 26, Item 2 or other approved agency records disposition schedule. These records are available for public inspection and copying, in accordance with the Freedom of Information Act (Title 5, United States Code, section 552).

15. Filing Date:
April 6, 2010
Department Approval Date
March 2, 2010
CMS Consultation Date
April 6, 2010
Date Filed with Congress

Appendix B – Significant* Oil Spill Events in Delaware River and Bay

Responsible Party	Date	Amount Spilled	Product Spilled
M/T *Elias* – ARCO, Ft. Mifflin Dock	9 April 1974	12,000 bbl of a 217,000 bbl cargo	***Bachaquero crude oil explosion, fire, spill
T/V *Corinthos* – Marcus Hook	31 Jan 1975	266,000 barrels	Fire and crude oil spill while docked at BP *Edgar M. Queeny* collided with *Corinthos*
T/V *Grand Eagle*	29 Sept 1985	435,000 gallons	Crude oil **-** grounded MH Bar
Coastal Eagle Point	5 Dec 1985	22,000 gallons 80 tons	Benzene
Standard Chlorine	3 Jan 1986	569,000 gallons	PDCB/benzene
T/V *Intermar Alliance*	21 Mar 1986	189,000 gallons	Nigerian/Ninian Crude loss of steerage
T/V *Viking Osprey*	8 Sept 1986	295,000 gallons	Bottom scrap Marcus Hook Bar –Claymont Shoal
M/V *Jahre Spray*	7 Oct 1988	Trailing sheen - 6 miles	Nigerian crude oil
T/V *Presidente Rivera* –South of Marcus Hook	24 June 1989	435,000 gallons	#6 heavy oil – industrial grade – grounding Claymont Shoal
****T/V *Exxon Valdez***	24 March 1989	10.8 million gallons	North Slope crude oil
Barge *Worlds Radiance* – Hogg Island Terminal	21 Nov 1989	4200 gallons	Storm - Barge broke from dock while off loading – crude oil
T/V *Faith I & Ocean Barge 190*	19 Aug 1990	168,000 gallons	Gasoline **-** collision
M/V *Santa Clara* 30 miles off Cape May	3 Jan 1992		Arsenic Trioxide –containers weather
M/V *Kentucky*	22 July 1994	13,000 gallons	Crude oil – suspected grounding Marcus Hook bar-Claymont Shoal
M/V *Jahre Spray* Eagle Point Refinery	22 July 1995	56,000 gallons	West African Rabbi crude –transfer hose broke during storm
T/V *Anitra* Big Stone Anchorage	9 May 1996	42,000 gallons	Nemba and Cabinda light crude oils. Leak below water line.
Bouchard *Barge 155* Bombay Hook Anchorage	24 Oct 1996	2,000 gallons	#6 fuel from Anchor compartment while waiting out storm

T/V *Niki* - Delaware City	1996	1,500 gallons	
M/V *Mystras* - Big Stone Anchorage	18 Sep 1997	200 bbls (8,400 gallons)	Brent crude oil
Bouchard *Barge #115*- Motiva	27 Oct 1999	6,300 gallons	Vacuum gas oil - overfill
Conectiv/IRPP	Dec 1999	750,000 gallons	subsurface diesel spill
Tug John Terecamo Near Ft. Mifflin	15 June 2001	2,000 gallons	Hit by propeller of Tanker –grounded to avoid sinking. Diesel fuel
Motiva Acid Spill Delaware City	17 July 2001-	Land based spill- 10,000 gallons to water	Spent sulfuric acid and water mixture – fire/explosion
T/V *Athos I* – Vicinity of CITGO docks, Paulsboro. NJ	26 Nov 2004	265,000 gallons	Crude oil – heavy Hit submerged objects
M/V *Bermuda Islander*	26 April 2006	Original mystery spill- ? gals	Oil trailing six miles
IPC Spill- Christina River, Wilmington	15 July 2006	2,100 gal	Waste oil – land based tank/line leak
T/V *Tigani* CITGO Dock	7 Oct 2007	1,600 gallons	#6 Bunker C oil – cracked scupper line that passed through a bunker tank – leaking while docked
Sunken Tugs - Schuylkill River	29 July 2008	1,200 gallons?	fuel oil/waste oil spill

*"Significant" is a relative term that is used in the title to mean amount spilled, level of response or the notoriety of the event.
**Exxon Valdez listed for comparison

***The petroleum industry generally classifies crude oil by the geographic location it is produced in (e.g. West Texas Intermediate, Brent), its API (American Petroleum Institute) gravity (an oil industry measure of density), and by its sulfur content. Crude oil may be considered *light* if it has low density or *heavy* if it has high density; and it may be referred to as sweet if it contains relatively little sulfur or *sour* if it contains substantial amounts of sulfur.

Brent and Ninian crude come from the North Sea area. Nemba and Cabinda light crude oils are produced in Angola. Nigerian crude oil could be Bonny Light, Agbami (light, sweet), Escravos or Pennington. Bachaquero crude oil is from Venezuela.

Ecological Risk Assessment –

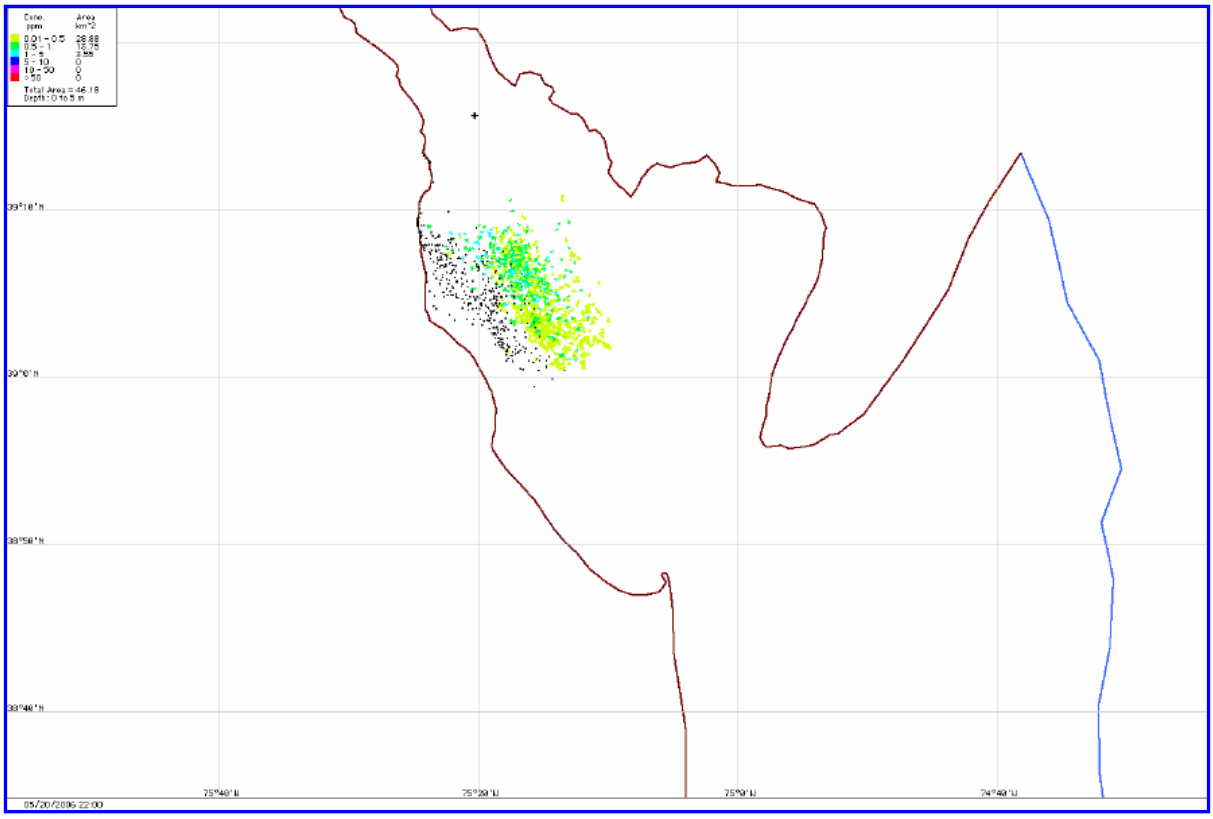
Environmental Tradeoffs Associated with Response Technologies –

2006

Ecological Risk Assessment: Consensus Workshop

Environmental Tradeoffs Associated With Oil Spill Response Technologies

Delaware Bay



Ecological Risk Assessment: Consensus Workshop

Environmental Tradeoffs Associated With Oil Spill Response Technologies

Delaware Bay

A Report to the US Coast Guard, Sector Delaware Bay

Don Aurand and Gina Coelho (Compilers)
Ecosystem Management & Associates, Inc.

Ecosystem Management & Associates, Inc.
Report 06-01

REPORT AVAILABILITY

Copies of this report can be obtained from the following address:

Commandant (G-RPP)
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2100 Second Street, SW
Washington, DC 20593
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LIST OF ABBREVIATIONS, SYMBOLS, AND ACRONYMS

Term	Abbreviation, Symbol, or Acronym
Area Contingency Plan	ACP
Automated Data Inquiry for Oil Spills	ADIOS
Barrels	bbls
Cubic Kilometers	Km^3
Ecological Risk Assessment	ERA
Ecosystem Management & Associates, Inc.	EM&A
Environmental Protection Agency	EPA
Environmental Sensitivity Index	ESI
General NOAA Oil Modeling Environment	GNOME
Geographic Information System	GIS
Hazardous Materials Response Division (NOAA)	HazMat
Hours	hrs
In-Situ Burn	ISB
Knots	kts
Meters	m
Miles per hour	mph
National Oceanic and Atmospheric Administration	NOAA
non-governmental organization	NGO
Office of Response and Restoration (NOAA)	OR&R
Parts per million	ppm
Regional Response Team	RRT
Scientific Support Coordinator	SSC
Square Kilometers	Km^2
United States Coast Guard	USCG
United States Coast Guard, Headquarters	USCG HQ
United States Fish and Wildlife Service	USFWS

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Ecological Risk Assessment: Consensus Workshop

Environmental Tradeoffs Associated With Oil Spill Response Technologies

Delaware Bay

Executive Summary

In January/February 2006, the United States Coast Guard (USCG) Sector Delaware Bay sponsored a workshop whose purpose was twofold: First, in response to the M/VAthos 1 oil spill in November 2004 and the ongoing work of the Area Committee, the USCG sought to bring together and educate the various non-spill response resource managers and scientist in the Delaware Estuary. Secondly, the workshop allowed the participants the opportunity to evaluate the relative risk to natural resources from various oil spill response options (on-water mechanical recovery, dispersant application, and on-shore mechanical recovery) compared to natural recovery.

The spill scenario designed by the Area Committee involved a release of approximately 60,000 gallons of Nigerian Qua Iboe crude oil due to an accident in the main channel of the upper estuary. The hypothetical date for the spill was mid-May. This period was selected to incorporate possible impacts to signature estuary species. During this period of time large populations of migratory shorebirds would be present in the estuary and Horseshoe Crab spawning would be occurring.

The workshop consisted of two three-day sessions, separated by approximately one month. Over 50 agency, academic and NGO personnel participated over the 6 day period. At the initial meeting in January, five focus groups were established and analyzed natural recovery and on-water mechanical recovery. At the second workshop in February, due to prior commitments and a spill in New Jersey, attendance was reduced and only three focus groups (including some participants from the two disbanded groups) were maintained; at that time the remaining three alternatives were ranked.

After evaluating the various spill response options within the parameters presented for this scenario the groups came to the consensus that the most benefit to the environment occurred with dispersant use, if the dispersant application was highly effective (85% removal). However, the groups questioned how realistic this scenario would be considering all the variables affecting a dispersant's effectiveness, e.g., weather, temperature, sea state, spill product, logistics of dispersal, time constraints, dispersant availability and supply, water depth, circulation patterns and flushing rates, natural resources, etc. When considering a more realistic effectiveness ranges within 35-50% the benefits of dispersant use, in this

scenario, are not quite as dramatic and overwhelming as the original 85% effectiveness rating.

Primary risks noted by all groups, to shore birds, waterfowl and Horseshoe Crabs on the water surface and along the shoreline, were all reduced in that case. Concerns were voiced regarding the increase over exposure of water column organisms to dispersed oil. This concern was less than the risk perceived to the other resources.

Overall, the participants felt that the ERA was a very valuable exercise. A list of recommendations was developed and is included at the end of this report. These recommendations will be reviewed by the Area Committee for further action. It was also strongly recommended that the USGC/Area Committee should consider sponsoring additional ERA's to examine other critical scenarios in other parts of the Estuary.

1.0 Objectives of the Delaware Bay Workshop

1.1 Background and Process

In 1998, the United States Coast Guard (USCG) began sponsoring efforts to develop a comparative risk methodology to evaluate oil spill response options. Interest in selecting response options based on a risk/benefit analysis predates the 1998 initiatives, but the current effort is different in that it emphasizes a consensus-building approach to evaluate risks and benefits.

Headquarters, USCG (G-MOR) sponsored the development of a guidebook on this process. The document, *Developing Consensus Ecological Risk Assessments: Environmental Protection in Oil Spill Response Planning. A Guidebook*, is available from G-MOR (Aurand et al., 2000). It can also be downloaded from the contractor's web site at www.ecosystem-management.net.

The process is designed to help planners compare ecological consequences of specific response options, especially in nearshore or estuarine situations. This is particularly important for consideration of dispersants and in-situ burning, which present difficult analytical issues. The process focuses on ecological "trade offs" or cross-resource comparisons. Through a structured analytical approach participants find "common ground" for evaluating impacts and they develop defensible logic to support their conclusions. The process is consistent with the U.S. Environmental Protection Agency's (EPA) Ecological Risk Assessment (ERA) guidelines (U.S. EPA, 1998), but emphasizes development of group consensus among stakeholders. The process uses a series of analytical tools specifically developed for use in a group environment. It is designed as a planning tool and should not be used during an actual event. However, knowledge gained by participants in the consensus-building process facilitates real-time decision-making.

Training usually involves two 2- or 3-day workshops lead by a facilitator. The ideal size is 25 to 30 participants, including spill response managers, natural resource managers and trustees, subject matter experts, and non-governmental organizations. The goal is to achieve consensus interpretations of potential risks and benefits associated with selected response options based on a scenario developed by local participants. Time between the two workshops is used by participants to research issues of concern before developing final conclusions. The process focuses heavily on achieving a consensus interpretation of the available technical information. Therefore, it is important to have broad stakeholder representation in the decision process; otherwise, results may not be accepted by all stakeholders involved in an actual spill event.

The workshop process includes three primary phases - **problem formulation, analysis,** and **risk characterization**. Details of the process are described in the Guidebook. In the first phase, **problem formulation**, participants develop a scenario for analysis, identify resources of concern along with associated assessment thresholds, and prepare a conceptual model to guide subsequent analysis. In the **analytical phase**, participants characterize exposure and ecological effects. The conceptual model, developed in the problem formulation phase, directs the analysis using standard templates and simple analytical tools that define and summarize the analysis for each resource of concern and each response option. Finally, participants complete a **risk characterization**. During this phase,

participants interpret their results in terms of the costs and benefits of each response option to overall environmental protection as compared with natural recovery (i.e., baseline).

1.2 Sponsor's Objectives

The Delaware Bay workshop was sponsored by the Sector Delaware Bay Area Committee. The objectives of the meeting were to improve oil spill response strategies and enhance existing oil spill contingency planning in the area through open consultation between oil spill planners, managers, responders and resource trustee agencies. Through the consensus ERA process, the sponsors hope to facilitate a better understanding of resource trustee and response agency concerns, more timely and effective response decisions, and greater resource protection and recovery in the event of future oil spills.

1.3 Participants

A total of 48 individuals from 21 organizations attended the first workshop, with lesser numbers at the second session. Their names and affiliations are included in Appendix A. At the first workshop in January the participants were divided into five focus groups. At the second workshop in February, Focus Groups 2 and 4 were not well-represented, and the individuals from those groups joined Focus Group 1, 3 or 5. A significant portion of the reduction in attendance was due to an actual spill in New Jersey. Some persons had also indicated early in the process that they would only be able to attend the first session. The periods attended by each participant, and the focus groups they participated in are all indicated in Appendix A.

1.4 Organization of the Report and the Associated Compact Disk

This report is one of a series of files on a Compact Disk (CD) prepared as a project deliverable product. The report summarizes the results of the workshops, and presents the conclusions of the participants. It is formatted to be printed as an independent, double sided report. In addition, the CD contains copies of some of the presentations made at the workshops by the sponsors or by subject matter experts, as well as copies of documents provided as reference material by the sponsors. These files are cited at appropriate locations in the text of the report.

2.0 Overview of Workshop Events

This training exercise consisted of two 3-day workshops. The first workshop was held from 11 to 13 January, and the second from 14 to 16 February, 2006.

At the first workshop the meeting began with an overview of the ERA process (see ERA Overview on the workshop CD) followed by a discussion of the information developed prior to the meeting by the Steering Committee concerning the scenario, the resources at risk, and the response options to be considered (Problem Formulation Phase). This included a presentation by Dr. Alan Mearns, National Ocean and Atmospheric Administration (NOAA), Hazardous Materials Response Division (HazMat) which summarized the key elements of the scenario and the results of the NOAA trajectory modeling using the General NOAA Modeling Environment (GNOME) model and the Automated Data Inquiry for Oil Spills (ADIOS) model (see the Oil Spill Scenario file[1] and the Surface Oil Trajectory file on the workshop CD). The Steering Committee recommended that the group evaluate four response options, natural recovery (necessary as an analytical baseline), on-water mechanical recovery, use of dispersants, and on-shore mechanical recovery.

Since protective booming is a primary component of current response planning in Delaware Bay, the group discussed how that was to be considered.[2] Several options were presented. The Steering Committee considered the options and concluded that for natural recovery it would be assumed that no booming would occur, but for all other options protective booming would be in place. Since the GNOME model does not really account for the amount of oil entering the tidal creeks, the effect of booming will have to be done qualitatively by each focus group during their evaluation. This is a key assumption, because preventing contamination of marshes along the tributaries will reduce the level of concern.

The inclusion of an additional response option, on-shore in-situ burning, was discussed as well. The participants agreed to defer a decision on this until the second workshop, when it would be possible to better determine if sufficient time was available to complete an evaluation.

The participants then discussed the draft resources at risk matrix prepared by the facilitators and reviewed by the Steering Committee. There was a discussion about the value of adding salt marsh impoundments as a category, but it was decided that the tide gates would be closed during an oil spill and so they did not need to be added. Marine habitat was defined as the area beyond a line connecting Cape May and Cape Henlopen, while estuarine habitat was inside of that line. There was considerable discussion as to the water depth at which “shallow” and “deep” habitats should be divided, since Delaware Bay is quite shallow. Ultimately, the participants accepted the original suggestion to separate the two at a depth of 20 feet, based on the likely depth that dispersed oil concentrations were likely to be a concern.

[1] The “Oil Spill Scenario” PowerPoint presentation includes the basic information on the oil spill, as well as a summary of the results of the trajectory and weathering analyses for the surface slick alone, and for the use of dispersants at an effectiveness of 85%. The dispersant use portion was not presented until the third day of the first workshop, at the beginning of the evaluation of the dispersant option.

[2] Protective booming involves the use of specially designed boom along the shoreline or across the mouths of inlets, bays or tidal streams to deflect oil away from sensitive shoreline habitats. The use of such boom to prevent oil from entering tidal creeks in Delaware Bay is a key element in existing plans, and significant quantities of such boom is pre-positioned as well as stockpiled by oil spill response organizations in the region.

Several other minor changes to the draft habitat list and the characteristic species listing were proposed and accepted.

Dr. Aurand (facilitator, EM&A) then reviewed the concept of "thresholds" with the participants, and suggested that the criteria listed on the "Final Thoughts on Thresholds" slide in the ERA process briefing offered conservative guidance for their discussions later in the process. There were no objections. The guidelines were as follows:

- Organisms (birds, turtles, marine mammals) on the water surface should be considered affected if they are likely to be in contact with sheen.
- Shoreline habitat should be considered to be affected if there is between 10 to 100 grams of oil or emulsified oil per square meter.
- Organisms in the water column can be evaluated by the criteria presented in Table 4.1.
- If necessary, sediment exposure effects can be based on the NOAA Screening Quick Reference Tables (SQuiRTs) (NOAA, 1999).

Discussions then moved on to the risk ranking matrix. The final matrix is presented as Figure 4.1. As part of the risk ranking discussion, the participants agreed that the definitions they would use for the different levels of population baseline units would be local (L), which meant the population was essentially restricted to Delaware Bay; regional (R) which meant the population was restricted to the Mid-Atlantic area, and national/international (N) for broader populations.

The second day began with a review of the discussions of Day 1. Some additional, minor changes were made to the resources at risk table, and the issue of where to divide shallow and deep habitat was again raised, with some participants suggesting that it might be useful to divide the less than 20-foot habitat into 0 to 10 feet and 10 to 20 feet. It was agreed that this could be discussed in the focus groups, but that the table would use the 20-foot demarcation. Dr. Aurand then gave an overview presentation on oil spill basics. Following that presentation, the participants were divided into focus groups (see Appendix A) and began the risk assessment process for natural recovery.

On day three the focus groups completed and discussed the risk scoring for natural recovery and on-water mechanical recovery, and began work on the dispersant use option. Prior to beginning consideration of any of the response options under review, Dr. Aurand, presented an overview of response options.[3] The on-water mechanical recovery discussions were preceded by a presentation by Mr. Eugene Johnson, Delaware Bay and River Cooperative, Inc. on available resources and recovery strategies for the Delaware Bay (see On-Water Recovery on the workshop CD). The participants agreed, after significant discussion, to use an effectiveness of 25% for on-water mechanical recovery. After the focus groups completed their review of on-water mechanical recovery, Dr. Aurand gave an introduction to dispersants. He was followed by Dr. Alan Mearns, who reviewed the results of the GNOME and ADIOS modeling for dispersant use at an assumed effectiveness of 85%

[3] The presentations "Overview of Response Options" and "Introduction to Dispersants" are part of a dispersant training course that is offered by EM&A. More information on these presentations may be obtained by contacting EM&A directly.

(see the Dispersant at 85% Surface Oil Shown and Dispersant at 85% No Surface Oil[4] files on the workshop CD). There was a great deal of discussion concerning the realism of the 85% effectiveness option. The facilitation team explained that it was not meant to imply that it was expected to be achieved, but rather to allow the analysis of a "worst case" situation for water column exposure. After questions and answers, the focus groups had approximately one hour to consider the dispersant option.

All of the groups successfully ranked natural recovery and on-water mechanical recovery, but did not complete the evaluation of the consequences of dispersant use. At the end of the session, they developed a list of items to be addressed at the beginning of the second workshop:

- Participants want information/presentation on current dispersant policy.
- Participants would like to see another percentage of effectiveness (35% modeling run); also loading rate data for shoreline impacts for all three scenarios.
- Is there more information on aquatic amphipods, mollusks, etc. – in general, what are they and what is their function within the environment?
- May be useful to show a foodweb (direct, indirect) for this system for this time of year (Living Resources of the Delaware Estuary – bring a copy for each participant).
- If there were a proposed change on dispersant use policy, what process would be used to approve it?
- Have five hard copies of the Environmental Sensitivity Index for the next workshop.
- Bring additional toxicity data (if available) on species and/or information on natural bioavailability at or in the benthic environment and in the water column.
- Provide the quantity of dispersed oil entering the Broadkill and Liepsic Rivers.
- Participants should review the current Delaware Bay Area Contingency Plan prior to the next meeting.
- Get information on dispersed oil impacts at the molecular level on Horseshoe Crab eggs.
- Bring toxicity data on oil and dispersed oil biouptake by polychaetes.

In addition, the participants noted that the risk from this scenario was serious (based on the season and trajectory) for what was a relatively small spill, and that it really presented a challenge to decision-makers based on the risks to shorebirds and Horseshoe Crab eggs. The participants recommended considering other scenarios (seasonality, different oils, and/or different locations) if possible.

After introductions, the second workshop (14-16 February) began with a movie entitled "Introduction to Dispersants and Their Application," prepared by Oil Spill Response Limited (OSRL). This was followed by a presentation by Drs. Aurand and Coelho (facilitators, EM&A) which addressed many of the questions raised at the end of the first workshop (see the Additional Data file on the workshop CD). This was followed by a

[4] At the workshop, only the first of these files was available, but it was difficult to see the dispersed oil trajectory, so the second file, which does not show the oil remaining on the surface was developed for inclusion in the CD.

presentation by Mr. Gerald Conrad on the current dispersant policy in the Delaware Bay. The policy is available in the Sector Delaware Bay Area Contingency Plan, which is available at two internet locations. These are the USCG Sector Delaware Bay website at http://www.uscg.mil/d5/sector/delawarebay/Area_Committee.htm and the USCG Homeport website, http://homeport.uscg.mil/mycg/portal/home/do. He indicated that the ERA process will not directly result in any reconsideration or changes in policy, but that the issues being discussed are very important for future planning. If there were to be changes, there would need to be a formal consideration by the Sector Delaware Bay Area Committee, which would include extensive coordination and environmental review by both state and federal agencies. The current program for dispersant use monitoring was also discussed by Mr. Ben Anderson (also available in the Sector Delaware Bay Area Contingency Plan).

It should be noted that there was an oil spill incident in New Jersey which prevented a number of participants from attending and caused several others to leave early on the first day. This led to a decision to consolidate the remaining participants into three groups, since most of the missing participants were from two of the original groups. These changes are described in Appendix A (Participants). In Section 4, the results for all five groups are shown for natural recovery and on-water mechanical recovery, which were the two options scored in the first workshop. Results for dispersants and on-shore mechanical recovery are shown only for focus groups one, three and five (which had the additional members at meeting two).

Dr. Alan Mearns then presented the GNOME and ADIOS results for the use of dispersants at 35% effectiveness (see the Oil Spill Scenario 2[5], Dispersant at 35% Surface Oil Shown and Dispersant at 35% No Surface Oil files on the workshop CD). He also reviewed the results of the surface oil trajectory analysis and the evaluation of dispersant use at 85% effectiveness for a comparison. When this was completed, the participants were asked if they wanted to score dispersants at both effectiveness levels, or just one. The group chose to score both. The remainder of day one was spent with the focus groups completing the evaluation of the dispersant option.

Day two opened with a review of the results for natural recovery, on-water mechanical recovery, and dispersant use (35% and 85% effectiveness). The participants reviewed and discussed the differences between the various focus groups, and why they might have occurred. In general, however, there was good agreement between the three remaining groups. This was followed by an introduction to shoreline recovery by Dr. Aurand, and a presentation on shoreline recovery in the Delaware Bay area by Mr. Pat McGovern of Clean Venture, Inc. (see Delaware Bay Shoreline Recovery on the workshop CD). Dr. Alan Mearns also reviewed the results of a bioremediation study conducted on Slaughter Beach in the mid-1990s. The participants decided, based on Dr. Mearn's presentation, that they did not need to consider bioremediation in this workshop. Participants then discussed the effectiveness of shoreline recovery, and decided that it would not be possible to select one value to use in the analysis. Participants were reminded that protective booming should be assumed during the evaluation. The participants completed their review of on-shore mechanical recovery prior to lunch.

The remainder of day two was spent discussing possible ways to address other scenarios and/or the critical factors in the scenario which they just completed. There was support for considering the effects of a larger spill, a different product, a different season, and

[5] This presentation includes the information on dispersant use at 35% effectiveness, as well as many of the same slides used in the original presentation at the first workshop.

a location further up into the Delaware River. A number of participants felt, however, that we could not do justice to such discussions without a comprehensive scoring, and there was not sufficient time remaining to do that. A decision was made by the Steering Committee to have the three focus groups meet individually for approximately 1.5 hours to have open discussions about the key factors in their analysis and to develop a list of items they would like to share with the group. The focus groups were told to consider the following two questions:

- What were the 'drivers' that affected your decisions in this scenario?
- How would changes in those areas change your conclusions?

Day two ended with the participants reviewing the results of their discussions, which are presented in Section 5.1

Day three was a half-day session devoted to a discussion of recommendations and conclusions. These are presented in Section 5.2.

3.0 Exercise Scenario and Basic Analytical Information

3.1 Exercise Scenario

After considering a variety of options, the Steering Committee developed a scenario which threatened both the Delaware and New Jersey shorelines. This was done by changing the wind direction partway through the scenario. There was no narrative scenario developed, but the summary spill conditions are presented in Table 3.1. The weather conditions are within normal ranges for spring, and the volume released is consistent with a collision or grounding leading to a partial loss of cargo (one compartment on a larger vessel). Nigerian Qua Iboe crude oil is a commonly transported oil in the Delaware Bay, and it was tested and found to be dispersible by NOAA prior to the workshop. This information was presented to the participants on the first day for review and accepted. The participants felt that the scenario represented serious risk to natural resources, and really challenged the managers to discuss the risks to shore birds and breeding Horseshoe Crabs.

Table 3.1 Key Parameters for the Delaware Bay Scenario.

Time/Date	0600 on 20 May 2006
Location	39º15.66 N 75º20.33W
Volume	60,000 gallons (1432 barrels)
Oil Type	Nigerian Qua Iboe
Specific Gravity	API 36.2
Wind Speed	10 to 15 knots (variable directions)
Air/Water Temperature	15º C

3.2 Geographic Area of Concern

The general area of concern was the Delaware Bay south of the spill site, and the open ocean waters immediately adjacent to the mouth of the Bay. The approximate extent of the area is defined by the extent of the map in Figure 3-3, which shows the surface oil trajectory. The area includes all of Delaware Bay and its shoreline south of the release point, as well as the ocean area and associated shoreline immediately adjacent to the mouth of the Bay.

3.3 Resources of Concern

Participants reviewed and agreed to use the resource table developed by the facilitators for the Steering Committee prior to the meeting with minor modifications to the list of representative species, and some changes to the proposed habitats and subhabitats. The final table is presented in Appendix B. The major discussion items and their resolution were:

- Delaware salt marshes contain a large number of impoundments, which could be contaminated. Participants agreed to assume that tidal access (via tide gates) could be shut off during an oil spill, so that contamination would not occur.
- Marine habitat was defined as the area outside of a line connecting Cape May and Cape Henlopen. The bay is the area inside of the Capes.
- The category "Structured Hard Bottom Community" on the table refers to non-oyster communities, and includes sabellid reefs, dense clam or mussel beds, and artificial reefs.
- The issue of listing protected species as a separate category on the table was discussed and the participants agreed that it was unnecessary, based on the proposed ranking system (impacting such a species leads to a high percentage impact and/or long recovery, resulting in a high risk).
- There was considerable discussion as to whether or not a depth of 20 feet was the appropriate level at which to divide "shallow" and "deep" subtidal and water column communities. Since Delaware Bay has extensive areas which are less than 20 feet deep, there was some interest in having an area of 0-10 feet and then an area of 10-20 feet in depth. Ultimately, the one area was used, and the participants were instructed to discuss the issue in their focus groups, and to add comments to the ranking score if it proved to be critical to their discussions.

3.4 Conceptual Model

During discussions about the general analytical process, the participants agreed that developing a detailed conceptual model was not necessary for their purposes. As an alternative, they accepted the list of seven hazards developed initially in a detailed conceptual model prepared for the San Francisco Bay workshop (Pond et al., 2000) that have been used in all subsequent workshops. They agreed that these should be considered for each of the proposed response options (these hazards are air pollution, aqueous exposure, physical trauma, oiling/smothering, thermal, waste and indirect). The response options to be considered would be natural recovery (no response), on-water mechanical recovery, dispersant application, on-shore mechanical recovery and, if time was available, on-shore in-situ burning.

3.5 Modeling Results

The NOAA HazMat Modeling Group used the basic information in the scenario to develop a surface trajectory and a dispersed oil trajectory analysis using GNOME for the detailed risk assessment portion of the workshop. Basic weathering information was calculated using the ADIOS II program. Mass balance estimates are presented in Tables 3.2

(oil only) and 3.3 (emulsified oil) and in Figures 3.1 and 3.2. This oil (Nigerian Qua Iboe crude oil) emulsifies quite rapidly, but is dispersible early in the spill. The volume present in the environment more than doubles in twelve hours and ultimately more than 300,000 gallons of mousse are present, which is six times the volume that was originally released. Table 3.4 shows the volume of oil and emulsion present on six shoreline segments if no response options are implemented.

Table 3.2 Oil Budget (in Gallons) Budget for Undispersed and Dispersed Oil (35 and 85% Effectiveness) as Predicted in the Delaware Bay Scenario, Initial Spill Volume 60,000 Gallons.

Oil in the Environment, 24 Hours Post-spill				
Response	Floating	Beached	Dispersed	Evaporated
No Dispersal	24,348	6,804	4,656	24,192
Disperse 35%	15,444	4,692	17,688	22,176
Disperse 85%	3,516	1,116	36,024	18,344
Oil in the Environment, 48 Hours Post-spill				
Response	Floating	Beached	Dispersed	Evaporated
No Dispersal	22,080	7,944	4,656	25,320
Disperse 35%	14,172	5,352	17,688	22,788
Disperse 85%	3,072	1,356	36,024	19,548

Table 3.3 Water-in-oil Emulsion (Mousse) and Oil Budget (in Gallons) for Undispersed and Dispersed Oil (35 and 85% Effectiveness) as Predicted in the Delaware Bay Scenario, Initial Spill Volume 60,000 Gallons, 89.9% Emulsification in 30 Hours.

Emulsion in the Environment, 24 Hours Post-spill			
Response	Floating	Beached	Total Emulsion
No Dispersal	183,068	51,158	234,226
Disperse 35%	116,120	35,278	151,398
Disperse 85%	24,902	8,391	33,293
Emulsion in the Environment, 48 Hours Post-spill			
Response	Floating	Beached	Total Emulsion
No Dispersal	218,614	78,653	297,267
Disperse 35%	140,317	52,990	193,307
Disperse 85%	30,059	13,426	43,485

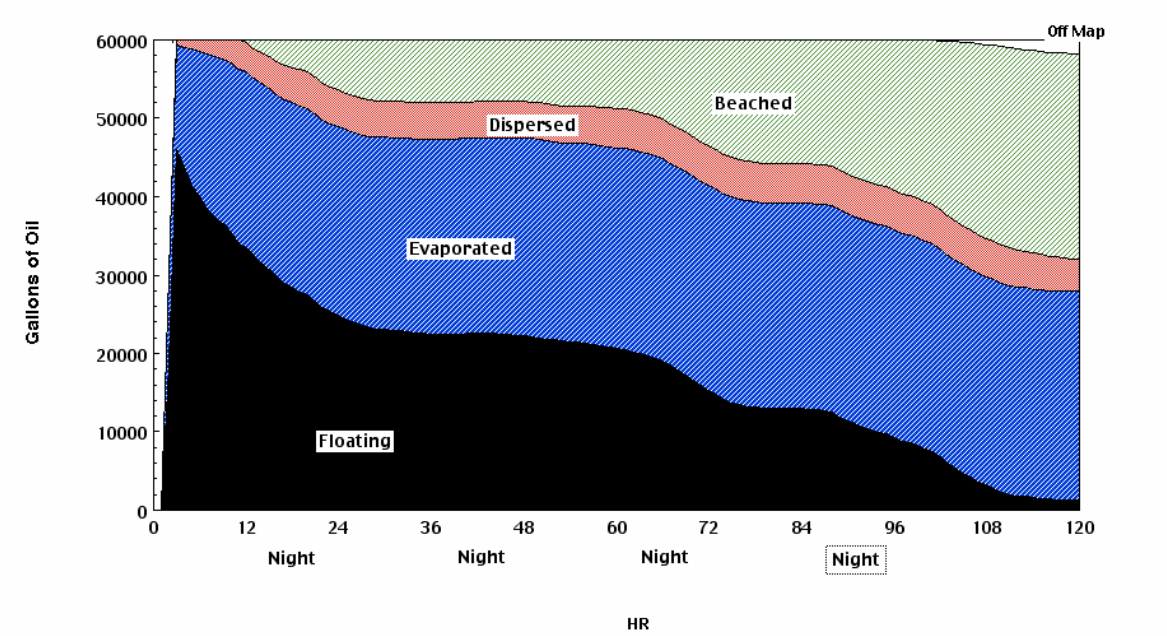


Figure 3.1 *The ADIOS predictions for the fate of the floating oil (emulsification not considered) in the Delaware Bay scenario if no response options are employed.*

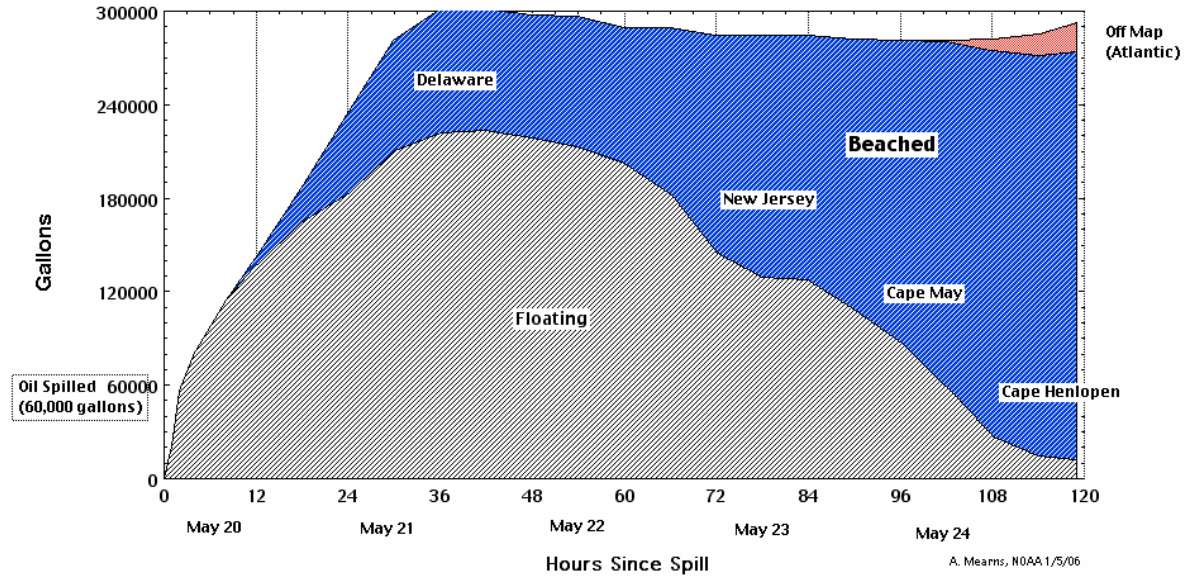


Figure 3.2 *The ADIOS predictions for floating and beached oil when emulsification is considered in the Delaware Bay scenario if no response options are employed.*

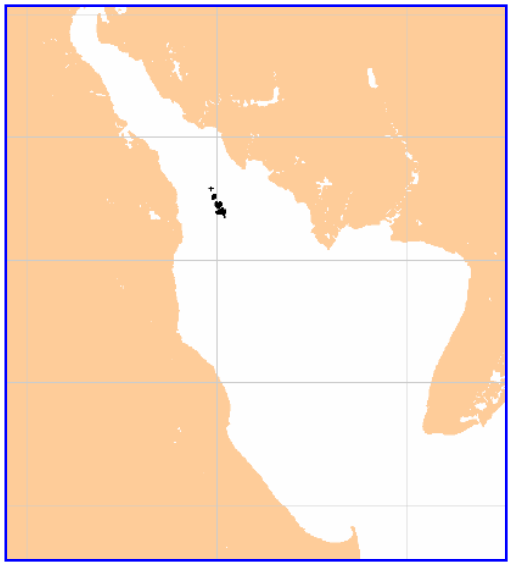
Selected snapshots from the surface oil trajectory modeling results are shown in Figure 3.3. The average concentration in the dispersed oil plume produced without the use of dispersants (Figure 3.4, at an expanded scale) is compared to toxicity threshold values for adult crustaceans (Figure 3.5) and sensitive life history stages (Figure 3.6) (see Table 4.1 and the associated discussion in Section 4 for information on development and interpretation of thresholds). Figure 3.7 presents the same data as in Figure 3.6, but at an expanded scale in order to clarify the relationship between thresholds and observed concentrations.

While the movement of the floating oil is heavily influenced by tidal flow, wind is the primary mover for surface oil. Under the modeled wind conditions the oil initially moves towards the Delaware shore, in the vicinity of Bombay Hook and further south. After approximately 30 hours the wind changes and the slick moves towards the New Jersey shore, stranding from the vicinity of Fortescue, NJ all the way to Cape May. Finally, after approximately three days the remaining floating oil leaves Delaware Bay and moves south along the Atlantic coast. The volumes of oil (or emulsion) present in several locations are given in Table 3.4. Given the volume of the initial spill, the volumes of emulsion which strand near Bombay Hook, DE and Cape May, NJ are quite large, and there is also considerable volume inside the hook of Cape Henlopen, DE as well as south of Cape Henlopen along the Atlantic shore.

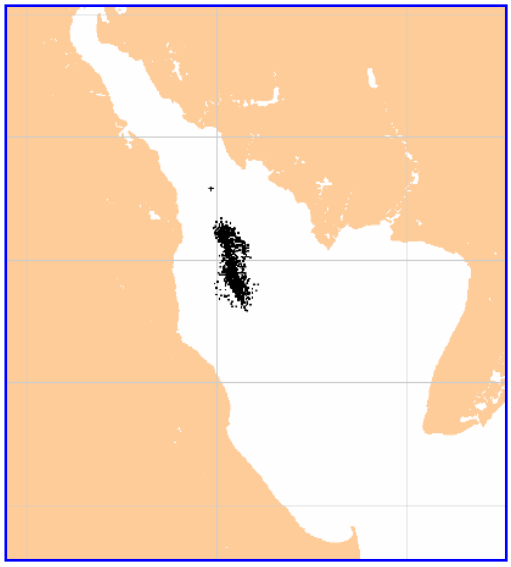
Table 3.4 The Estimated Gallons of Oil and Emulsion on Six Shoreline Segments for the Delaware Bay Scenario if No Response Options are Employed.

Shoreline	Oil	Emulsion
Bombay Hook	8,040	72,000
Egg Island area	420	3,800
North Cape May	64	600
Cape May	6,672	60,000
Cape Henlopen	3,012	27,000
South of Cape Henlopen	3,292	29,600

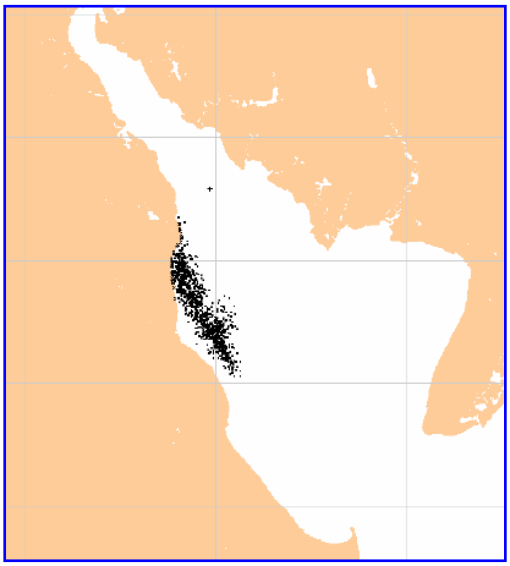
Average concentrations in the water column with no response (Figures 3.4 to 3.7) do not exceed any of the thresholds presented for adult crustaceans or for sensitive life history stages. The maximum concentrations exceed the 'low level of concern' threshold for sensitive life history stages but not for adult crustaceans. This situation would apply only to animals which remained in contact with maximum concentrations for a period of at least several hours. In general, there is insufficient oil dispersed or dissolved to represent a threat to water column organisms except in the immediate vicinity of the slick, and then only in the surface layer (0 to 2 meters).



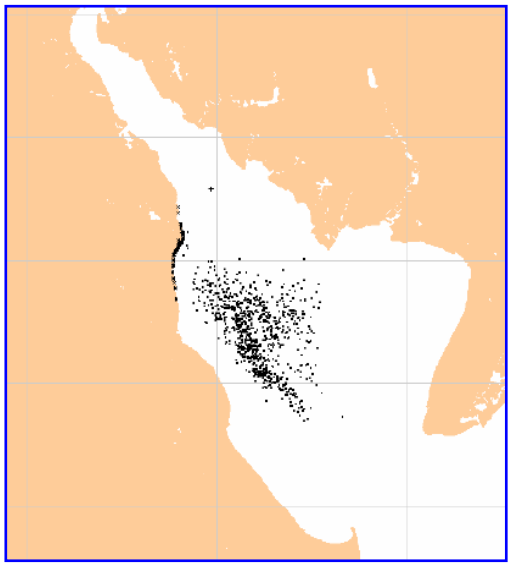
A: 1 Hour



B: 7 Hours



C: 18 Hours



D: 42 Hours

Figure 3.3 *Results from the NOAA GNOME modeling for the Delaware Bay scenario surface oil slick trajectory.*

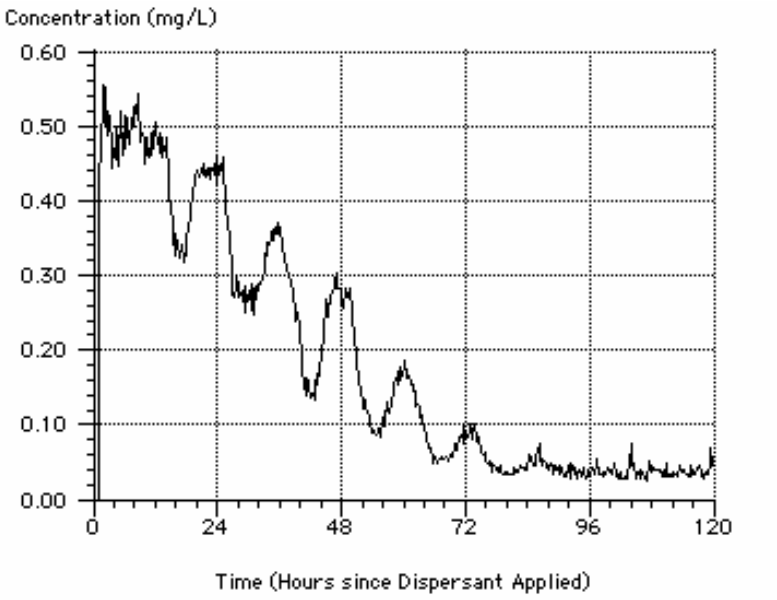


Figure 3.4 *Average dispersed oil concentration from 0 to 2 meters in the plume versus time without the use of dispersants.*

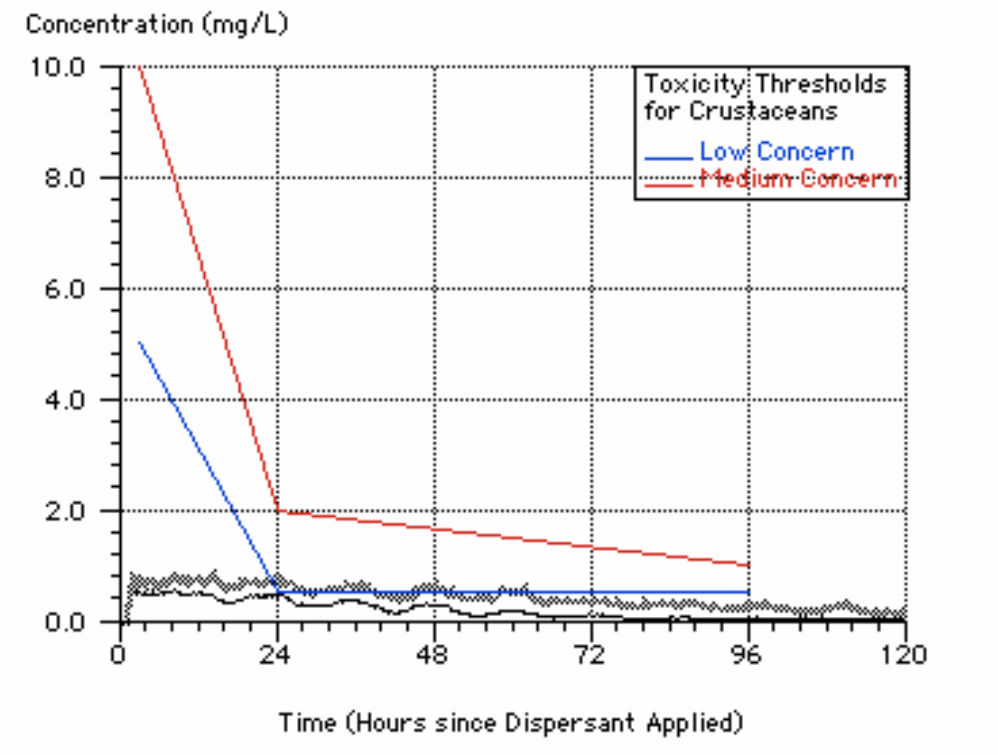


Figure 3.5 *Toxicity thresholds for dispersed oil for adult and juvenile crustaceans compared to maximum and average dispersed oil concentrations at 0 to 2 meters without the use of dispersants (based on the values presented in Table 4.1).*

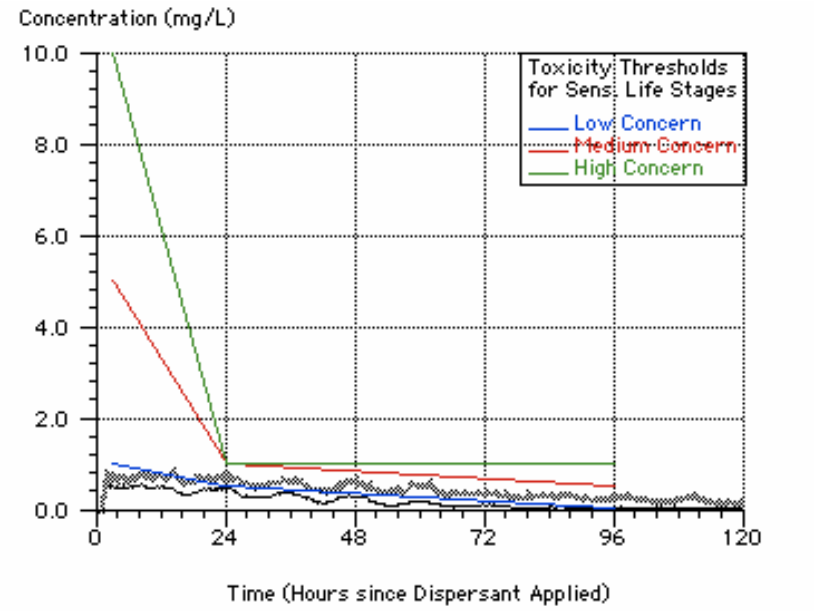


Figure 3.6 *Toxicity thresholds for dispersed oil for sensitive life history stages compared to maximum and average dispersed oil concentrations at 0 to 2 meters without the use of dispersants (based on the values presented in Table 4.1).*

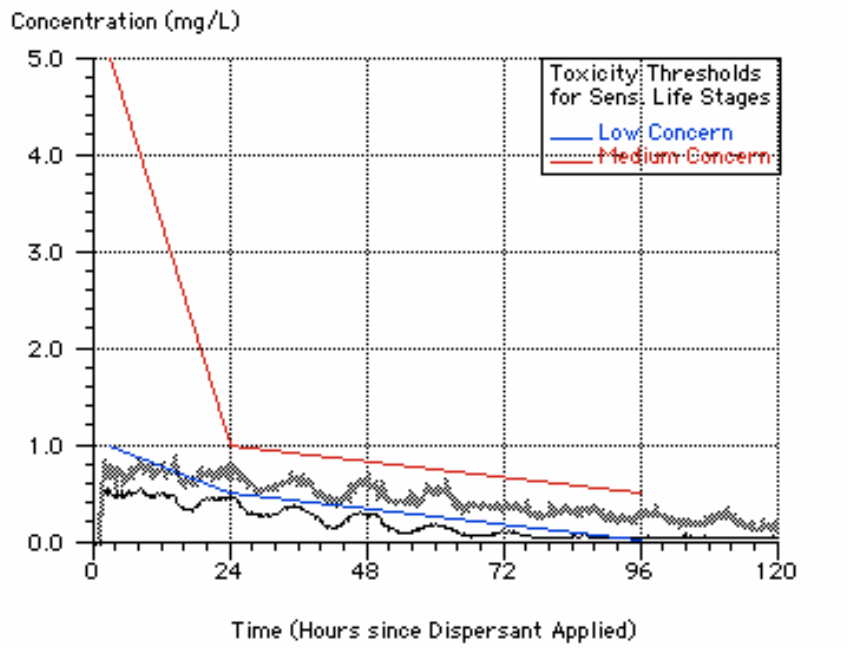


Figure 3.7 *Conservative toxicity thresholds for dispersed oil for sensitive life history stages compared to maximum and average dispersed oil concentrations at 0 to 2 meters without the use of dispersants (based on the values presented in Table 4.1).*

Snapshots from the dispersed oil modeling results are shown in Figure 3.8 for 85% effectiveness and in Figure 3.9 for 35% effectiveness. For clarity, oil remaining on the surface has been removed from the frames. Figure 3.10 depicts fate of the oil slick when dispersants are applied at 85% effectiveness, while Figure 3.11 shows the effect of the dispersant application at 6 hours on emulsion formation.

By comparing Figure 3.3 to Figures 3.8 and 3.9, the differences in the trajectory for the surface oil and the dispersed oil plume are noticeable. This is even more obvious in the QuickTime trajectory movies on the workshop CD. The dispersed oil plume moves with the estuarine currents, and shows a strong tidal oscillation, while the surface slick responds to the wind field. As a result, different areas of the estuary are exposed when dispersants are applied. A second obvious result is the dramatic reduction in emulsion formation, and in the amount of oil stranding (Tables 3.2 and 3.3). For example, after 48 hours almost 79,000 gallons of emulsion have beached with no response, while with dispersant application at 85% effectiveness this number is reduced to approximately 13,500 gallons. On-water mechanical recovery, assuming an effectiveness of 25%, would lead to a reduction similar to that estimated for dispersants at 35% effectiveness, assuming that the emulsion could be effectively recovered and stored in the short term.

This reduction in shoreline impact with dispersant use comes at the expense of increased exposure to organisms in the water column. Figure 3.12 shows the maximum and average water column concentrations in the top 2 meters when dispersants are used at 85% effectiveness. Maximum concentrations initially peak at approximately 2 parts per million (ppm), and rapidly decline over time as dilution occurs. Average concentrations peak slightly later at approximately 0.75 ppm and then also decline with dilution. Table 3.5 shows the area of the dispersed oil plume (defined as any grid cell in the model where the presence of oil is predicted) over time, along with the average and maximum concentrations. For comparative purposes, the approximate volume of the Delaware Bay is 13 billion cubic meters, and the approximate surface area is 1,773 square kilometers (Sutton *et al*., 1996). So the contaminated area at 48 hours amounts to 4.7% percent of the total area of the Bay. The affected volume at that time, based on the assumed mixing depth of 2 meters, is less than 0.1%.

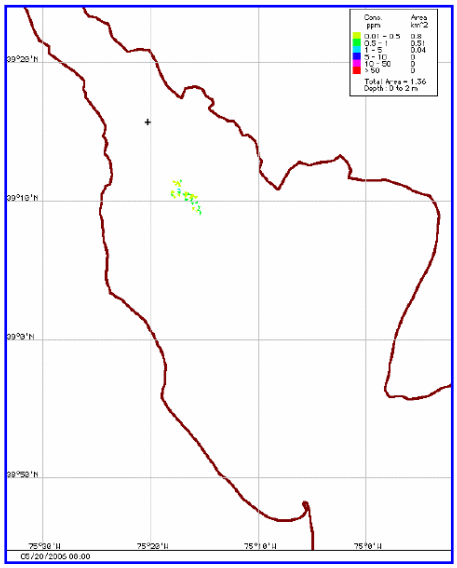
Table 3.5 Estimated Dispersed Oil Plume Extent and Concentrations, Over Time, When Dispersants are Used at 85% Effectiveness.

Hours Into Spill	Area (sq. km.)	Depth (m)	Average Concentration (ppm)	Maximum Concentration (ppm)
0	0.0	0.0	0.00	0.00
6 (Spill Dispersed)	25.7	2.5	1.00	2.00
12	38.8	4.5	0.75	1.60
24	58.3	2.5	0.47	0.63
48	83.6	2.0	0.34	0.66
72	213.5*	2.5	0.09	0.37

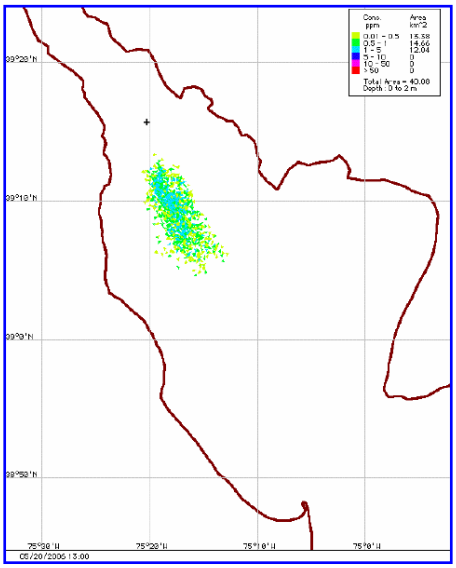
* Approximately 50% of the plume is outside of Delaware Bay at this time.

Figure 3.13 compares the maximum and average water column concentration in the top 2 meters when dispersants are used at 85% effectiveness to the thresholds of concern for adult and juvenile crustaceans. Figure 3.14 shows the same information at an expanded scale. Only the low level of concern threshold is exceeded, and then only for the maximum concentrations, which do not represent a large proportion of the plume. Figure 3.15 compares these concentrations to the conservative toxicity thresholds for sensitive life history stages. In this case the low level of concern threshold is exceeded for both the average and maximum concentrations, and the medium and high level of concern thresholds are approached at the 24-hour mark for the maximum concentrations. This suggests a low risk to planktonic organisms present in the dispersed oil plume, with a higher risk to those in the areas of high concentration. Figure 3.16 compares these concentrations to the low level of concern threshold for adult fish. The maximum concentration curve approaches the threshold at 24 to 36 hours, but does not exceed it. Figure 3.17 compares the exposure profile at a specific point in the Bay to the toxicity thresholds for adult and juvenile crustaceans (as representative of the benthic community). The data suggests that benthic organisms would be at low risk during this spill scenario.

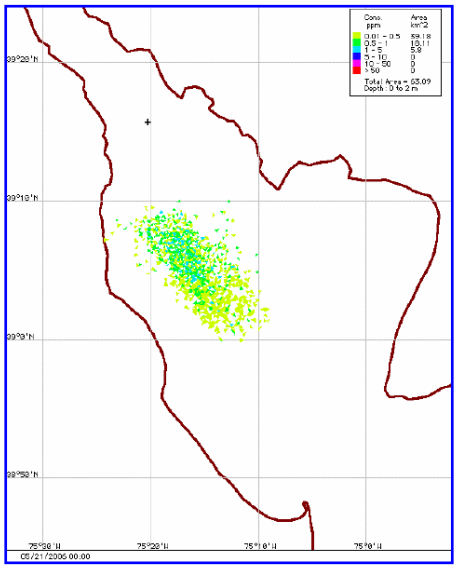
Finally, Figure 3.18 shows the maximum and average concentrations of dispersed oil when dispersants are used at 35% effectiveness. Figure 3.19 compares these values to the thresholds for sensitive life history stages. This is the only comparison presented, since it is the only one where predicted values at 35% effectiveness approached the thresholds. In this case, the low level of concern threshold falls between the average and maximum concentration curves, suggesting that animals in the portions of the plume with higher than average concentrations could be at risk.



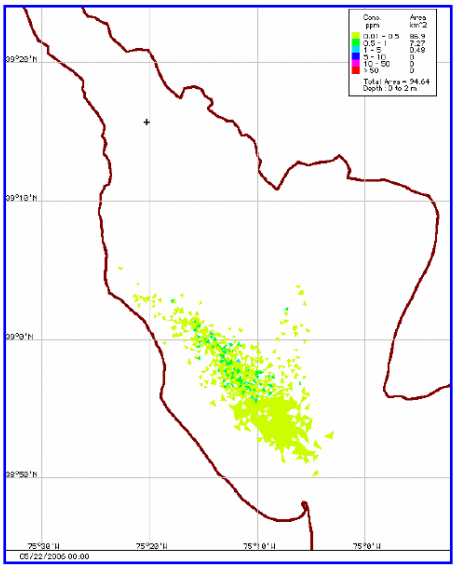
A: 3 Hours



B: 7 Hours (D + 1 Hour)



C: 18 Hours (D + 12 hours)

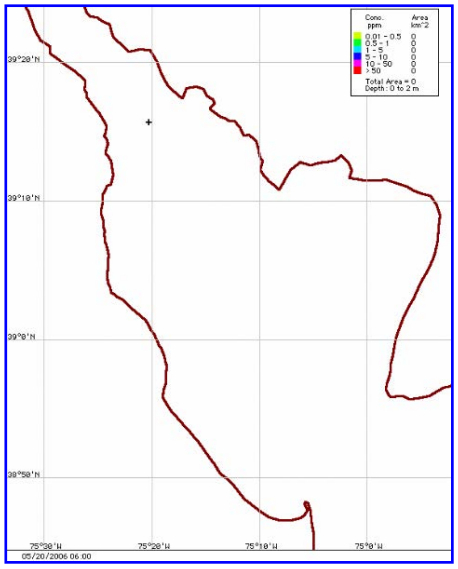


D: 42 Hours (D + 36 hours)

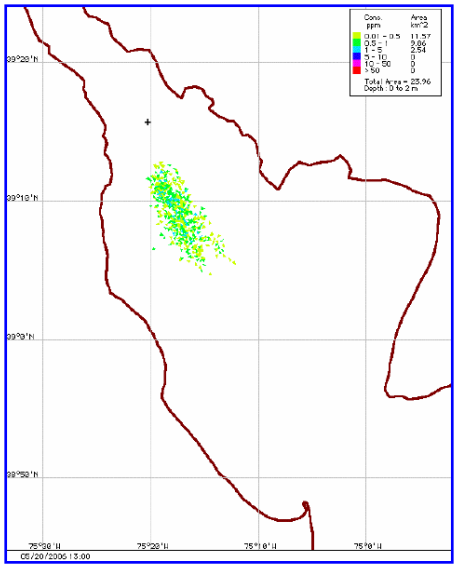
Key:

Light green	<0.5 ppm
Medium green	0.5 - 1 ppm
Light blue	1 - 5 ppm
Dark blue	5 - 10 ppm
Pink	10 - 50 ppm
Red	>50 ppm

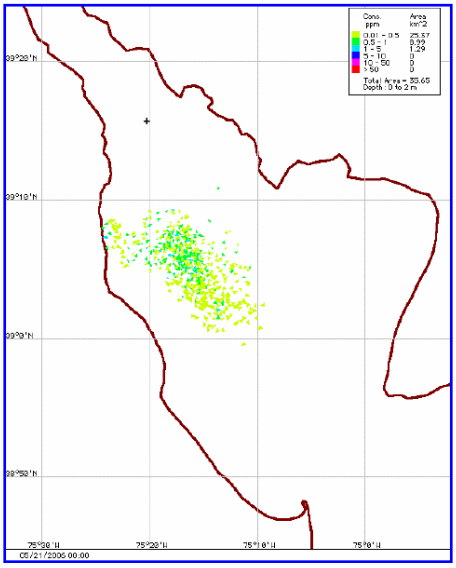
Figure 3.8 *Results from the NOAA GNOME modeling for the Delaware Bay scenario for dispersant use at 85% effectiveness showing average dispersed oil concentrations (in ppm) from 0 to 2 meters (surface oil remaining not shown).*



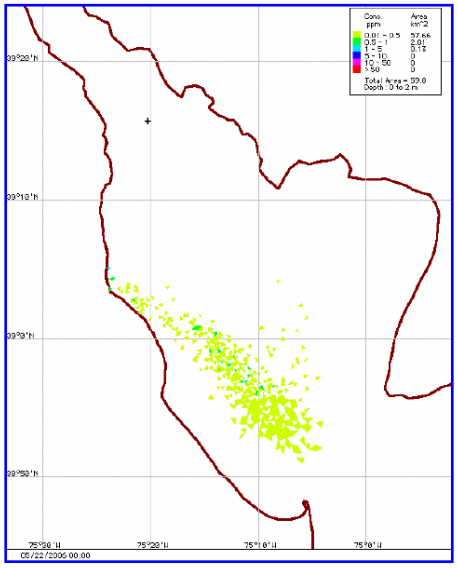
A: 1 Hour



B: 7 Hours (D + 1 Hour)



C: 18 Hours (D + 12 Hours)



D: 42 Hours (D + 36 Hours)

Key:

Light green	<0.5 ppm
Medium green	0.5 - 1 ppm
Light blue	1 - 5 ppm
Dark blue	5 - 10 ppm
Pink	10 - 50 ppm
Red	>50 ppm

Figure 3.9 *Results from the NOAA GNOME modeling for the Delaware Bay scenario for dispersant use at 35% effectiveness showing average dispersed oil concentrations (in ppm) from 0 to 2 meters (surface oil remaining not shown).*

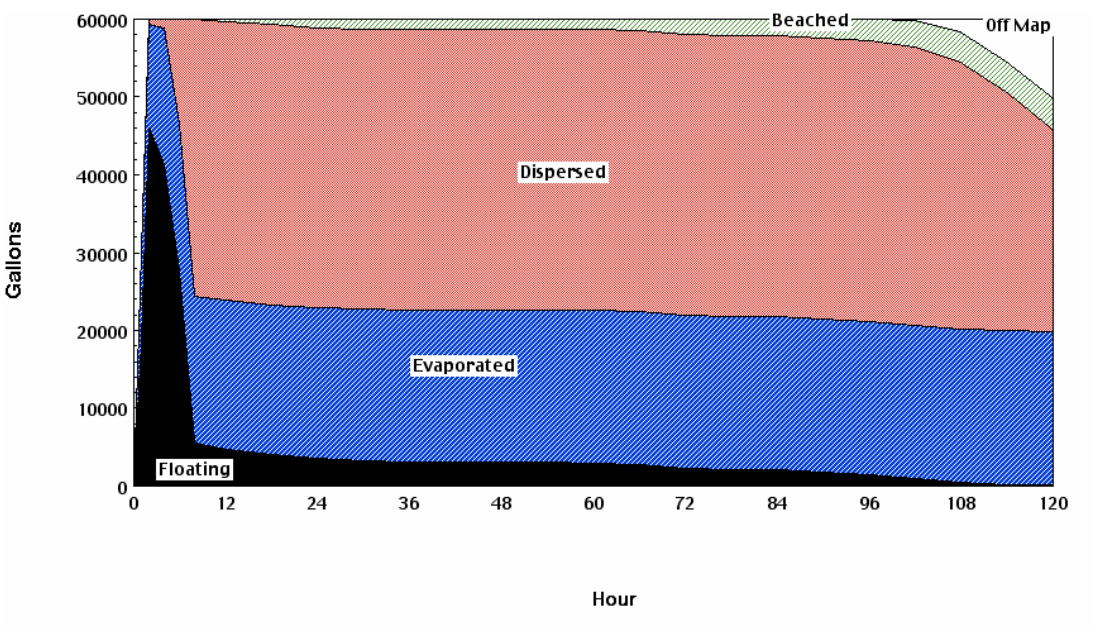


Figure 3.10 *The ADIOS predictions for the fate of the floating oil in the Delaware Bay scenario with the use of dispersants at 85% effectiveness.*

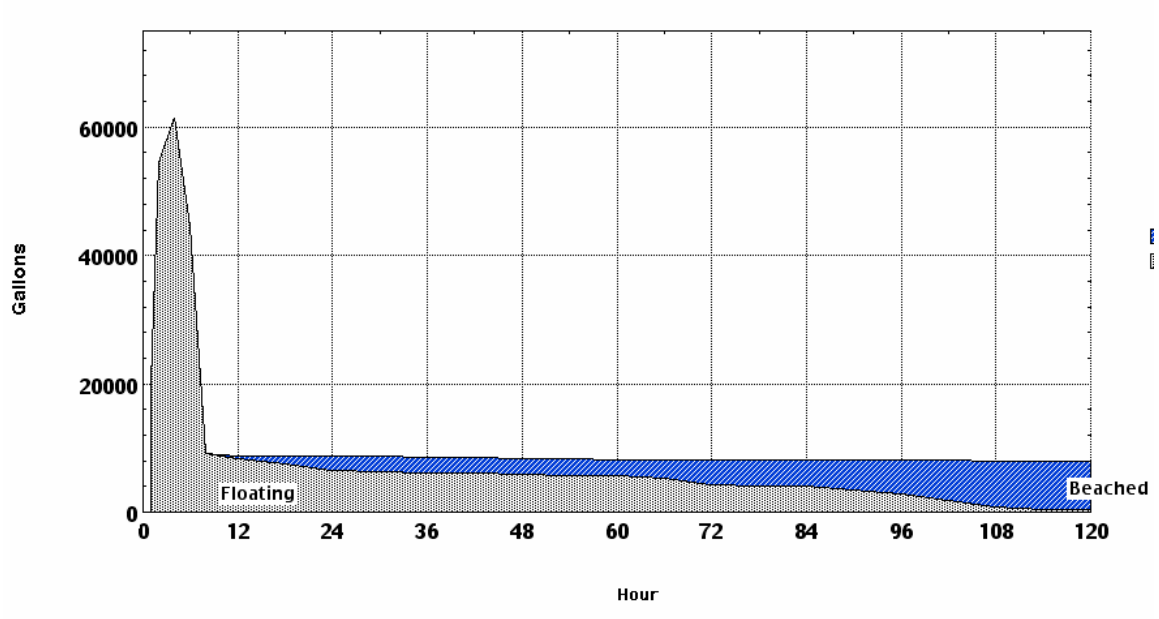


Figure 3.11 *The ADIOS predictions for the fate of emulsion in the Delaware Bay scenario with the use of dispersants at 85% effectiveness.*

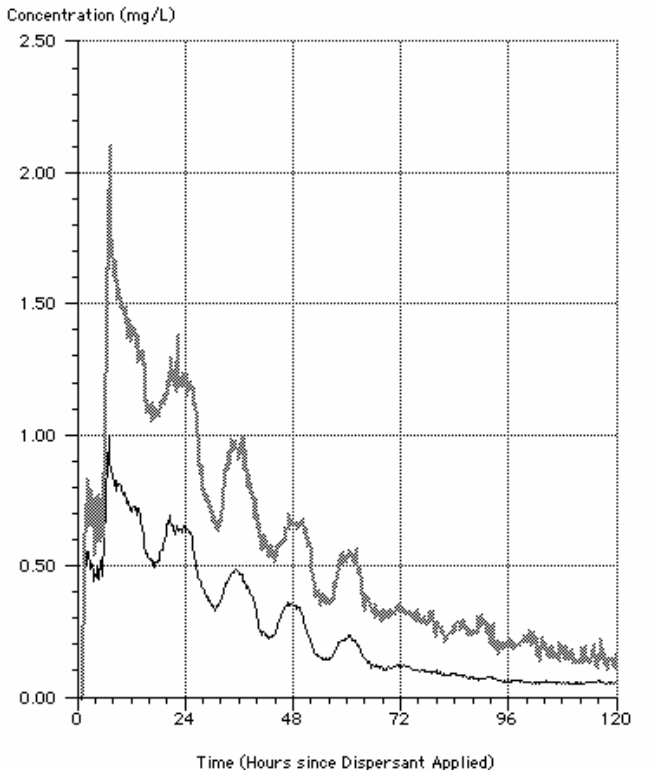


Figure 3.12 *Maximum and average dispersed oil concentration from 0 to 2 meters in the plume versus time with the use of dispersants at 85% effectiveness.*

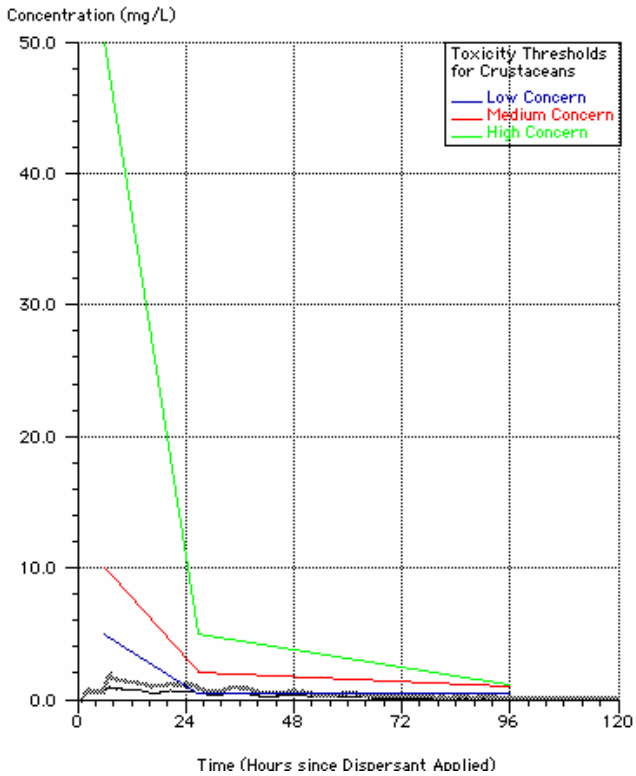


Figure 3.13 *Conservative toxicity thresholds for dispersed oil for juvenile and adult crustaceans compared to maximum and average dispersed oil concentrations with 85% effectiveness at 0 to 2 meters (based on the values presented in Table 4.1).*

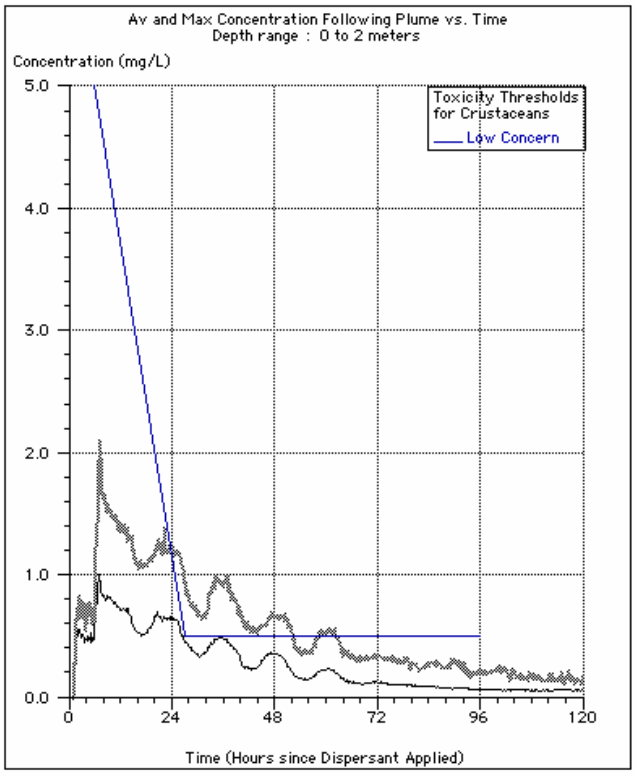
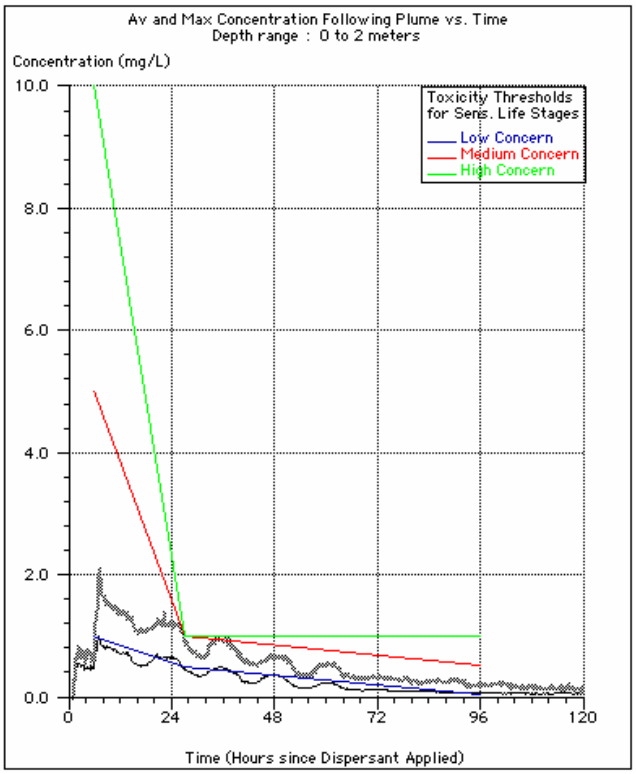


Figure 3.14 *An expanded view of the conservative low level of concern toxicity threshold for dispersed oil for juvenile and adult crustaceans compared to maximum and average dispersed oil concentrations with 85% effectiveness at 0 to 2 meters (based on the values presented in Table 4.1).*

Figure 3.15 *Conservative toxicity thresholds for dispersed oil for sensitive life history stages compared to maximum and average dispersed oil concentrations with 85% effectiveness at 0 to 2 meters (based on the values presented in Table 4.1).*



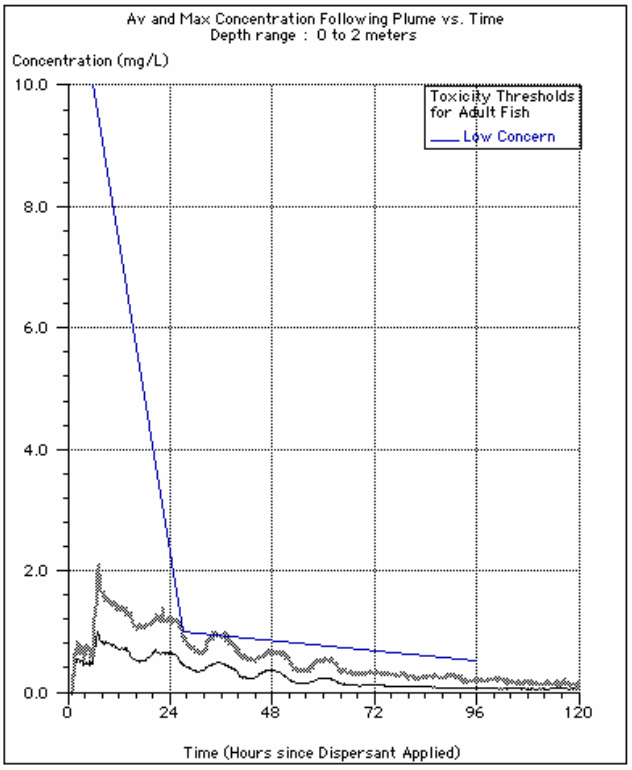


Figure 3.16 *Low level of concern toxicity threshold for dispersed oil for adult fish compared to maximum and average dispersed oil concentrations with 85% effectiveness at 0 to 2 meters (based on the values presented in Table 4.1).*

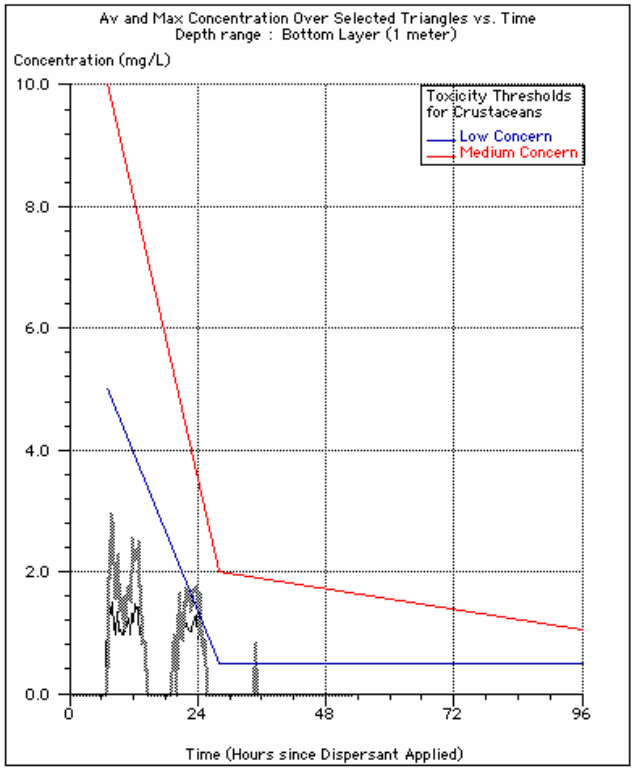


Figure 3.17 *Average and maximum exposure to dispersed oil for benthic habitat at a point on a shellfish reef in the middle of the Bay (39°48.21' W, 75°08.12' N) compared to maximum and average dispersed oil concentrations with 85% effectiveness (based on the values presented in Table 4.1).*

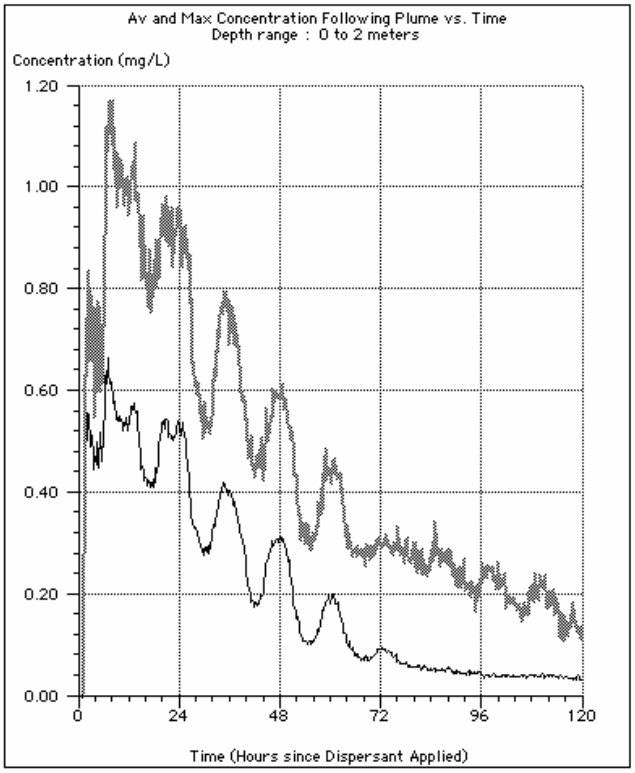


Figure 3.18 *Maximum and average dispersed oil concentration from 0 to 2 meters in the plume versus time with the use of dispersants at 35% effectiveness.*

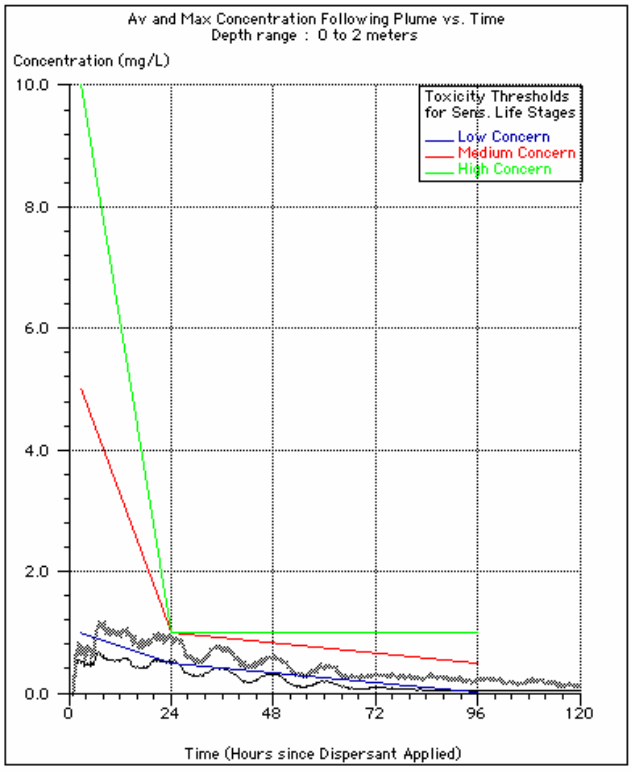


Figure 3.19 *Toxicity thresholds for dispersed oil for sensitive life history stages at maximum and average concentrations with 85% effectiveness (based on the values presented in Table 4.1).*

4.0 The Results of the Risk Analysis Process

Focus groups developed and then used the risk matrix presented in Figure 4.1 (see Section 2.0). Each focus group was tasked with reviewing the scenario, the modeling results, information on exposure and sensitivity to oil and dispersed oil, and basic life histories and distributions in order to develop a group estimate of the percent of each resource affected and the recovery time. In the initial evaluation, the groups used alphanumeric codes to rate the level of concern. After the scaling was developed in plenary session, color coding was used to indicate summary levels of concern.

		RECOVERY			
		> 10 years (SLOW) (1)	**5 to less than 10 years (2)**	**1 to less than 5 years (3)**	**< 1 year (RAPID) (4)**
PERCENT OF RESOURCE AFFECTED	**> 50% (LARGE) (A)**	**1A**	**2A**	**3A**	**4A**
	30 to 50% (B)	**1B**	**2B**	**3B**	**4B**
	10 to 30% (C)	**1C**	**2C**	**3C**	**4C**
	0 to 10% (SMALL) (D)	**1D**	**2D**	**3D**	**4D**

Legend: Red cells represent a "high" level of concern, yellow cells represent a "moderate" level of concern, and green cells represent a "limited" level of concern.

Figure 4.1 *Definition of levels of concern for the Delaware Bay risk assessment.*

Using the ranking matrix requires that the participants develop estimates of the proportion of the resource affected, and how long it will take the resource to recover. A key factor in determining whether or not a resource is affected is to apply thresholds at which impacts, either acute or chronic, would be expected to occur for the various resource groups under consideration. This is perhaps the most difficult part of the consensus process, and has been discussed in detail at all of the workshops. In this case, as in other workshops, very conservative assumptions were presented by the facilitator and accepted as guidelines by the participants.

The only thresholds which can be generally quantified are those related to aquatic toxicity. Table 4.1, reproduced from the Guidebook, presents a series of concentration thresholds which were made available to the participants. These values are based on a summary of published toxicity information initially developed during the early workshops. This table was reviewed by the National Academy of Sciences panel which recently considered issues related to dispersant use, and is included in their report (NRC, 2005).

Impacts to birds, mammals and turtles on the water surface were assumed if there was a high probability of any contact with the surface oil slick. The nature of these impacts was developed during the focus group discussions. For shoreline resources and habitats, damage was assumed if oil contacted the habitat. Table 4.2 presents estimates of shoreline exposure, based on varying loading rates. It was used for general guidance only and is based on average concentrations; actual shoreline accumulations of oil are generally irregularly distributed, especially at low concentrations.

It is important to keep in mind that the participants used the information available to them to develop levels of concern about the risk, and the risk scores do not represent a prediction of actual impacts. Instead they represent a consensus on the part of the participants that such consequences were likely to occur under the scenario under consideration.

Table 4.1 Consensus Exposure Thresholds of Concern (in ppm) for Dispersed Oil in the Water Column.

Continuous Exposure	Level of Concern	Protective of Sensitive Life Stages	More Protective Criteria	Protective of Adult Fish	More Protective Criteria	Adult Crustacea/ Invertebrates	More Protective Criteria
3 hours	Low	<5	<1-5	<10	<10	<5	<5
	Medium	5-10	5-10	10-100	10-100	5-50	5-50
	High	>10	>10	>100	>100	>50	>50
24 hours	Low	<1	<0.5	<2	<0.5	<2	<0.5
	Medium	1-5	.5-5	2-10	.5-10	2-5	.5-5
	High	>5	>5	>10	>10	>5	>5
96 hours	Low	<1	<0.5	<1	<0.5	<1	<0.5
	Medium			1-5	.0-5	1-5	.5-1
	High	>1	>0.5	>5	>5	>5	>1

The detailed results for all five focus groups for natural recovery (i.e. no response) are shown in Figure 4.2.[6] There were very high levels of concern in this scenario for organisms on the water surface, salt marshes, mud flats, sandy beaches and sand and gravel beaches in the estuary. There was also concern for sandy beaches (and in one group, terrestrial habitat) on the Delaware outer coast. The concerns within the bay were focused on the risk to shore birds and waterfowl, and to Horseshoe Crabs (adults and particularly eggs on the spawning beaches). The concern on the outer coast was for nesting Piping Plovers (and other threatened and endangered species), which are in the area, but only a few pairs are present. If there was to be any impact to the shore where these birds were known to nest, it was assumed they would be impacted. This elevated the level of concern. There was a consensus that exposure of benthic habitat and water column organisms were not a concern.

[6] For all options except natural recovery protective booming was assumed to be in place and reasonably effective (see Section 2.0 for further discussion).

Table 4.2 Estimates of Shoreline Exposure per Square Meter of Surface.

Width of Oiled Zone	Loading Rate											
	0.1 g/m			1 g/m			10 g/m			100 g/m		
	Volume per square meter (g/m^2)	Average Thickness[1] (µm)	Concentration in Top 1 square cm^2[2] (ppm dry wt)	Volume per square meter (g/m^2)	Average Thickness[1] (µm)	Concentration in Top 1 square cm^2[2] (ppm dry wt)	Volume per square meter (g/m^2)	Average Thickness[1] (µm)	Concentration in Top 1 square cm^2[2] (ppm dry wt)	Volume per square meter (g/m^2)	Average Thickness[1] (µm)	Concentration in Top 1 square cm^2[2] (ppm dry wt)
0.1 m	1	95	14	10	950	143	100	9,500	1,429	1000	95,000	14,286
0.5 m	0.5	47.5	2.86	5	475	28.6	50	4,750	286	500	47,500	2,857
1.0 m	0.1	9.5	1.43	1	95	14.3	10	950	143	100	9,500	1,429
10 m	0.01	0.95	0.143	0.1	9.5	1.43	1	95	14.3	10	950	143
100 m	0.001	0.095	0.0143	0.01	0.95	0.143	0.1	9.5	1.43	1	95	14.3

1. Oil density = 0.95 gms/cc
2. Soil density = 1.4 gms/cc

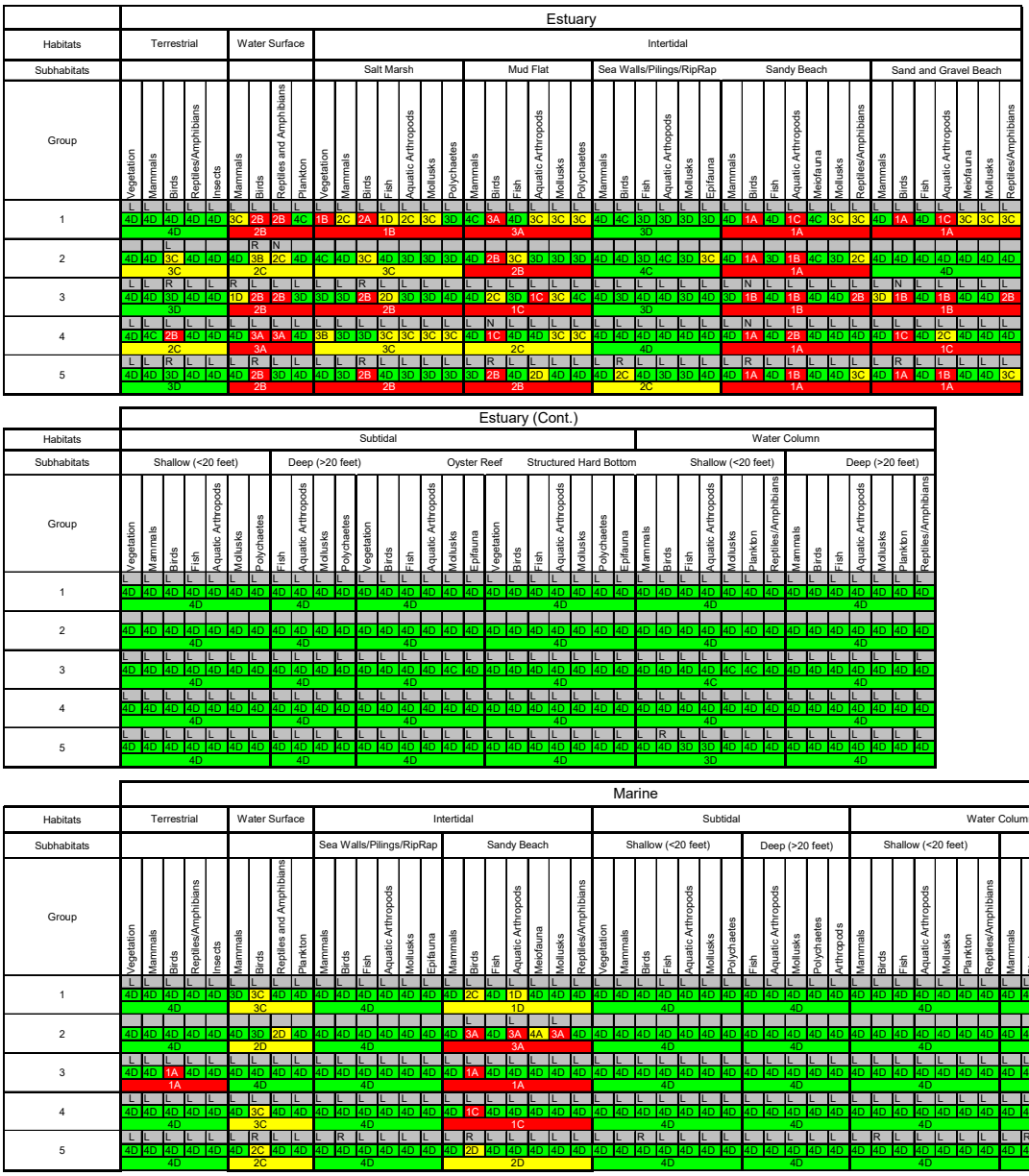
On-water mechanical recovery (Figure 4.3) did not significantly reduce the risk to the habitats of most concern, based on the estimate of the effectiveness of the equipment available (a maximum estimate of 25% recovery was used). Most groups did conclude that effective protective booming would protect salt marshes by preventing oil from entering tidal creeks.

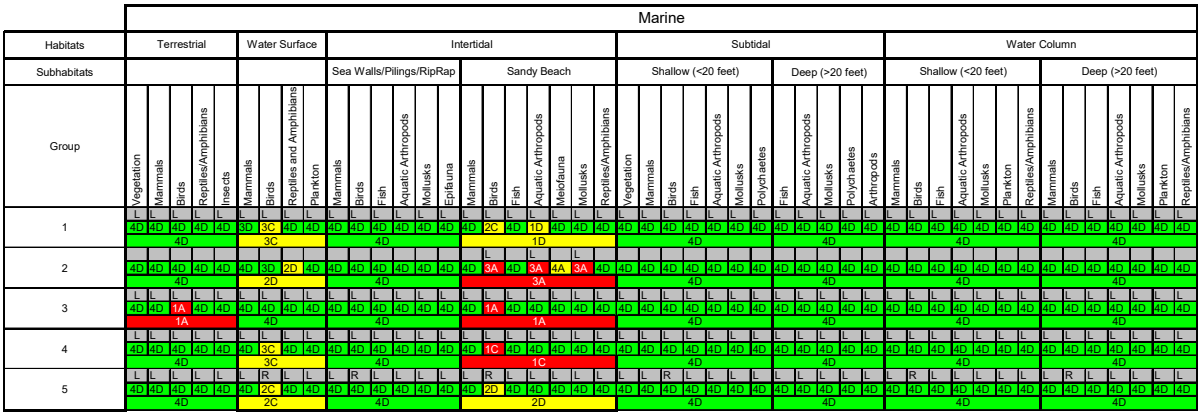
The remaining three response options were analyzed at the second workshop, when only three focus groups were present.[7] The results for dispersant use at 85% and 35% effectiveness are presented in Figures 4.4 and 4.5 respectively. There was a consistent conclusion that the use of dispersants, if highly effective, would significantly decrease the impacts seen for the natural recovery and on-water mechanical recovery options.[8] While there was some increase in the level of concern for water column exposure, none of the focus groups felt it rose to beyond a moderate level of concern. The benefits were not seen by the focus groups unless the application was highly effective, but at the same time the concern for water column exposure also declined.

The final option, on-shore mechanical recovery (Figure 4.5), had essentially the same impacts as natural recovery and on-water mechanical recovery. While all of the groups felt shoreline cleanup was important, they did not believe it would mitigate their primary concerns. In some cases, concern over the impacts of the cleanup itself was expressed.

[7] As discussed in Section 2.0, two of the five groups lost enough members at the second workshop that the remaining participants were assigned to the other three focus groups. The changes in individual focus group assignments are documented in Appendix A.

[8] There was considerable discussion concerning how realistic it was to achieve this level of effectiveness. It was pointed out that the primary objective was to develop a "worst case" risk to the water column for evaluation purposes, and that there was no expectation that this would necessarily be achieved (see Section 2).





Reference Area codes: L = local, R = regional, and N = national or international (see Section 2 for definitions).

Figure 4.2. *Detailed focus group risk analysis results for natural recovery.*

Reference Area codes: L = local, R = regional, and N = national or international (see Section 2 for definitions).

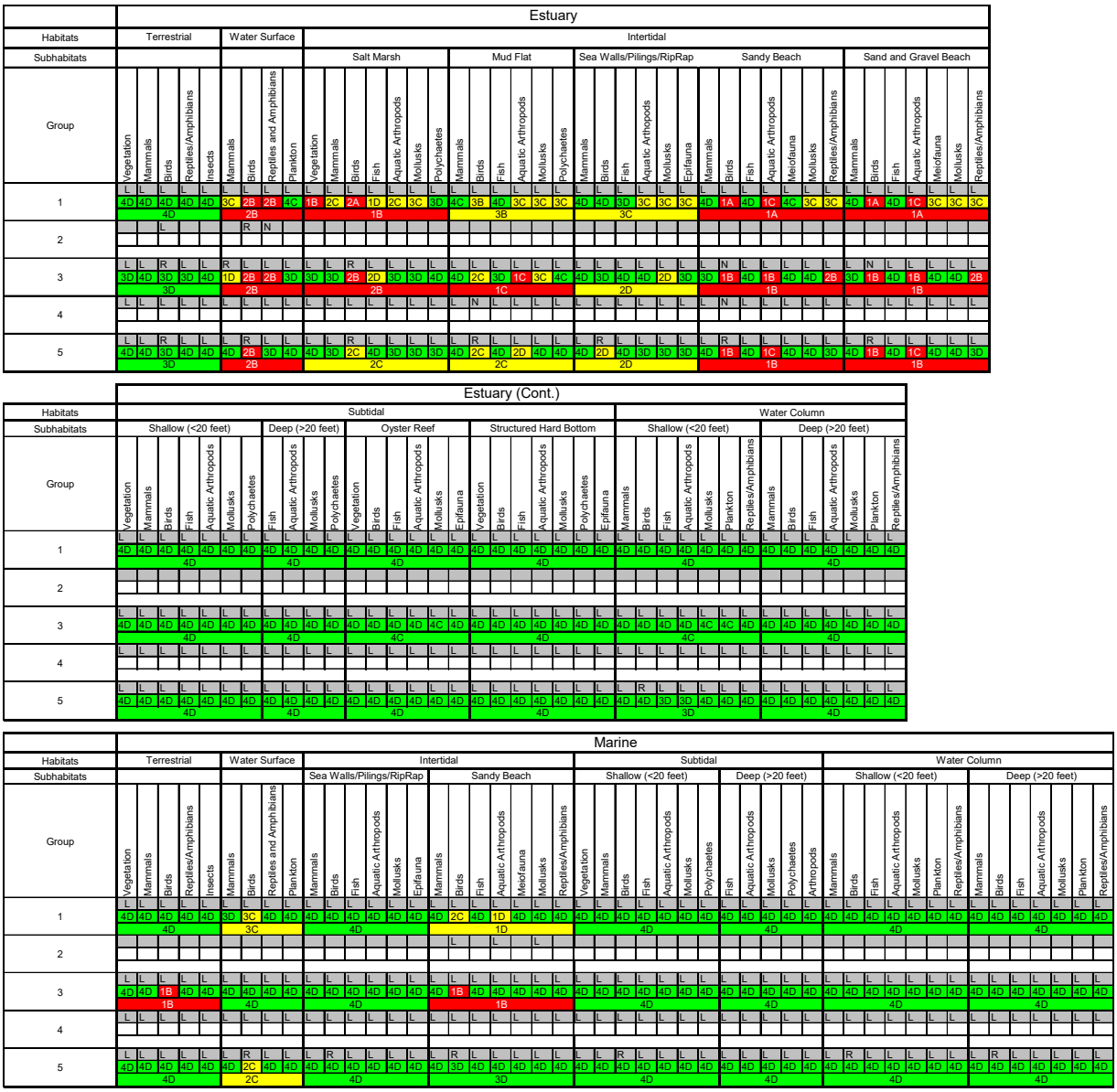
Figure 4.3 *Detailed focus group risk analysis results for on-water mechanical recovery.*

Reference Area codes: L = local, R = regional, and N = national or international (see Section 2 for definitions).

Figure 4.4 *Detailed focus group risk analysis results for dispersant application at 85% effectiveness.*

Reference Area codes: L = local, R = regional, and N = national or international (see Section 2 for definitions).

Figure 4.5 *Detailed focus group risk analysis results for dispersant application at 35% effectiveness.*

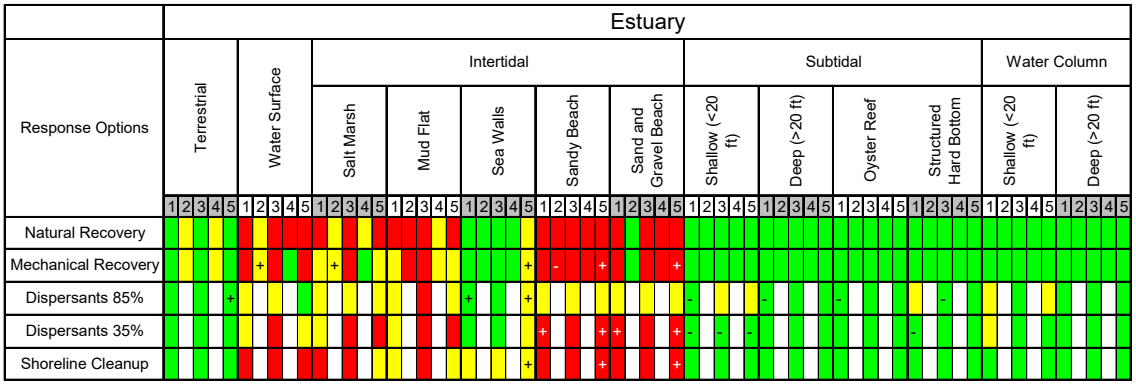


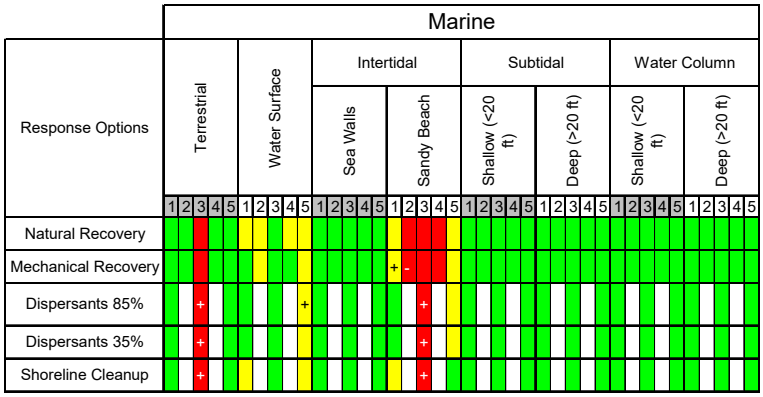
Reference Area codes: L = local, R = regional, and N = national or international (see Section 2 for definitions).

Figure 4.6 *Detailed focus group risk analysis results for on-shore mechanical recovery.*

5.0 Summary Risk Analysis Results and Lessons Learned

Table 5.1 presents the summary results for this workshop. Five response options were analyzed along with natural recovery: on-water mechanical recovery, dispersant application at 85% effectiveness, dispersant application at 35% effectiveness and on-shore mechanical recovery. This table is based on the detailed data in Section 4 and allows an easy comparison across response options. All options were analyzed by only three of the five groups, as discussed in Section 2. In summary, participants felt that the most benefit to the environment resulted from the use of dispersants, provided they were relatively highly effective (see footnote 8). The increased risk to the water column was a concern, but was not as high as the risk to the shoreline and water surface areas which would be protected by dispersant use. No attempt was made to resolve differences between focus group scores, but they were discussed. It was emphasized that there is no one best way to respond to a spill, and that the best option is to use all acceptable techniques in concert with one another.





Legend: Red cells represent a "high" level of concern, yellow cells represent a "moderate" level of concern, and green cells represent a "limited" level of concern. There are two group scores per sub-habitat type (columns). A + indicates reduced concern within the broad risk category, while a – indicates an increased concern within the category.

Figure 5.1 *Final relative risk matrix for the Delaware Bay risk assessment.*

5.1 Key Factors Influencing Decisions in this Scenario

On the afternoon of the second day of the second workshop, the focus groups were asked to review the factors which influenced their discussions, and how changes in those factors might alter their conclusions. As future response plans are developed, these issues should be kept in mind. The comments from each of the three focus groups were as follows:

- **Group 1**
  - What if the oil spill volume is larger (10X)?
    - Overall risk is higher.
    - Concern over dispersed oil reaching toxic concentrations in the water column.
  - What if the oil spill is further up river?
    - The available time to respond would be shorter because of closer shorelines.
    - There would be fresh water vs. brackish water issues (because of dispersant use limitations in fresher water).
  - What if it is a different season?
    - Summer - Recreational uses are both a concern for protection and for interfering with response. Impact of higher temperatures on evaporation of the oil.
    - Fall - Driver would be migratory birds and waterfowl, as well as butterflies.
    - Winter - Response logistics due to the season (e.g.- frozen water, access, etc.).
    - Overall for all seasons - Living resources are drivers. Need for awareness of sensitive organisms with information from environmental managers on wildlife and vegetation (e.g., oysters and fisheries).
  - What if a different product was spilled?
    - Need a list of bulk petroleum materials entering the port and a table of effective dispersability of those products.
    - How effective should a dispersant be to be used?
    - Does the petroleum product shipped in the estuary vary by season?
  - General comment
    - Diagram that reflects the dispersant use policy areas in the Area Contingency Plan should be more detailed with bathymetry of the estuary.

- **Group 3**
  - Drivers - For most recovery methods, birds/Horseshoe Crabs/mollusks were species of concern (Piping Plover, eagles, etc.). Diamondback Terrapins were also important to this group.
  - Theory behind scores
    - Time of spill was critical to species that drove scores.

        - Spatial spread of oil was a factor – large portion of marshes and mudflats in entire bay (impact to individual marsh may be large, but to the entire resource, the impact would be less).
        - Delaware side is more heavily impacted during initial hours of spill.
        - Group did not feel 25% mechanical recovery affected scores enough to create improvement.
        - Dispersants were beneficial at 85%, but not so much at 35% effectiveness.
        - Food web dynamics become more important in dispersant response scenario, as do juvenile/larval stages in various species.
        - During on-shore mechanical recovery, there were not many changes in scores due to tradeoffs (less oil, but greater impact due to staging and equipment).
    - Change in volume
        - Greater impacts overall, longer mechanical and on-shore recovery time.
        - Resource levels may change, for example, local to regional.
    - Change in season
        - Species of concern would shift (e.g., fish spawning, mussel spat, dolphins, etc.).
        - Important to note that there is no time where there is not a species of concern, either in water or on-shore.
        - Decision related to dispersants may change given time and specific resource.

- **Group 5**
    - What were the drivers affecting decisions in this scenario?
        - Concern for birds (Red Knots, Piping Plovers) at the water surface, mudflats, and beaches.
        - Horseshoe Crabs on beaches and mudflats.
        - Minimal effects in water column and benthos.
        - Economic and political drivers were not considered.
        - When dispersants were assumed to be effective (85%), shoreline impacts were significantly reduced to a point where they outweighed concerns for the water column effects.
        - Assumed that logistics for getting dispersants was not an issue.
    - Modifications
        - Change Season to July/August - Much larger concern for fish, oyster, crab, clam larvae would affect decision to use dispersant. Lower concern for birds and horseshoe crabs would affect response decisions.
        - Change in Location (up river in May) - Spawning of Striped Bass, Shad, etc. in upper river sections would affect decision to use dispersants. Lower concern for birds.
        - Change in Location to Offshore Ocean (1/2 mile) - More likely to approve dispersant use due to concern for oiling beaches and lower concern for dispersed oil in water column.

- Increase Size of Spill 10x - Increased concern for all species on beaches, marshes, mudflats for natural recovery. Questionable whether dispersants will be worth using on majority of slick. May want to selectively use dispersants to protect selected areas.

5.2 Consensus Recommendations

On the last day of the workshop, the participants reviewed the comments listed in Section 5.1, and developed the following list of consensus comments for consideration in future oil spill response planning efforts. They suggested these be presented to the Sector Delaware Bay Area Committee for consideration.

- This scenario focused on impacts to the mid and lower bay and did not consider treatment options for cleaning upper bay and river. The Area Committee should pursue future workshops to address these areas.
- Update the Environmental Sensitivity Index (ESI) maps (a lot of work, relating to ecologically significant resources, has been done in the past 10-15 years that is not reflected in those maps):
    - Database is somewhat rigid, and sometimes difficult to use, since it doesn't prioritize the resources,
    - We do not have the most up to date information related to ecologically significant species and critical habitats in the atlas (e.g., oyster, Atlantic sturgeon, white cedar swamps, freshwater tidal wetlands),
    - Consider breaking out eggs, larvae and juveniles rather than having the information combined,
    - Consider using C. Stern information system, United States Fish and Wildlife Service, to capture this information,
    - Involve non-governmental organizations during ESI data collection.
- Initiatives to integrate ESI maps with Geographic Information System (GIS) systems are worthwhile. This could facilitate rapid decisions between the Incident Command System and resource managers.
- The Area Committee needs to address ways to improve GIS information exchange/centralization.
- USCG would benefit from obtaining internal GIS capabilities to enhance inter-agency planning and response.
- Need more information to assess the impacts of oil and dispersed oil on:
    - eggs/juvenile/adult Horseshoe Crabs,
    - post D-hinge stage larval oysters and mussels (e.g., veliger, etc.),
    - indirect food web impacts on critical species.
- Evaluate Coastal Response Research Center research and other funding opportunities to address these needs.
- Need to better integrate information needs with response options (provide localized information on ESI maps; focus research needs with response options).
- Suggest developing a working committee to identify scenarios throughout the area of responsibility (conditions and locations) where dispersants would NOT be used,

would be IDEAL to use, and where the "grey area" in between occurs (natural resource trigger points):
    - Although this was a beneficial exercise, it did not provide enough detailed information to assess whether dispersant use would be a viable response under other conditions or scenarios,
    - Confidence in the benefit of using dispersants would improve if more detailed information was provided on the extent of shoreline oiling for a given scenario.
- Take advantage of spills of opportunity to explore fate and effects.
- Need to develop a method to rapidly determine how effective a dispersant application will be on an actual spill.
- Evaluate current process to assess "real-time" dispersant use to streamline the decision-making.
- Residence time and operational limitations are key components of dispersant use decision-making.
- Protective booming strategy is an effective mechanism in the ACP, so the Area Committee should re-evaluate it for further improvements (e.g., resource protection and prioritization).
- The Area Committee should evaluate shoreline protection strategies for ecologically important areas (e.g., Horseshoe Crab beaches, Red Knots).
- The identification of oil collection areas could be an important component of shoreline protection.
- Develop " protection and response" strategies for Atlantic Ocean coastal bays and beaches.
- Closer linkage of GNOME model (NOAA) output with local hydrographic predictive modeling to enhance evaluation of response options.
- The Area Committee should engage resource managers, NGOs, and local resource experts in planning, exercises and/or training opportunities.
- Communication is an important part of oil spill response management. The Area Committee should continue to evaluate portals/partnering for rapid information dissemination.
- Area Committee meetings are open to the public. ERA workshop participants are encouraged to attend.

6.0 References

Aurand, D., L. Walko and R. Pond. 2000. Developing Consensus Ecological Risk Assessments: Environmental Protection in Oil Spill Response Planning. A Guidebook. United States Coast Guard, Washington, DC. 148 pages. (Also Ecosystem Management & Associates, Inc. Technical Report 00-01)

National Oceanic and Atmospheric Administration (NOAA). 1999. Screening Quick Reference Tables (SQuiRTs). NOAA HazMat Report 99-1. Seattle, WA.

National Research Council (NRC). 2005. Oil Spill Dispersants: Efficacy and Effects. National Academy of Sciences Press, Washington, DC. 377 p.

Pond, RG., D.V. Aurand, and J.A. Kraly (compilers). 2000. Ecological Risk Assessment Principles Applied to Oil Spill Response Planning in the San Francisco Bay Area. California Office of Spill Prevention and Response. California Department of Fish and Game, Sacramento, CA.

Sutton, C.C., J.C. O'Herron, II, and R.T. Zappalorti. 1996. The Scientific Characterization of the Delaware Estuary. The Delaware Estuary Program (DBRC Project No. 321; HA File No. 93.21). 200 p. + appendices.

U.S. Environmental Protection Agency. 1998. Guidelines for Ecological Risk Assessment. Federal Register 63 (93) of Thursday, May 14, 1998. pp. 26846-26924.

Appendix A

Participants

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Appendix B

Resource Table

Region	Habitat	Subhabitat	Resource Category	Example Organisms
Estuary	Terrestrial	Upland and Supratidal	Vegetation	deciduous trees, shrubs, grasses agricultural crops
			Mammals	opossum, raccoon, red fox, deer, Delmarva fox squrrel
			Birds	bald eagle; cattle egret; rail; snipe; killdeer, woodcock, vultures, wood ducks, wild turkey perigrine falcon
			Reptiles/Amphibians	diamond back terrapins, black snake, frogs and toads, salamanders
			Insects	butterflies, damsel flies
	Water Surface and Surface Microlayer		Mammals	otters, muskrat, dolphins, humpback whales
			Birds	osprey, black duck, mallard, tundra swan, mergansers, loon, bald eagle
			Reptiles/Amphibians	diamond back terrapins, northern water snake, loggerhead and Kemp's ridley sea turtles, frogs and toads, salamanders
			Plankton	Fish eggs and larvae, crustacean larvae, copepods, phytoplankton
	Intertidal	Salt Marsh	Vegetation	common three-square rush, salt meadow cord grass, salt meadow hay, big cord grass, common reed, groundsel, marsh elder, diatoms, bluegreen algae
			Mammals	muskrat, opossum, raccoon, red fox, deer, rice rat
			Birds	great blue heron, black duck, blue and green-winged teal, mallards, Northern harrier, osprey, rails, red wind blackbird,widgeon, shovelers
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides
			Aquatic Arthropods	blue crab, mud crab, amphipods, grass shrimp
			Mollusks	snails, clams, mussels
			Polychaetes	worms
		Mud Flat	Mammals	muskrat, opossum, raccoon, red fox, deer, rice rat
			Birds	wading birds, great blue heron, black duck, blue and green-winged teal, mallards, Northern harrier, rails
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy, Silversides, skates and rays
			Aquatic Arthropods	blue crab, mud crab, amphipods, grass shrimp
			Mollusks	snails, clams, mussels
			Polychaetes	worms
		Sea Walls Pilings/RipRap	Mammals	rice rat, racoons, domestic pets
			Birds	gulls, cormorants, terns, herons, killdeer, osprey
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides, gobies, blennies

Region	Habitat	Subhabitat	Resource Category	Example Organisms
Estuary (cont.)	Intertidal (cont.)	Sea Walls Pilings/RipRap (cont.)	Aquatic Arthropods	blue crab, mud crab, amphipods, grass shrimp, barnacles
			Mollusks	snails, clams, mussels
			Epifauna	sea squirts, bryozoans, macroalgae
		Sandy Beach	Mammals	opossum, raccoon, red fox, deer, domestic animals
			Birds	wading birds, sandpipers, gulls, terns, plover, red knots, ruddy turnstones, perigrine falcon
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides
			Aquatic Arthropods	horseshoe crab
			Meiofauna	copepods, amphipods, nematodes
			Mollusks	snails
			Reptiles/Amphibians	diamondback terrapin, loggerhead and Kemp's Ridley sea turtles, northern water snake
		Sand and Gravel Beach	Mammals	opossum, raccoon, red fox, deer, domestic animals
			Birds	sandpipers, gulls, terns, plover, perigrine falcon
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides
			Aquatic Arthropods	horseshoe crab
			Meiofauna	copepods, amphipods, nematodes
			Mollusks	snails
			Reptiles/Amphibians	diamondback terrapin, loggerhead and Kemp's Ridley sea turtles, northern water snake
	Subtidal	Shallow (<20 feet)	Vegetation	macroalgae, benthic diatoms
			Mammals	otters, humpback whales
			Birds	pelicans, diving ducks, loons, cormorants, canvasbacks, tundra swan
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides, sturgeon, flounder, blue fish, hard head, shad, eels, croaker, weakfish, skates and rays, menhaden, sharks
			Aquatic Arthropods	blue crab, mud crab, amphipods, horseshoe crab, barnacles, amphipods
			Mollusks	razor clams, softshell clams, hard clams,
			Polychaetes	worms
		Deep (>20 feet)	Fish	rockfish, perch, herring, sturgeon, flounder, blue fish, hard head, shad, eels, croaker, weakfish,
			Aquatic Arthropods	blue crab, mud crab, amphipods, horseshoe crab, amphipods
			Mollusks	clams

Region	Habitat	Subhabitat	Resource Category	Example Organisms
Estuary (cont.)	Subtidal (cont.)	Deep (>20 feet) (cont.)	Polychaetes	worms
		Oyster Reefs	Vegetation	macroalgae, benthic diatoms
			Birds	tundra swan, dabbling and diving ducks
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides, flounder, shad, eels, croaker, weakfish, skates and rays, menhaden
			Aquatic Arthropods	blue crabs, amphipods, isopods, grass shrimp
			Mollusks	oysters, snails
			Epifauna	bryozoans, sea squirt
		Structured Hard-Bottom Community	Vegetation	macroalgae, benthic diatoms
			Birds	tundra swan, dabbling and diving ducks
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides, flounder, shad, eels, croaker, weakfish, skates and rays, menhaden
			Aquatic Arthropods	blue crabs, amphipods, isopods, grass shrimp
			Mollusks	snails
			Polychaetes	sabellid worms
			Epifauna	bryozoans, sea squirt
	Water Column	Shallow Water (<20 feet)	Mammals	otters, dolphins, humpback whales
			Birds	diving ducks, loons, cormorants
			Fish	rockfish, perch, herring, sturgeon, flounder, shad, eels, croaker, weakfish, menhaden
			Aquatic Arthropods	blue crabs, horseshoe crabs
			Mollusks	
			Plankton	copepods, fish eggs and larvae, invertebrate larvae, jellyfish, diatoms, green algae, dinoflagellates
			Reptiles/Amphibians	loggerhead and Kemp's Ridley sea turtles
		Deep Water (>20 feet)	Mammals	dolphins, humpback whales
			Birds	loons
			Fish	rockfish, perch, herring, sturgeon, flounder, shad, eels, croaker, weakfish, menhaden
			Aquatic Arthropods	blue crab, horseshoe crabs
			Mollusks	
			Plankton	copepods, fish eggs and larvae, invertebrate larvae, jellyfish, diatoms, green algae, dinoflagellates
			Reptiles/Amphibians	loggerhead and Kemp's Ridley sea turtles
Marine	Terrestrial	Upland and Supratidal	Vegetation	deciduous trees, Atlantic white cedar, shrubs, grasses agricultural crops
			Mammals	opossum, raccoon, red fox, deer, Delmarva fox squrrel
			Birds	bald eagle; cattle egret; rail; snipe; killdeer, woodcock, vultures, wood ducks, wild turkey perigrine falcon
			Reptiles/Amphibians	diamond back terrapins, black snake, frogs and toads, salamanders
			Insects	butterflies, damsel flies
	Water Surface including Surface Microlayer		Mammals	dolphins, humpback whales
			Birds	osprey, black duck, mergansers, sea ducks
			Reptiles/Amphibians	loggerhead and Kemp's ridley sea turtles
			Plankton	Fish eggs and larvae, crustacean larvae, copepods, phytoplankton

Region	Habitat	Subhabitat	Resource Category	Example Organisms
Marine (cont.)	Intertidal	Sea Walls Pilings/RipRap	Mammals	rice rat, racoons, domestic pets
			Birds	gulls, cormorants, terns, herons, killdeer, osprey
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides, gobies, blennies
			Aquatic Arthropods	blue crab, mud crab, amphipods, grass shrimp, barnacles
			Mollusks	snails, clams, mussels
			Epifauna	sea squirts, bryozoans
		Sandy Beach	Mammals	opossum, raccoon, red fox, deer, domestic animals
			Birds	sandpipers, gulls, terns, plover, perigrine falcon
			Fish	killifish, mummichug, rockfish, perch, herring, bay anchovy. Silversides
			Aquatic Arthropods	ghost crabs
			Meiofauna	copepods, amphipods, nematodes
			Mollusks	snails
			Reptiles/Amphibians	loggerhead and Kemp's Ridley sea turtles
	Subtidal	Shallow (<20 feet)	Vegetation	macroalgae, benthic diatoms
			Mammals	
			Birds	diving ducks, loons, cormorants, canvasbacks, tundra swan
			Fish	rockfish, perch, herring, flounder, shad, eels, croaker, weakfish, skates and rays, menhaden
			Aquatic Arthropods	blue crab, lobster, amphipods, horseshoe crab, barnacles, amphipods
			Mollusks	clams, mussels
			Polychaetes	worms
		Deep (>20 feet)	Fish	rockfish, perch, herring, flounder, shad, eels, croaker, weakfish, skates and rays, menhaden
			Aquatic Arthropods	blue crab, lobster, amphipods, horseshoe crab, amphipods
			Mollusks	scallops, hard clams
			Polychaetes	worms
	Water Column	Shallow Water (<20 feet)	Mammals	dolphins, humpback whales
			Birds	sea ducks, loons, cormorants
		Shallow Water (<20 feet) (cont.)	Fish	rockfish, perch, herring, sturgeon, flounder, shad, eels, croaker, weakfish, menhaden, sharks
			Aquatic Arthropods	blue crabs
			Mollusks	
			Plankton	copepods, fish eggs and larvae, invertebrate larvae, jellyfish, diatoms, green algae,
			Reptiles/Amphibians	loggerhead and Kemp's Ridley sea turtles
		Deep Water (>20 feet)	Mammals	dolphins, humpback whales
			Birds	loons
			Fish	rockfish, perch, herring, sturgeon, flounder, shad, eels, croaker, weakfish, menhaden, sharks
			Aquatic Arthropods	blue crab
			Mollusks	
			Plankton	copepods, fish eggs and larvae, invertebrate
			Reptiles/Amphibians	loggerhead and Kemp's Ridley sea turtles

Ecological Risk Assessment –

Bakken and Dilbit Oil Spills - 2015

Consensus Ecological Risk Assessment of Potential Transportation-related Bakken and Dilbit Crude Oil Spills in the Delaware Bay Area: *Comparative Evaluation of Response Actions*

A Report to the U.S. Coast Guard, Sector Delaware Bay

Ann Hayward Walker, Debra Scholz, and Melinda McPeek, SEA Consulting Group

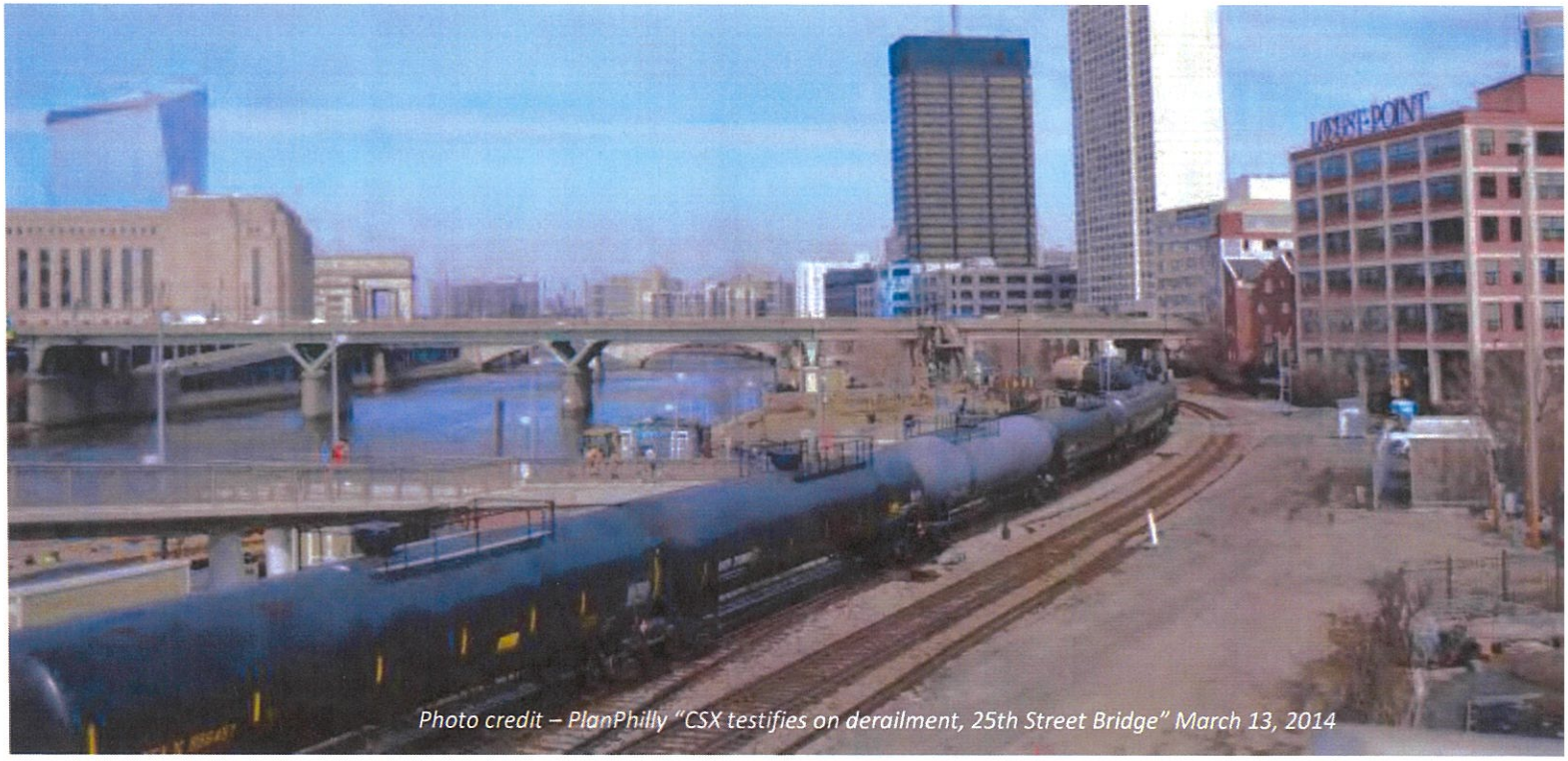

Photo credit – PlanPhilly "CSX testifies on derailment, 25th Street Bridge" March 13, 2014

Consensus Ecological Risk Assessment of Potential Transportation-related Bakken and Dilbit Crude Oil Spills in the Delaware Bay Area: *Comparative Evaluation of Response Actions*

A Report to the U.S. Coast Guard
Sector Delaware Bay

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July 21, 2015

Dear ERA Workshop Participant:

I would like to extend my sincere thanks to all those who participated in this Ecological Risk Assessment (ERA) for Sector Delaware Bay. This ERA focused on assessing the risks from specific crude oils moving through the Sector's Area of Responsibility and planning for the best way to respond to an incident involving Bakken crude oil and diluted bitumen.

Historically, one million barrels per day (BPD) of crude oil are transported through this region. Due to the energy renaissance, three different Class I rail companies now transport 588,000 BPD Bakken and 103,000 BPD diluted bitumen to five nearby refineries. This increased risk must be accompanied by proper contingency planning and updated response strategies. To maintain an effective and safe response posture throughout the eastern corridor, as the Federal On-Scene Coordinator and Co-Chair to the Area Committee, I feel this ERA is both timely and pertinent, not only in Pennsylvania, New Jersey, and Delaware, but nationwide.

We need to understand the properties and behavior of these oil products while defining appropriate response options to mitigate their associated potential risks. The ERA represents the collaborative efforts of subject matter experts and stakeholders from numerous disciplines working together to accomplish these goals, and I deeply appreciate their participation in this significant undertaking.

Sincerely,

B. A. Cooper
Captain, U.S. Coast Guard
Federal On-Scene Coordinator
Commander, Sector Delaware Bay

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List of Abbreviations, Symbols, and Acronyms

Agency for Toxic Substances and Disease Registry	ATSDR
American Petroleum Institute	API
Area Contingency Plan	ACP
Area of Responsibility	AOR
Automated Data Inquiry for Oil Spills	ADIOS
Barrels per day	BPD
Best management practice	BMP
Captain	CAPT
Center for Toxicology and Environmental Health, LLC	CTEH
Centistokes	.cSt
Consensus Ecological Risk Assessment	CERA
Delaware Bay	DelBay
Delaware Bay and River Cooperative	DBRC
Delaware Department of Natural Resources and Environmental Control	DNREC
Delaware River and Bay Oil Spill Advisory Committee Report	DRBOSAC
Ecological Risk Assessment	ERA
Emergency Response Division	ERD
Endangered Species Act	ESA
Environmental Sensitivity Index	ESI
Essential Fish Habitat	EFH
Estuary turbidity maximum	ETM
Federal On-scene Coordinator	FOSC
Firefighting	FF
Gallons	gals
General NOAA Oil Modeling Environment	GNOME
Geographic response strategies	GRS
Historic Preservation Agency	HPA
Hours	hrs
Human health and safety	HHS
Interagency Modeling and Atmospheric Assessment Center	IMAAC
Lieutenant Commander	LCDR
Lower explosive limit	LEL
Magnuson-Stevens Fisheries Conservation and Management Act	MSA
Marine Environmental Response	MER
Material safety data sheet	MSDS
Merchant Vessel	M/V
Microns	µ
National Historic Preservation Act of 1996	NHPA

National Oceanic & Atmospheric Administration ..... NOAA
Native American Graves Protection and Repatriation Act ..... NAGPRA
Natural attenuation with monitoring ..... NAM
Natural Resource Damage Assessment ..... NRDA
Nautical mile ..... nm
Net Environmental Benefit Analysis ..... NEBA
New Jersey Department of Environmental Protection ..... NJDEP
Non-governmental organization ..... NGO
Office of Incident Management & Preparedness CG533
Office of Response and Restoration (NOAA) ..... OR&R
Oil and Hazardous Materials Simulated Environmental Test Tank ..... OHMSETT
Oil particle aggregate ..... OPA
Oil Pollution Act of 1990 ..... OPA 90
Oil spill recovery vessels ..... OSRV
Pennsylvania Department of Environmental Protection ..... PADEP
Polycyclic aromatic hydrocarbons ..... PAH
Perfluorochemicals ..... PFC
Perfluorooctane sulfonate ..... PFO
Perfluorooctane sulfonate acid ..... PFOA
Pennsylvania Department of Environmental Protection ..... PADEP
Parts per million ..... ppm
Parts per thousand ..... ppt
Personal protective equipment ..... PPE
Regional Response Team ..... RRT
Resources at risk ..... RAR
Safety data sheet ..... SDS
Scientific and Environmental Associates, Inc. (dba SEA Consulting Group) ..... SEA
Scientific Support Coordinator ..... SSC
Short-term exposure limit ..... STEL
State Historic Preservation Officer ..... SHPO
Threatened and endangered ..... T/E
Time-weighted average limit ..... TWA
United States ..... US
U.S. Coast Guard ..... USCG
U.S. Coast Guard, Headquarters ..... USCG HQ
U.S. Environmental Protection Agency ..... EPA
United States Fish and Wildlife Service ..... USFWS

Preface

The original report was provided to US Coast Guard Sector Delaware Bay in September 2015. The authors received thoughtful insight from two external and independent readers. Subsequently, the authors added clarification to address the readers' comments about the use of firefighting foam and the weathering behavior of dilbit oil.

January 2016.

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- Mike Towle, EPA "Bakken Crude Oil February 2015 Testing at OHMSETT"
- Dr. Kelly Scribner, CTEH "Health and safety concerns associated with response to crude oil releases"
- Chief Jim Kelly, Sunoco Logistics – Discussion on Foam, Logistics and Port Asset for Fire & Spill Response
- Suzanne Lemieux, API – Industry safety course for moving crude by rail
- Dr. Michel Boufadel, New Jersey Institute of Technology - Bakken and Dilbit Oil Fate
- Bryan Naranjo, Norfolk Southern Railroad - Norfolk Sothern's Crude Oil by Rail Planning, Training and Response

- Mike Austin, CSX - CSX's Crude Oil by Rail Planning, Training and Response

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Executive Summary

In 2015, the United States Coast Guard (USCG) Sector Delaware Bay sponsored the project, "Consensus Ecological Risk Assessment of Potential Transportation-related Bakken and Dilbit Crude Oil Spills in the Delaware Bay Area: Comparative Evaluation of Response Actions". The aim of the Sector Commander, who is the designated Federal On-scene Coordinator (FOSC), and the Area Committee was to update the Area Contingency Plan (ACP) and improve preparedness to oil spills in the Sector's area of responsibility (AOR) by identifying timely and effective response actions that can enable resource protection and recovery in the event of future spills from Bakken and diluted bitumen (dilbit) oils. Project-specific objectives were to assess the risks from these two crude oils, which are moving through the Sector's AOR and plan for the best way to respond to incidents involving these oils since they are transported via rail, barge, and tanker throughout the AOR. Funded by USCG headquarters (HQ), a related project objective was to consider specifically threatened and endangered (T/E) species in accordance with USCG HQ guidance on Section 7 consultations (Gelzer, 2013) pursuant to the Endangered Species Act (ESA) and Essential Fish Habitat (EFH) under the Magnuson-Stevens Fisheries Conservation and Management Act (MSA).

This project adapted the consensus ecological risk assessment (CERA) process, as described in *Developing Consensus Ecological Risk Assessments: Environmental Protection in Oil Spill Response Planning. A Guidebook* (Aurand et al., 2000), to satisfy this project's objectives. Previous CERAs assessed the risks associated with a single oil type in one or two scenarios, the variables being different spill volumes or, in some previous ERAs, spill location. This CERA assessed two types of crude oil with different properties and behavior, in five spill scenarios involving rail, barge, and tanker modes of transportation, in two seasons (winter and spring), and in three different settings, i.e., creek (freshwater), river (brackish/salt water depending upon the volume of fresh water flowing into the river), and bay (saltwater). Special consideration was given to T/E species throughout the process. The properties of these oils (Bakken-highly flammable and dilbit-weathering and sinking) necessitated developing a new set of response actions, and evaluating the risks of the spilled oil and response actions in two phases, i.e., initial emergency phase (initial 4-6 hours) and longer-term (6 hours onward, especially 4 – 7 days). A new set of 10 response actions and new conceptual models were developed and the risk ranking matrix was revised. Due to the serious fires in recent incidents involving Bakken oil, the project assessed human health and safety risks in addition to ecological risks.

To accomplish the full project scope, a Project Committee comprising members of the Area Committee and resource trustee agencies worked with the USCG and consultant staff assigned to this project to: guide project activities; lead subcommittees; lead scenario workgroups in the two workshops; and provide guidance about this report's organization, including key points to highlight. Past CERA workshops involved 30-50 participants in two 3-day workshops, separated by about a month. This CERA involved nearly 90 participants in two 2-day workshops separated by less than 2 weeks in June 2015. Not all participants attended both workshops, but there was a core majority who participated in both.

Due to the broad project scope and unlike previous ERA's where at least two workgroups separately evaluated the same scenarios and then developed a final consensus among all participants, the workgroups in this project assessed separate scenarios and achieved scenario-

specific consensus, rather than a consensus across all workgroups about all scenarios. That said, some general findings about response actions to spills of Bakken and dilbit oil include:

- Assuming health and safety measures of first responders (e.g., fire fighters and pollution responders) are successful, risks to human health and safety and social-economic resources from a fire as well as fire-fighting foam were scored as a moderate level of concerns.
- The ecological risks associated with the use of fire-fighting foam in fresh, brackish or marine waters were scored with a moderate concern.
- Participants assigned higher levels of concern to the ecological risks associated with a spill of dilbit oil, compared to a spill of Bakken crude oil.
- For transportation-related spills of Bakken oil, in general, the workshop participants found that the "No response other than monitoring" option was considered of limited or moderate level of concern when deemed appropriate for the scenario conditions, both at the 4- to 6-hour response frame or at the 4- to 7-day post discharge. In most cases, the participants found that there was very little change in concern levels when considering the various response action versus the "no response" action. Although some of the levels of concern did increase from low to moderate (green to yellow), this increase in concern did not require a change in response options. The highest level of concern in Scenario 1 (rail, Philadelphia, Schuylkill River, freshwater) was with the use of extinguishing agents or for vapor suppression in the intertidal zone for both the initial response and over the 4- to 7-day response times.
- For transportation-related spills of dilbit oil, in general, the workshop participants found that the "No response other than monitoring" option provided a moderate to high level of concern, both at the 4- to 6-hour response timeframe to the 4- to 7-day post discharge. In most cases, the participants found that there was very little change in concern levels when considering the various response action versus the "no response" action. Some of the levels of concern did increase for response actions over the 4- to 6-hour timeframe to the 4- to 7-day period from low to moderate (green to yellow). The high level of concerns (red) were scored in Scenario 5 (barge, Delaware River, brackish water) regarding the use of most response options deemed applicable for use in the intertidal, mid-water, and benthic zones for both the initial response and over the 4- to 7-day response times. Similar concerns were also expressed for Scenario 4 (rail, Mantua Creek, freshwater) when considering the risk of shoreline clean up and oil detection / mapping methods for the intertidal and midwater zones.
- For dilbit oil spills, participants recommended that rapid containment and removal of the oil from the water surface is the highest environmental priority during the initial few hours of response, to limit spreading of the oil and reduce potential extent of contamination on both shoreline and benthic habitats. If the oil is not recovered early on, especially in freshwater, the oil will likely begin to pick up sediments and submerge, making it very difficult to detect and recover without doing additional damage to the environment.
- The presence of T/E animals and plants and some other organisms, such as diamondback terrapin (turtle) and freshwater mussels, are drivers that increase the level

of concern in these scenarios from both the oil and response actions which could impact them, e.g., trampling from shoreline cleanup and oil removal using mechanical means in nesting season.

- A response action scored with a high level of concern (red) is a prompt to further review and assure that response actions would not adversely affect the species of concern; it is not intended to prevent or stop response actions. This ranking represents a need for follow-up action by the Area Committee and Regional Response Team (RRT) to more fully address whether certain response actions will be allowed and, if so, under what circumstances, e.g., in certain seasons or under specific conditions.

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1.0 Introduction

In 1998, the USCG began sponsoring efforts to develop comparative methods that would enable the evaluation of relative risks associated with three primary categories of marine/coastal oil spill response actions – mechanical recovery, dispersants, and *in-situ* burning. The results of the risk assessment would be used to inform pre-spill planning decisions that are reflected in ACPs and consistent with policies in the Regional Contingency Plans around the United States. Interest in selecting response options based on a risk/benefit analysis predates the 1998 initiatives, but efforts since the 1998 project are different in that they emphasize a consensus-building approach to evaluate potential risks and benefits. USCG Headquarters (formerly G-MOR, now MER) sponsored the development of a guidebook on this process. That document, entitled *Developing Consensus Ecological Risk Assessments: Environmental Protection in Oil Spill Response Planning. A Guidebook*, is available from MER (Aurand *et al.*, 2000). A previous CERA, which followed that guidance, was conducted for the Delaware Bay in 2006 for the above-mentioned response options. The focus of this CERA addresses a new set of response actions to spills involving two specific types of crude oils, i.e., Bakken and diluted bitumen (dilbit), which have become part of the USCG's evolving responsibilities in the recent national energy renaissance.

The CERA process is designed to help oil spill decision makers to compare ecological consequences of specific response options, especially in nearshore or estuarine situations. This is important because when an incident occurs, rapid decisions must be made to implement the optimal actions intended to mitigate environmental risks from the oil and response actions, as well as ensure public safety and the safe passage of commerce. Given multiple regulatory authorities and response options, it is most practical to consider and reach agreement among those with inter-jurisdictional responsibility about the potential limitations and benefits of available risk mitigation options before time-critical decisions have to be made during response. Due to the length of time involved to conduct the entire process (i.e., a total of several months), conducting an incident-specific ERA is impractical for the emergency phase of an actual spill of waterborne oil. Notwithstanding, knowledge gained by participants in the CERA process facilitates real-time decision-making by enabling a review of significant risk factors in relation to previously considered response options; some of which may still be generally applicable and/or could be modified to implement during an actual incident.

The CERA process allows decision makers to evaluate effects to ecological resources through cross-response comparisons. In this structured, ***qualitative***, and analytical approach, participants develop a shared understanding and basis for evaluating impacts. Moreover, through this process, participants develop technically-feasible rationale to support their consensus findings that can be used to develop appropriate response strategies to include in the ACP.

The CERA process uses a series of matrices and other tools to structure discussions and capture group consensus about risk management options (i.e., response options), stressors, resources at risk, and the impact of stressors on identified resources. The oil spill CERA process typically involves 2-3 months of planning followed by two 2- or 3-day facilitator-led workshops. The ideal size is around 20-30 participants for two scenarios, including spill response managers, natural resource managers and trustees, subject matter experts, and non-governmental organizations. The goal is to achieve consensus interpretations of potential risks and benefits associated with selected response options based on scenarios developed by local participants.

Time between the two workshops, usually at least a month, is used by participants to research issues of concern before developing final conclusions. The process focuses heavily on achieving a consensus interpretation of available data and technical information. Therefore, it is important to have broad representation in the assessment process to build joint support for and credibility in the findings.

The CERA process includes three primary phases - ***problem formulation, analysis,*** *and* ***risk characterization,*** plus a fourth post-workshop phase of ***documenting and applying results***. Details of the process are described in the USCG *Guidebook* (Aurand *et al.*, 2000). In the first phase, problem formulation, participants develop a scenario for analysis, identify resources of concern along with associated assessment thresholds, and prepare a conceptual model to guide subsequent analysis. In the analysis phase, participants characterize exposure and ecological effects. The risk characterization phase, directs the assessment, using standard templates and simple analytical tools that define and summarize the assessment for the resources of concern against each evaluated response option. Finally, participants complete a risk characterization. During this phase, participants interpret their results in terms of the advantages and disadvantages of each response option in comparison to the impacts of leaving the oil in place to naturally attenuate with monitoring (NAM). The risks of impacts from oil alone are compared to the risk of each category of response action on various resources at risk from the spill.

This CERA adapted the 2000 Guidebook, as discussed in Section 3.0, to assess the spill response risks associated with new transportation-related scenarios involving oils produced in North America, i.e., Bakken and dilbit crude oils.

1.1 Objectives

This project was sponsored by USCG Sector Delaware Bay and the Sector Delaware Bay Area Committee. The project's overall goal is to update the ACP and improve preparedness to oil spills in the USCG's AOR by identifying timely and effective response actions that can enable resource protection and recovery in the event of future spills from Bakken and dilbit oils. Through the CERA process, the sponsors intend to facilitate a better understanding of natural resource trustee and response agency concerns and the concerns of non-governmental organizations (NGOs) that have particular interests in the Delaware River and Bay ecosystem.

Project-specific objectives are to assess the risks from two crude oils (Bakken and dilbit) moving through the Sector's AOR and plan for the best way to respond to incidents involving these oils as they are transported via rail, barge, and tanker throughout the AOR. The aim of the Sector Commander, who is the designated FOSC, and the Area Committee is to enhance preparedness and understanding of the properties and behaviors of these oil products and mitigate potential risks. Another project objective is to improve the understanding of the sequence and coordination of response actions implemented by first responders, particularly local fire fighters, with the response actions described in the ACP.

1.2 Participants

This CERA was carried out by a Project Committee and workshop participants. Appendix A contains the list of project participants. The Project Committee was comprised of consultant support and members of the Sector Delaware Bay Area Committee, notably representatives from the USCG, EPA, NOAA, USFWS, DNREC, PADEP, NJDEP, and DBRC. Consultant support was provided by SEA Consulting Group and SRA International, Inc.

A total of 172 individuals from 82 organizations were invited. Seventy-eight attended the first workshop; fewer participants attended the second session. Many but not all participants attended both workshops, some attended one session or the other. Participant affiliations also are included in Appendix A. At the first workshop (June 9-10, 2015), participants were divided into five breakout groups, one for each scenario. These were also their assignments in the second workshop (June 23-24, 2015). Participants who were unable to attend the first meeting were placed in one of the five workgroups during the second workshop.

1.3 Organization of the Report

This report is the project deliverable. It is PDF-1 formatted to be printed as an independent, double-sided report. The report is available electronically from USCG Headquarters MER and USCG Sector Delaware Bay.

Sections 1 and 2 provide an overall ***Introduction*** to the project, and ***Background*** about the ERA process as applied in this project, respectively. The report summarizes the ***Methods*** used to prepare for the assessment activities conducted during two workshops in June 2015 (Section 3); presents the ***Results*** of the assessment (Section 4); and describes the ***Discussion*** among participants who assessed the risks associated with the five scenarios during the workshops (Section 5). In addition, the ***Appendices*** contain relevant, detailed information about this CERA and workshops. Participants used the best available information at the time the CERA was conducted.

Electronic copies of some of the presentations made at the workshops by the sponsors or by subject matter experts and the recorders' notes from the workshops have been delivered to Mr. Gerald Conrad, Contingency Planning Specialist at Sector Delaware Bay. These files are mentioned when appropriate in the text of this report.

2.0 Background

The process is based on EPA's ERA Guidelines (EPA, 1998). It is designed as a planning tool to enable detailed assessment of options for responding to oil spills by a diverse group of participants.

The CERA's goal was to assess the potential benefits and limitations of response actions in relation to the effect of spilled oil alone as a way to make informed decisions about the many response actions that will result in an outcome that is better than not using them, or leaving the oil to attenuate naturally. In that context, this CERA represents a NEBA, which is an approach frequently referred to by U.S. oil spill responders, and by industry globally, for evaluating the potential benefits and limitations of, and tradeoffs associated with, different oil spill response actions.

The planning phase for a NEBA includes: setting the goals of assessment; selecting a limited and feasible suite of alternative actions; defining the temporal and spatial scope of assessment; identifying contaminant and remediation stressors; selecting environmental services and other ecological properties of interest; selecting metrics and methodologies for the comparison of alternatives; selecting a reference state; establishing plausible links between stressors and services (conceptual model); and developing an analysis plan (Fig. 1). As such, the NEBA planning phase is consistent with EPA ERAs.

2.1 EPA ERA Process

The ERA process used by EPA for Superfund[1] (EPA 1998) was the basis for the CERA process for oil spill response. The process was developed to provide a methodical means for risk managers to identify appropriate ways for reducing ecological risks though various cleanup and other mitigation options. An ERA is one tool in the overall management of ecological risks.

In situations where a complex of ecosystem values (e.g., watershed resources) is at risk from multiple stressors[2], a group of risk managers may function as a risk management team. In the EPA process, the ERA is carried out by a risk management team comprising risk managers, risk assessors, and interested parties, such as stakeholders. Risk management teams may include decision officials from federal, state, local, and tribal governments; commercial, industrial, and private organizations; leaders of non-governmental advocacy groups; and other sectors of the public such as property owners.

Risk managers, charged with protecting human health and the environment, help assure that risk assessments provide information relevant to their decisions by describing why the risk assessment is needed, what decisions it will influence, and what they want to receive from the risk assessor. Risk managers are individuals and organizations who have the responsibility, or have the authority to take action or require action, to mitigate an identified risk, such as the members of Unified Command. Risk managers also may include a diverse group of other parties

[1] **Superfund** is the name given to the environmental program established to address abandoned hazardous waste sites. It is also the name of the fund established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended.

[2] As defined in the EPA risk assessment glossary, a stressor is any physical, chemical, or biological entity that can induce an adverse response. Stressors may adversely affect specific natural resources or entire ecosystems, including plants and animals, as well as people in the environment with which they interact. http://www.epa.gov/risk/glossary.htm

who also have the ability to take action to reduce or mitigate risk, such as the Natural Resource Trustees (EPA, 1998).

Risk assessors evaluate and characterize exposure to stressors and the relationship between stressor levels and ecological effects, and ensure that scientific information is used effectively to address ecological and management concerns. Stressors from spilled oil may include physical smothering or chemical toxicity of the oil, as well as stressors from actual response actions, such as physical trauma associated with mechanical means to remove oil from the environment. Risk assessors describe what they can provide to the risk manager(s), where problems may occur, and where analytical uncertainty resides.

The CERA process is implemented through consensus among and between risk managers, risk assessors, and other interested and/or affected stakeholders during a multiday interactive workshop. Project Committee representatives, serving in both risk manager and risk assessor roles, helped guide and apply the ERA process. This group also helped ensure that all key participants were appropriately involved. The interface among them from initial planning through to the communication of risk at the end of the risk assessment was critical to ensure that the results of the assessment can be used to support risk management decisions.

During planning, the Project Committee came to agreement on the framework for this risk assessment and available resources needed to achieve the goals. They used information on the area's ecosystems, regulatory requirements, and publicly-perceived environmental values to interpret the goals for use in the ERA. The Project Committee reached agreements about (1) clearly established and articulated management goals, (2) characterization of decisions to be made within the context of the management goals, and (3) agreement on the scope, complexity, and focus of the risk assessment, including the expected output. In this risk assessment, stakeholders and other interested parties also provided an active role in the assessment process by participating in the two workshops, the activities of which are discussed in Sections 3, 4, and 5 of this report.

Many of the previous CERAs that were conducted using the Guidebook (Aurand *et al.*, 2000) were reviewed as background for this project.

2.2 Consultation Process

In accordance with USCG HQ guidance on Section 7 consultations (Gelzer, 2013) pursuant to ESA[3] Section 7(a)(1)[4] and EFH under MSA[5], this risk assessment project served as a collaborative pre-spill planning activity among the USCG, USFWS, the state resource trustee agencies, and NOAA/National Marine Fisheries Service with the intent to develop Best Management Practices (BMPs) strategies that would mitigate, minimize, or have no adverse effect on federally-listed T/E species and their habitats that may be present in any of the ERA's scenarios.

Additionally, this CERA considered the USCG's role pursuant to the National Historic Preservation Act of 1996 (NHPA) Section 106 consultation for cultural resources (as defined), for Area and Regional Planning under the 1997 Programmatic Agreement that directs federal

[3] 16 U.S.C. 1531-1544, 87 Stat. 884
[4] http://www.fws.gov/endangered/laws-policies/section-7.html
[5] http://www.habitat.noaa.gov/aboutus/statutoryauthorities.html

agencies to comply with Section 106 for emergency response actions under the NCP. However, tribal consultations as required on Executive Order 13175 and the Native American Graves Protection and Repatriation Act (NAGPRA) were not addressed during this risk assessment. Instead, this need should be brought forward in the future to the area and regional planning bodies in Regions 2 and 3.

This ERA assesses preliminarily the potential for adverse effects should BMPs identified for ESA, EFH, or NHPA be implemented. In the judgment of the Project Committee, this CERA meets the intent of Section 7.a.1 of ESA. Categories for these T/E species were developed early in the process and incorporated into the evaluation of resources at risk.

3.0 Methods

The Project Committee adopted the methods used in previous CERAs for oil spill response planning (Aurand, *et al.*, 2000; Pond, *et al.*, 2000) which consisted of 12 activities that were conducted over four phases. Participants carried out the methods for this project as shown in Figure 3.1. Phases 1 and 4 were carried out by the Project Committee. Phases 2 and 3 were carried out by all participants in two workshops, which were held at the Delaware County Emergency Services Training Center near the Philadelphia International Airport in Sharon Hill, PA. Appendix B contains the agendas for the two workshops.

Phase 1: Problem Definition/Formulation

(Project Committee, pre-workshop teleconference/meetings: Feb. 13, Mar. 3, and April 15, 2015)

1. Assemble the Project Committee
2. Develop the scenario(s)
3. Estimate the transport, fate of oil, and exposure potential
4. Define response actions for consideration
5. Define resources of concern

Phase 2: Conceptual Model/Analysis Plan

(All participants, 1st workshop: June 9-10, 2015)

6. Consider important relationships
7. Thresholds of sensitivity to oil

Phase 3: Analysis and Risk Characterization

(All participants, 2nd workshop: June 23-23, 2015)

8. Determine levels of concern about effects
9. Evaluate relative risk for oil only vs. various response actions
10. Define limits of the analysis

Phase 4. Document and Apply

(Project Committee, post-workshop meeting: July 15, 2015)

11. Document the risk assessment
12. Apply the results in response planning

Figure 3.1. Sector DelBay CERA Process, 2015

The following modifications relative to the organization of previous ERAs were made to address the objectives of this project:

- This project was characterized by substantial and continuous engagement by members of the Project Committee that was needed to achieve the ambitious project objectives.
- In contrast to previous ERAs that involved one crude oil and two scenarios, this ERA evaluated two crude oils in five scenarios: Bakken (3 scenarios) and dilbit (2 scenarios).
- The five scenarios were defined for potential spills of different oils, in different seasons, and in different environments, i.e., freshwater, brackish, and salt water.
- Due to this complexity and the large number of participants, each workgroup evaluated and reached consensus among the workgroup participants regarding the potential risks of response actions for a specific scenario. This is a different approach than previous ERAs,

i.e., multiple workgroups evaluated the same scenario and a consensus among workgroups was reached.

- A new set of 10 categories of response actions was developed compared to the 3-4 considered in previous ERAs.
- Recent studies and other materials were compiled by the consultant team. These references were made available electronically to the Project Committee and workshops participants for their review through SRA's SharePoint. The list of these references is presented in Appendix C, Bibliography.
- Because these two crude oil types have the potential for significant flammability and other hazards when released in a transportation scenario, human health risks were considered in addition to ecological risks. Due to the flammability of these oils, fire fighters participated in this CERA and the ecological hazards associated with firefighting foam were evaluated in addition to traditional spill response actions, e.g., booms and shoreline cleanup.
- Due to the properties of these oils and the transportation routes considered (i.e., rail and marine intercoastal), a new set of response actions used in this CERA was developed.
- The resources at risk (RAR) included new socio-economic categories and freshwater, brackish water, and marine environments in the table.
- Presentations were added to the workshops to inform participants with leading edge information about these oils. Dr. Michel Boufadel of the New Jersey Institute of Technology, who is a National Academy of Sciences scholar appointed to the current study on "Effects of Diluted Bitumen on the Environment: A Comparative Study", gave a presentation on fate of these oils. Three presentations by industry representatives involved in crude oil transportation by rail as well as industry preparedness and response actions, including a Crude Oil by Rail Response Safety training course. This course, intended for safety staff and emergency responders, is available at http://www.api.org/oil-and-natural-gas-overview/transporting-oil-and-natural-gas/rail-transportation/crude-oil-by-rail-response-safety-course .
- This CERA considered the potential risk of response actions on federal and state listed T/E species in the vicinity of the five scenarios.
- Four subcommittees developed sets of essential background information that was presented and used in both workshops. The subcommittees and their leads were:
    - Oil Behavior, Transport, and Fate – Ed Levine and Frank Csulak (NOAA ERD)
    - Resources of Concern – Ben Anderson (DNREC) and Debra Scholz (SEA)
    - Effects – Clay Stern (USFWS)
    - Response Actions – Rich Gaudiosi (DBRC)
- The risk ranking matrix previously used to define thresholds of sensitivity to oil was modified to define the y-axis as a scale of the relative ecological impacts rather than estimation of the percent of resources impacted; new definitions of ecological severity were developed.
- Previous ERA projects had at least two workgroups separately evaluate the same scenarios, and then developed final consensus. The workgroups in this project each worked on separate scenarios. Consensus was reached within workgroups but not across workgroups about the relative risks of oil and response actions associated with the five scenarios.
- Workshop participants were asked to provide feedback on this process, both at the workshop and through an on-line survey.

3.1 Geographic Area of Concern

The geographic areas of concern for this CERA were the transportation routes of Bakken and dilbit oils in the Sector Delaware Bay AOR. These routes included barge and tanker marine transportation in the Delaware River and Delaware Bay, and 32 railroad crossings over creeks and rivers in the AOR. Sector DelBay identified 32 rail/water nexus areas in three states (Pennsylvania, Delaware, and New Jersey) and two federal regions (Regions II and III). From these 32 nexus areas, the Project Committee selected different environments (creek, river, and bay) through which Bakken and dilbit oils were transported by rail, barge, or tanker as being generally representative of the nexus areas. These locations served as the setting for the five scenarios identified for this CERA.

3.2 Scenarios

Following an initial kickoff teleconference on February 13, 2015, the Project Committee met on March 3, 2015 at Sector DelBay and identified five scenarios involving the two crude oil types that represented a range of situations in the AOR. The selected scenarios were located (Figure 3.2) in three different states (Pennsylvania, Delaware, and New Jersey) in two different federal regions, for urban and more rural environments, and two different seasons (winter and spring) to address the potential seasonal differences in response actions and sensitivity of RAR.

The spill scenarios were defined based on past incident history in the Port, potential impacts to natural resources, historical response actions, response assets within the Port, and the response strategies contained in the Sector Delaware Bay ACP (2012). Each of the scenarios is defined in Section 5.

Figure 3.2: Scenario Locations

Separate workgroups (consisting of Project Committee members and workshop participants) were organized to evaluate the risks of response actions for each scenario. Project Committee members, some of whom participated in the CERA previously conducted for Delaware Bay (Aurand and Coelho, 2006), were assigned to coach the workgroup participants in carrying out their assessment activities during both workshops. Recorders also were assigned to capture the discussion, assumptions, and results of the workgroups. The workgroup coaches and recorders were:

1. LCDR Weaver/A.H. Walker: Scenario 1 – Bakken Rail (Philadelphia, Schuylkill River - PA)
2. Rich Gaudiosi/Rebecca Weissman: Scenario 2 – Bakken Barge (Pea Patch Island, Delaware River - DE)
3. Debbie Scholz/Dave Pugh: Scenario 3 - Bakken Tanker (lower Delaware Bay - DE)
4. Clay Stern/Melinda McPeek: Scenario 4 – Dilbit Rail (Mantua Creek, NJ)
5. Ben Anderson/Stacey Burger: Scenario 5 – Dilbit Barge (Marcus Hook anchorage, Delaware River - PA)

The following sections describe the sets of RAR and response actions evaluated in all five scenarios. In most of the previous ERAs, a single conceptual model and modeling could be discussed in one section because the main variable of comparing ecological risk was the volume of oil spilled, e.g., large vs. smaller spill. However, in this project, the scenarios are so different from one another that separate models were run for each scenario and separate, scenario-specific conceptual models also were developed.

3.3 Resources at Risk

The Project Committee developed the following list of resources of concern and at risk in the five scenarios, grouped according to habitat, sub-habitat, and resource categories.

Habitats:

- Artificial shorelines
- Natural terrestrial shorelines
- Intertidal shorelines (including surface waters 0-1 meter)
- Mid-water (0-2 meters above the bottom)
- Benthic (bottom + 2 meters)

Sub-habitat:

- Bulkheads, riprap, manmade structures, pavement
- Vegetated, sand, gravel
- Marsh, swamp, tidal flats
- Water column
- Seabed
- Socio-economic resources
- Human health receptors

Categories of Ecological Resources of Concern:

- Mammals (aquatic and non-aquatic dependent)
- Birds (aquatic and non-aquatic dependent)
- Reptiles and amphibians (aquatic and non-aquatic dependent)
- Macro-invertebrates
- Aquatic vertebrates
- T/E species – Animals
- T/E species – Plants
- Plants (submerged and floating aquatic vegetation)
- Fishing (commercial and recreational)
- Water intakes (surface and mid-water)

Categories of Socio-economic Resources of Concern:

- Workers
- Residential community
- Sensitive receptors
- Commercial community
- Industrial community
- Transportation community

A draft RAR table was presented at the first workshop, discussed and accepted with some specific examples appropriate for each scenario. For example, the examples of RAR in the urban, river environment of Scenario 1 (Philadelphia, PA) are different than the specific examples for a creek in an industrial area (Mantua Creek, NJ). The actual RAR associated with each scenario varied given the seasonal differences in scenarios (winter vs. spring), e.g., diamondback terrapins hibernate during winter and are at less risk from some response actions than other times of year.

The final consolidated RAR table for all five scenarios is presented in Appendix D. This table presents examples of plants and animals that could be present in any season and life stage, rather than limited to only those that are present on the dates of the scenario. Examples of both federal and state T/E species are included. The habitats for the scenarios spanned freshwater (Scenarios 1 and 4), brackish water (Scenarios 2 and 3), and saltwater environments (Scenario 5).

The presence or potential presence of different protected species, i.e., federally and state listed threatened and endangered plants and animals, also varied somewhat among scenarios. Although omitted from the endangered species list of examples in this ERA, seals, beluga whales, and manatees (protected under the Marine Mammal Protection Act of 1972) have occasionally been sighted in the AOR. For example, manatees were sighted in NJ in 2009 and again in the Delaware River north of Philadelphia in 2015 (Philly.com, 2015).

3.4 Response Actions

In pre-workshop meetings on March 3, 2015 and April 14, 2015, the Project Committee reviewed recent literature and spill reports about Bakken and dilbit oils, including oils that have similar properties, and then the Committee compiled a detailed list of potential actions that could be appropriate to implement during response to these oils. Due to the already ambitious project

objectives, the Committee decided to omit Subpart J[6] response options from consideration for this ERA. This overall list was then categorized to better align with the response categories of previous ERAs and to facilitate evaluating their risks. These general categories provided a common framework for the workgroups since specific response actions could vary among the five scenarios, e.g., some on land, some on water, and presence or absence of ice.

The following categories of actions were used in assessing the risks associated with responding to Bakken and dilbit oil spills in the five transportation-related scenarios:

1. No response action – Natural attenuation of oil with monitoring
2. Fire – Let burn and controlled burn (both in-situ)
3. Fire – Extinguishing agent and methods
4. No Fire – Vapor suppression
5. No Fire – Oil spread control, on land, on water, and underwater
6. No Fire – On-water recovery and underwater recovery
7. No Fire – Resource protection, on water and on land
8. No Fire – Shoreline cleanup
9. No Fire – Oil detection/mapping (physical contact methods)
10. No Fire - Oil detection/mapping (remotely observed methods)

Appendix E presents the final set of response actions in a table used by workshop participants to characterize the risks of response actions in the five scenarios. The table defines the response actions, provides examples of them along with their associated logistical considerations, and summarizes their respective constraints and estimated, generalized levels of effectiveness in identified habitats.

The list of response actions takes into account that response to these crude oils involves two phases: the initial flammability phase when light ends of the oils are present and fires could occur, during which the deployment of traditional spill response options would be pre-empted by first responder (fire fighter) actions; and a second, longer-term phase of responding to the oil on-water. Fires have resulted following recent incidents involving Bakken oil, which has been known to re-ignite. Flammability is also a concern with freshly-spilled dilbit oil. These acute public safety concerns take precedence over pollution response. The time scales associated with the phases are not absolute; rather they represent a range of hours and days that generally align with important weathering and behavior changes that would influence decisions about response actions. For purposes of this ERA, ***Phase 1 covers approximately the initial 4-6 hours***; long enough for pollution responders to become actively engaged after first responders (e.g., fire fighters) have arrived on scene and probably would still be dealing with flammability risks. ***Phase 2 includes the time after the initial 6 hours, but focuses specifically on the timeframe when the oil behavior on the water could begin to change and requires different response strategies***, which participants estimated to be ***about 4-7 days into the spill***.

For both of these crude oils, oil recovery is difficult in the second phase. Bakken oil is a light crude oil. Following rapid evaporation of light ends, the remaining components naturally disperse into the water column, making recovery from the water generally impractical. Dilbit oil, on the other hand, comprises heavy oil tar sands mixed with diluents to facilitate its

[6] http://www2.epa.gov/emergency-response/national-contingency-plan-ncp-subpart-j-product-schedule-fact-sheet

transportation. When initially spilled, the diluents begin to separate. After a few days, residual heavier components may be exposed to sediments in the water column, no longer float, and then become difficult to track and recover.

Although (intentional) controlled burning *in situ* was discussed and left as an option, there is no fire boom available in port. If burning became a preferred option in Delaware Bay, fire boom would have to be brought in and the logistics and approval would likely preclude its implementation. Also, air quality becomes an issue with burning Bakken oil, e.g., concerns about breathing in the toxins that are in the resultant smoke plume.

The DBRC recently formed an industrial fire group to share fire resources among member companies. The Fire Chief from Sunoco Logistics presented information on fire-fighting foam in the port to participants in the June 9-10 workshop. The highlights from this presentation include:

1. The use of foam to manage flammability hazards and fires was the subject of considerable discussion. Using enough foam to blanket vapors and extinguish fire is a fire safety goal, but applying enough foam to prevent re-flashing is almost next to impossible. Bakken is very likely to re-ignite.
2. There were also questions regarding the expiration dates of stockpiled foams. The expiration dates for most foams are about 20-25 yrs. from the date of manufacture when properly stored. The foam should be tested regularly, with annual testing being ideal.
3. Foam purchased from the manufacturer is actually in concentrate form. It must be mixed with water and air to become a foam solution. It is not foam that extinguishes fires—it is the water component and access to abundant source of water is needed to put out a fire. In the marine environment, responders have access to plenty of water, but they may lack access to the necessary platform and hoses, which is also essential.

Spills and fires outside of the normal realm, i.e., along a transportation route, are problematic for industry to provide assistance. Coordinating the logistics to mobilize the necessary resources to the response (oil spill or fire) and set up when a fire occurs off-site, outside a facility where the foam is stored, takes time. The challenge is getting the water, tools, and foam to a fire on a barge or tanker away from a dock in time to reduce fire hazards. This resource/logistical coordination is also time consuming for a rail car incident, since these incidents rarely occur in geographically convenient locations relative to where foam is stored. Certain foams require specific nozzle equipment that further complicates response logistics. It should be noted that in many fire-fighting scenarios, the approval for using fire-fighting foam is contingent upon the containment and disposal of fire-fighting wastes (foam and water). This would be a challenging requirement in a marine environment.

The runoff from fire-fighting foam if applied in the five scenarios could present both human health and ecological risks. Older-generation foams contain Perfluorochemicals (PFCs), which have been commonly used to improve the ability of fire-fighting foam to smother fire. The EPA is phasing out the use of PFCs, as its use can result in a water quality issue and it can also be dangerous to aquatic life and human health. In particular PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoic acid) are two commonly used PFCs that are known to enter ecosystems and move up food chains, accumulating in animal and human tissue, including the liver and blood.[7] PFCs have been linked to bladder and liver cancer, endocrine disruption, and

[7] http://www.crccare.com/case-study/fighting-fire-fighting-foam

developmental and reproductive toxicity, including neonatal mortality and are potentially lethal to animals.[8] PFOS and PFOA are increasingly being phased out of modern foams. Additionally, all fire-fighting foams (including the modern foams that do not contain PFCs) may cause a decrease in water oxygen content that can have a negative effect on water quality and aquatic ecology. It appears from reviewing the foam Material Safety Data Sheet (MSDS)[9] (Appendix F) that PFOA and PFOS are not present in these three foams. However, it is unknown if these are the only foams stored in the port area. Two of the three foams reviewed did contain fluorinated surfactants at low levels. Evidence for shorter-chain fluorinated compounds behavior in the environment is limited, and further research is needed as production of other fluorinated compounds increases as an alternative to PFOA and PFOS in fire-fighting foams (Scheringer et al., 2014). While research has generally shown that shorter chain fluorinated compounds are less toxic and less bio-accumulative, some research has shown that some shorter-chain fluorinated compounds can biodegrade into persistent organic compounds (Scheringer et al., 2014; Queensland Incident Response Unit, 2014).

3.5 Conceptual Models

The workshop participants reviewed the conceptual model presented in matrix format that was prepared for the San Francisco Bay workshop (Pond *et al.*, 2000) and used in previous ERAs. Participants updated and expanded the definitions of potential hazards to align better with the five scenarios.

The definitions of hazards used in completing the conceptual models for each of the scenarios are:

1. Air pollution – vapors, direct effects from respiratory issues for air breathers. Therefore, air pollution is not a stressor for mid-water, benthos.
2. Aqueous exposure – direct effects from aquatic respiration and dermal exposure to oil and oil components dissolved within the water column; may be short-lived exposure with the potential for high consequence for impacted species. Excludes submerged oil globules.
3. Physical trauma (mechanical impact from equipment, aircraft, people, boats, etc.) – direct effects from physical impact on individual species, including disturbance.
4. Oiling/smothering – direct effects from dermal contact with oil; skin (hypothermia), mucosal membranes (eyes, nares, etc.); indirect effects or secondary impacts could include ingestion (preening). May include contact with submerged oil globules or mats.
5. Thermal (heat exposure from fire) – direct effects from oil burning; impacts from exposure to a fire/burn (not dermal exposure to the oil).
6. Waste – direct effects prior to being removed (pre-cleaning) from the system. Excludes equipment intended for re-use, e.g., non-sorbent boom.

[8] Betts, KS (2007). 'Perfluoroalkyl acids: what is the evidence telling us?', *Environmental Health Perspectives* vol. 115, iss. 5, pp. A250-256.

[9] The MSDS was part of OSHA's Hazard Communication Standard (HCS). However, the HCS has been revised by OSHA to align with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), GHS and one change is the renaming of MSDSs to simply safety data sheets, or SDSs. Since most of the data sheets used in the ERA still carry the MSDS label, they are referred to in the report as MSDS.

7. Ingestion (food web, etc.) – resources indirectly exposed to oil or its constituents via ingestion of oil or contaminated/affected prey.
8. Advisory/Closure – prohibited action of use (e.g., commercial or recreational fishery, water intake); protection from possible exposure.

Recognizing the distinctive oil behaviors of Bakken crude and dilbit oils, the conceptual models developed for these oils reflect the two phases of potential exposure pathways:

- B1 = Bakken on the water/soil surface (initially)
- B2 – Bakken within water column due to natural dispersion (later)
- D1 = Dilbit before weathering (initially)
- D2 = Dilbit after weathering (later)

The conceptual model developed for this CERA depicts the connections between the resources of concern (human health/socio-economic and ecological) and their potential to be exposed to hazards (exposure pathway) for five scenarios. The numbers in the cells (1-8) represent the path by which a hazard can affect a resource. The completed model for each scenario represents the record of the reasoning of each workgroup about the concern for that resource. ***NA*** represents the absence of a connection between a potential hazard and the resource of concern.

Appendix G contains the completed conceptual models for human health and safety (some but not all workgroups completed them) and five ecological models for different scenarios (all workgroups completed these separately).

3.6 Modeling Results

This CERA considered the properties, behavior, and hazards associated with both oil types from the initial release through approximately seven days. Modeling of the spilled oil on water was conducted for all five scenarios by NOAA. A smoke plume model (Interagency Modeling and Atmospheric Assessment Center) also was run for Scenario 1, since that scenario resulted in a fire almost immediately. This plume model provided information about the footprint of the smoke plume in relation to human health and socio-economic resources at risk. Additional models that can be run, but were not for this CERA, are those that estimate concentrations and size of flammable vapor cloud, including SAFER, CHARM, and ALOHA.

For the oil spilled into waterways, basic weathering information and an oil budget (amount spilled, evaporated, naturally dispersed, remaining) along with individual trajectory models were calculated for each of the five scenarios. The NOAA Emergency Response Division (ERD) Modeling Group used the basic information in the scenarios to develop a surface trajectory analysis using GNOME[10] (General NOAA Operational Modeling Environment) for the detailed risk assessment portion of the workshop. Basic weathering information was calculated using the ADIOS 2[11] program. The model was run to show extent of contamination from the start of the

[10] GNOME is the modeling tool that OR&R Emergency Response Division uses to predict the possible route, or trajectory, a pollutant might follow in or on a body of water, such as in an oil spill

[11] ADIOS (Automated Data Inquiry for Oil Spills) is NOAA's oil weathering model. It is an oil spill response tool that models how different types of oil weather (undergo physical and chemical changes) in the marine environment (http://response.restoration.noaa.gov/adios).

incident (zero hours) through about 4 days. The modeling results were used to characterize the risks associated with each of the scenarios, which is discussed in Section 5.

The weathering and modeling results, e.g., graphic plots, are presented in Appendix H. The information for each of the five scenarios includes: the ADIOS 2 weathering and oil budget tables up to 120 hours following the initial discharge, screenshots at different times (e.g., +1 hr., 5 hrs., 14 hrs., 18 hrs., 36 hrs., and 42 hrs.) from the GNOME trajectory model, and extent of oiling maps for the first four days of the incident. The screen shots were selected to illustrate noteworthy stages of oil movement for each scenario; they were not selected to be comparable across scenarios. With regard to oil weathering/behavior and pollution response actions, actionable oil will be in the environment approximately 4-7 days following the initial discharge. Between 12 and 48 hours, the oil budget tables indicate that 56 to 61% of the Bakken oil remains in the environment. For the dilbit scenarios, between 12 and 48 hours, 75 to 77% of the oil remains in the environment.

Evaporation of the light components of both oils occurs rapidly in the first 12 hours and during this time, flammable vapors and benzene would be a distinct health and safety concern for both oils. In particular, the flammable vapors and no-fire situation are potential barriers to implementing pollution control options due to their ignition hazard.

The time-weighted average limit (TWA) limit for benzene is 1 ppm over an 8-hour period; the short-term exposure limit (STEL) is 5 ppm for a 15-min period. Personal protective equipment (PPE) can be used to protect workers but large spills of these oils near public communities could require evacuation. Since evacuation is in the jurisdiction of local authorities, evacuation is not a response action available to the USCG and was omitted from this ERA.

3.7 Risk Ranking Matrix

The Effects Subcommittee lead reviewed the risk matrix from previous ERAs and proposed a modification that would improve its utility for characterizing threshold levels of concern for the impacts of Bakken and dilbit oils in the five scenarios. ***Risk*** is defined as the probability of an impact occurring; participants must qualitatively consider if there is a high, medium, or low probability of the impact occurring, and then determine the severity and the duration of the impact. The conceptual model is the first step in considering the risk of potential exposure of a resource to the spilled oil.

The Effects Subcommittee lead reminded participants that the risk characterization of a CERA is qualitative, not quantitative, in nature. Quantitative risk assessments that focus on the actual injury to the environment (habitats and organisms) are carried out following an oil spill through Natural Resource Damage Assessment (NRDA) activities. ***Injury*** is a legal term defined in the OPA 90 (Oil Pollution Act) regulations and under CERCLA. Injury is defined as a linkage between cause and effect beyond a reasonable doubt. When working during response, responders tend to consider and decide about impacts that are relatively short-term and based upon what was learned from previous response events, e.g., it is better to protect marshes to avoid having them oiled because of the longer-term severity and duration of oil impacts in those environments. The response community now recognizes that protecting marshes from oiling is a response best practice; this knowledge guides preparedness and response decisions, without a NRDA study.

The revised matrix enabled workshop participants to more readily assess potential risks using the best available information from literature (e.g., the references in Appendix C), past experience with oil spills in the area, e.g., the *M/V Athos* in 2004, and their knowledge of resources in the AOR. It also reorders the presentation of levels of concern from lowest (green on left side of the matrix) to highest (red on the right side).

The updated risk matrix is presented in Figure 3.3. Workshop participants approved this risk ranking matrix during the June 9-10, 2015 workshop.

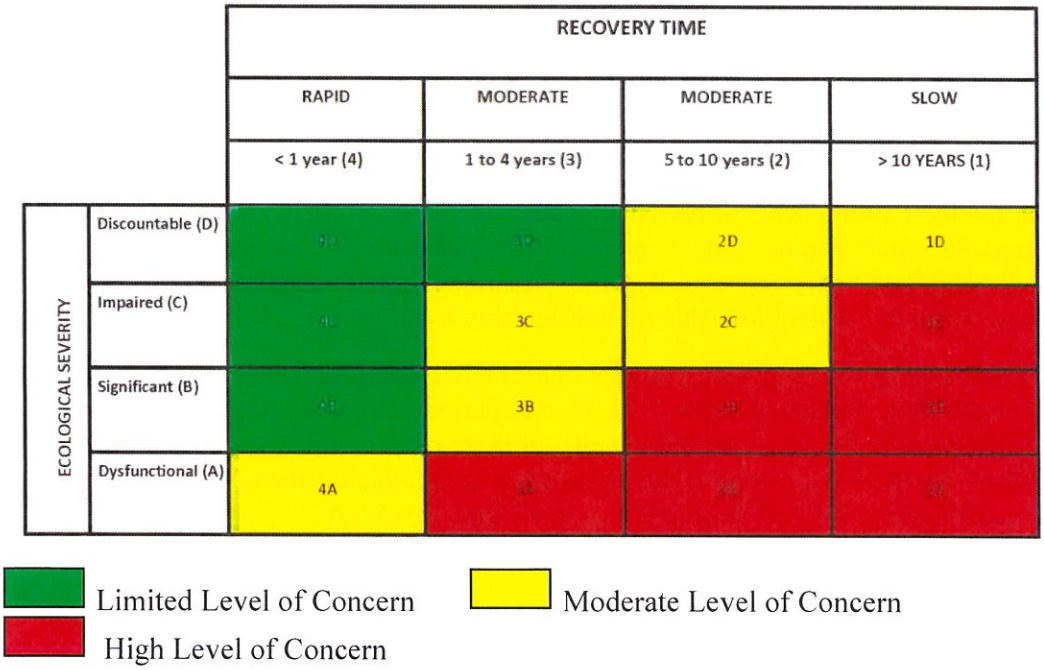


Figure 3.3 Levels of concerns risk matrix for the 2015 Sector DelBay assessment

The definitions of ecological severity used by participants in assessing risk in this CERA are:

- **Discountable** – Impact considered negligible, trivial, or a minor inconvenience, e.g., birds flew off nest but came back and landed.
- **Impaired** – Animal or community feels an impact; it may not be terribly significant or long-term, but it is an impact.
- **Significant** – Effects that are potentially life altering or may disrupt a breeding cycle; those that can affect community, e.g., all blooms knocked down, impacts reproductive cycle.
- **Dysfunctional** – Juveniles wiped out, habitat completely smothered, reproductive cycle severely impacted (not occurring/ceased); adults wiped out.

Workshop participants used this risk ranking matrix during the June 23-24, 2015 workshop to estimate the level and duration of ecological impact of the response actions compared to the impact of the spilled oil alone. Duration of impact begins from the time of the oil discharge. Severity takes into account the significance of individual organisms relative to the scale of population. For example, if an organism had recovery about 70% one year, but would take 10

years for 100% recovery, then the risk could be ranked as significant, in the 1- to 4-year duration. Local populations that could be killed by a spill would receive a dysfunctional score. Freshwater mussels, for example, if wiped out by oiling in a creek, will not recover for 50-100 years. This would equate to a risk of a dysfunctional impact. Generally, participants considered populations of organisms at the local scale, and assumed no impacts on a regional or national scale for that species.

For an endangered species, any harm qualifies as a ***take***[12] and is significant. As generally applied in this ERA, non T/E plants would recover in 4 to 5 years and non T/E fish would recover in 1 to 2 years. The ranking of red does not mean to stop actions, but rather to review and assure that response actions would not adversely affect the species of concern.

The ranking measures were also appropriate for characterizing human health risks. The impact from a drinking water ban would likely be considered *Dysfunctional* in severity; inhalation and dermal impacts might be ranked as *Significant*.

Participants used the information available to them to assign levels of concern about the risk. The information gathered for participant review before and between the workshops is presented in the Bibliography (Appendix C). As can be seen in the risk matrix, the groups used alphanumeric scores to scale the anticipated impact severity and recovery time. After developing the scaling, color coding was used to indicate the summary levels of concern. The risk scores represent a consensus on the part of the participants that such consequences were likely to occur under the scenario under consideration.

[12] ESA, Section 7, and Incidental Take of Endangered and Threatened Species in U.S. Lands or Waters. Being listed on the ESA makes it illegal to "take." Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to do these things (50 CFR § 3(19), 2009) any of these protected species, whether endangered or threatened or adversely modify or destroy designated critical habitat under Section 9 – Prohibited Acts. NOTE: Under ESA, 'take' prohibitions under Section 9 are not automatic for threatened species; the USFWS and NMFS must conduct a Section 4 process to address threatened species.

4.0 Results

The summaries of the risk characterizations for each of the five scenarios are presented in Figures 4.1 (Bakken oil scenarios) and 4.2 (Dilbit oil scenarios). Scenarios 1-3 involved Bakken oil; Scenarios 4-5 involved dilbit oil. As noted earlier, unlike previous ERA where at least two workgroups separately evaluated the same scenarios and then developed final consensus, the workgroups in this project each worked on separate scenarios. That is, the findings presented here summarize the workgroup-specific consensus for Scenarios 1-5, rather than consensus of all workgroups about all scenarios. For the reader's convenience, a row that highlights the transportation setting (i.e., urban, creek, river or bay) of each of the scenarios has been added to the summary tables.

Both Bakken and dilbit oils are characterized with flammability hazards during the early stages of a spill. Some recent Bakken oil rail incidents have resulted in fires, e.g., in the town Lac-Megantic, Canada (2013), which resulted in 47 deaths from the burning oil when the train derailed while passing through the center of the town. The risks to human health and safety and social-economic resources from a fire as well as fire-fighting foam, as highlighted in Scenario 1, were scored as a moderate level of concern (yellow) assuming that safety measures were successful, e.g., PPE for workers and other protective measures for the public, such as safe distance from fire and shelter in place away from the smoke plume. For human health and safety, the levels of concern from the oil only and for other response actions were scored as low (green).

The presence of a red ranking (high level of concern) represents a need for follow-up action by the Area Committee and Regional Response Team to more fully address whether certain response actions will be allowed and if so, under what circumstances, e.g., in certain seasons or under specific conditions. The red ranking of highest relative risk is not intended to prevent or stop response actions, but rather to prompt further review and assure that response actions would not adversely affect the species of concern.

The gray cells scored "Not Applicable" refer to the absence of either the resource at risk in a scenario or the lack of pathway for exposure to the hazard presented by the oil or type of response action during Phase 1 or Phase 2. For example, in Scenario 3, which involves a spill of Bakken oil in the middle of the upper Delaware Bay in winter, during the first 4-6 hours, the risk to shorelines and benthos were scored as Not Applicable because the oil would not reach those environments in that time frame.

In this CERA, participants assigned higher levels of concern about the ecological risks associated with a spill of dilbit oil compared to a spill of Bakken crude oil.

4.1 Bakken Oil Response Actions

Scenario 1 occurs from a rail crossing within Philadelphia's urban setting; Scenario 2 involves a barge in the middle of the Delaware River near Pea Patch Island, an ecologically and culturally-sensitive resource; and Scenario 3 involves a tanker in the open water of upper Delaware Bay.

In general, the workshop participants from Scenarios 1, 2, and 3 found that the "No Response other than monitoring" option was considered of limited or moderate level of concern when deemed appropriate for the scenario conditions, both at the 4- to 6-hour response frame or at 4 to 7 days post discharge. In most cases, the participants found that there was very little change

in concern levels when considering the various response action versus the "no response" action. Although some of the levels of concern did increase from low to moderate (green to yellow), this increase in concern did not require a change in response options. The highest level of concern in the urban, freshwater scenario (1), was with the use of extinguishing agents or for vapor suppression in the intertidal zone for both the initial response and over the 4- to 7-day response times.

Overall, the highest level of ecological concern (red) in these scenarios occurs from the risk of the use of fire-fighting foam as a fire extinguishing or vapor suppression agent to threatened/endangered species, which may be present in Scenario 1 intertidal shoreline. The use of foam in this area in both response phases increased the risk (yellow) over the presence of oil only (green).

In the initial 4-6 hours after a Bakken spill occurs in these scenarios, the response actions that ***positively change, i.e., decrease the risk (change a yellow to a green score)*** compared to the "no response other than monitoring" actions are:

- Scenario 1 – oil spread control, on-water recovery, resource protection, shoreline cleanup, and remotely observed oil detection/mapping in the mid-water habitat (Scenario 1)

In the initial 4-6 hours after a Bakken spill occurs in these scenarios, the response actions that ***negatively change, i.e., increase the risk (change a green to a yellow score)*** compared to oil only are:

- Scenario 1 – oil spread control, on-water recovery, resource protection, shoreline cleanup, and remotely observed oil detection/mapping in natural terrestrial shorelines.

In Scenarios 2 and 3, implementing response actions does not noticeably decrease ecological risks compared to the risk of oil alone.

After the oil has been in the environment for 4-7 days, much of the Bakken oil would have weathered, leaving a light residual oil staining on shorelines, including the intertidal portion of the shoreline, which could be below the water surface (surface water or mid-water column habitats @ 0 meters) during high tide.

After the oil has been in the environment for 4-7 days, the response actions that ***positively change, i.e., decrease the risk (change a yellow to a green score)*** compared to oil only is:

- Scenario 2 – implementing on-water oil recovery near intertidal shorelines.

After the oil has been in the environment for 4-7 days, the response actions that ***negatively change, i.e., increase the risk (change a green to a yellow score)*** compared to oil only are:

- Shoreline cleanup in artificial shorelines and natural terrestrial shorelines in Scenarios 1 and 2.

Habitat	Artificial Shorelines			Natural Terrestrial Shorelines			Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1			Mid-water (0 to 2 meters)			Benthic (bottom, >2 meters)		
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement			Vegetated,Grass, Sand, Gravel			Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach			Water Column			Bottom of the Water Column / Seabed		
SCENARIO	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Transportation Setting	Urban	River	Bay	Urban	River	Bay	Urban	River	Bay	Urban	River	Bay	Urban	River	Bay
Response Actions															
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)															
Fire															
Let burn and controlled burn (both in-situ)															
Extinguishing agents and methods															
No Fire															
Vapor suppression															
Oil spread control															
On-water oil recovery															
Resource protection															
Shoreline clean up															
Oil Detection/mapping - remotely observed methods															

Limited Level of Concern
Moderate Level of Concern
High Level of Concern
Not Applicable

Figure 4.1a Summary Risk Characterization for the Bakken oil scenarios (Phase 1)

Habitat	Artificial Shorelines			Natural Terrestrial Shorelines			Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1			Mid-water (0 to 2 meters)			Benthic (bottom, >2 meters)		
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement			Vegetated,Grass, Sand, Gravel			Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach			Water Column			Bottom of the Water Column / Seabed		
SCENARIO	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Transportation Setting	Urban	River	Bay	Urban	River	Bay	Urban	River	Bay	Urban	River	Bay	Urban	River	Bay
Response Actions															
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)															
Fire															
Let burn and controlled burn (both in-situ)															
Extinguishing agents and methods															
No Fire															
Vapor suppression															
Oil spread control															
On-water oil recovery															
Resource protection															
Shoreline clean up															
Oil Detection/mapping - remotely observed methods															

Limited Level of Concern
Moderate Level of Concern
High Level of Concern
Not Applicable

Figure 4.1b Summary Risk Characterization for the Bakken oil scenarios (Phase 2)

4.2 Dilbit Oil Response Actions

Scenario 4 occurs from a rail crossing over Mantua Creek in New Jersey; Scenario 5 involves a barge in the middle of the Delaware River near the Marcus Hook Anchorage. Generally, the ecological risks associated with spilled dilbit oil and the anticipated response actions for the two scenarios are either moderate or high level of concern, especially if T/E species are present in contaminated areas.

As with Bakken oil, the highest level of concern (red) in these scenarios occurs with threatened/endangered species, which may be present and could be impacted by the oil and/or response actions. In these scenarios, T/E species (e.g., Atlantic sturgeon to sea turtles to bald eagles) might be present and at risk in all environments except artificial shorelines.

In general, the workshop participants from Scenarios 4 and 5 found that the "No Response other than monitoring" option provided a moderate to high level of concern, both at the 4- to 6-hour response timeframe to 4 to 7 days post discharge. In most cases, the participants found that there was very little change in concern levels when considering the various response action versus the "no response" action. Some of the levels of concern did increase for response actions over the 4- to 6-hour timeframe to the 4- to 7-day period from low to moderate (green to yellow). The high level of concerns (red) were scored for scenario 5 regarding the use of most response options deemed applicable for use in the intertidal, mid-water, and benthic zones for both the initial response and over the 4- to 7-day response times. Similar concerns were also expressed for Scenario 4 when considering the risk of shoreline clean up and oil detection / mapping methods for the intertidal and midwater zones.

In the initial 4-6 hours after a dilbit spill occurs in these scenarios, the response actions that ***positively change, i.e., decrease the risk (change a yellow to a green score, or a red to a yellow score)*** compared to oil only are:

- Scenario 5 – oil spread control and on-water recovery in artificial shorelines and at the water's edge (0 meters of the mid-water habitat); and resource protection in intertidal shorelines

In the initial 4-6 hours after a dilbit spill occurs in these scenarios, ***no response actions negatively change, i.e., increase the risk (change a green to a yellow score, or a yellow to a red score)*** compared to the presence of the "no response" action only.

It is important to note that in some habitats, oil detection and mapping methods (if physically disturbing) were scored as a higher risk (red) than oil spread control, on-water recovery and resource protection to natural vegetated shorelines, intertidal shorelines, and mid-water habitats (yellow or green). Remotely observed methods would present a low (green) ecological risk. Participants recognized that available methods to detect and recover submerged dilbit oil are lacking in effectiveness.

Workgroup participants noted that on-water oil recovery in the earliest stage after release is the most important response action to prevent the oil from spreading out and expanding the extent of contamination, e.g., into the Delaware River, and contaminating larger shoreline and benthic habitats and organisms. This oil type will transform from a fairly light crude-like product to a heavy #6 product that will be tacky and adhesive. The oil will likely behave differently as it

weathers in ambient conditions; it could behave as one type of weathered product and a different type a few hours later. This was the situation with the oil spill from the M/V Presidente Rivera in 1989, which required one set of tactics in the morning and a different set in the afternoon because the pour point of the oil was just above or below ambient air and water temperatures.

After the light ends of the diluent have flashed off, the residual product will be extremely tacky and will adhere to whatever it contacts. From an environmental standpoint, this is a significant challenge for onshore cleanup and wildlife rehabilitators to avoid if at all possible. It will take time to experiment (trial/error) with emerging ideas and techniques and develop new response/restoration best management tactics to manage dilbit releases.

After the oil has been in the environment for about 4-7 days, much of the dilbit oil would have weathered to the point that the diluent evaporated, leaving the heavier, persistent bitumen in the environment, available to pick up sediments and sink to the benthos.

After the oil has been in the environment for 4-7 days, the response action that ***positively changes, i.e., decreases the risk (change a yellow to a green score)*** compared to the remaining oil (NAM only) is:

- Scenario 4 – controlled in-situ burning in natural terrestrial shorelines, intertidal shorelines, and the water's edge of the mid-water habitat (0 meters).
- Scenario 4 - oil spread control, on-water recovery, resource protection, shoreline cleanup in natural terrestrial shorelines
- Scenario 5 – Resource protection in intertidal shorelines.
- Scenario 5 - oil spread control, on-water recovery the water's edge of the mid-water habitat (0 meters).

After the oil has been in the environment for 4-7 days, the response actions that ***negatively change, i.e., increase the risk (change a green to a yellow score)*** compared to oil only are:

- Scenario 5 - shoreline cleanup in artificial shorelines (increased risk to reptiles, amphibians, and macro-invertebrates).

Habitat	Artificial Shorelines		Natural Terrestrial Shorelines		Intertidal Shoreline (Exposed & Sheltered) / Surface Water		Mid-water (0 to 2 meters)		Benthic (bottom, >2 meters)	
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement		Vegetated, Grass, Sand, Gravel		Marsh, Swamp, Tidal Flats, Sand Beaches,		Water Column		Bottom of the Water Column / Seabed	
SCENARIO	4	5	4	5	4	5	4	5	4	5
Transportation Setting	Creek	River	Creek	River	Creek	River	Creek	River	Creek	River
Response Actions										
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)										
Fire										
Let burn and controlled burn (both in-situ)										
Extinguishing agents and methods										
No Fire										
Vapor suppression										
Oil spread control										
On-water oil recovery										
Resource protection										
Shoreline clean up										
Oil Detection/mapping - physical detection/remotely observed methods										

Limited Level of Concern
Moderate Level of Concern
High Level of Concern
Not Applicable

Figure 4.2a Summary Risk Characterization for the dilbit oil scenarios (Phase 1)

Habitat	Artificial Shorelines		Natural Terrestrial Shorelines		Intertidal Shoreline (Exposed & Sheltered) / Surface Water		Mid-water (0 to 2 meters)		Benthic (bottom, >2 meters)	
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement		Vegetated, Grass, Sand, Gravel		Marsh, Swamp, Tidal Flats, Sand Beaches, Cobble/Boulder Beach		Water Column		Bottom of the Water Column / Seabed	
SCENARIO	4	5	4	5	4	5	4	5	4	5
Transportation Setting	Creek	River	Creek	River	Creek	River	Creek	River	Creek	River
Response Actions										
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)										
Fire										
Let burn and controlled burn (both in-situ)										
Extinguishing agents and methods										
No Fire										
Vapor suppression										
Oil spread control										
On-water oil recovery										
Resource protection										
Shoreline clean up										
Oil Detection/mapping - physical detection/remotely observed methods										

Limited Level of Concern
Moderate Level of Concern
High Level of Concern
Not Applicable
Unable to Determine Due to Insufficient Information

Figure 4.2b Summary Risk Characterization for the dilbit oil scenarios (Phase 2)

4.3 Additional Findings and Observations

- The high level of engagement by members of the Project Committee strengthened the consensus value of the outcomes.
- Participants recognize that the potential risks of the oils and response options could vary from the ERA findings during an actual spill, depending upon exact location in proximity to sensitive resources of concern and time of year.
- The summary tables presented in Table 4.1 and 4.2 might be viewed as "dashboard indicators", that is, metrics and key performance indicators for operational dashboards that are viewed as an effective means of alerting decision makers as to where they are in relationship to their objectives.
- When scored green, the response actions listed on the left side of the table represent the workshop participant recommendations.
- When spilled, Bakken and dilbit behave differently. Moreover, the behavior of dilbit oils can vary depending upon the type and percentage of added diluents. For Bakken oils, participants agreed that the primary initial strategy is to safely mitigate risks from flammable vapors. For dilbit oils, participants determined that it is imperative for containment and skimming operations to be implemented immediately to recover the oil before it spreads, weathers, begins to pick up any sediments in the water, and possibly would begin to sink. In a creek, the primary recovery strategy would be skimming before the oil can move into the river. However, in developing response strategies during the initial hours of a spill, responders must also consider health and safety hazards of the oils, i.e., evaporation of light ends, release of hydrogen sulfide gas, and flammability, especially with regard to the ignition sources, e.g., boat engines.
- Uncertainty exists around the use of fire-fighting foam.
- An important take away is the long duration of recovery for freshwater mussels in Scenario 4.
- In Scenario 2, it is best to keep the Bakken mid-river away from shorelines, but this would be problematic, given the flammability/ignition issues associated with boat engines and securing the source to limit the volume of the spill, stabilizing the vessel, and implementing containment near the source.
- Participants would like to know more about any studies conducted on the vapor density off-gassing.
- Participants noted the need to carry LELs on the OSRVs.
- Participants requested additional research/studies conducted on the vapor density, particularly how high above the surface the vapors were likely to be present, and noted the need to carry LELs on the OSRVs.
- Participants identified the need to have further study of the potential water column concentrations and toxicity of foam if applied in coastal (marine, estuarine) waters.
- Participants noted that R&D is needed to improve the ability to recover submerged dilbit oil, which is persistent, without damaging the habitats and organisms, especially those that have a long period of recovery, such as the freshwater mussels in Mantua Creek and T/E or rare species. Some of the recent R&D work by Dr. Boufadel, among others, is

increasing our understanding about dilbit behavior and fate, and may provide new insights for early response and potentially treatment to reduce its persistence.

- One gap in the assessment concerned Section 106 of NHPA, to involve State Historic Preservation Officer (SHPO) and HPA, and to look at tribes in the AOR and their preferences for consultation. Activities to address this gap are underway in the Region but were not resolved in time to incorporate in this ERA.
- Workgroup participants identified an information gap with regard to estimates of fish and bird populations in the area, which increased uncertainty around severity estimates.
- Participants using the NOAA ESI maps did not seem cover the full range of environmental resources at risk in all scenarios, e.g., freshwater mussel beds in vicinity of Mantua Creek. NOAA responded that east of Mantua creek there is a mapped a record of the NJ ST eastern pond mussel. It is important to recognize that NOAA focuses on state and federally-listed species, not necessarily all 'rare' species. In addition, NOAA is not always provided with data for all records or species for every state, rather the exact records are at the discretion of the data provider. Data for New Jersey was provided by NJDEP Endangered and Nongame Species Program in 2013.

4.4 Recommendations

The Project Committee evaluated oil spill response strategies identified during this process through literature review and informed by open dialogue among oil spill planners, managers, responders, and natural resource trustee agencies. The output of this risk assessment is intended to enhance existing oil spill area contingency planning. Participants looked at the net benefit of the response action to determine if it made the situation better or worse than the no active response other than natural attenuation and monitoring.

Since this CERA was adapted to address a broader scope than previous ERAs, participants were asked to provide feedback on the workshop process, following the second workshop. A summary of their comments is presented in Appendix I.

Participants made the following recommendations to Sector Delaware Bay, in no particular order:

- Begin working with port partner subject matter experts to apply these results to develop a set of BMPs to guide FOSC decision-making during preparedness and response for spills from these transportation scenarios, along the lines of the NOAA Shoreline Countermeasure Manual.
    - If possible, develop recommendations for a holistic "concept of operations" approach for dilbit oil spills. That is, a priority sequence of response actions to implement near the spill source. For example, focus on pre-spill planning to improve the effectiveness of oil containment and recovery in the early stages of a spill. The best option to minimize the ecological risk of this crude oil using current technology is to deliver containment and recovery equipment faster to the scene to limit the geographic spread of oil, and recover the majority of spilled oil, before weathering when the oil would submerge and become more difficult to detect and recover.
    - In the Scenario 4 workgroup, for example, the participants strongly believed that the key to reducing ecological risks would be to contain and recover the

oil almost immediately near the spill source, which they also recognized would be highly unlikely.
    - As appropriate, generic, key topic areas should be developed into best BMPs presented in tabular format or list and incorporated into the ACP. For example:
        - Protect sensitive shorelines
        - Booming: does not represent a concern unless actions drive oil into mudflats or if T&E species are impacted by deployment actions.
        - Removing oil residue from shore: does not represent a concern unless actions drive oil into mudflats or if equipment impacts T&E species.
        - On water skimming: does not represent a concern.
    - One option is translating the summary matrices into GRS, when to use these response actions (green), when not to use (red) and those that need more consideration (yellow).
- Before commencement of emergency response actions, threatened and endangered species require an informal consultation with services before it is assumed they are not present.
- Future ERAs should assess the potential risks and net environmental benefit of response actions that involve materials regulated by Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan, e.g., Imbiber Beads.
    - Also, explore the potential use of helicopter-deployed herder agents for Bakken spills in open water, similar to Scenario 3, and consider a test zone and window of opportunity.
- Future ERAs should consider the viability of developing a single conceptual model for these two types of crude oil. This project developed five that are slightly different from one another because there was inadequate time for five workgroups, 90 participants to reach consensus on a generic conceptual model in this ERA.
- It would be useful to conduct future ERAs on similar scenarios in temperate climates but with different seasons. For example, Scenario 4 would likely have had different outcomes if the same volume of oil had been discharged in spring and closer to Delaware.
- Participants would like EPA to consider investigating water column concentrations and dilution of foam in its testing of Bakken oils at OHMSETT in New Jersey.
- Participants recommended that issues on the use of foams and hazards associated should be added to the ACP, including:
    - Confirm whether or not fire-fighting foams containing PFCs are being stored in the area.
    - Assess the feasibility of logistical actions and coordination needed to enable the use of foam in mitigating risks from hazards during rail, barge, or tanker response.
    - Evaluate the approval/authorization issues for applying fire-fighting foam for crude oil incidents that threaten navigable waters. Do human health and safety priorities negate the need for RRT approval? If RRT approval will be necessary, define the preparedness actions to enable approval when needed.

5.0 Discussion

As noted earlier, participants reviewed and approved a revised risk matrix for use in this project (Figure 3.3). For each scenario, workgroup participants completed a conceptual model, and then reviewed information on the oils, their properties (Appendix C), MSDSs on three types of firefighting foam (Appendix F), weathering and trajectory modeling results Appendix I), ESI maps showing the location of RAR in relation to the projected extent of contamination, T/E species lists and map of water intakes from the ACP, other relevant information about seasonality and distribution, plus case studies and spill reports involving these or similar oils. Because of the differences among the scenarios, including the assumptions made for each, the summary results of the risk characterizations for the five scenarios are discussed separately. Participants generally conducted a conservative evaluation and recognized that these findings could be less conservative in an actual situation.

The conceptual models were used first to clarify the pathways of exposure and the types of hazards between the spilled oil and seasonally-present RAR. The risk matrix was first completed by each workgroup to characterize the risks to resources of concern from the oil only, i.e., no response action, except for natural attenuation and monitoring (NAM). Next, participants compared the potential risks of each category of response actions to the risks associated with the spilled oil left in place to attenuate, plus monitoring via sampling. During this comparison, participants were asked to determine:

1. If using a response action is likely to ***improve*** the outcome, the score is a **lower** alphanumerical value than oil only.
2. If using a response action is likely to ***worsen*** the outcome, the score is a **higher** alphanumerical value than oil only.

The aim of this characterization is to methodically identify optimal response actions, as well as opportunities for risk managers (i.e., USCG FOSCs) to modify response actions that could then improve the outcome. Stated another way, through this assessment the USCG could modify response actions to change a yellow level of concern to a green, and a red level of concern to a yellow or green.

Key properties summarized by NOAA for the two oils used in the scenarios are presented in Tables 5.1 and 5.2. The specific composition of these crude oils can vary when produced and transported. The example MSDS used for these oils were provided by a participant from ExxonMobil Biomedical Sciences, Inc.

5.1 Bakken Oil Properties

Bakken crude oil is a light crude oil with an API of 36 to 44. It has a low viscosity and will float on the water surface. It will quickly spread into thin slicks, with significant amounts of the lighter fractions lost via evaporation (which can result in serious explosion/fire and inhalation risks). Bakken crude contains moderate concentrations of toxic (soluble) compounds, thus can pose risks to aquatic resources. In addition, it will oil and penetrate into intertidal habitats, causing the potential for fouling of riverine habitats and long-term contamination of sediments.

Bakken Sweet Crude Oil
Light crude oil - API of 36 to 44
Low viscosity and will float on the water surface.
Quickly spreads into thin slicks on the water surface.
Significant amounts of the lighter fractions lost via evaporation; may result in explosion/fire and inhalation risks.
Contains moderate concentrations of toxic (soluble) compounds, may pose risks to aquatic resources.
May coat and penetrate into intertidal habitats, with potential fouling of riverine habitats and sediments.
Low viscosity and will float on the water surface.
Density (at 15 °C): 0.813
Viscosity: 2.18 cSt at 40 degrees C
Pour Point: -73°C (-99°F) - 48°C (118°F)

Table 5.1 Properties of Bakken Crude Oil

5.2 Dilbit Oil Properties

Diluted bitumen, or dilbit, is bitumen—a heavy oil that has been blended with, one or more, lighter petroleum products, such as condensate (the oil co-produced from a gas well) or a naphtha-based oil. Once released, dilbit will initially behave as a medium crude oil. However, it will rapidly lose the volatile fraction of the diluent through evaporation, leaving behind the viscous bitumen. The diluents have high percentages of toxic, water-soluble components, resulting in greater risks to water-column organisms compared to heavier oils. Acutely toxic impacts from the diluent could be relatively severe, but limited to a localized area. Depending on the density of the bitumen, the residue may float or sink; depending on the viscosity, pour point, and ambient temperatures, the oil will spread into slicks or congeal into tarballs and tarmats; depending on what the bitumen was blended with, dilbit oil can change properties over time. SCAT and Operations teams should be asked to observe and report any buried oil or sinking.

Diluted Bitumen = Dilbit (Kearl)
Bitumen blended with a diluent - one or more light petroleum products, such as condensate or a naphtha-based oil.
Once released, initially behaves as a medium crude oil.
Rapidly loses volatile fraction of diluent through evaporation, leaving behind the viscous bitumen, which behaves as a heavy crude oil that is persistent in the environment.
Diluents - high percentages of toxic, water-soluble components; greater risks to water-column organisms compared to heavier oils.
Acutely toxic impacts from the diluent could be relatively severe, but limited to a localized area.
Depending on the density of the bitumen, residue (after loss of light ends) may float or sink (smothering hazards) and be sticky and difficult to recover.
Depending on the viscosity, pour point, and ambient temperatures, oil may spread into slicks or congeal into tarballs and tarmats.

Diluted Bitumen = Dilbit (Kearl)
Depending on the blends, the residue may change properties over time; e.g., could become non-floating if sediments are present in the water, submerge, and rest on the benthos and/or be buried in sediments.
Density: 0.94
Viscosity: 83 cSt at 40 degrees C
Pour Point: <(33) degrees F (for whole crude oil, i.e., both bitumen and diluent)

Table 5.2 Properties of dilbit oil

Additional information provided by NOAA oil database, ADIOS 2, and spill experience[13], provided the participants with further knowledge on weathering of dilbit oil. In general, recent studies have determined that the dilbit components will weather (components can be found in surface, mid-water, or bottom waters) within the first 72 to 96 hours, and the lighter, more toxic diluent components (the lighter ends) fractions of the oil will undergo weathering through evaporation. The specific gravity of residual heavier components will begin to approach 1.0 and, especially in freshwater and/or waters with particulate matter, be more likely to sink. Consequently, the risks of the options to manage the spilled oil risks were assessed twice, for each of two phases of oil behavior:

- Initial spill of oil: initial 2-6 hours and potentially up through 2 days, which is the approximate duration when public safety actions would take precedence over pollution response actions, i.e., the flammability risks for both oils should have diminished. NOTE: Additional weathering of the oils will continue until the lighter components are removed; about 72 to 96 hours, perhaps longer depending upon the actual oil and ambient conditions, a large majority of the lighter components are expected to evaporate into the atmosphere (Bakken and dilbit) or mix into the upper water column (Bakken).
- Weathered oil: through the initial 7-8 days, i.e., the approximate time after the emergency phase during which oil could still be found on the water surface and recoverable using traditional pollution response techniques. Sometime during the latter end of this timeframe, the residual bitumen component of dilbit oil would likely begin to pick up sediment in the water column and sink below the water surface, either in the water column or settle on the bottom.

Participants noted that R&D is needed to improve the ability to find and recover submerged dilbit oil, which is persistent, without damaging to the habitats and organisms, especially those that have a long period of recovery, such as the freshwater mussels and T/E or rare species. R&D that is in progress may also provide insights about reducing its persistence in the environment. Interaction with other particles in the water column will likely result in oil particle aggregates (OPAs), which could cause the formation of droplets. There are two types of OPA droplets and

[13] The NOAA ADIOS database includes estimates of the physical properties of dilbit oils and products. Using this information, NOAA has incorporated a dilbit oil into the ADIOS 2 to predict *changes* in those properties once the oil has been released. The properties evaluated for dilbit oil include the density, viscosity, and water content of the product; as well as the rates at which it evaporates from the sea surface, disperses into the water column, and forms oil droplets that become emulsified, suspended, or sinks in the water.

they will either sink or rise to the surface. One has more sediment than oil; the other has more oil than sediments. Adhesion (stickiness) of the oil is an important characteristic. In the Delaware Bay, we expect more adhesion of oil to the sediments and particles in the Bay. If the oil readily forms droplets, this could reduce the potential for smothering by submerged oil mats and increase the rate of biodegradation of the oil.

Shared assumptions and observations identified by the participants include:

- The risk assessment matrices *generally* omit physical-contact oil detection methods because these methods would not be needed for Bakken oil, nor would they likely be implemented in the first seven days of a dilbit oil spill. While these response actions could be appropriate and potentially useful for dilbit oil spills, they would be implemented after the diluent components separated from the bitumen crude oil.
- Handling of waste is a potential pathway and that waste management will be correctly carried out; therefore, this risk is only a concern if waste BMPs are not followed. It is assumed that waste will drop out as a risk, but participants agreed they cannot disregard waste because there are cleanup options such as skimming with the possibility of approved decanting, and recanting, which could add contaminants back into the environment.
- The focus on the ERA was on wetlands, e.g., marshes that could be exposed to spilled or floating oil, rather than uplands. The three states value marsh grass species differently, e.g., NJ considers *Phragmites australis* worthy of protection while the other states consider it less important.
- Participants recognized that some areas considered upland (dry area) are within the scenario scope yet participants did not use a common definition of upland. Some places may be 10 miles from a water body but not considered upland (dry area).

5.3 Health and Safety Risk Characterization

The use of foam in on the spilled oil to suppress vapors and potentially extinguish fires was discussed by all workgroups. Three types of foam are stockpiled on facilities in the region: PKW, Thunderstorm FC-601A, and UNIVERSAL GOLD 1% / 3%. After reviewing their respective MSDSs, participants reached several conclusions:

1. In an urban environment, public safety concerns could require fire fighters to continuously apply foam to suppress vapors and prevent fires near people.
2. When spilled onto coastal waters, foam would not be a preferred pollution response action due to the potential for adverse impacts on marine and estuarine organisms and habitats and the inability to maintain a foam barrier between the spilled oil and the atmosphere.
3. Logistically, applying foam from industry stockpiles is a challenge if needed outside of the facility where it is stored.
4. Since public safety concerns could drive the application of foam regardless of concerns about ecological risks, and to more fully inform decision-making, participants identified the need to have further study of the potential water column concentrations and toxicity of foam if applied in coastal (marine, estuarine) waters.

Human health risks from flammable vapors and fires were also characterized by the workgroups for both oil types. The workgroups considered risks to both workers (first responders and pollution responders) and the general public. CTEH proposed groups of health-related socio-economic resources (workers, sensitive receptors (e.g., children, elderly, and sick), and potential communities in proximity to the incident) and drafted the initial conceptual model for human health and safety (HHS) using Scenario 1, because this spill location occurs in a densely populated, urban area. Figure 5.1 displays the characterization of Scenario 1 HHS risks, which are predominantly associated with flammability and benzene hazards when the oil is first spilled. There would be a slightly elevated risk to humans from just monitoring the vapors, but risk is still considered low and is denoted as a limited level of concern (green) due to the outdoor, transient nature of the flammability and inhalational exposures. If no fire occurred, implementing various response actions would present a lower risk to HHS than the fire, although these actions could result in slight risks, e.g., from vapors, to workers and people in the transportation community who could not shelter in place.

Participants characterized risks of monitoring only as resulting in some potential impairment to, with rapid recovery by, sensitive receptors (i.e., the sick, elderly, and children), nearby transportation and residential communities and as being overall, a low concern. If a fire occurred and response actions were to either let the oil burn or add extinguishing agents, the potential for impairment to human/socio-economic resources would increase over the risk of the oil alone; recovery from fire and foam/water damage or injury could take 1 to 4 years. Impacts could potentially arise from dermal exposure, and inhalational exposure to combustion byproducts of oil including PAHs and fire smoke, as well as the fire-fighting foam itself. Participants raised several questions about the use of foam but lacked the necessary information to resolve them.

Habitat	Human Health and Safety					
Sub habitats	Work Area (e.g., hot and warm zones), plus Public Health (Transportation, Industrial, Residential/Recreational Communities)					
Oil Type	B1	B1	B1	B1	B1	B1
Resources of concern (Socio-economic)	Workers	Residential Community	Sensitive Receptors	Commercial Community	Industrial Community	Transportation Community
Human health and safety receptors relevant to this ERA	First Responders (on water/on land), safety monitoring, oil recovery operations (on water/on land), oil contamination monitoring/SCAT	All - adults, adolescents; also children, elderly, sick (personal residences)	Children, Elderly, Sick (daycares, hospitals, nursing homes)	Adults (shops, general commercial facilities)	Adults (nearby refineries, plants, etc.)	Mostly Adults (rail, marine, roads: drivers, passengers)
Response Actions - Actionable Oil						
No response action except monitoring (air: flammability, Benzene, etc.; soil; water; and stranded onshore oil)	4D	4C	4C	4D	4D	4C
Fire						
Let burn and controlled burn (both in-situ)	3B	3C	3B	3C	3C	4C
Extinguishing agents and methods	3B	3C	3B	3C	3C	4C
No Fire						
Vapor suppression	4C	4D	4D	4D	4D	4C
Oil spread control	4C	4D	4D	4D	4D	4C
On-water oil recovery	4C	4D	4D	4D	4D	4C
Resource protection	4C	4D	4D	4D	4D	4C
Shoreline clean up	4C	4D	4D	4D	4D	4C
Oil detection/mapping - remotely observed methods	4D	4D	4D	4D	4D	4C

Figure 5.1 Risk Characterization: Human Health/Socio-economic Resources of Concern

The summaries of the workgroups' risk characterizations of the different response actions, in relation to the risk of oil only, associated with each of the five scenarios are discussed in the following sections. Detailed notes, including assumptions made by workgroup participants, were taken by recorders in each of the workgroups and were used to develop the discussion below.

5.4 Scenario 1 – Bakken Rail Incident, Philadelphia

Scenario 1 addressed an urban rail incident involving Bakken crude oil in the same location as an actual derailment that occurred January 20, 2014 (Figure 5.2). [NOTE: The incident occurred at the Arsenal Bridge located in the University City neighborhood of Philadelphia, PA on January 15, 2015, and resulted in damage to four railcars but no spillage of oil.] For this scenario, approximately 100,000 gallons of Bakken cargo released, half of which entered the Schuylkill River. The other half of the discharge spilled on land and caught fire in a highly-populated urban area near commercial and residential areas, sports centers, nursing homes, schools, and water intakes. At this time of year, ice is often present on the river, with snow onshore.

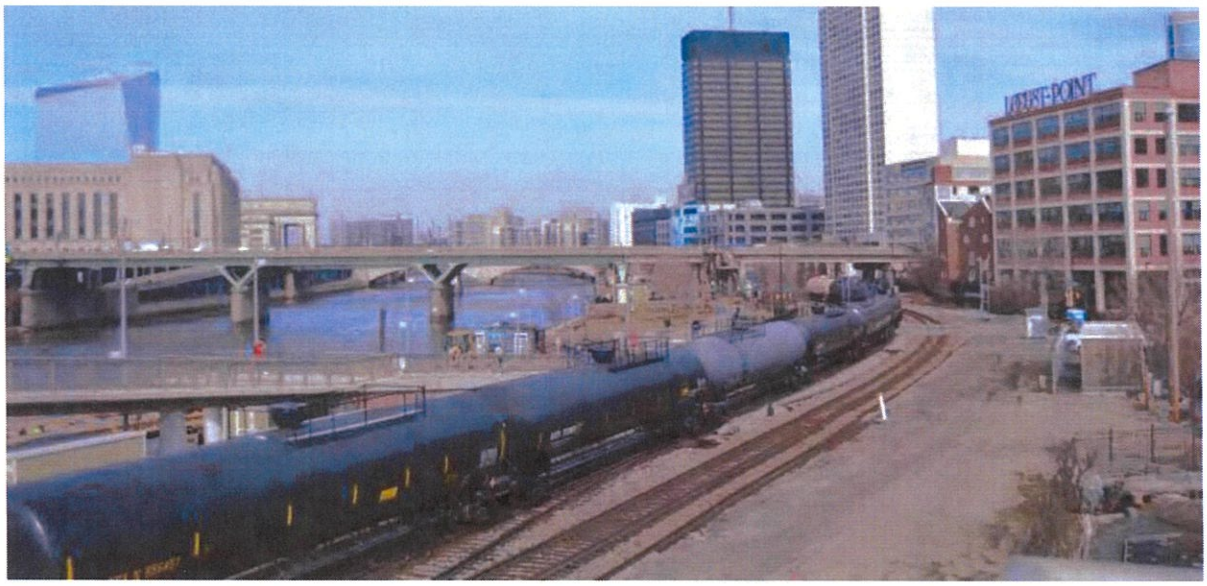


Figure 5.2 Crude oil by rail at the Arsenal Bridge in Philadelphia

(Photo Credit -http://planphilly.com/articles/2014/03/13/csx-testifies-on-derailment-25th-street-bridge)

For this scenario, Philadelphia Office of Emergency Management ran the Interagency Modeling and Atmospheric Assessment Center (IMAAC) plume model. Figure 5.3 shows the conditions and result of the model.

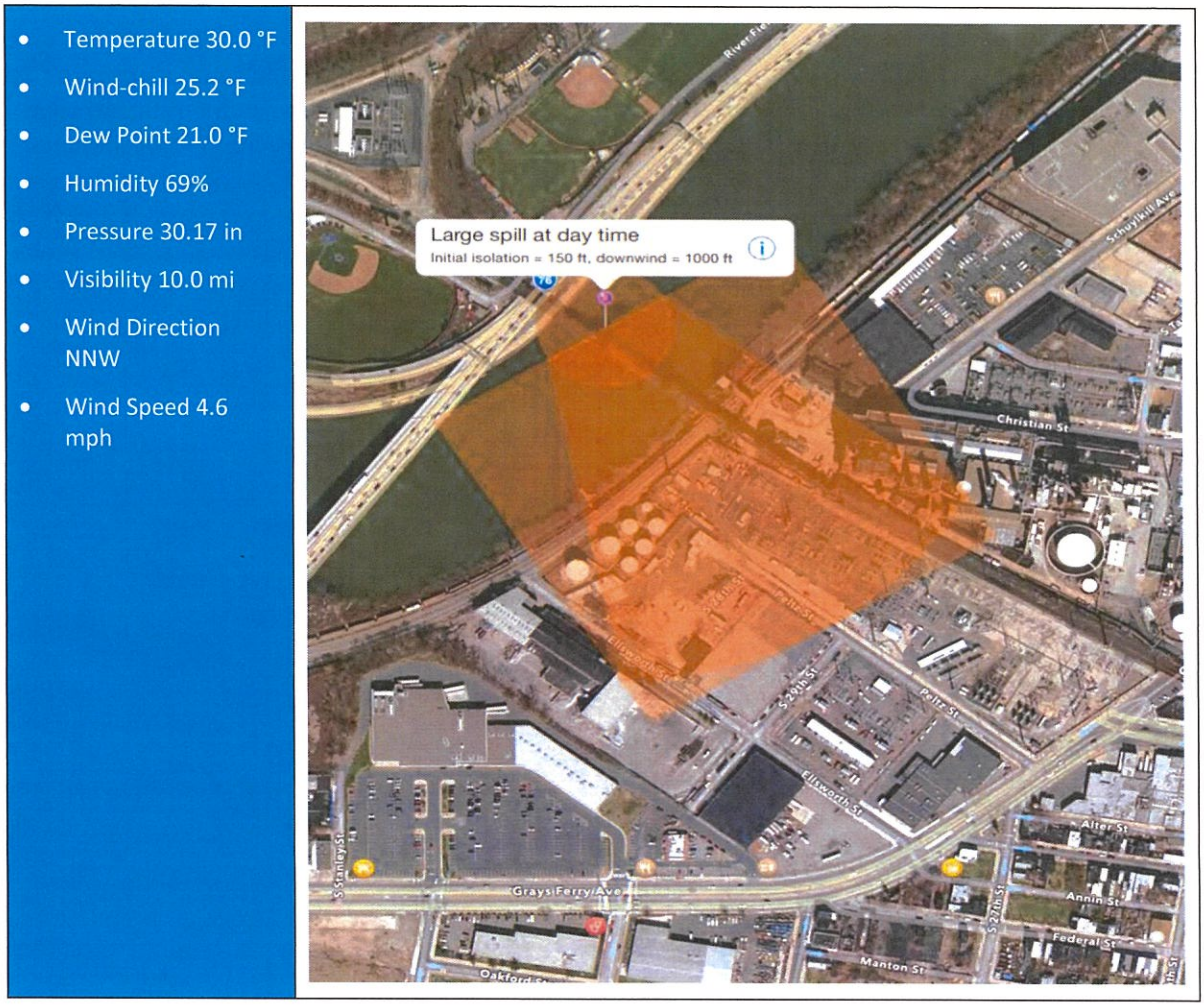


Figure 5.3 Smoke Plume model for Scenario 1

Participants reviewed the information contained in Appendix H:

- The weathering of the oil over time, in terms of amount that would evaporate and remain in the environment (shown in the oil budget table), and benzene concentrations, was calculated by NOAA's ADIOS 2.
- The oil spread predictions from trajectory model, including possible extent of contamination over 4 days, in relation to the ESI maps for the area.

The ADIOS 2 program shows that of the 50,000 gals of Bakken oil that did not burn, the oil that spilled into the Schuylkill River and on the adjacent shore would rapidly evaporate. ADIOS 2 estimated that the oil would move about 1.5 nautical mile (nm) in total within the Schuylkill River (0.7 nm upstream and 0.8 nm downstream) and provided an oil budget for the 50,000 gals that did not burn in this scenario (Table 5.3).

Time/Fate	*Floating*	*Beached*	*Evaporated/Dispersed*
After 24 Hours	9,400 gallons (18.8%)	23,000 gallons (46%)	17,600 (35.2%)
After 48 Hours	5,750 gallons (11.5%)	17,500 gallons (35%)	26,750 (53.5%)
After 72 Hours	3,900 gallons (7.8%)	14,350 gallons (28.7%)	31,750 (63.5%)
After 96 Hours	3,050 gallons (6.1%)	11,900 gallons (23.8%)	35,050 (70.1%)

Table 5.3 Oil budget for Scenario 1

The primary driver for the highest level of concern (red) is the potential presence of peregrine falcons, bald eagles, and osprey, which could be feeding (fishing) in the area of contamination. If a bald eagle or osprey was exposed to the oil, and was part of a mating pair, there would be a significant potential impact for a relatively long period of time.

Phase 1 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 1 (initial 6 hours) associated with no action other than monitoring plus all response actions for this scenario are shown in Figure 5.4.

As noted above, the driver for the highest level of concern was the potential presence of peregrine falcons, osprey, and bald eagles, which could be adversely impacted by the physical event, the oil, and the response activities taking place. The use of foam was also a concern on macro-invertebrates, such as freshwater mussels. Due to these concerns, the summary risk in intertidal shoreline with the use of foam was red.

Participants were also concerned about the use of foam to macroinvertebrates in waters 0-2 meters deep, as well as fishery closures. While a fishery might be closed to reduce the risk of oil tainting, closing the fishery would not necessarily reduce the risk from exposure to fire-fighting foam.

Participants had moderate level of concern regarding the potential impact of oil recovery and removal activities where oil stranded in the intertidal zone and surface waters where aquatic vegetation might be present. N/A was applied when the resources of concern listed in the matrix were not present in this scenario area.

Except for the flammability and foam concerns, a low level of concern was expressed about potential risk to other ecological resources of concern during the early hours of the incident.

Phase 2 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 2 (initial 7 days) associated with no action other than monitoring plus all response actions for this scenario are shown in Figure 5.5.

Given the rapid weathering of Bakken oil, January spill time, and the urbanized setting, the risks were characterized as the same as Phase 1.

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach								Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																							
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4D	3D	NA	4D	NA	2B	NA	4D	3D	NA	4D	NA	2B	3C	4C	3D	3C	3C	2B	3C	4D	4D	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																							
Fire																																							
Let burn and controllec burn (both in-situ)	4D	4D	NA	4D	NA	4C	NA	4D	4D	NA	4D	NA	4C	3C	4C	4D	NA	4D	4C	3C	NA	4D	4C	4D	4D	NA	4D	NA	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat															3C																									
Extinguishing agents and methods	4C	4C	NA	3C	NA	3C	NA	4C	4C	NA	3C	NA	3C	3C	3C	3C	3C	2B	2B	3C	4D	2B	4C	3C	3C	NA	3B	3B	NA	NA	NA	2B	4C	3B	2C	2C	NA	NA	NA	2C	4C
Summary for Sub-habitat																																							
No Fire																																							
Vapor suppression	4C	4C	NA	3C	NA	3C	NA	4C	4C	NA	3C	NA	3C	3C	3C	3C	3C	2B	2B	3C	4D	2B	4C	3C	3C	NA	3B	3B	NA	NA	NA	2B	4C	3B	2C	2C	NA	NA	NA	2C	4C
Summary for Sub-habitat																																							
Oil spread control	4D	3D	NA	4D	NA	2B	NA	4D	3D	3C	4D	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																							
On-water oil recovery	4D	3D	NA	4D	NA	2B	NA	4D	3D	3C	4D	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																							
Resource protection	4D	3D	NA	4D	NA	2B	NA	4D	3D	3C	4D	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																							
Shoreline clean up	4C	4C	NA	3B	3B	3C	NA	3B	3B	3B	3B	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																							
Oil Detection/mapping - remotely observed methods	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D
Summary for Sub-habitat																																							

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

Moderate Level of Concern

High Level of Concern

Not Applicable

Figure 5.4 Scenario 1 Risk Characterization (Phase 1)

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)									Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach									Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-Invertebrates	Aquatic Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4D	3D	NA	4D	NA	B1	NA	4D	3D	NA	4D	NA	2B	3C	4C	3D	3C	3C	2B	3C	4D	4D	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																								
Fire																																								
Let burn and controlled burn (both in-situ)	4D	4D	NA	4D	NA	4C	NA	4D	4D	NA	4D	NA	4C	3C	4C	4D	NA	4D	4C	3C	NA	4D	4C	4D	4D	NA	4D	NA	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																			3C																						
Extinguishing agents and methods	4C	4C	NA	3C	NA	3C	NA	4C	4C	NA	3C	NA	3C	3C	3C	3C	3C	2B	2B	3C	4D	2B	4C	3C	3C	NA	3B	3B	NA	NA	NA	2B	4C	3B	2C	2C	NA	NA	NA	2C	4C
Summary for Sub-habitat																																								
No Fire																																								
Vapor suppression	4C	4C	NA	3C	NA	3C	NA	4C	4C	NA	3C	NA	3C	3C	3C	3C	3C	2B	2B	3C	4D	2B	4C	3C	3C	NA	3B	3B	NA	NA	NA	2B	4C	3B	2C	2C	NA	NA	NA	2C	4C
Summary for Sub-habitat																																								
Oil spread control	4D	3D	NA	4D	NA	2B	NA	4D	3D	3C	4D	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																								
On-water oil recovery	4D	3D	NA	4D	NA	2B	NA	4D	3D	3C	4D	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																								
Resource protection	4D	3D	NA	4D	NA	2B	NA	4D	3D	3C	4D	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	3C
Summary for Sub-habitat																																								
Shoreline clean up	4C	4C	NA	3B	3B	3C	NA	3B	3B	3B	3B	NA	2B	3C	3C	3C	3B	3B	2B	3B	4C	4C	4C	4C	3D	NA	3C	4C	NA	NA	NA	4D	4C	NA	NA	NA	NA	NA	NA	NA	4C
Summary for Sub-habitat																																								
Oil Detection/mapping - remotely observed methods	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D
Summary for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

High Level of Concern

Moderate Level of Concern

Not Applicable

Figure 5.5 Scenario 1 Risk Characterization (Phase 2)

5.5 Scenario 2 – Bakken Barge Incident, Delaware River

Scenario 2 was an incident involving a barge carrying Bakken crude oil. The 50,000-gallon spill occurred on the Delaware River at Eddystone, PA on April 15, 2015, an ecologically-sensitive time of year. The released cargo impacts Pea Patch Island, the largest heron rookery on the East Coast of the United States north of Florida.

Figure 5.6 shows one of the articulated tug and barges used to transport Bakken oil in the Delaware Bay.

Figure 5.6 US Ship Co. barge, ***Petrochem Producer****, used to transport Bakken oil.*

(Photo credit: Delaware Bay and River Cooperative)

Participants reviewed the information contained in Appendix H:

- The weathering of the oil over time, in terms of amount that would evaporate and remain in the environment (shown in the oil budget table), and benzene concentrations, were calculated by the ADIOS 2 program.
- The oil spread predictions from the trajectory model, including possible extent of contamination over four days, in relation to the ESI maps for the area.

Phase 1 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 1 (initial 6 hours) associated with no action other than monitoring plus all response actions for this scenario are presented in Figure 5.7.

Participants made the assumption that 25,000 gals floated on the river, that shorelines would be pre-cleaned to prevent the oiling of debris, and that there would be some oiling on adjacent shorelines, mostly in New Jersey. The oil spread on the river initially ranged from Wilmington, DE south of the C&D Canal to the Augustine Wildlife Area in Delaware. Fire was not part of this scenario and response actions for fire were NA but vapor hazards were a risk and considered.

Artificial and natural shorelines were assumed to be above the mean high tide mark and thus not oiled.

Shoreline cleanup of Bakken oil residue was not considered likely in intertidal shorelines during Phase 1, or in the water column, so these were also ranked NA. Participants expressed a moderate level of concern with the potential exposure of mammals, birds, reptiles/amphibians, and T/E animals and plants to Bakken oil onshore and in the upper water column. At this time of year, people could be fishing and participants considered whether the smell of oil would be a voluntary disincentive to stop fishing. Advisories would likely be issued but not shut down. Participants agreed that if people could smell oil, they could be exposed and should take precautionary efforts, and also recognized that state and local health departments would make public health determinations and issue advisories.

Participants assumed that vapor issues from Bakken to mammals and birds would impair them but should recover in less than one year. Amphibians receive higher risk rankings because both inhalation and absorption is higher through the skin.

Compared to oil only, implementing measures to control the spread of oil where T/E animals might be present in the intertidal zone decreased the risk from moderate to low; but this action also increased slightly the risk to T/E plants if they were in the pathway of the spilled oil. T/E plants in artificial shoreline received a 4D ranking because participants did not believe there were any in the area.

Phase 2 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 2 (initial 7 days) associated with no action other than monitoring plus all response actions for this scenario are presented in Figure 5.8.

In the Phase 2 timeframe, floating oil could be found in areas farther north from Trainer, PA and Logan Township, NJ but no further south than the Augustine Wildlife Area in Delaware.

Compared to the oil only, changes in potential risk were few and primarily related to the potential impact of shoreline cleanup activities to remove stranded oil, which would likely be light, e.g., bathtub ring. Shoreline cleanup in intertidal areas where T/E animals, e.g., osprey and bald eagles (recovered T/E species) might be present or hazed into oiled areas, was scored a high level of concern (red), and the level of concern increased from low (green) to moderate (yellow) for reptiles/amphibians that could be present on artificial and natural terrestrial shorelines. Potential risk also increased to moderate level of concern about the impact of shoreline cleanup activities in the intertidal zone on mammals, birds, reptiles/amphibians, and plants.

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)									Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach									Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4C	4C	4B	4D	4C	NA	NA	4C	4C	4B	4D	4D	4C	4D	3B	3B	3B	3B	3B	4D	3C	4C	4C	3B	3B	3B	3B	4D	4D	4C	4D	4D	4C	4D	4D	4D	4D	4D	4C	4C
Summary for Sub-habitat																																								
Fire																																								
Let burn and controlled burn (both in-situ)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Extinguishing agents and methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
No Fire																																								
Vapor suppression	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil spread control	4C	4C	4C	4C	4C	NA	4C	4C	4C	4C	4C	4C	4C	4D	3C	3C	3C	3B	4D	3C	3C	4D	4D	3B	3B	3B	3B	4D	4D	4C	4D	4D	4D	4D	4D	4D	4D	4D	4C	4C
Summary for Sub-habitat																																								
On-water oil recovery	4D	4D	4C	4D	4D	NA	4D	4D	4D	4C	4D	4D	4D	4D	3C	3C	3C	3B	4D	4D	3C	4D	4D	3B	3B	3B	3B	4D	4D	4C	4D	4D	4D	4D	4D	4D	4D	4D	4C	4C
Summary for Sub-habitat																																								
Resource protection	4D	4D	4C	4D	4D	NA	4D	4D	4D	4C	4D	4D	4D	4D	3C	3C	3C	3B	4D	4D	3C	4D	4D	3B	3B	3B	3B	4D	4D	4C	4D	4D	4D	4D	4D	4D	4D	4D	4C	4C
Summary for Sub-habitat																																								
Shoreline clean up	4C	4C	4B	4D	4C	NA	4D	4C	4C	4B	4D	4D	4C	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil Detection/mapping - remotely observed methods	4C	4C	4B	4D	4C	NA	4D	4C	4C	4B	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D
Summary for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

Moderate Level of Concern

High Level of Concern

Not Applicable

Figure 5.7 Scenario 2 Risk Characterization (Phase 1)

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach								Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water intakes - midwater
Response Actions																																							
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4C	4C	4B	4D	4C	N/A	N/A	4C	4C	4B	4D	4D	4C	4D	3B	3B	3B	3B	3B	4D	3C	4C	4C	3B	3B	3B	3B	4D	4D	4C	4D	4D	4C	4D	4D	4D	4D	4D	4C	4C
Summary for Sub-habitat																																							
Fire																																							
Let burn and controlled burn (both in-situ)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary for Sub-habitat																																							
Extinguishing agents and methods	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary for Sub-habitat																																							
No Fire																																							
Vapor suppression	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary for Sub-habitat																																							
Oil spread control	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary for Sub-habitat																																							
On-water oil recovery	4D	4D	4D	4D	4D	N/A	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	3B	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary for Sub-habitat																																							
Resource protection	4D	4D	4C	4D	4D	N/A	4D	4D	4D	4C	4D	4D	4D	4D	3C	3C	3C	3B	3B	4D	3C	4D	4D	3B	3B	3B	3B	4D	4D	4C	4D	4D	4D	4D	4D	4D	4D	4D	4C	4C
Summary for Sub-habitat																																							
Shoreline clean up	4C	4C	3C	4D	4C	N/A	N/A	4C	4C	3C	4D	4D	4C	4D	3B	3B	3B	3B	2B	4D	3C	4D	4D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary for Sub-habitat																																							
Oil Detection/mapping - remotely observed methods	4C	4C	4B	4D	4C	N/A	4D	4C	4C	4B	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D	4D
Summary for Sub-habitat																																							

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

Moderate Level of Concern

High Level of Concern

Not Applicable

Figure 5.8 Scenario 2 Risk Characterization (Phase 2)

One potential gap in the assessment was a Section 106 consultation under the NHPA, which requires a review of proposed actions (i.e., response actions) with interested parties, e.g., federally-recognized tribes (there are none in NJ), and weighing of project alternatives to avoid or minimize damage to significant historic and cultural properties. Some ESI maps captured some archaeological sites.

5.6 Scenario 3 – Bakken Tanker Incident, Delaware Bay

Scenario 3 was an incident involving a tanker carrying Bakken crude oil. The incident, a 500,000-gallon discharge, occurs in the middle of the northern end of Delaware Bay (saltwater) on January 15, 2015. The resultant spill involves highly flammable vapors that limits response and navigation within the reaches of the oil, and could have greater impacts on the ecologically-diverse shorelines of three states (Pennsylvania, Delaware, and New Jersey) if it occurred in the other seasons.

Participants reviewed the information contained in Appendix H:

- The weathering of the oil over time, in terms of amount that would evaporate and remain in the environment (shown in the oil budget table), and benzene concentrations, was calculated by the ADIOS 2 program.
- The oil trajectory predictions include the possible extent of contamination over the first four days, in relation to the ESI maps and resources of concern for the area.

Trajectory models for this scenario were run with two different winds because initial models run with no winds present allowed the tidal action to dominate the movement and spread of oil, which resulted in no shoreline impacts taking place. This was considered improbable by the participants, so a second trajectory model run was requested using seasonally-prevailing winds. The wind conditions are:

- 0 knots (essentially calm; only tides and currents affected the spread of the oil); no shoreline impacts were realized using this scenario, and
- 8-13 knots from the north/northwest (seasonally prevailing winds); resulted in likely shoreline impacts from the spilled oil.

Phase 1 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 1 (initial to 6 hours) associated with no action other than monitoring and other response actions for this scenario are presented in Figure 5.9.

The weathering and trajectory models showed that in the first six hours, with winds of 0 knots, the oil would spread but would remain in the vicinity of the tanker and be transported within the bay and river by tidal conditions and currents only; there were no shoreline impacts with this trajectory. With these conditions, the ADIOS 2 program estimates that 16% of the oil would evaporate, leaving 84% of the spilled Bakken oil on the water. For this reason, HHS concerns over the potential ignition of the flammable vapors was the primary driver to take no response action during Phase 1, other than to prevent a fire from starting. Participants discussed vapor suppression but determined that would not be an option as maintaining a foam vapor barrier would be impossible in open waters and the volumes of foam required were not present in the quantities needed. Additionally, responder operations would be limited by LEL thresholds. If

readings do not allow for safe working, responders would not go into the flammable zone and put personnel at greater risk.

They also noted that the vapor density would be heavier than air especially in calm winds; the flammable vapors could provide a health and safety hazard to responders as the vapors could potentially displace oxygen. Wind or rain would reduce/move vapor density. Participants requested additional research/studies conducted on the vapor density, particularly how high above the surface the vapors were likely to be present, and noted the need to carry LELs on the OSRVs.

Participants characterized the risks of oil only, since no other actions could be taken during Phase 1. For this reason, the majority of the chart is ranked NA. The water depth in this location is approximately 25 to 40 feet, and the first six hours would have some mid-water impacts with components of the oil dissolving in the upper 2 meters of the water column. The highest risk of concern would be for any T/E plants and animals on the shorelines, which might not be present due to seasonality, but was ranked red out of caution. Sturgeon has been present in the benthic zone in the past. Protective booming would be desirable. Moderate level of concern (yellow) was assigned for birds, reptiles/amphibians, macro invertebrates, and aquatic vegetation on sensitive wetlands and riprap shorelines and the upper water column that could be exposed to the spilled oil.

Phase 2 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 2 (4 to 7 days) associated with no action other than monitoring plus all response actions for this scenario are presented in Figure 5.10.

In addition to the risks identified during Phase 1, some additional risks were noted as being possible and applicable to specific resources of concern. Participants spent the majority of their discussion time considering Phase 2 with the higher wind conditions and treated this as a typical crude oil once the flammable light ends evaporate. Primarily in the intertidal shoreline, participants noted that some response actions could reduce the risks presented by the oil alone. Specifically, implementing diversion and exclusion booming response actions to protect sensitive shorelines from being oiled, shoreline cleanup response actions to remove oil residue from the shore, and implementing on water recovery / skimming when practicable, would slightly decrease risks to mammals, reptiles/amphibians, plants, and aquatic vegetation.

Since the time of the scenario was January, participants discussed the likelihood that sensitive shoreline habitats would be less impacted by the oil and that natural weathering and NAM might be the response action of lowest risk to the shoreline. However the large quantities of oil discharged, which could result in longer-term shoreline impacts, required consideration of additional response actions. If the scenario had been set in spring, the risks to ecological resources from the oil, and probably shoreline cleanup actions, would have been ranked higher.

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)									Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach									Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4C	3C	3C	NA	NA	1A	1B	4C	3C	3C	NA	NA	1B	1B	4C	3C	3C	3C	1B	1B	1B	4C	NA	3B	3B	3B	3B	NA	4D	NA	NA	4C	NA	NAN	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Fire																																								
Let burn and controlled burn (both in-situ)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Extinguishing agents and methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
No Fire																																								
Vapor suppression	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil spread control	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
On-water oil recovery	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Resource protection	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Shoreline clean up	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil Detection/mapping - remotely observed methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

Moderate Level of Concern

High Level of Concern

Not Applicable

Figure 5.9 Scenario 3 Risk Characterization (Phase 1)

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)									Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach									Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-Invertebrates	Aquatic Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4C	3C	3C	NA	NA	1A	1B	4C	3C	3C	NA	NA	1B	1B	3B	3B	3B	1B	1B	1B	1B	4C	NA	3B	3B	NA	3B	NA	4D	NA	NA	4C	NA	NAN	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Fire																																								
Let burn and controlled burn (both in-situ)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Extinguishing agents and methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
No Fire																																								
Vapor suppression	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil spread control	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4C	3C	3B	2C	NA	NA	2C	4C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
On-water oil recovery	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4C	3C	NA	4C	NA	4D	NA	NA	4C	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Resource protection	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4C	3C	3C	3C	NA	NA	2C	4C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Shoreline clean up	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4C	3C	4C	1C	NA	NA	2C	4C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil Detection/mapping - remotely observed methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3B	3B	3B	1B	NA	NA	1B	4C	NA	3B	3B	NA	3B	NA	4D	NA	NA	4C	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

High Level of Concern

Moderate Level of Concern

Not Applicable

Figure 5.10 Scenario 3 Risk Characterization (Phase 2)

5.7 Scenario 4 – Dilbit Rail Incident, Mantua Creek

Scenario Four was a railcar incident involving Dilbit crude oil. The bitumen in dilbit contains resins and asphaltenes, which makes it stickier than typical heavy crude. It is more likely to sink in freshwater than saltwater.

The incident occurred at the rail crossing over Mantua Creek in Paulsboro, New Jersey on May 25, 2015, in the vicinity of an actual train derailment in 2012 that released vinyl chloride (Figure 5.10). The Mantua Creek is freshwater and approximately 2 meters deep. Much of Mantua Creek's floodplain contains highly disturbed soils consistent with historical and current urban uses (Figure 5.11). Approximately 100,000 gallons of oil was released impacting freshwater marshes, the Mantua Creek and parts of the Delaware River.

Figure 5.11 Train derailment in Paulsboro, NJ, 2012

(Source: http://wac.450f.edgecastcdn.net/80450F/nj1015.com/files/2012/12/crane3-300x224.jpg)

Participants reviewed the information contained in Appendix H:

- The weathering of the oil over time, in terms of amount that would evaporate and remain in the environment (shown in the oil budget table), and benzene concentrations, was calculated by the ADIOS 2 program.
- The oil spread predictions from trajectory model, including possible extent of contamination over 3 days, in relation to the ESI maps for the area.

Workgroup participants identified the need to involve the SHPO and HPA, as well as natural resource agencies to fill data gaps with regard to estimates of fish and bird populations in the area, which increased uncertainty around severity estimates.

Phase 1 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 1 (initial 6 hours) associated response actions for this scenario are presented in Figure 5.12.

The trajectory model predicted that dilbit oil spilled just after peak high tide (at 0741) would move from the creek into the Delaware River during the first six hours. The ADIOS 2 program estimated that 20% of this oil would evaporate in the first six hours, leaving approximately 80% of the oil in the environment. There were response organizations nearby and could begin pollution response operations quickly but probably not in time to implement containment booming and skimming to prevent the majority of the oil from moving into the Delaware River.

Mantua Creek has been historically impacted by point-source and non-point source pollution, including oil spills, releases of hazardous wastes, sewage, and run off. Upstream there are wetland areas, with freshwater streams to the north and south; a narrow channel opens to a freshwater marsh with salamanders and turtles. A primary driver of ecological risk is oil exposure and trampling/crushing by responders or vehicles. Of particular concern are turtles, which have inherently very low infant survival rates coupled with low adult reproductive rates.

The incident location is near the Paulsboro community. If a fire occurred from the incident, it would create air hazard risks for the community. While applying foam was not viewed as logistically feasible in this situation, participants would like to know more about the composition of these foams and their potential environmental interactions.

Participants assumed that animals in the water would not exit the water, and land animals would flee the area for any kind of active response and so the risk of impact would be low from fire. T/E species were ranked NA since there are no documented occurrence in the area during winter, nor was there suitable habitat present. .

The overall assessment of risks during this phase are low (green) to moderate (yellow). Participants assigned a moderate level of concern for oil only for mammals, birds, reptiles/amphibians and macro-invertebrates (freshwater mussels) on shorelines, plus marsh vegetation, in the surface/midwater habitat. Fire could reduce the risk to green for mammals and birds, and marshes by removing the source of oil contamination. In the case of no fire, implementing oil spread control, on water protection (booming) and recovery response actions could also slightly reduce the risk to the same resources of concern. With the industry resources located nearby, participants assumed a barge could be deployed quickly as temporary storage of oil and some oily water recovered by skimmers. Participants, however, were uncertain about temporary storage of large quantities of recovered oily water; if this were not quickly solvable (e.g., by decanting) then skimming operations might be curtailed.

Phase 2 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 2 (4 to 7 days) associated with no action other than monitoring plus all response actions for this scenario are presented in Figure 5.13.

In this scenario, it was assumed that the worst case scenario would be that the Dilbit would sink, and likely severely impact (smother) benthic organisms and their habitat. The extent of contamination would begin in Mantua Creek, move into the Delaware River in the first tidal cycle. It was also assumed, as worst case scenario that most, if not all, sunken oil would remain in the Mantua Creek sediments or likely go virtually undetected in the Delaware River. The trajectory model of floating oil movement, therefore, was limited to 3 days, and floating oil would be minimized by boom deployment at Mantua Creek-Delaware River confluence.

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines (Riparian)							Intertidal Shoreline (littoral) (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach								Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-Invertebrates	Aquatic Invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	3C	3C	2C	3C	4C	NA	NA	3C	3C	2C	3C	4C	NA	3D	3C	3B	2C	3C	NA	NA	3C	4D	NA	3C	3B	2C	4C	3B	3C	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Fire																																								
Let burn controlled burn (both in-situ)	4D	4D	2C	3C	4C	NA	NA	4D	4D	2C	3C	4C	NA	3D	4D	4D	2C	3C	NA	NA	3D	4D	NA	4D	4D	2C	4C	3B	3D	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Extinguishing agents and methods	3C	3C	2C	3C	4C	NA	NA	3C	3C	2C	3C	4C	NA	3D	3C	3B	2C	3C	NA	NA	3C	4D	NA	3C	3B	2C	4C	3B	3C	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
No Fire																																								
Vapor suppression	3C	3C	2C	3C	4C	NA	NA	3C	3C	2C	3C	4C	NA	3D	3C	3B	2C	3C	NA	NA	3C	4D	NA	3C	3B	2C	4C	3B	3C	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil spread control	4D	4D	2C	3C	4C	NA	NA	4D	4D	2C	3C	4C	NA	3D	4D	4D	2C	3C	NA	NA	3C	4D	NA	4D	4D	2C	4C	3B	3D	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
On-water oil recovery	4D	4D	2C	3C	4C	NA	NA	4D	4D	2C	3C	4C	NA	3D	4D	4D	2C	3C	NA	NA	3C	4D	NA	4D	4D	2C	4C	3B	3D	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Resource protection	4D	4D	2C	3C	4C	NA	NA	4D	4D	2C	3C	4C	NA	3D	4D	4D	2C	3C	NA	NA	3C	4D	NA	4D	4D	2C	4C	3B	3D	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Shoreline clean up	3C	3C	2C	3C	4C	NA	NA	3C	3C	2C	3C	4C	NA	3D	3C	3B	2C	3C	NA	NA	3C	4D	NA	3C	3B	2C	4C	3B	3C	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								
Oil Detection/mapping - physical detection/ remotely observed methods	3C	3C	2C	3C	4C	NA	NA	3C	3C	2C	3C	4C	NA	3D	3C	3B	2C	3C	NA	NA	3C	4D	NA	3C	3B	2C	4C	3B	3C	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

High Level of Concern

Moderate Level of Concern

Not Applicable

Figure 5.12 Scenario 4 Risk Characterization (Phase 1)

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines (Riparian)							Intertidal Shoreline (littoral) (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach								Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	Aquatic Vertebrates	T/E species-Animals	T/E species-Plants	Mammals	Birds	Reptiles and Amphibians	Macro-invertebrates	T/E species-Animals	T/E species-Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-invertebrates	Plants	T/E species-Animals	T/E Species	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic invertebrates	Plants	T/E species-Animals	T/E species-Plants	Fishing	Water Intakes - midwater
Response Actions																																							
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3D	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
Fire																																							
Let burn controlled burn (both in-situ)	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3C	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
Extinguishing agents and methods	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3D	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
No Fire																																							
Vapor suppression	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
Oil spread control	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3B	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
On-water oil recovery	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3B	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
Resource protection	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3B	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
Shoreline clean up	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3B	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							
Oil Detection/mapping - physical detection/ remotely observed methods	3C	3C	2B	3C	4C	NA	NA	3C	3C	2B	3C	4C	NA	3B	3C	3B	2B	3C	NA	NA	3C	4D	NA	3C	3B	2B	4C	2A	3A	NA	NA	4D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																							

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

Moderate Level of Concern

High Level of Concern

Not Applicable

Unable to Determine Due to Insufficient Information

Figure 5.13 Scenario 4 Risk Characterization (Phase 2)

Workgroup participants assumed that during Phase 2, the weathered oil would sink to the bottom of Mantua Creek, and in the Delaware River. Smothering impacts caused the risk of oil only to change to red for certain resources of concern, i.e., reptiles/amphibians, macro-invertebrates (freshwater mussel beds), and aquatic plants. Participants noted that there are freshwater mussel beds in New Jersey that did not appear on the ESI maps. Also, more information is needed to assess the potential benefits and limitations of the response actions. For example, if the bottom of the creek is essentially paved with this oil, is it better to cap the creek bottom, dredge and possibly re-release existing contaminants, or leave the contaminants in place given the potential for toxic components to leach into the benthic habitat. If sediments or other materials were added to cover the oil, would that be considered filling a wetland, which could trigger other federal and/or state regulatory requirements that may need to be considered in the response action? The ranking of red does not mean to stop actions, but rather to view and assure that response actions would not adversely affect the species of concern.

5.8 Scenario 5 – Dilbit Barge Incident, Delaware River

Scenario Five was a barge incident involving Dilbit crude oil. The incident occurred at the Marcus Hook Anchorage in Pennsylvania on April 15, 2015 in brackish water. Predicting how dilbit would behave in the brackish to salt water of the lower Delaware River is unclear. The "salt line"[14] in the Delaware River is generally around the Delaware Memorial Bridge south of Wilmington, DE, and the river north of the salt line is brackish. Approximately 50,000 gallons of cargo is spilled into the Delaware River south of the Delaware Memorial Bridge, ultimately impacting the ecologically diverse shorelines of three states (Pennsylvania, Delaware, and New Jersey).

Participants reviewed the information contained in Appendix H:

- The weathering of the oil over time, in terms of amount that would evaporate and remain in the environment (shown in the oil budget table), and benzene concentrations, was calculated by ADIOS 2.
- The oil spread predictions from trajectory model, including possible extent of contamination over 4 days, in relation to the ESI maps for the area.

The recent spill experiences, FOSC report, and the Delaware River and Bay Oil Spill Advisory Committee Report (DRBOSAC) report, which was mandated by Congress, about the *M/T Athos* spill (Nov. 24, 2004) of 265,000 gals of Venezuelan heavy crude oil, and the *T/V Presidente Rivera* (June 24, 1989) 306,000 gal of No. 6 fuel oil, was used to inform assessing the risks associated with this scenario of floating/submerged crudes. In both of these spill incidents the heavy crude acquired suspended sediments as it weathered and went from a floating to sinking submerged oil.

Participants assumed that no fire would occur in this scenario; therefore, they assigned NA to all fire-related response actions. They also assumed for purposes of the assessment, that 75% of the oil would be on the surface for spreading and recovery; and that 25% would become sunken.

[14] Salt-laced water, known in water jargon as the "salt front" or "salt line," is 250 milligram per liter chloride concentration. This concentration is based on drinking water quality standards originally established by the U.S. Public Health Service. Source: http://www.state.nj.us/drbc/hydrological/river/salt/

Phase 1 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 1 (2-6 hours) associated with no action other than monitoring and other response actions for this scenario are presented in Figure 5.14.

ADIOS 2 estimated that 23% of this oil would evaporate in the first six hours, leaving approximately 77% of the oil in the environment. In this scenario, vapor control was not considered a significant risk.

Source control and protecting the creeks from floating oil was the priority response actions.

Participants scored the risks from the oil and monitoring as low (green) for the resources of concern in artificial and natural terrestrial shoreline, with the exception of moderate concern for reptiles/amphibians on artificial shorelines. Participants assigned a high level of concern (red) for birds, reptiles/amphibians, macro-invertebrates, T/E animals and plants, and plants associated with the oiling of intertidal areas, and for birds in the surface/mid water column. Participants were moderately concerned (yellow) about potential risks in the water column to reptiles (turtles), aquatic vegetation, macro-invertebrates, T/E animals (Atlantic sturgeon), as well as for species that are fished and water intakes.

Compared to oil only, participants noted that some pollution response actions could mitigate risks from the spilled oil, i.e., containment booming (oil spread control) and skimming (on water oil recovery), and protective booming for mammals in the intertidal area. These actions could also be beneficial if their implementation resulted in reducing the oil threat to benthic resources of concern.

At this time of the year, early spring, many species of invertebrates and vertebrates are breeding producing large numbers of pelagic/nektonic larva. Some of these are meroplankton floating near the surface, while others like the striped bass eggs tumble alone the bottom driven by tidal currents. In both of these circumstances, potential adverse oiling impacts would be high.

Phase 2 – Risk Characterization

The detailed results of the participants' characterization of risks during Phase 2 (4-7 days) associated with no action other than monitoring plus all response actions for this scenario are presented in Figure 5.15.

After 3-4 days, 73% of the spilled dilbit crude, would remain in the environment as a heavy thick crude. Depending upon the actual blend, the specific gravity of the residual oil could hover around or above 1.0, which is the specific gravity for freshwater at 4°C.[15] . This rapid loss of the light diluent as a result of evaporation and weathering is important to consider. After the rapid evaporation/weathering, the resultant heavy thick crude has more resins and asphaltenes and is more sticky and tackier than typical heavy crudes. The increased 'stickiness' increases the probability of having suspended sediments attach to the oil droplets, thus increasing its specific gravity, making it heaver in the water and sink below the surface. Participants anticipated considerable shoreline contamination of heavy oil with this scenario, and that the oil would begin to pick up sediment in the water and begin to sink.

[15] Oils with a specific gravity of less than 1.0 will float on the water surface; those greater than 1.0 will not float.

Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)									Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach									Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	4C	4B	3B	3B	4C	4D	4D	4D	4D	4D	4D	4D	4D	4D	3B	3A	2B	2B	2A	1A	2A	4A	4A	3B	3A	2C	3B	4A	4A	3B	4D	4A	4A	NA	NA	NA	NA	NA	NA	4A	4A
Summary Risk for Sub-habitat																																								
Fire																																								
Let burn and controlled burn (both in-situ)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
Extinguishing agents and methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
No Fire																																								
Vapor suppression	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
Oil spread control	4C	4B	3D	3D	4C	4D	4D	4D	4D	4D	4D	4D	4D	4D	3C	3B	2C	2C	2B	1B	2B	4A	4A	3C	3B	2D	3C	4B	4B	3C	4D	4A	4A	4D	4D	4D	4D	4D	4D	4A	4A
Summary Risk for Sub-habitat																																								
On-water oil recovery	4C	4B	3D	3D	4C	4D	4D	4D	4D	4D	4D	4D	4D	4D	3C	3B	2C	2C	2B	1B	2B	4A	4A	3C	3B	2D	3C	4B	4B	3C	4D	4A	4A	4D	4D	4D	4D	4D	4D	4A	4A
Summary Risk for Sub-habitat																																								
Resource protection	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3D	3C	2D	2D	2C	1C	2C	4A	4A	3B	3A	2C	3B	4A	4A	3B	4D	4A	4A	4D	4D	4D	4D	4D	4D	4A	4A
Summary Risk for Sub-habitat																																								
Shoreline clean up	4C	4B	3B	3B	4C	4D	4D	4D	4D	4D	4D	4D	4D	4D	3B	3A	2B	2B	2A	1A	2A	4A	4A	3B	3A	2C	3B	4A	4A	3B	4D	4A	4A	4D	4D	4D	4D	4D	4D	4A	4A
Summary Risk for Sub-habitat																																								
Oil Detection/mapping - physical detection/ remotely observed methods	4C	4B	3B	3B	4C	4D	4D	4D	4D	4D	4D	4D	4D	4D	3B	3A	2B	2B	2A	1A	2A	4A	4A	3B	3A	2C	3B	4A	4A	3B	4D	4A	4A	4D	4D	4D	4D	4D	4D	4A	4A
Summary Risk for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

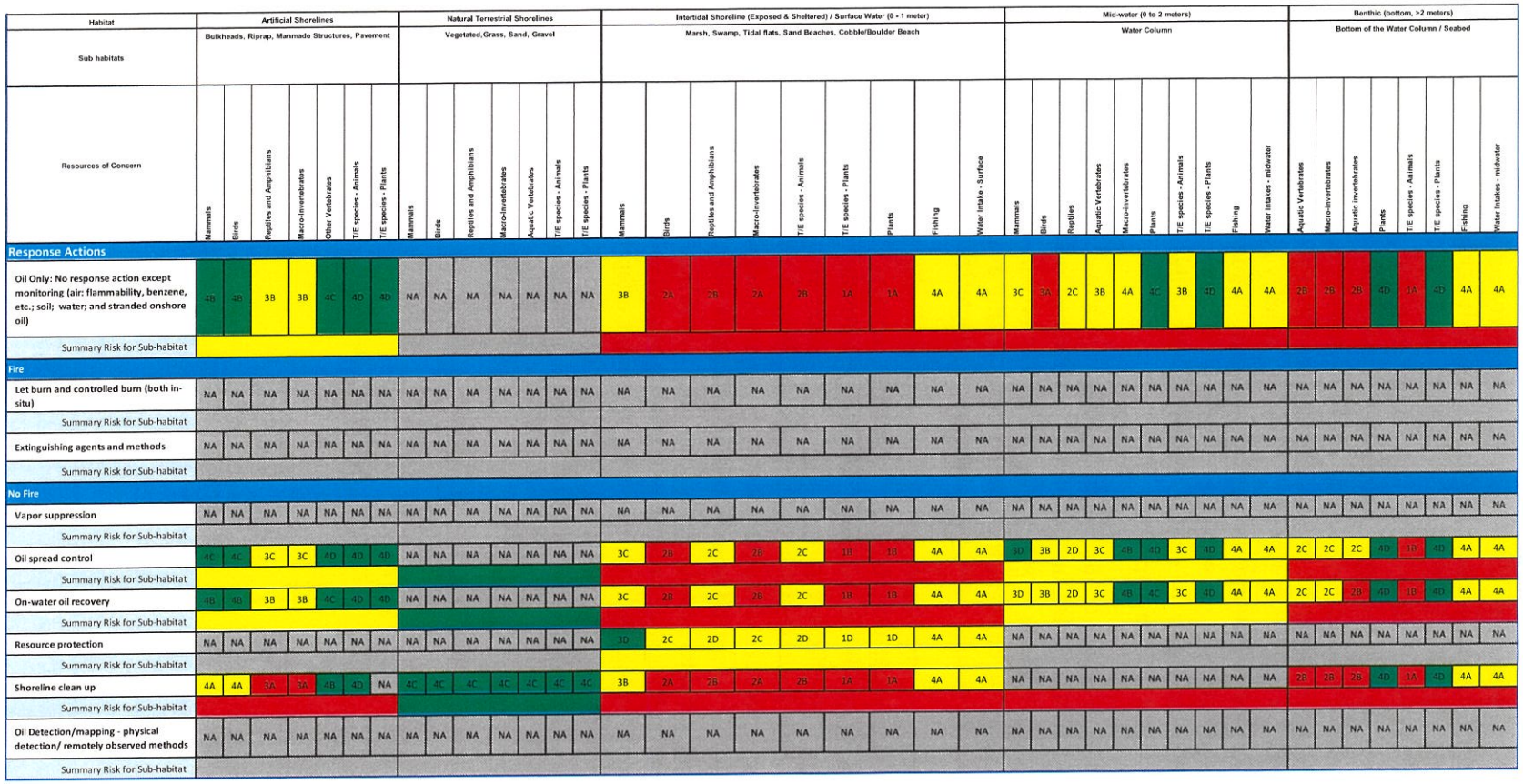
Limited Level of Concern

Moderate Level of Concern

High Level of Concern

Not Applicable

Figure 5.14 Scenario 5 Risk Characterization (Phase 1)



Habitat	Artificial Shorelines							Natural Terrestrial Shorelines							Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)									Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement							Vegetated,Grass, Sand, Gravel							Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach									Water Column									Bottom of the Water Column / Seabed							
Resources of Concern	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Other Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	Aquatic Vertebrates	T/E species - Animals	T/E species - Plants	Mammals	Birds	Reptiles and Amphibians	Macro-Invertebrates	T/E species - Animals	T/E species - Plants	Plants	Fishing	Water Intake - Surface	Mammals	Birds	Reptiles	Aquatic Vertebrates	Macro-invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater	Aquatic Vertebrates	Macro-invertebrates	Aquatic invertebrates	Plants	T/E species - Animals	T/E species - Plants	Fishing	Water Intakes - midwater
Response Actions																																								
Oil Only: No response action except monitoring (air; flammability, benzene, etc.; soil; water; and stranded onshore oil)	4B	4B	3B	3B	4C	4D	4D	NA	NA	NA	NA	NA	NA	NA	3B	2A	2B	2A	2B	1A	1A	4A	4A	3C	3A	2C	3B	4A	4C	3B	4D	4A	4A	2B	2B	2B	4D	1A	4D	4A	4A
Summary Risk for Sub-habitat																																								
Fire																																								
Let burn and controlled burn (both in-situ)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
Extinguishing agents and methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
No Fire																																								
Vapor suppression	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
Oil spread control	4C	4C	3C	3C	4D	4D	4D	NA	NA	NA	NA	NA	NA	NA	3C	2B	2C	2B	2C	1B	1B	4A	4A	3D	3B	2D	3C	4B	4D	3C	4D	4A	4A	2C	2C	2C	4D	3B	4D	4A	4A
Summary Risk for Sub-habitat																																								
On-water oil recovery	4B	4B	3B	3B	4C	4D	4D	NA	NA	NA	NA	NA	NA	NA	3C	2B	2C	2B	2C	1B	1B	4A	4A	3D	3B	2D	3C	4B	4C	3C	4D	4A	4A	2C	2C	2B	4D	1B	4D	4A	4A
Summary Risk for Sub-habitat																																								
Resource protection	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3D	2C	2D	2C	2D	1D	1D	4A	4A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								
Shoreline clean up	4A	4A	3A	3A	4B	4D	NA	4C	4C	4C	4C	4C	4C	4C	3B	2A	2B	2A	2B	1A	1A	4A	4A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2B	2B	2B	4D	1A	4D	4A	4A
Summary Risk for Sub-habitat																																								
Oil Detection/mapping - physical detection/ remotely observed methods	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Summary Risk for Sub-habitat																																								

The first row of each response option is the risk characterization for each resource of concern in the habitat. The second row is the overall response option risk characterization for the entire subhabitat/habitat.

Limited Level of Concern

High Level of Concern

Moderate Level of Concern

Not Applicable

Figure 5.15 Scenario 5 Risk Characterization (Phase 2)

The Delaware estuary turbidity maximum (ETM) falls (in general) between the vicinity of Marcus Hook (RM 79) in the north and a line between the Cohansey River in New Jersey and the Smyrna River (RM 44) in Delaware. This ETM zone is characterized by the increase in salinity from a freshwater condition (0-0.5 ppt) to that of an oligohaline concentration (0.5-5 ppt) moving down river to the Smyrna River area. These high sediment concentrations are caused primarily by the resuspension of fine-grained sediments by strong tidal currents in this region and the formation of additional sediments as dissolved organic matter from land runoff interacts with diluted salt water to form larger particles. The Delaware Estuary is widely recognized as being one of the most turbid, sediment-laden estuaries in the United States. In this environment, when dilbit separates from its blended light/heavy composite it forms into the thick heavy sticky crude, and adhesion of sediment particulates onto the crude droplets will cause the crude to submerge creating a challenging tracking and recovery operation.

Shoreline oiling could occur on both sides of the Delaware River north to about the Schuylkill River on the PA side and south of the C&D Canal to around Augustine Creek in Delaware and Alloway Creek in New Jersey. Participants would have preferred to have more detailed information about the degree of oiling on specific shoreline types. Using available information as well as their prior response experience, they completed the risk characterization for this scenario.

Compared to Phase 1, participants had a higher level of concern (red) about this phase of oiling for resources of concern (aquatic vegetation, macroinvertebrates, aquatic invertebrates, and T/E animals) associated with the benthic sub-habitat. In fact, the summary of risk was scored high (red) for both oil alone and pollution response actions for resources of concern in three habitats: intertidal shorelines, surface/mid-water column, and benthos. Participants identified some pollution response actions that could reduce the risk to certain resources of concern from moderate (yellow) to low (green): oil spread control through containment booming (could reduce risk to mammals, e.g., river otter, muskrat, raccoon, in the intertidal shorelines; aquatic vegetation, macro-invertebrates, and aquatic invertebrates in the bottom of the water column), and on-water oil recovery (could reduce risk to mammals, e.g., river otter, and macro-invertebrates at the water surface). On the other hand, shoreline cleanup would increase the risks to reptiles/amphibians and macro-invertebrates on artificial shorelines from moderate (yellow) to high (red).

6.0 References

Aurand, D., L. Walko and R. Pond. 2000. Developing Consensus Ecological Risk Assessments: Environmental Protection in Oil Spill Response Planning. A Guidebook. United States Coast Guard, Washington, DC. 148 pages. (Also Ecosystem Management & Associates, Inc. Technical Report 00-01)

Gelzer, C.C., U.S. Coast Guard. Oct. 17, 2013. MER Policy Letter 01-14; Endangered Species Act (ESA) and Essential Fish Habitat (ESF) Consultation Process Guidance. Washington, DC.

Philly.com. July 2015. Manatee sighted in the Delaware. Available at: http://www.philly.com/philly/news/breaking/20150731_Manatee_sighted_in_the_Delaware.html

Pond, R.G., D.V. Aurand, and J.A. Kraly (compilers). 2000. Ecological risk assessment principles applied to oil spill response planning to California waters. California Office of Spill Prevention and Response. California Department of Fish and Game, Sacramento, CA. Available (without front matter) at: http://www.rrt9.org/external/content/document/2763/1513707/1/San%20Francisco%20ERA%201999%20final.pdf

Pond, R.G., J. Kraly, D.V. Aurand, G.M. Coelho, A.H. Walker, B. Martin, J. Caplis, and M. Sowby. 2001. Ecological Risk Assessment Principles Applied to Oil Spill Response Planning. *Proceedings,* 2001 International Oil Spill Conference. American Petroleum Institute, Washington, DC.

Queensland Incident Response Unit. 2014. Managing Fire Fighting Foam Policy. Explanatory Notes. Version 1.4. State of Queensland, Australia. ABN 46 640 294 485

Scheringer M, Trier X, Cousins IT, de Voogt P, Fletcher T, Wang Z, et al. 2014. Helsingør Statement on poly- and perfluorinated alkyl substances (PFASs). Chemosphere 114:337–339; doi: 10.1016/j.chemosphere.2014.05.044.

U.S. Coast Guard, Sector Delaware Bay Area Committee. 2012. Sector Delaware Bay Area Contingency Plan. 1 Washington Avenue, Philadelphia PA. Available at: http://dbrcinc.org/acp/

U.S. Environmental Protection Agency. 1998. Guidelines for Ecological Risk Assessment. Federal Register 63 (93) of Thursday, May 14, 1998. pp. 26846-26924.

Pond, R.G., D.V. Aurand, and J.A. Kraly, compilers. 2000a. Ecological Risk Assessment Principles Applied to Oil Spill Response in the Galveston Bay Area. Texas General Land Office, Austin, TX.

Walker, A.H., D. Scholz, R.G. Pond, D.V. Aurand, and J.R. Clark. 2001. Lessons Learned in Ecological Risk Assessment Planning Efforts. In: *Proceedings,* 2001 International Oil Spill Conference. American Petroleum Institute, Washington, DC.

7.0 Appendices

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Appendix A: Project Participants

Workshop 1 (June 9-10)	Workshop 2 (June 23-24)	NAME	SCENARIO	AGENCY	EMAIL
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X	X	Anderson, Ben*[16]	5	DE-DNREC	Bennett.Anderson@state.de.us
		Anderson, Steve	4	NJ Environmental and Health Assessment Program	
	X	Austin, Mike	1	CSX	mike_austin@csx.com
X	X	Bauer, Bob*	1	PA-DEP	rbauer@pa.gov
X	X	Berzins, David	4	NJ-DEP Region 2	David.berzins@dep.nj.gov
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X	X	Block, Taylor	5	DOI	
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X	X	Csulak, Frank*	4	NOAA	Frank.Csulak@noaa.gov
	X	Darby, Valincia	5	DOI	valincia_darby@ios.doi.gov
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Appendix B: Workshops Agendas

USCG Sector Delaware Bay Consensus Ecological Risk Assessment Meeting

Workshop 1 – Agenda

Delaware County Emergency Training Center
1600 Calcon Hook Rd, Sharon Hill, PA 19079; Phone (610) 237-8630
Workshop 1 - Day 1

June 9, 2015

All refreshments graciously sponsored by industry members Of the Delaware Bay and River Cooperative

0730

Registration/check in + coffee and tea

0800

Welcome and Opening Comments (CAPT Benjamin Cooper, Commanding Officer, Sector Delaware Bay and Federal On-scene Coordinator

0815

Introductions (Ann Hayward Walker, SEA Consulting Group)

Project Committee and Subcommittees
Workshop participants

0830

Background – Sector DelBay Project (LCDR Michael Weaver and LT Eric Nielsen)

Sector Delaware Bay Project
- Project Objectives and scope (LCDR Weaver)
  - Anticipated use, and value, of project results
  - Planning only – results are not binding during response
  - Scope: Bakken and Dilbit crude oil transported by rail (crossing over streams/rivers) and barge (coast and in Delaware Bay)

Overview of Rail Incidents in the AOR
- Scenario locations (LT Nielsen)

0915

ERA Background (SEA)

- Opportunities and limitations of ERAs
- What are the objectives of this workshop?

0930

Introduction to Consensus Ecological Risk Assessments (SEA)

Using the Coast Guard Assessment Guidebook

- Previous Workshops
- What consensus means + value of consensus to

project results Essential activities of the process

- *Activities 1-5: Conducted by Project Committee and Subcommittees; presentations given at this workshop*
- *Activities 6-8: Conduct at this workshop*
- *Activities 8-10: Continue at next workshop*
- *Activities 11-12: Post-workshops, final report and implementation of findings*

1000

Break (20 mins.)

1020

Pre-workshop Planning (SEA)

Continue with Subcommittee Pre-Workshop Activities - Presentations by subcommittee leads

1020

Subcommittee Pre-Workshop Activities - Transport Subcommittee Lead – Ed Levine

- EPA response to incidents and OHMSETT study – Mike Towle, EPA
- Human/public health considerations – Kelly Scribner, BTEH
- Behavior and Transport - Ed Levine, NOAA
    - Oil behavior
    - Oil transport for the 4 water scenarios: NOAA oil trajectory and behavior – distribution of oil: air/water surface/water subsurface
    - For the Bakken/urban/fire scenario: Interagency Modeling and Atmospheric Assessment Center (IMAAC) smoke plume model output, courtesy Philadelphia OEM

1230

LUNCH (1 Hour) – provided

1330

Resources Subcommittee – Ben Anderson, DNREC and Debra Scholz, SEA

- Definition/description of ecological and socio-economic resources of concern in study area
- Information, data sources and references

1415

Pre-Workshop Activities - Effects Subcommittee – Clay Stern, USFWS

- Defining effects
  - General objectives of the analysis phase
  - Using fate and effect information
- Using thresholds to estimate the sensitivity to oil of the resources at risk
  - Exposure
  - Sensitivity
  - Effect
- Suggest thresholds measures for use in the analysis for specific resources
- Data collection concerning hazards relative to endpoints and resources identified in the conceptual model
- Information, data sources and references

1530

BREAK (15 Mins)

1545

Continue with Response Operations Subcommittee Pre-Workshop Activities - Rich Gaudiosi, Delaware Bay and River Cooperative (DelBay Co-op)

- Description of each response option
- Resources required (logistics) to implement the option
- Operational limitations
- Anticipated efficiency of each option (single %; or % of the upper and lower range, or other %?)
- Implications of using the option on oil fate
- Concerns associated with using the option
- Information, data sources and references (used to date and sources for risk analysis and characterization – next workshop)

1700

Review the results of the first day (SEA) Introduction to tomorrow (SEA) Questions/discussion (all)

1715

ADJOURN

Workshop 1 - Day 2

June 10, 2015

0800

Review the results of the first day
(SEA) Review process for today

- Conceptual model
- Conducting the analysis for natural attenuation and monitoring (NAM)
- Using the Risk Ranking Matrix
- Workgroups will determine the risk – 2 groups for each scenario, then meet and reach consensus
- Estimating levels of concern - simplifying the scores
- Achieving consensus on final risk scores
- Evaluating the relative risk for the response options under consideration
- How can you compare effects – the NAM baseline
- Preparing the relative risk summary

0815

Industry presentation on new safety course for moving crude by rail – Suzanne Lemieux, API

0830

Foam, Logistics and Port Asset for Fire & Spill Response - Chief Jim Kelly, Sunoco Logistics

0845

Review of the Conceptual Model – SEA

0915

Determining the level of concern – Clay Stern, USFWS

- Risk matrix concept
- Developing a matrix scale

0945

Expert Presentation on Fate of Dilbit Oil in the Environment – Michel Boufadel, NJIT

1015

BREAK (30 mins.)

1045

Establishing the Baseline for Effects: Natural Attenuation and Monitoring (NAM) – Clay Stern, USFWS

1100

Begin Preliminary Risk Scoring – Workgroups for each of the five scenarios

Participants assigned to workgroups (2 workgroups/scenario) and breakout rooms

1145

Time Out - Review and compare initial scores

1230

Lunch (provided)

1330

Continue preliminary risk scoring for baseline (break refreshments at 1445)

1520

Review, discussion and revision of baseline (NAM) scores

1600

Next workshop - Assignments (Preparation required! Homework to gather data/information about resources of concern to characterize effects of response options in the next workshop)

1615

Questions to be addressed before the next workshop (June 23-24, 2015 – same location and hours)

1630

ADJOURN

USCG Sector Delaware Bay Consensus Ecological Risk Assessment Meeting

Workshop 2 - Agenda

Delaware County Emergency Training Center
1600 Calcon Hook Rd, Sharon Hill, PA 19079; Phone (610) 237-8630

Workshop 2 - Day 1
June 23, 2015

Refreshments graciously sponsored by the Delaware Bay and River Cooperative members

0730

Registration/check in + coffee and tea

0800

Welcome and Opening Comments

0815

Introductions (Ann Hayward Walker, SEA Consulting Group)

Project Committee and Subcommittees
Workshop participants

0830

Process Overview (Walker)

- Adapting the Coast Guard Assessment Guidebook for this ERA
  - What consensus means + value of consensus to project results
- Essential activities of the process
  - *Activities 1-5: Conducted by Project Committee and Subcommittees; presentations given at Workshop 1*
  - *Activities 6-8: Workshop 1*
  - *Activities 8-10: Workshop 2*
  - *Activities 11-12: Post-workshops, final report and implementation of findings*

0915

Workshop 2 Overview (SEA)

- Objectives of Workshop 2
- Review of agenda and activities
- Assess response actions for two timeframes o Initial 2-4 hours after incident begins o 4-7 days after incident begins

0945

Rail Company Presentation(s)

Spill response planning, resources/capabilities, and railroad local training options to manage crude oil transportation by rail.

- Bryan Naranjo, Norfolk Southern Railroad - Norfolk Sothern's Crude Oil by Rail Planning, Training and Response
- Mike Austin, CSX - CSX's Crude Oil by Rail Planning, Training and Response

1015

Break (20 mins.)

1035

Review of Workshop 1: Key Activities - Plenary

- Presentations by Subcommittees on oil behavior/transport; resources of concern; effects; and response options
- Conceptual models for the 5 Scenarios

1130

Work in between Workshops: Information Gathering (SEA) – Plenary

- Refined trajectory models for scenarios 1 and 3
- Extent of contamination maps
- Oil budgets (weathering effects in percentages of initial oil fate)
- Currents
- Nautical charts – Bathymetry/water depths
- ESI maps (based on topo sheets) for DE, PA and NJ – inventory of resources of concern
- Estuary sensitive areas maps – priority ecological resources by season ESI resources
- Extent of contamination maps
- M/V Athos oil spill after action report
- Maps of water intakes
- List of state endangered species from ACP (supplement those on the ESI maps)
- Estimates of bird and fish distributions (state reps and USFWS reps)
- MSDS for Bakken and Dilbit oils, 3 types of foam

1230

LUNCH (1 Hour) – provided

1330

Review Scenario 1: Conceptual Model for Human Health (Walker and Workgroup Coaches) - Plenary

- Applicable to all scenarios?
- Refine as necessary

1400

Review Risk Ranking: Threshold Levels of Concern (Walker, Clay Stern, USFWS and Kelly Scribner, CTEH) - Plenary

- Using thresholds to estimate the sensitivity to oil of the resources at risk
  - Exposure
  - Sensitivity
  - Effect
- Risk ranking matrix = thresholds for levels of concern to use in characterizing risk

1430

Characterize Risk of No Response Action (oil only, plus monitoring) – Workgroups

1530

BREAK (15 Mins)

1545

Begin characterizing risks of initial response actions (1st timeframe) - Workgroups

Characterize the relative risk for the response actions in the initial 2-6 hours of response

1645

Wrap-up for the Day

- Workgroup reports on progress - Plenary
- Introduction to tomorrow (Walker)
- Questions/discussion (all)

1700

ADJOURN

Workshop 2 - Day 2

June 24, 2015

0800

Overview for the day – Plenary

- Review the results of the first day
- Review process for today
    - Complete risk characterization (assign levels of concern) for response actions in both timeframes
    - Capture caveats – uncertainties, limitations
    - Summarize recommendations for response planning going forward
    - Questions, comments, adjustments?

0830

Complete 1st timeframe - Plenary

0915

Begin work on characterizing response action risks for 2nd timeframe – Workgroups

Characterize the relative risk for the response actions over the first 4-7 days of response

1015

BREAK (30 mins.)

1230

LUNCH (1 Hour) - provided

1330

Continue/complete characterization of risks for 2nd timeframe - Workgroups

1445

BREAK (then return to workgroup)

1520

Report out – risk ranking scores – Plenary

- **Limitations**
- **Uncertainty**
- **Response recommendations**

1600

Participant Feedback on ERA Process– Plenary

1615

Next steps– Plenary

1630

ADJOURN

Appendix C: Bibliography

Environmental Monitoring

National Oceanic and Atmospheric Administration (NOAA). (2012). Oil Spills in Water [PowerPoint presentation]. Presented at the Region 4 Regional Response Team Meeting, February 2012. 21 slides. Retrieved from: http://www.nrt.org/production/nrt/RRTHomeResources.nsf/resources/RRT4Feb2012Meeting_1/$File/SCAT_for_Freshwater_Spills_part1.pdf

U.S. Department of Interior (DOI), U.S. Geological Survey (USGS). (1998). Ground Water Contamination by Crude Oil near Bemidji, Minnesota. *USGS Fact Sheet 084-98*.

Governmental Regulations NPRM

Advanced Notice of Proposed Rulemaking; Hazardous Materials: Oil Spill Response Plans for High-Hazard Flammable Trains, 49 C.F.R. Pts. 130 and 174 (2014).

Association of American Railroads. (2014). *Freight Railroads Join U.S. Transportation Secretary Foxx in Announcing Industry Crude by Rail Safety Initiative* [Press Release]. Retrieved from http://www.aar.org.

Bulk Packagings for Certain Medium Hazard Liquids and Solids, Including Solids with Dual Hazards, 49 C.F.R. § 173.242 (2014).

Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains, Notice of Proposed Rulemaking, 49 C.F.R. Pts. 171, 172, 173, 174, and 179 (2014).

National Transportation Safety Board. (2014). *Safety Recommendation to the Pipeline and Hazardous Materials Safety Administration* (R-14-4 through -6).

Notice of Emergency Order Establishing Additional Requirements for Attendance and Securement of Certain Freight Trains and Vehicles on Mainline Track or Mainline Siding Outside of a Yard or Terminal, 78 Fed. Reg. 48218 (Aug. 7, 2013).

Notice of Safety Advisory and Announcement of Emergency Meeting of the Railroad Safety Advisory Committee, 78 Fed. Reg. 48224 (Aug. 7, 2013).

United Nations, Sub-Committee of Experts on the Transport of Dangerous Goods. Transmitted by IPIECA. (2014). Classification and hazard communication provisions for crude oil – An update of available information related to ST/SG/AC.10/C.3/2014/49. Proceedings from *Forty-sixth Session*. Geneva, Switzerland.

U.S. Department of Homeland Security, U.S. Coast Guard. U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. (2011). *Guidance on the Transportation of Marine Pollutants*.

U.S. Senate. 113th Congress, 2D Session. S. 2547, *To establish Railroad Emergency Services Preparedness, Operational, Needs, and Safety Evaluation (RESPONSE) Subcommittee under the Federal Emergency Management Agency's National Advisory Council to provide recommendations on emergency responder training and resources relating to hazardous materials incidents involving railroads, and for other purposes*. Washington, D.C.: U.S. Government Printing Office. Retrieved from http://www.gpo.gov/fdsys/pkg/BILLS-113hr5345ih/html/BILLS-113hr5345ih.htm.

U.S. Department of Transportation, Federal Railroad Administration, & Pipeline and Hazardous Materials Safety Administration. (2014). *Recommendations for Tank Cars Used for the Transportation of Petroleum Crude Oil by Rail*. (Docket No. PHMSA-2014-0049; Notice No. 14-07).

U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. (2014). *Preliminary Guidance from OPERATION CLASSIFICATION*. January 2, 2014. Retrieved from http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_111F295A99DD05D9B698AE8968F7C1742DC70000/filename/1_2_14%20Rail_Safety_Alert.pdf.

U.S. Department of Transportation. (2014). *Amended and Restated Emergency Restriction/Prohibition Order.* (Docket No. DOT-OST-2014-0025).

Human Health and Safety

Chemguard, Inc. (2010). *Thunderstorm FC-601A Material Safety Data Sheet.* Mansfield, TX.

Food and Water Watch. (2014). *The Bakken Boom: East Coast at Risk* [Fact Sheet]. Retrieved from www.foodandwaterwatch.org.

Goldstein, B. D., Osofsky, H.J., & Lichtveld, M. Y. (2011). The Gulf Oil Spill. *The New England Journal of Medicine, 364* (14), 1334-1348.

Harrill, J. A., Wnek, M. W., Pandey, R. B., Cawthon, D., Nony, P., & Goad, P.T. (2014). Proceedings from the 2014 International Oil Spill Conference: *Strategies for Assessing Human Health Impacts of Crude Oil Releases.* May 5-8, 2014, Savannah, Georgia, USA. Retrieved from: http://ioscproceedings.org/doi/abs/10.7901/2169-3358-2014.1.1668.

Tyco Fire Suppression and Building Products. (2010). *PKW Material Safety Data Sheet.* (Product Code 2011-2-006 Ana). Marinette, WI.

Walker, A. H., & Bostrom, A. (2015). Proceedings from the 2015 Oil Spill & Ecosystem Science Conference: *Oil Spill Community Engagement: Transdisciplinary Lessons to Support Community Resilience*. February 18, 2015. Houston, TX.

Incident Reports

National Transportation Safety Board. (2008). *Derailment of Norfolk Southern Railway Company Train 68QB119 with Release of Hazardous Materials and Fire, New Brighton, Pennsylvania, October 20, 2006* (NTSB/RAT-08/02, PB2008-916302). Railroad Accident Report: Washington, D.C.

Transportation Safety Board of Canada. (2014). *Runaway and Main-Track Derailment, Montreal, Maine & Atlantic Railway Freight Train MMA-002 Mile 0.23, Sherbrooke Subdivision Lac-Megantic, Quebec, 06 July 2013.* Railway Investigation Report R13D0054: Gatineau QC, Canada.

Doelling, P., Davis, A., Jellison, K., & Miles, S. (2014). *Bakken Crude Oil Spill Barge E2MS 303, Lower Mississippi River, February 2014* [PowerPoint slides]. Presentation of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration to the Region 3 Regional Response Team, Rehoboth Beach, DE. May 13, 2014.

Moore. K. Capt. (2014). *Derailment: Schuylkill Arsenal Bridge, Philadelphia, PA, 20 January 2014* [PowerPoint slides]. Presentation of U.S. Coast Guard Sector Delaware Bay to the Region 3 Regional Response Team, Rehoboth Beach, DE. May 13, 2014.

Oil Characteristics

Andrews, A. (2014). Crude Oil Properties Relevant to Rail Transport Safety: In Brief. *Congressional Research Service 7-5700,* R43401. Washington, D.C.

Boyd, J.N., Scholz, D., & Walker, A.H. (2001). *Effects of Oil and Chemically Dispersed Oil in the Environment [Poster Presentation]*. Proceedings of the 2001 International Oil Spill Conference. Retrieved from http://iosc proceedings.org/doi/abs/10.7901/2169-3358-2001-2-1213.

Davis, B., Etkin, D.E., Watts, K., & Landry, M. (2004). *Determination of Oil Persistence: A Historical Perspective*. Proceedings of the Fifth Biennial Freshwater Spills Symposium. 19 pages. Retrieved from http://www.environmental-research.com/erc_papers/ERC_paper_19.pdf.

Enbridge Pipelines Inc., Enbridge Energy Partners, L.P. (2013). *2013 Crude Characteristics*. No. 44.

Etkin, D.E., Joeckel, J., Walker, A.H., Scholz, D., Moore, C., Baker, C., Hatzenbuhler, D., Patton, R.G., and Lyman, E. (2015). Washington State 2014 *Marine & Rail Oil Transportation Study: Appendix D: In Depth: Basics on Oil Properties*. Prepared for the Spill Prevention, Preparedness & Response Program, Washington State Department of Ecology, Olympia, WA. Publication No. 15-08-101. Retrieved from https://fortress.wa.gov/ecy/publications/SummaryPages/1508010.html.

Michel, J., Scholz, D., Henry, C. B., & Benggio, B. L. *Group V Fuel Oils: Source, Behavior, and Response Issues*. (1995). Proceedings of the 1995 International Oil Spill Conference. Retrieved from http://ioscproceedings.org/doi/pdf/10.7901/2169-3358-1995-1-559.

Scholz, D.K., Kucklick, J.H., Pond, R., Walker, A.H., Bostrom, A., & Fischbeck, P. (1999). Fate of Spilled Oil in Marine Waters: Where Does It Go? What Does It Do? How Do Dispersants Affect It? *American Petroleum Institute* Publication No. 4691. Cape Charles, VA.

U.S. Department of Transportation, Federal Railroad Administration, & Pipeline and Hazardous Materials Safety Administration. (2013). *Hazmat/Crude Oil FAQ*. Federal Railroad Administration Office of Public Affairs: Washington, D.C. Retrieved from https://www.fra.dot.gov/eLib/details/L04352.

Oil Characteristics, Bakken Crude

American Petroleum Institute, Energy. (2014). *Staff Analysis of Crude Oil Samples Submitted to PHMSA* [PowerPoint slides]. Washington, D.C.

Auers, J.R., Couture, R.M., & Sutton, D.L. (2014). *The North Dakota Petroleum Council Study on Bakken Crude Properties.* Prepared for North Dakota Petroleum Council by Turner, Mason & Company. Dallas, TX.

ConocoPhillips. (2014). *Safety Data Sheet for Bakken Crude Oil, Sweet*. Product Code 825378.

Etkin, D.E., Joeckel, J., Walker, A.H., Scholz, D., Moore, C., Baker, C., Hatzenbuhler, D., Patton, R.G., and Lyman, E. (2015). Washington State 2014 *Marine & Rail Oil Transportation Study: Appendix E: In Depth: Properties of Crude by Rail Oils – Bakken Crude*. Prepared for the Spill Prevention, Preparedness & Response Program, Washington State Department of Ecology, Olympia, WA. Publication No. 15-08-101. Retrieved from https://fortress.wa.gov/ecy/publications/SummaryPages/1508010.html..

National Response Team & Regional Response Team. (2014). *Emerging Risks Responder Awareness Training* [PowerPoint slides]. Training Subcommittee. Retrieved from http://www.nrt.org/production/NRT/NRTWeb.nsf/AllPagesByTitle/SP-EmergingRisksResponderAwarenessTrainingBakkenCrudeOil(2015)?Opendocument.

New Jersey Work Environment Council. (2015). *Bakken Crude Oil by Rail: New Dangers for Firefighters* [Fact sheet]. Retrieved from http://nynjbaykeeper.org/wp-content/uploads/2015/01/Bakken-Crude-by-Rail-Fact-Sheet-Final.pdf.

North Dakota Petroleum Council. (2014). *The North Dakota Petroleum Council Study on Bakken Crude Properties: Bakken Crude Characterization Task Force*. Prepared by Turner, Mason & Company and SGS Laboratories. Bismark, ND. Retrieved from http://www.ndoil.org/image/cache/Bakken_Quality_Report.pdf.

North Dakota Petroleum Council. (2014). *Bakken by the Numbers Oil & Gas Industry Facts & Figures* [Fact sheet]. Bismark, ND. Retrieved from http://www.ndoil.org/image/cache/0815_Facts_Figures_web.pdf.

North Dakota Petroleum Council, NDPC Bakken Crude Characterization Task Force. (2014). BKN Quality & Safety Initiative, Presentation of Preliminary Results. Proceedings from the *Williston Basin Petroleum Conference*. Bismarck, ND. Retrieved from http://ndoil.org/image/cache/0519_Bakken_Quality_Study_2.pdf.

Transportation Safety Board of Canada. (2013). *Laboratory Report LP148*. Retrieved from http://www.tsb.gc.ca/eng/enquetes-investigations/rail/2013/R13D0054/lab/20140306/LP1482013.asp.

U.S. Environmental Protection Agency, Emergency Response Team. (2015). *Bakken Shale Crude Oil Spill Evaluation Pilot Study*. Retrieved from http://rrt5.org/Portals/0/docs/BakkenCrudePilotStudy-PrelimRpt_Final_4-1-15.pdf.

U.S. Department of Transportation. (2014). *A Survey of Bakken Crude Oil Characteristics Assembled*. For U.S. Department of Transportation, submitted by the American Fuel & Petrochemical Manufacturers, and prepared by Dangerous Goods Transport Consulting, Inc. Retrieved from http://www.ourenergypolicy.org/wp-content/uploads/2015/06/Survey-of-Crude-Oil-Characteristics_FINAL-1.pdf.

Oil Characteristics, Diluted Bitumen

Enbridge Northern Gateway Pipelines. (2013). *Meso-scale Weathering of Cold Lake Bitumen/Condensate Blend – October 2012*. Prepared by SL Ross. National Energy Board File No: OF-Fac-Oil-N304-2010-01 01.

Etkin, D.E., Joeckel, J., Walker, A.H., Scholz, D., Moore, C., Baker, C., Hatzenbuhler, D., Patton, R.G., and Lyman, E. (2015). Washington State 2014 *Marine & Rail Oil Transportation Study: Appendix F: In Depth: Properties of Crude by Rail Oils – Diluted Bitumen and Related Oils*. Prepared for the Spill Prevention, Preparedness & Response Program, Washington State Department of Ecology, Olympia, WA. Publication No. 15-08-101. Retrieved from https://fortress.wa.gov/ecy/publications/SummaryPages/1508010.html.

Government of Canada: Environment Canada, Fisheries and Oceans Canada, & Natural Resources Canada. (2013). *Properties, Composition and Marine Spill Behaviour, Fate and Transport of Two Diluted Bitumen Products from the Canadian Oil Sands*. ISBN 978 1-100-23004-7.

Hindin, B., & Leis, B. (2012). *Diluted Bitumen-Derived Crude Oil: Relative Pipeline Impacts*. Battelle Memorial Institute. Columbus, OH. Retrieved from http://oilsandsfactcheck.org/wp-content/uploads/2012/07/Battelle_Dilbit-Relative-Pipeline-Impacts_072012.pdf.

National Research Council: Committee for a Study of Pipeline Transportation of Diluted Bitumen, Transportation Research Board; Board on Energy and Environmental Systems, & Board on Chemical Sciences and Technology. (2013). *TRB Special Report 311: Effects of Diluted Bitumen on Crude Oil Transmission Pipelines*. ISBN 978-0-309-28675-6. Washington, D.C.

Papavinasam, S., Rahimi, P., & Williamson, S. (2012). Corrosion Conditions in the Path of Bitumen from Well to Wheel. Proceedings from the Symposium on Crude Oil Corrosivity: *NACE 2012 Northern Area Eastern Conference*. (Paper Number: 2012:02). Toronto, Canada.

Polaris Applied Sciences, Inc. (2013). *A Comparison of the Properties of Diluted Bitumen Crudes with other Oils*. Retrieved from http://crrc.unh.edu/sites/crrc.unh.edu/files/comparison_bitumen_other_oils_polaris_2014.pdf.

Tsaprailis, H., & Zhou, Z. (2014). *Properties of Dilbit and Conventional Crude Oils*. Alberta Innovates – Technology Futures. Retrieved from http://www.ai-ees.ca/media/10927/properties_of_dilbit_and_conventional_crude_oils_-_aitf_-_final_report_revised.pdf.

U.S. Department of Homeland Security, U.S. Coast Guard, Research and Development Center. (2013, Revised 2014). *Development of Bottom Oil Recovery Systems – Final Project Report*. Report No. CG-D-09-13. New London, CT.

Witt O'Brien's, Polaris Applied Sciences, & Western Canada Marine Response Corporation. (2013). *A Study of Fate and Behavior of Diluted Bitumen Oils on Marine Waters, Dilbit Experiments*. Gainford, Alberta, Canada. Retrieved from http://transmountain.s3.amazonaws.com/application14/V8C_TERMPOL_REPORTS/1407.html.

Oil Characteristics > Oil Sands

Gordon, D., Brandt, A., Bergerson, J., & Koomey, J. (2015). *Oil, Creating a Global Oil-Climate Index*. Carnegie Endowment for International Peace. Washington, D.C.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration. (2013). *Transporting Alberta Oil Sands Products: Defining the Issues and Assessing the Risks*. NOAA Technical Memorandum NOS OR&R 44. Seattle, WA.

Inside EPA's Superfund Report. (2015). *NAS Panel Weighs Potential Spill Response Rule Changes for Oil Sands.* Inside EPA's Superfund Report, XXIX (6), pg. 17.

Oil Research

Michel, J., & Galt, J.A. (1995). *Conditions under Which Floating Slicks can Sink in Marine Settings*. Proceedings from 1995 Oil Spill Conference: Spill Management/Mitigation. Retrieved from http://ioscproceedings.org/doi/pdf/10.7901/2169-3358-1995-1-573.

National Research Council: Committee for a Study of Pipeline Transportation of Diluted Bitumen, Transportation Research Board; Board on Energy and Environmental Systems, & Board on Chemical Sciences and Technology. (2013). *TRB Special Report 311: Effects of Diluted Bitumen on Crude Oil Transmission Pipelines*. ISBN 978-0-309-28675-6. Washington, D.C.

National Academy Press, National Research Council, Committee on Marine Transportation of Heavy Oils. (1999). *Spills of Nonfloating Oils: Risk and Response*. ISBN 0-309-52015-0. Washington, D.C.

Washington State Department of Ecology, the Regional Response Team 10, & the Pacific States/British Columbia Oil Spill Task Force. (2013). *Alberta Oil Sands Workshop*. Conducted by The Center for Spills in the Environment, University of New Hampshire. Seattle, WA.

Oil Transportation

Federal Emergency Management Agency, National Fire Academy. (2014, November 17). *Petroleum Crude Oil: Railroad Safety Procedures* [Training]. Coffee Break Training – Hazardous Materials. Retrieved from http://www.usfa.fema.gov/training/coffee_break/.

Stockdill, P. (2014, December 22). Understanding safety concerns of shipping Bakken crude oil. *Bismarck Tribune*.

Washington State Department of Ecology. (2013). *Changing Oil Movement in the Northwest: Implications for State Spill Prevention, Preparedness and Response Program*.

Oil Transportation > Crude by Barge

O'Connell, J. (2013). Crude-by-Barge. *MarEx*. Retrieved from http://maritime-executive.com/newsletter/.

Oil Transportation > Crude by Pipeline

Weimer, C. (2011). *Congressional Reauthorization and PHMSA Rulemakings – Enough to avoid future tragedies* [PowerPoint slides]. Prepared for Pipeline Safety Trust.

Oil Transportation > Crude by Rail

Anderson, B. (2014). *Delaware's OIL by RAIL Routes GIS based Response Maps* [PowerPoint slides]. Prepared Inland Area Committee-Region 3, Rehoboth Beach, DE. Retrieved from http://www.rrt3.nrt.org/.

Andrews, A. (2014). Crude Oil Properties Relevant to Rail Transport Safety: In Brief. *Congressional Research Service 7-5700,* R43401. Washington, D.C.

EPA Inland Area Committee. (2014). *Crude Oil Presentation by Rail* [PowerPoint slides]. Prepared for EPA Inland Area Committee Meeting, Rehoboth Beach, DE. Retrieved from http://www.rrt3.nrt.org/.

Faulkner, M., & NRT Training Subcommittee. (2014). *Emerging Risks Responder Awareness Training Bakken Crude Oil* [PowerPoint Slides]. Prepared for National Response Team and Regional Response Team.

Fritelli, J., Andrews, A., Parfomak, P.W., Pirog, R., Ramseur, J.L., & Ratner, M. (2014). U.S. Rail Transportation of Crude Oil: Background and Issues for Congress. *Congressional Research Service 7-5700*, R433901. Washington, D.C.

Kirkpatrick, S.W. (2009). Detailed Impact Analyses for Development of the Next Generation Rail Tank Car, Part 2 – Development of Advanced Tank Car Protection Concepts. Proceedings from ASME 2009: *Rail Transportation Division Fall Conference*. RTDF2009. Ft. Worth Texas.

Liu, X., Rapik Saat, M., & Barkan, C.P.L. (2012). Analysis of Causes of Major Train Derailment and Their Effect on Accident on Accident Rates. *Transportation Research Record: Journal of the Transportation Research Board 2289*. doi: 10.3141/2289-20

Liu, X., Rapik Saat, M., & Barkan, C.P.L. (2013). Safety Effectiveness of Integrated Risk Reduction Strategies for Rail Transport of Hazardous Materials. *Transportation Research Record: Journal of the Transportation Research Board 2374*. doi: 10.3141/2374-12

O'Connell, J. (2013). Crude-by-Rail and Other Logistical Wonders. *MarEx*. Retrieved from http://maritime-executive.com/newsletter/.

Patterson, E. (2014). *Petroleum Crude Oil by Rail, A Shipper's Perspective* [PowerPoint slides]. Prepared for EPA Region III RRT Meeting. Rehoboth Beach, DE. Retrieved from http://www.rrt3.nrt.org/.

Pineau, M., & Ekberg, A. (2012). *Reducing the Occurrences and Impact of Freight Train Derailments* [PowerPoint slides]. Prepared for D-Rail dissemination Meeting 12th November. Stockholm, Sweden. Retrieved from http://d-rail-project.eu/IMG/pdf/DR-WP3-141112-Final_Seminar_Stockholm.pdf.

Pumphrey, D., Hyland, L., & Melton, M. (2014). *Safety of Crude Oil by Rail*. Center for Strategic & International Studies. Washington, D.C.

Reuters Media. (2014, September 16). U.S. crude-by-rail projects; Phillips 66 planning Bakken project. *Brainerd Dispatch*. Retrieved from http://www.brainerddispatch.com/content/us-crude-rail-projects-phillips-66-planning-bakken-project.

Oil Transportation > Crude by Vessel

Houston, G., Gaudreau, R., & Sinclair, M. (2013). *A Review of Canada's Ship-Source Oil Spill Preparedness and Response Regime, Setting the Course for the Future*. ISBN 978-1-100-54627-8. Transport Canada. Tanker Safety Panel Secretariat. Ottawa, Canada.

Johnson, E., & Wilkins, W. (2013). *Eddystone Rail Company: Bringing Bakken Crude to Philadelphia Refineries* [PowerPoint slides]. Proceedings from: Platts North American Crude Marketing Conference. Houston, TX.

Planning Requirements

Burkett, V.R. and Davidson, M.A. [Eds.]. (2012). *Coastal Impacts, Adaptation and Vulnerability: A Technical Input to the 2012 National Climate Assessment*. Cooperative Report to the 2013 National Climate Assessment, pp. 150.

Regional Response Team 10, & the Northwest Area Committee Emerging Risks Task Force. (2013). *Emerging Risks Task Force Report 2013*. Retrieved from www.rrt10nwac.com/files/factsheets/131217071637.pdf.

Federal Emergency Management Agency, National Fire Academy. (2014, November 3). *Petroleum Crude Oil: Preincident Planning* [Training]. Coffee Break Training – Hazardous Materials. Retrieved from http://www.usfa.fema.gov/training/coffee_break/.

References General

Etkin, D.E., Joeckel, J., Walker, A.H., Scholz, D., Moore, C., Baker, C., Hatzenbuhler, D., Patton, R.G., and Lyman, E. (2015). Washington State 2014 *Marine & Rail Oil Transportation Study*. Prepared for the Spill Prevention, Preparedness & Response Program, Washington State Department of Ecology, Olympia, WA. Publication No. 15-08-101. Retrieved from https://fortress.wa.gov/ecy/publications/SummaryPages/1508010.html.

Trans Mountain Pipeline ULC. (2013). *Response to Province of BC IR No. 1.1.73c-Attachment 1*. Retrieved from https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2482815/B150-1_-_Trans_Mountain_Response_to_Province_BC_IR_No._1_-_A3Y2Z1.pdf?nodeid=2482295&vernum=-2

Response Technologies

Etkin, D.E., Joeckel, J., Walker, A.H., Scholz, D., Moore, C., Baker, C., Hatzenbuhler, D., Patton, R.G., and Lyman, E. (2015). Washington State 2014 *Marine & Rail Oil Transportation Study: Appendix C: In Depth: Crude by Rail Emergency & Spill Response.* Prepared for the Spill Prevention, Preparedness & Response Program, Washington State Department of Ecology, Olympia, WA. Publication No. 15-08-101. Retrieved from https://fortress.wa.gov/ecy/publications/SummaryPages/1508010.html.

Risk Assessments

Aurand, D., & Coelho, G (Compilers). (2006). *Ecological Risk Assessment: Consensus Workshop. Environmental Tradeoffs Associated with Oil Spill Response Technologies.* U. S. Coast Guard, Sector Delaware Bay. Ecosystem Management & Associates, Inc., Lusby Md. Technical Report 06-01.

Aurand, D., Walko, L., & R. Pond. (2000). *Developing Consensus Ecological Risk Assessments: Environmental Protection In Oil Spill Response Planning A Guidebook.* U.S. Coast Guard. Washington, D.C.

Ecosystem Management & Associates, Inc. (2000). *Consensus Ecological Risk Assessment: Terminology Fact Sheet.*

Etkin, D.S., & Neel, J. (2001). *Investing in Spill Prevention: Has It Reduced Vessel Spills and Accidents in Washington State*. Proceedings from the 2001 International Oil Spill Conference. American Petroleum Institute, Washington, D.C. Retrieved from http://www.environmental-research.com/erc_papers/ERC_paper_30.pdf.

Federal Emergency Management Agency, National Fire Academy. (2014, November 24). *Petroleum Crude Oil: Hazard Assessment and Risk Evaluation* [Training]. Coffee Break Training – Hazardous Materials. Retrieved from http://www.usfa.fema.gov/training/coffee_break/.

Forest Ethics. (2014). *Off the Rails, The Fossil Fuel Takeover of the Pacific Northwest.* Retrieved from http:// http://www.forestethics.org/.

Kraly, J., Pond, R.G., Walker, A.H., Caplis, J., Coelho, A.G., Martin, B., & Sowby, M. (2001). *Ecological Risk Assessment Principles Applied to Oil Spill Response Planning.* Proceedings from the 2001 International Oil Spill Conference. American Petroleum Institute, Washington, D.C.

Margolis, J. (2015). *Runaway Risks, Oil Trains and Government's Failure to Protect People, Wildlife and the Environment.* Center for Biological Diversity. *Retrieved from http://www.biologicaldiversity.org/campaigns/oil_trains/pdfs/runaway_risks_web.pdf.*

New York State Departments of Environmental Conservation, Health, & Transportation, Division of Homeland Security and Emergency Services, & New York State Energy Research and Development Authority. (2014). *Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity.*

State of Oregon. (2014). *Preliminary Statewide Rail Safety Review.* Retrieved from https://olis.leg.state.or.us/liz/2013I1/Downloads/CommitteeMeetingDocument/41059.

Stockman, L. (2014). *Runaway Train: The Reckless Expansion of Crude-by-Rail in North America*. Oil Change International: Washington, D.C. Retrieved from http://priceofoil.org/2014/05/28/runaway-train-reckless-expansion-crude-rail-north-america/.

Walker, A.H., Scholz, D., Aurand, D.V., Pond, R.G., & Clark, J.R. (2001). *Lesson Learned in Ecological Risk Assessment Planning Efforts.* Proceedings from the 2001 International Oil Spill Conference. American Petroleum Institute, Washington, D.C. Retrieved from http://ioscproceedings.org/doi/abs/10.7901/2169-3358-2001-1-185.

Washington State Department of Ecology. (2014). *Washington State Marine & Rail Oil Transportation Study, Preliminary Findings & Recommendations* (Publication No. 14-08-013). Department of Ecology: Olympia, WA.

Welch, L.C., Mulee, A.M., Shrestha, A., & Wade, D. (2013). *Oil and Water: Tar Sands Crude Shipping Meets the Great Lakes?* Alliance for the Great Lakes. Retrieved from http://www.greatlakes.org.

U.S. Consultation Requirements

Endangered Species Act of 1973. *Section 7 Emergency Consultation and Definition of Critical Habitat.* 16 U.S.C. § 1531 et seq. Sections 402.05 – 402.07.

U.S. Consultation Requirements > Endangered Species Act Consult

U.S. Department of Homeland Security, U.S. Coast Guard. (2013). *MER Policy Letter 01-14; Endangered Species Act (ESA) Section 7 and Essential Fish Habitat (EFH) Consultation Process Guidance*. Washington, D.C.

U.S. Department of Homeland Security's U.S. Coast Guard, U.S. Environmental Protection Agency, Department of the Interior's Office of Environmental Policy and Compliance and U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration's - National Marine Fisheries Service and National Ocean Service. (2001). *Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act.*

U.S. Department of Homeland Security's U.S. Coast Guard, U.S. Environmental Protection Agency, Department of the Interior's Office of Environmental Policy and Compliance and U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration's - National Marine Fisheries Service and National Ocean Service.

(2002). *Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act – A Guidebook.*

U.S. Department of Interior, U.S. Fish and Wildlife Service. (2003). *Critical Habitat – Questions and Answers*.

U.S. Department of Interior, U.S. Fish and Wildlife Service. (2011). *Critical Habitat, What is it?* Retrieved from http://www.fws.gov/endangered/.

U.S. Department of Interior, U.S. Fish and Wildlife Service. (2013). *Consultations, Frequently Asked Questions*. Retrieved from http://www.fws.gov/endangered/what-we-do/faq.html.

U.S. Consultation Requirements > Essential Fish Habitat Consult

Magnuson-Stevens Fishery Conservation and Management Act. (1996). 16 U.S.C. §§ 1801-1884. As reauthorized with the Magnuson–Stevens Fishery Conservation and Management Reauthorization Act of 2006. (2006). U.S. Public Law 109-479.

National Oceanic Atmospheric Administration, National Marine Fisheries Service. (2004). *Essential Fish Habitat Consultation Guidance (Version 1.1).* Silver Spring, MD.

National Oceanic Atmospheric Administration, National Marine Fisheries Service. (2007). *Essential Fish Habitat and Critical Habitat: A comparison.* Retrieved from http://www.habitat.noaa.gov/pdf/efhcriticalhabitatcomparison.pdf.

U.S. Department of Commerce, National Oceanic Atmospheric Administration, and National Marine Fisheries Service. (2013). *National Marine Fisheries Service Instruction (03-201-07), Further Guidance on Combined EFH and ESA Consultations.*

U.S. Consultation Requirements > National Historic Preservation Act Consult

Advisory Council on Historic Preservation, Office of Federal Agency Programs. (2011). *Advisory Council on Historic Preservation* [Fact sheet]. Washington, D.C. Retrieved from http://www.achp.gov/AboutTheACHPFactSheet2011.pdf.

Executive Office of the President's Council on Environmental Quality, & Advisory Council on Historic Preservation. (2013). *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106.* Washington, D.C.

National Historic Preservation Act of 1966, as amended through 2006. 16 U.S.C. 470 *et seq.*

U.S. Department of Interior, National Park Service. (1997). *Archeology Program, Abandoned Shipwreck Act (ASA)* [Fact sheet]. Reproduced from *Encyclopedia of Underwater and Maritime Archaeology,* edited by James P. Delgado. British Museum Press: London, England. Retrieved from http://www.nps.gov/archeology/tools/Laws/ASA.htm.

U.S. Consultation Requirements > Tribal Consults

Executive Office of the Present, Office of Management and Budget. (2010). *Memorandum for the Heads of Executive Departments and Agencies, and Independent Regulatory Agencies; Guidance for Implementing E.O. 13175, "Consultation and Coordination with Indian Tribal Governments."* Washington, D.C.

Executive Order 13175 of November 6, 2000, Consultation and Coordination with Indian Tribal Governments, 65 Fed. Reg. 67249 (Nov. 6, 2000).

Notice; request for comments on The Coast Guard's Policy of Consultation and Coordination with Indian Tribal Governments under Executive Order 13175, 66 Fed. Reg. 36361 (July 11, 2001).

U.S. Environmental Protection Agency. (2012). *EPA Region 10 Tribal Consultation and Coordination Procedures*. EPA 910-K-12-002.

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Appendix D: Resources at Risk Table

Habitat	Sub habitats	Resource Category	Example Organisms (includes state-listed species)
On-land and on-water socio-economic areas	Work area (e.g., hot and warm zones), plus general public areas	Workers	First responders and pollution responders (on water/on land) involved in safety monitoring, oil recovery operations (on water/on land), oil contamination monitoring/SCAT
		Residential community	All - adults and adolescents; also children, elderly, and sick (single and multi-family residences)
		Sensitive receptors	Children, elderly, sick (daycares, hospitals, and nursing homes)
		Commercial community	Adults (retail, other commercial facilities)
		Industrial community	Adults (nearby refineries, plants, etc.)
		Transportation community	Potentially all (rail, marine, roads: drivers, passengers)
Artificial Shorelines	Bulkheads, riprap, manmade structures, pavement	Mammals, aquatic, and non-aquatic dependent	River otter, raccoon, muskrat, and bats
		Birds, aquatic, and non-aquatic dependent	Waterfowl, wading birds, shorebirds, song birds, raptors, and gulls
		Reptiles and amphibians	Diamondback terrapin, frogs, and salamanders
		Macro-invertebrates	Oysters, mussels, barnacles, crabs, and periwinkle
		Other invertebrates	Insects, spiders, and zooplankton
		T/E species - animals	Peregrine falcon and northern long-eared bat
		T/E species (or rare) - plants	None identified
Natural Terrestrial Shorelines	Vegetated (trees, shrub/scrub wetlands, grass), sand, and gravel	Mammals, aquatic, and non-aquatic dependent	River otter, raccoon, muskrat, and bats
		Birds, aquatic, and non-aquatic dependent	Waterfowl, wading birds, shorebirds, song birds, and raptors
		Reptiles and amphibians, aquatic and non-aquatic dependent	Diamondback terrapin, frogs, and salamanders
		Macro-invertebrates	Oysters, mussels, barnacles, dragonfly nymph, planktonic fish eggs, and crabs
		Aquatic vertebrates	Mummichog, Atlantic silverside, and bay anchovy
		T/E species - animals	Osprey, northern long-eared bat; also bald eagle still of concern although now recovered
		T/E species (or rare) - plants	Swamp pink, long-lobed arrowhead, wild rice, and swamp beggar-ticks

Habitat	Sub habitats	Resource Category	Example Organisms (includes state-listed species)
Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 to 1) meter	Marsh, swamp, tidal flats, sand beaches, cobble/boulder beach (at the water / land or water / air interface)	Mammals, aquatic and non-aquatic dependent	River otter, raccoon, muskrat, bats, and marsh rice rat
		Birds, aquatic and non-aquatic dependent	Waterfowl, wading birds, shorebirds, song birds, raptors, gulls
		Reptiles and amphibians	Diamondback terrapin, snapping turtle, and sea turtles
		Macro-invertebrates	Oysters, mussels, barnacles, dragonfly nymph, planktonic fish eggs, and horseshoe crabs
		T/E species - animals	Red knot, least bittern (shorebirds), southern leopard frog, and threespine stickleback
		T/E species - plants	Long-lobed arrowhead, wild rice, swamp beggar-ticks, seabeach amaranth, Wright's spike rush, Walter's barnyard grass, and Smith's bullrush
		Plants – submerged and floating aquatic vegetation	Water hyacinth, spatterdock, arrow arum, wild celery, and phytoplankton
		Fishing – commercial or recreational	Oysters, mussels, blue crab, flounder, bluefish, weakfish striped bass, and American shad
		Water intake - surface	Surface water – industrial or drinking water
Mid-water (0 to 2 meters)	Water column	Mammals, aquatic dependent	River otter
		Birds	Ducks, geese, cormorant, and gulls
		Reptiles	Snapping turtles and sea turtles
		Aquatic vertebrates	Mummichog, Atlantic silverside, bay anchovy
		Macro-invertebrates (incl. larval life stage)	Dragon fly nymph; larval clams, oysters, and crabs
		Plants – submerged and floating aquatic vegetation	Water hyacinth, spatterdock, arrow arum, wild celery, and phytoplankton
		T/E species - animals	Osprey, hickory shad, banded sunfish, threespine stickleback, and eastern redbelly turtle
		T/E species - plants	None identified
		Fishing – commercial and recreational	Oysters, mussels, blue crab, flounder, bluefish, weakfish, stripped bass, and American shad
		Water intakes - midwater	Surface water – industrial or drinking water

Habitat	Sub habitats	Resource Category	Example Organisms (includes state-listed species)
Benthic (bottom, >2 meters)	Attached or associated with the bottom of the water column / seabed	Aquatic vertebrates	Seals, river otter, mummichog, perch, sturgeon, sea turtles, dolphin, and porpoise
		Macro-invertebrates (incl. larval life stage)	Oysters, mussels, clams, worms, planktonic fish eggs, and crabs
		Aquatic invertebrates	Phytoplankton, zooplankton, and algae
		Plants – submerged aquatic vegetation	None identified
		T/E species - animals	Short-nosed sturgeon and Atlantic sturgeon
		T/E species - plants	None identified
		Fishing – commercial and recreational - bottom	Shrimp, scallop, and blue crab
		Water intakes - midwater	Industrial or drinking water

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Appendix E: Response Actions Table

Summary of Response Actions	
Response Action	**No Response Action – Natural Attenuation and Monitoring**
Use	Natural attenuation relies on natural processes to decrease and "attenuate" concentrations of contaminants (oil) in soil, groundwater, and water. Monitoring typically involves collecting soil, groundwater, and water samples to analyze them for the presence of contaminants (oil) and other site characteristics. Allow natural attenuation for spills where oil is not recoverable and/or more environmental damage will occur from the response actions; or effective spill response resources are not available.
Examples/logistical considerations	Monitoring via sampling and other methods, networks of observers, sampling protocols, especially new methods for Group V oils (sunken dilbit crude oil after evaporation of light fractions).
Limitations	Environmental damage occurs to some extent. Public dissatisfaction with the oil spill response managers if dilbit oil sinks after light fractions evaporate and cannot be located or tracked; fisheries impacts.
Effectiveness	Attenuation may be prudent for Bakken crude oil. Dilbit being much more persistent will probably not be a candidate for attenuation on land. Monitoring would likely be required for both oil types; monitoring effectiveness over time on land will be more practical than in water.
Response Action	**Fire – Let Burn and Controlled Burn (both in-situ)**
Use	Allow rail cars to burn themselves out, or control the burn to reduce impacts of spilled oil to the environment.
Examples/logistical considerations	Water cooling streams, fireboats, air monitoring, and structural exposure protection.
Limitations	Access to water supply, frac tanks, high flow pumps, and nozzles.
Effectiveness	Ability to get close enough for effective cooling, potential for "heat-induced tear" in the shell of a rail car.
Response Action	**Fire – Extinguishing agent and methods**
Use	Strategies, methods, and people and equipment resources to extinguish a crude oil rail car fire.
Examples/logistical considerations	Foam availability to extinguish a rail car fire, and potential involvement of adjacent rail cars. Access to dry chemical agents, fire boom, and fire boats.
Limitations	Access to sufficient quantity of foam, dry chemical agents, fire boom, and fire boats. Need access to high volume fire pumps and nozzles. Requires highly skilled personnel.

Summary of Response Actions	
Effectiveness	Very effective if resources arrive quickly; before adjacent rail cars are heated and tears in shells of rail cars occur.
Response Action	**No Fire – Vapor Suppression**
Use	Use of a blanket of vapor suppression agents to reduce the vapors being released from pooled crude oil to reduce the risk of fire, and to provide a safe environment for the population and responders.
Examples/logistical considerations	Sufficient quantity of foam, and Subpart J products, such as herding agents, encapsulators, absorbents (Imbiber Beads), intrinsically safe vacuum pumps/trucks, PPE, and air monitoring.
Limitations	Foam application on a U.S. water body may not be allowed. Large area coverage may be needed. Applicator needs to be close enough, and have sufficient quantity to sustain coverage.
Effectiveness	Effective for pooled crude oil in containment (boom, drainage ditch, and small creek. Large area coverage is more difficult.
Response Action	**No Fire – Oil Spread Control – On land, on-water, underwater**
Use	Use of strategies, methods, and resources to control the spread of spilled crude oil on water.
Examples/logistical considerations	Containment/ deflection boom, sorbents, pneumatic curtains, turbidity curtain, dams/dikes, interceptor trenching, underflow dams, and pre-staged boom.
Limitations	Sufficient quantity boom, speed of deployment is critical to reduce spread, controlling spread of submerged oil is challenging, tide/current/ice can hamper control actions.
Effectiveness	Very effective if deployed correctly based on current speed. Turbidly, silt, and pneumatic curtain effectiveness may be impacted by current, and difficult to hold in place. Tidal range of Delaware River exposes mud flats at low tide.
Response Action	**No Fire – On-water Recovery, Underwater Recovery**
Use	Recovery of crude oil from water for disposal and possible reuse to prevent or minimize sensitive shoreline resources and habitat.
Examples/logistical considerations	Booms, self-propelled skimmers, stationary skimmers, and advancing skimmers (brush, drum, weir, and dynamic Inclined Plane). Collection booming, nets, trawls, pumps, dredge, divers, vacuum system, airlift, and bottom trawls.
Limitations	Type of skimmer must be selected for the type of oil. Submerged oil difficult to locate – impacting recovery methods. Low visibility will impair diver's ability to see oil. Recovery amount is encounter rate dependent.

Summary of Response Actions	
Effectiveness	Brush skimmers are very effective and efficient for heavy oils (dilbit). DIP and drum skimmer very effective for light oils (Bakken). Heavy sediment load and current in Delaware River can impact recovery of submerged oil. Diver effectiveness impaired by low visibility, and differentiating oil from mud.
Response Action	**No Fire – Resource Protection**
Use	Sensitive area protection strategies (ACP), protection booming strategies, deflection booming to protect sensitive areas, water intakes, and fisheries.
Examples/logistical considerations	12' boom for protection/deflection due to shallow water in Delaware River Creeks, and ease of use. 18" boom for deeper water areas. Turbidity and silt curtain used for submerged oil. Pneumatic curtains, dams/dikes, interceptor trenching, underflow dams, and pre-staged boom.
Limitations	Many sensitive areas identified in the ACP are creeks with shallow water. Exposed mud flats at low tide may impact placement of protection boom. Current and tide necessitates boom to be tended at every tide cycle. Many mid-river sites in the Delaware River have been tested for a spill scenario occurring in the River, but none have been tested for a spill source in the creeks. NJ shoreline along the Delaware Bay is very porous and difficult to protect.
Effectiveness	Protection strategies for floating oils are very effective in areas tested. Protection strategies for non-floating oils are much less effective.
Response Action	**No Fire – Shoreline Clean up**
Use	Removal of oil from the shoreline for disposal to prevent further contamination of sensitive areas and habitat.
Logistics	Mechanical recovery systems – skimmers, vacuum trucks, storage tanks, sorbent, hand tools, laborers, PPE, and Subpart J agents.
Limitations	Debris removal, recovery method based on shoreline type and oil type, access may be difficult, impacted habitat.
Effectiveness	Depends on many factors; oil type – heavy vs. light, amount of debris, and tide range impacts work schedule.
Response Action	**No Fire – Oil Detection/Mapping (physical contact methods)**
Use	Strategies, methods, and resources used to detect oil by physically sampling oil for movement, location, and physical properties.
Logistics	Water samples, trawls, underwater sentinels, monitoring stations, oil detection sensors, crab pots, Vessel Submerged Oil Recovery System (VSORS), snare samplers, and ROV.
Limitations	Develop sampling protocol to adequately cover the impacted areas, tide, and current spread oil quickly covering large areas. Determining sampling location may be difficult for

Summary of Response Actions	
	submerged oil, movement of oil depends on many factors – dynamic situation depends on conditions, e.g. winds, temp, and ice.
Effectiveness	Effectiveness limited by absence of a full suite of technological methods to detect oil and map its extent of contamination in all subsurface environments (water column or benthos). Some methods exist, but this is an active R&D area.
Response Action	**No Fire – Oil Detection/Mapping (remotely-observed methods)**
Use	Remotely monitor the movement of oil in the environment.
Logistics	Overflights and other visual observations, aircraft laser sensor, and other remote sensing systems (IR, FLIR), photo bathymetric, underwater visual by divers or ROV, sonar, laser fluorosensor, side-scan sonar, and multi-beam sonar.
Limitations	Availability of equipment and operator, data interpretation, and sampling protocol must be developed.
Effectiveness	Effectiveness limited by absence of a full suite technological methods to detect oil and map its extent of contamination in all subsurface environments (water column or benthos). Some methods exist, but this is an active R&D area.

Appendix F: Firefighting Foam MSDS

MATERIAL SAFETY DATA SHEET

ANSUL
by Tyco Fire Suppression & Building Products

PKW

Product Code: 2011-2-006 ANa Issue Date: 07-21-2010

1. Product and Company Identification

Material name	**PKW**
Version #	01
Revision date	07-21-2010
CAS #	Mixture
Product Code	2011-2-006 ANa
Product use	Fire extinguishing agent
Manufacturer / Importer / Supplier	
Name	Tyco Fire Suppression and Building Products
Address	One Stanton Street Marinette, WI 54143-2542
Phone	715-735-7411
Internet	http://www.ansul.com
Emergency Phone Number	CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Emergency overview	WARNING Irritating to eyes and skin. Prolonged exposure may cause chronic effects.
Potential health effects	
Routes of exposure	Eye contact. Skin contact. Inhalation. Ingestion.
Eyes	Contact with eyes may cause irritation.
Skin	Avoid contact with the skin. May cause skin irritation.
Inhalation	Inhalation of dusts may cause respiratory irritation.
Ingestion	Not a likely route of entry.
Target organs	Eyes. Respiratory system. Skin.
Signs and symptoms	Irritation of eyes and mucous membranes.

3. Composition / Information on Ingredients

Non-hazardous components	CAS #	Percent
Silicone fluid	63148-57-2	0.5 - 1.5
Purple Pigment	68647-14-3	1 - 5
MICA	12001-26-2	1 - 5
FULLERS EARTH	8031-18-3	1 - 5
POTASSIUM BICARBONATE	298-14-6	60 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.
Skin contact	Wash off with warm water and soap. Get medical attention if irritation develops and persists.
Inhalation	Move to fresh air.
Ingestion	Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Extinguishing media	
Suitable extinguishing media	This product is not flammable. Use extinguishing agent suitable for type of surrounding fire.
Protection of firefighters	
Specific hazards arising from the chemical	None known.
Protective equipment for firefighters	None known.
Special protective equipment for fire-fighters	None known.
Explosion data	
Sensitivity to mechanical impact	Not available.
Sensitivity to static discharge	Not available.
Hazardous combustion products	Carbon monoxide and carbon dioxide.

6. Accidental Release Measures

Personal precautions	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits.
Environmental precautions	Do not contaminate water.
Methods for containment	If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Avoid the generation of dusts during clean-up. Clean up in accordance with all applicable regulations. Following product recovery, flush area with water.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid contact with eyes. Wash thoroughly after handling. Wear personal protective equipment.
Storage	Store in a well-ventilated place. Guard against dust accumulation of this material. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

Canada - British Columbia

Components	Type	Value	Form
MICA (12001-26-2)	TWA	3.0000 mg/m3	Respirable.

Canada - Ontario

Components	Type	Value	Form
MICA (12001-26-2)	TWA	3.0000 mg/m3	Respirable.

Canada - Quebec

Components	Type	Value	Form
MICA (12001-26-2)	TWA	3.0000 mg/m3	Respirable dust.

Personal protective equipment	
Eye / face protection	Wear safety glasses with side shields (or goggles).
Skin protection	Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
Respiratory protection	In the case of respirable dust and/or fumes, use self-contained breathing apparatus.

9. Physical & Chemical Properties

Appearance	
Form	Powder.
Color	Violet.
Odor	Odorless.
Physical state	Solid.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	Not available.
Relative density	Not available.
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Incompatible materials	Strong acids.
Hazardous decomposition products	Carbon oxides.

11. Toxicological Information

Toxicological information	The toxicity of this product has not been tested.
Chronic effects	Prolonged inhalation may be harmful. Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicity	This product has no known eco-toxicological effects.
Persistence and degradability	Not available.
Partition coefficient (n-octanol/water)	Not available

13. Disposal Considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations.

14. Transport Information

TDG

Not regulated as dangerous goods.

15. Regulatory Information

Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Non-controlled

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 1
Flammability: 0
Physical hazard: 0

NFPA ratings
Health: 1
Flammability: 0
Instability: 0

Disclaimer The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Issue date 07-21-2010

Thunderstorm FC-601A

MATERIAL SAFETY DATA SHEET

Date Prepared: 3/26/2010
Supersedes Date: New

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Thunderstorm FC-601A**

Chemical Family: Surfactant mixture, fire fighting foam concentrate, aqueous film forming foam.

Company Identification: Chemguard, Inc.
204 South 6th Avenue
Mansfield, Texas 76063 USA
(817) 473-9964 (For Product Information)
(817) 473-9964 (For Emergency Information)
www.chemguard.com

2. COMPOSITION / INFORMATION ON INGREDIENTS

CONTAINING: HAZARDOUS AND/OR REGULATED COMPONENTS

Chemical Name	Percentage	CAS Number	OSHA Hazard
Water	Balance	7732-18-5	NO
Diethylene glycol monobutyl ether	4 – 13 %	112-34-5	YES
Polysaccharide gum	1 – 2 %	Proprietary	YES
Proprietary hydrocarbon surfactants	NA	Proprietary	YES
Proprietary fluorosurfactants	NA	Proprietary	YES

COMPOSITION NOTES:

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
WARNING! MAY CAUSE EYE AND/OR SKIN IRRITATION

Routes of Exposure:

Eye Contact: Exposure during the handling or mixing may cause immediate or delayed irritation or inflammation.

Skin Contact: Exposure during the handling or mixing may cause immediate or delayed irritation or inflammation.

Ingestion: Ingestion of large quantities may cause abdominal cramps, nausea, vomiting, diarrhea.

Inhalation: Exposure to this product in excess of the applicable TVL or PEL may cause or aggravate other lung conditions. Exposure to this product may cause irritation to the nose, throat, and upper respiratory system.

Chronic: None known

Medical Conditions which May be Aggravated by Inhalation or Dermal Exposure: Persons with unusual (hyper) sensitivity to chemicals may experience adverse reactions to this product.

Carcinogenic Potential: This product and its ingredients are not listed as a carcinogen by NTP, OSHA, ACGIH or IARC.

4. FIRST AID MEASURES

Eyes: Immediately flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids. Seek immediate medical attention.

Skin: In case of contact, immediately wash with plenty of soap and water for at least 5 minutes. Seek medical attention if irritation or redness occurs. Remove contaminated clothing and shoes. Clean contaminated clothing and shoes before re-use.

Ingestion: If victim is conscious and alert, give 2 – 3 glasses of water to drink. Do not induce vomiting without medical advice. Do not induce vomiting or give anything by mouth to an unconscious person. Seek immediate medical attention. Do not leave victim unattended. Vomiting may occur spontaneously. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

Inhalation: If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues. If breathing is difficult, give oxygen. If breathing as ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

5. FIRE FIGHTING MEASURES

Flash Point – No flash to boiling

Lower Explosive Limit – Not Applicable
Upper Explosive Limit – Not Applicable
Hazardous Combustion Products – None known
Unusual Fire & Explosion Hazards – Decomposition products may be toxic.

Extinguishing Media – Water, Foam, Carbon Dioxide, Dry Chemical, Halon
Special fire fighting Procedures – None
Auto Ignition Temperature – Not Applicable

6. ACCIDENTAL RELEASE MEASURES

Wear appropriate protective gear for the situation. See Personal Protection information in section 8.

Containment of Spill: Dike or retain dilution water or water from firefighting for later disposal. Follow procedure described below under cleanup and disposal of spills.

Cleanup and Disposal of Spill: Vacuum or pump into an appropriate storage container. For smaller spills use absorbent materials and dispose of properly. Washing area with water will create large amounts of foam.

Environmental and Regulatory Reporting: Runoff from fire control or dilution water may cause pollution. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Minimum/Maximum Storage Temperature: Store at temperatures of 35°F - 120°F.

Handling: Use with adequate ventilation.

Storage: Store in an area that is dry, well ventilated and in closed containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure techniques may be used to effectively minimize employee exposures.

Eye Protection: When engaged in activities where product could contact the eye, wear safety glasses with side shields, goggles, or face shield.

Skin Protection: Skin contact should be minimized through use of latex gloves and suitable long sleeved clothing. Consideration must be given both to durability as well as permeation resistance.

Respiratory Protection: Avoid actions that cause dust exposure to occur. Use local or general ventilation to control exposures below applicable exposure limits. NIOSH or MSHA approved particulate filter respirators should be used in the context of respiratory protection program meeting the requirements of the OSHA respiratory protection standard [29 CFR 1910.134] to control exposures when ventilation or other controls are inadequate or discomfort or irritation is experienced. Respirator and/or filter cartridge selection should be based on American National Standards Institute (ANSI) Standards Z88.2 Practices for Respiratory Protection.

Ventilation: Use local exhaust or general dilution ventilation to control exposure within applicable limits.

Work Practice Controls:

Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

(1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
(2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
(3) Wash exposed skin promptly to remove accidental splashes or contact with this material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance – Thick liquid
Odor – Very slight solvent odor
Physical State – Liquid
Specific Gravity (H2O=1) – 1.021 – 1.051
pH 7.0 – 8.5

Vapor Pressure – Not Evaluated
Density – Not Evaluated
Boiling Point – 212°F
Melting Point – 32°F
Solubility in Water – 100% Soluble

10. STABILITY AND REACTIVITY

Stability: Stable.

Conditions to avoid: Unintentional contact with water.

Hazardous Polymerization: Hazardous polymerization will not occur.

Incompatibility with other materials: Strong oxidizers

Hazardous Decomposition: Oxides of nitrogen, sulfur, carbon.

11. TOXICOLOGICAL INFORMATION

Acute Eye and Skin Toxicity Data:
Toxicological Information and Interpretation:

	Concentration	Solution (As Used)
Eye Irritation:	Not evaluated	Not evaluated
Skin Irritation:	Not evaluated	Not evaluated

Acute Dermal LD50
Acute Oral Effects:
Acute Oral LD50
Inhalation Toxicity: Not evaluated
Sensitization: Not evaluated
Teratology: Not evaluated
Mutagenicity: Not evaluated
Reproduction: Not evaluated

Chronic Toxicity:
This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens.

12. ECOLOGICAL INFORMATION

Chemical Oxygen Demand: 304,000 mg/kg
Biological Oxygen Demand (5 Day) 141,000 mg/kg
Biodegradability (B.O.D./C.O.D.) 46%

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Dispose of waste material according to local, state and federal regulations. Discharge to waste treatment facilities only with permission. Anti-foam agents may be used to reduce foaming in the waste streams. Do not incinerate.

14. TRANSPORTATION INFORMATION

Hazardous Materials Description/Proper Shipping Name: NOT REGULATED

Hazard Class: Not Applicable

Identification Number: Not Applicable

Required Label Text: Not Applicable

Hazardous Substances/Reportable Quantities: Not Applicable

15. REGULATORY INFORMATION

FEDERAL REGULATORY STATUS:

Status under OSHA Hazard Communication Standard, 29 CFR 1910.1200: This product is considered a

"hazardous chemical" under this regulation, and does not need to be included in the employer's hazard communication program.

Reportable Quantities Under the Clean Water Act, CERCLA, and EPCRA, 40 CFR 117, 302 and 355:
The product contains no component regulated under section 304 (40 CFR 370).

Hazard Category and Applicability of EPCRA Hazardous Substance Inventory Reporting, 40 CFR 370:
Not listed

Applicability of EPCRA Toxic Chemical Release Inventory (TRI) Reporting. 40 CFR 372:
Not subject to TRI reporting

Status Under the Toxic Substances Control Act, 40 CFR 710:
All chemical(s) comprising this product are either exempt or listed on the TSCA Inventory.

SARA Title III Hazard Classes:

Fire Hazard:	NO
Reactive Hazard:	NO
Release of Pressure:	NO
Acute Health Hazard:	YES
Chronic Health Hazard:	NO

State Regulations:

California:
This product does not contain any components that are regulated under California Proposition 65.

Pennsylvania:
This product does not contain any components on the Pennsylvania Right to Know List.

16. OTHER INFORMATION

NFPA Ratings: Health: **1** Flammability: **0** Reactivity: **0**

Label Requirements:

WARNING! MAY CAUSE EYE AND/OR SKIN IRRITATION

Hazardous Material Information System (HMIS):	Health	1
	Flammability	0
	Reactivity	0
	Personal Protection	A

NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme
Protective Equipment: Safety glasses, gloves

ADDITIONAL INFORMATION:

The information contained in this document is given in good faith and based on our current knowledge.

It is only an indication and is in no way binding, notably as regards infringement of, or prejudice to third parties through the use of our products. Chemguard guarantees that its products comply with its sales specifications. This information must on no account be used as a substitute for necessary prior tests which alone can ensure that a product is suitable for a given use. Users are responsible for ensuring compliance with local legislation and for obtaining the necessary certifications and authorizations.

END OF MSDS

National Foam

MATERIAL SAFETY DATA SHEET #NMS420

UNIVERSAL GOLD 1% / 3%

ALCOHOL RESISTANT AQUEOUS FILM FORMING FOAM (AR-AFFF)

Liquid Concentrate

Section 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification
Product: Universal Gold 3%, Fire Fighting Foam Concentrate
Synonyms: Alcohol Resistant Aqueous Film Forming Foam (AR-AFFF)
CAS No: Mixture - No single CAS # applicable

Company Identification
Manufacturer:
National Foam, Inc.
180 Sheree Boulevard, Suite 3900
Exton, PA 19341
Emergency Phone Number (Red Alert): (610) 363-1400 (U.S.A.)
Fax: (610) 524-9073
www.nationalfoam.com

Section 2. COMPOSITION / INFORMATION ON INGREDIENTS

Components	CAS Number	% Weight
Water	7732-18-5	80-93%
Proprietary mixture of synthetic detergents	No single CAS # applicable	4-10%
(2-Methoxymethylethoxy) Propanol	34590-94-8	2-5%
Fluoroalkyl Surfactant	Confidential	0.5-2.0%
Polysaccharide	11138-66-2	0.5-2.0%

Section 3. HAZARDS IDENTIFICATION

Potential Health Effects

Inhalation
Vapors are minimal at room temperature. If product is heated or sprayed as an aerosol, airborne material may cause respiratory irritation.

Skin Contact
Contact with liquid may cause moderate irritation or dermatitis due to removal of oils from the skin.

Eye Contact
Product is an eye irritant.

Ingestion
Not a hazard in normal industrial use. Small amounts swallowed during normal handling operations are not likely to cause injury; swallowing large amounts may cause injury or irritation.

Additional Health Effects
Existing eye or skin sensitivity may be aggravated by exposure.

Carcinogenicity Information
No data available.

Section 4. FIRST AID MEASURES

Inhalation
No specific treatment is necessary since this material is not likely to be hazardous by inhalation. If exposed to excessive levels of airborne aerosol mists, remove to fresh air. Seek medical attention if effects occur.

Skin Contact
In case of skin contact, wash off in flowing water or shower. Launder clothing before reuse.

Eye Contact
In case of eye contact, flush eyes promptly with water for 15 minutes. Retract eyelids often to ensure thorough rinsing. Consult a physician if irritation persists.

Ingestion
Swallowing less than an ounce is not expected to cause significant harm. For larger amounts, do not induce vomiting. Give milk or water. Never give anything by mouth to an unconscious person. Seek medical attention.

Section 5. FIRE FIGHTING MEASURES

Flammable Properties
Flash Point: >200°F

Fire and Explosion Hazards
Avoid contact with water reactive materials, burning metals and electrically energized equipment.

Extinguishing Media
Product is an extinguishing media. Use media appropriate for surrounding materials.

Special Fire Fighting Instructions
This product will produce foam when mixed with water.

Section 6. ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)
NOTE: Review FIRE FIGHTING MEASURES and HANDLING (Personnel) sections before proceeding with clean-up. Use appropriate Personal Protective Equipment during clean-up.

Accidental Release Measures

Concentrate
Stop flow if possible. Use appropriate protective equipment during clean up. For small volume releases, collect spilled concentrate with absorbent material; place in approved container. For large volume releases, contain and collect for use where possible. Flush area with water until it no longer foams. Exercise caution, surfaces may be slippery. Prevent discharge of concentrate to waterways. Disposal should be made in accordance with federal, state and local regulations.

Foam/Foam Solution
See above. Flush with water. Prevent discharge of foam/foam solution to waterways. Do not discharge into biological sewer treatment systems without prior approval. Disposal should be made in accordance with federal, state and local regulations.

Section 7. HANDLING AND STORAGE

Handling (Personnel)
Avoid contact with eyes, skin or clothing. Avoid ingestion or inhalation. Rinse skin and eyes thoroughly in case of contact. Review HAZARDS and FIRST AID sections.

Storage
Recommended storage environment is between 35°F (2°C) and 120°F (49°C). Store product in original shipping container or tanks designed for product storage.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls
Special ventilation is not required.

Personal Protective Equipment

Respiratory
Recommended exposure limits (OSHA-PEL and ACGIH-TLV) have not been determined for this material. The need for respiratory protection should be evaluated by a qualified health specialist.

Protective Clothing
Rubber or PVC gloves recommended.

Eye Protection
Safety glasses, face shield or chemical splash goggles must be worn when possibility exists for eye contact. Contact lenses should not be worn. Eye wash facilities are recommended.

Other Hygienic Practices
Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing and wash thoroughly before re-use.

Exposure Guidelines

Exposure Limits
(2-Methoxymethylethoxy) Propanol (34590-94-8)

PEL(OSHA)
100 ppm, 8 hr. TWA Skin
150 ppm, 15 min. STEL Skin

TLV (ACGIH)
100 ppm, 8 hr. TWA Skin
150 ppm, 15 min. STEL Skin

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point:	Not applicable
Vapor Pressure:	Not applicable
Vapor Density:	Not applicable
Melting Point:	Not applicable

Evaporation Rate:	<1 (Butyl Acetate = 1.0)
Solubility in Water:	100%
pH:	8.0
Freezing Point:	26°F (-3°C)
Specific Gravity:	1.025 @ 25°C
Odor:	Mild, pleasant
Form:	Viscous liquid
Color:	Amber

Section 10. STABILITY AND REACTIVITY

Chemical Stability
Stable.

Incompatibility, Materials to Avoid
Avoid use of product on burning metals, electrically-energized equipment and contact with water reactive materials.

Polymerization
Will not occur.

Section 11. TOXICOLOGICAL INFORMATION

Mammalian Toxicity

Ingestion
This material was not toxic when administered to Wistar Albino rats at an acute oral dose of 5g/kg body weight.

Eye
Animal testing indicates this material is a primary eye irritant when tested undiluted on New Zealand Albino Rabbits.

Skin
Animal testing indicates this material is not a primary skin irritant when tested undiluted on New Zealand Albino Rabbits.

Inhalation
No data available at this time.

Carcinogenic, Developmental, Reproductive, Mutagenic Effects
No data available on this material.

Section 12. ECOLOGICAL INFORMATION

Ecotoxicological Information Aquatic Toxicity
96 hr. Flow Through LC_{50} for Fathead Minnows (pimephales promelas) is reported to be greater than 500 ppm.

Environmental Fate

BOD_5	Concentrate	91,500 mg/kg
COD	Concentrate	290,000 mg/kg

Section 13. DISPOSAL CONSIDERATIONS

Universal Gold, as sold, is not a RCRA-listed waste or hazardous waste as characterized by 40 CFR 261. However, State and local requirements for waste disposal may be more restrictive or otherwise different from Federal regulations. Therefore, applicable local and state regulatory agencies should be contacted regarding disposal of waste foam concentrate or foam/foam solution.

Concentrate
Do not discharge into biological sewer treatment systems without prior approval. Specific concerns are high BOD load and foaming tendency. Low dosage flow rate or antifoaming agents acceptable to the treatment plant may be helpful. Do not flush to waterways. Disposal should be made in accordance with federal, state and local regulations.

Foam/Foam Solution
Universal Gold foam solution can be treated by waste water treatment facilities. Discharge into biological sewer treatment facilities may be done with prior approval. Specific concerns are high BOD load. Dilution will reduce BOD and COD factors proportionately. Low dosage flow rate or antifoaming agents acceptable to the treatment plant may be helpful. Do not flush to waterways. Disposal should be made in accordance with federal, state and local regulations.

NOTE: As a service to our customers, National Foam has approvals in place with disposal facilities throughout the U.S. for waste water treatment and solidification and landfill of our foam liquid concentrates and foam solutions. If required, National Foam, Inc. can also provide information on the disposal of drums used for shipping our concentrates. Please contact National Foam's Risk Management Administrator at (610) 363-1400 for additional information.

Section 14. TRANSPORTATION INFORMATION

Shipping Information
Proper Shipping Name: Fire Extinguisher Charges or Compounds N.O.I., Class 70
National Motor Freight Code: 69160 Sub 0
Hazard Class: None
UN Number: None

Section 15. REGULATORY INFORMATION

U.S. Federal Regulations

Toxic Substances Control Act (TSCA)
All components of this product are listed in the TSCA inventory.

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III

Section 302/304
There are no components of this material with known CAS numbers which are on the Extremely Hazardous Substances (EHS) list.

Section 311 & 312
Based on available information, this material contains the following components which are classified as the following health and/or physical hazards according to Section 311 & 312:
(2-Methoxymethylethoxy) Propanol 34590-94-8 (Flammability)

Section 313
This material does not contain any chemical components subject to Section 313 reporting requirements.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)
This material does not contain any components subject to the reporting requirements of CERCLA.

OTHER REGULATORY INFORMATION
Canadian Environmental Protection Act (CEPA). All ingredients are listed on the DSL (Domestic Substance List).

STATE REGULATIONS

PENNSYLVANIA RIGHT-TO-KNOW HAZARDOUS SUBSTANCES LIST

PA Hazardous Substances present at levels greater than 1%:
(2-Methoxymethylethoxy) Propanol 34590-94-8

Section 16. OTHER INFORMATION

NFPA Rating	WHMIS Rating
Health 0 Flammability 0 Reactivity 0	D2B

ADDITIONAL INFORMATION

Preparation Date/Revision Number.....10/24/13

For further information, see National Foam Product Data Sheet for Universal Gold 1% / 3%.

The information contained herein is furnished without warranty either expressed or implied. This data sheet is not a part of any contract of sale. The information contained herein is believed to be correct or is obtained from sources believed to be generally reliable. However, it is the responsibility of the user of these materials to investigate, understand and comply with federal, state and local guidelines and procedures for safe handling and use of these materials. National Foam, Inc. shall not be liable for any loss or damage arising directly or indirectly from the use of this product and National Foam, Inc. assumes no obligation or liabilities for reliance on the information contained herein or omissions herefrom.

October 24, 2013

Appendix G: Conceptual Models

Conceptual Model:

The conceptual model depicts the connections between the resources of concern (human health/socio-economic and ecological) and their potential to be exposed to hazards (exposure pathway) for 5 incident scenarios. The numbers in the cells represent the path by which a hazard can affect a resource. This is our record of our reasoning about the concern for that resource. NA represents the absence of a connection between a potential hazard and the resource of concern.

Hazards/exposure pathways:

1. Air pollution – vapors, direct affects from respiratory issues for air breathers.
2. Aqueous exposure – direct affects from aquatic respiration and dermal exposure to oil and oil components dissolved within the water column; may be short-lived exposure with the potential for high consequence for impacted species. Excludes submerged oil globules.
3. Physical trauma (mechanical impact from equipment, aircraft, people, boats, etc.) – direct affects from physical impact on individual species.
4. Oiling/smothering – direct affects from dermal contact with oil; skin (hypothermia), mucosal membranes (eyes, nares, etc.); indirect affects or secondary impacts could include ingestion (preening). May include contact with submerged oil globules.
5. Thermal (heat exposure from fire) – direct affects from oil burning; impacts from exposure to a fire/burn (not dermal exposure to the oil).
6. Waste – direct affects from being removed and managed from the system
7. Ingestion (food web, etc.) – resources indirectly exposed to oil or its constituents via ingestion of oil or contaminated/affected prey.
8. Advisory/Closure – prohibit action of use (e.g., commercial or recreational fishery, water intake); protection from possible exposure. N/A = no interaction or no effect

Oil Type:

B1 = Bakken – surface;
B2 – Bakken within water column due to natural dispersion; D1 = Dilbit before evaporation of light fractions;
D2 = Dilbit after evaporation of light fractions

BAKKEN Oil Characteristics: It will quickly spread into thin slicks, with significant amounts of the lighter fractions lost via evaporation (which can result in serious explosion/fire and inhalation risks). Bakken crude contains moderate concentrations of toxic (soluble) compounds, thus can poses risks to aquatic resources. In addition, it will oil and penetrate into intertidal habitats, causing the potential for fouling of riverine habitats and long-term contamination of sediments.

DILBIT Oil Characteristics: Diluted bitumen, or dilbit, is bitumen, a heavy oil, that has been blended with one or more light petroleum products, such as condensate (the oil co-produced from a gas well) or a naphtha-based oil. Once released, dilbit will initially behave as a medium crude oil. However, it will rapidly lose the volatile fraction of the diluent through evaporation, leaving behind the viscous bitumen. The diluents have high percentages of toxic, water- soluble components, resulting in greater risks to water-column organisms compared to heavier oils. Acutely toxic impacts from the diluent could be relatively severe, but limited to a localized area. Depending on the density of the bitumen, the residue may float or sink; depending on the viscosity, pour point, and ambient temperatures, they will spread into slicks or congeal into tarballs and tarmats; depending on what they were blended with, they can change properties over time. SCAT and Operations teams should be asked to observe and report any burial or sinking.

SCENARIO 1 Conceptual Model: Human Health/Socio-economic Resources of Concern

Habitat	Human Health and Safety					
Sub habitats	Work Area (e.g., hot and warm zones), plus Public Health (Transportation, Industrial, Residential/Recreational Communities)					
Oil Type	B1	B1	B1	B1	B1	B1
Resources of Concern (Socio- economic)	Workers	Residential Community	Sensitive Receptors	Commercial Community	Industrial Community	Transportation Community
Human health and safety receptors relevant to this ERA	First responders (on water/on land), safety monitoring, oil recovery operations (on water/on land), oil contamination monitoring/SCAT	All - Adults, Adolescents; also children, elderly, sick (Personal Residences)	Children, Elderly, Sick (Daycares, Hospitals, Nursing Homes)	Adults (Shops, General Commercial Facilities)	Adults (Nearby Refineries, Plants, etc.)	Mostly Adults (rail, marine, roads: drivers, passengers)
Response Actions - Actionable Oil						
No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	1,3,8	1, 8	1, 8	1, 8	1, 8	
Fire						
Let burn and controlled burn (both in-situ)	1,3, 5,8	1,5,7,8	1,5,7,8	1,5,7,8	1,5,7,8	
Extinguishing agents and methods	1,3, 5,8	1,5,7,8	5,7,8	1,5,7,8	1,5,7,8	
No Fire						
Vapor suppression	1,3,8	1,7,8	1,7,8	1,7,8	1,7,8	
Oil spread control	1,3,6,8	1,8	1,8	1,7,8	1,7,8	
On-water oil recovery	1,3,6,8	1,8	1,8	1,8	1,8	
Resource protection	1,3,6,8	1,8	1,8	1,8	NA	
Shoreline clean up	1,3,6,7,8	1,8	1,8	1,8	1, 2, 7	
Oil Detection/mapping - **remotely observed methods**	NA	NA	NA	NA	NA	

SCENARIO 1 Conceptual Model: Ecological Resources of Concern

Habitat	Artificial Shorelines						Natural Terrestrial Shorelines						Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)								Benthic (bottom, >2 meters)							
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement						Vegetated (Trees, shrub/scrub wetlands, etc.), Grass, Sand, Gravel						Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach (at the water / land or water / air interface)								Water Column								(Attached or associated with the Bottom of the Water Column / Seabed)							
Oil Type	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2
Resources of Concern	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles and Amphibians, Aquatic & non-aquatic dependent	Macro-Invertebrates	Other Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-Invertebrates	Aquatic Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-Invertebrates	T/E species	Plants – submerged & floating aquatic vegetation	Fishing – Commercial or Recreational	Water Intake - Surface	Mammals, Aquatic dependent	Birds, Aquatic dependent (diving ducks)	Reptiles, Aquatic & non-aquatic dependent	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates – larval life stage	Plants – submerged & floating aquatic vegetation	T/E Species	Fishing – Commercial or Recreational	Water Intakes - midwater	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates	Aquatic invertebrates	Plants – submerged aquatic vegetation	T/E Species	Fishing – Commercial or Recreational - Bottom	Water Intakes - midwater
Response Actions - Actionable Oil																																				
No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	1, 4, 7	1,4,7	N/A	2,4,7,8	N/A	N/A	1, 4, 7	1,4,7	N/A	2,4,7,8	1,2,3,7,8	N/A	1,2,4,7	1,2,4,7	1,2,3,4,7	2,4,7,8	N/A	2,3,4	8	8	1,2,4,7	1,2,4,7	N/A	1,2,3,7,8	2,4,7,8	N/A	N/A	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fire																																				
Let burn and controlled burn (both in-situ	1,5	1,4,5,7	N/A	2,4,5,7,8	N/A	N/A	1,5	1,4,5,7	N/A	2, 4,5,7,8	2,3,7,8	N/A	1,2,4,5,7	1,2,4,7	1,2,3,4,5,7	2,4,5,7,8	N/A	2,3,4,5	8	8,5	1,2,4,5,7	1,2,4,7	N/A	2,3,7,8	2,4,5,7,8	N/A	N/A	8	8,5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Extinguishing agents and methods	1,3,4,5,7	1,3,4,5,7	N/A	2,4,5,7,8	N/A	N/A	1,3,4,5,7	1,3,4,5,7	N/A	2, 4,5,7,8	2,3,4,7,8	N/A	1,2,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,7,8	N/A	2,3,4,5	8	8,5	1,2,4,5,7	1,2,3,4,5,7	N/A	2,3,4,7,8	1,2,3,4,7,8	N/A	N/A	8	8,5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No Fire																																				
Vapor suppression	1,3,4,7	1,3,4,7	N/A	2, 3, 4,7,8	N/A	N/A	1,3,4,7	1,3,4,7	N/A	2, 3, 4,7,8	2,3,4,7,8	N/A	1,2,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7,8	N/A	2,3,4	8	8	1,2,4,7	1,2,3,4,7	N/A	2,3,4,7,8	2,3,4,7,8	N/A	N/A	8	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil spread control	1, 3, 4, 6, 7	1,3,4,7	N/A	2, 3, 4,7,8	N/A	N/A	1, 3, 4, 6, 7	1,3,4,7	N/A	2, 3, 4,7,8	2,3,7	N/A	1,2,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7,8	N/A	2,3,4	8	8	1,2,4,7	1,2,3,4,7	N/A	2,3,7	2,3,4,7,8	N/A	N/A	8	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
On-water oil recovery	NA	1,3,4,7	N/A	2, 3, 4,7,8	N/A	N/A	NA	1,3,4,7	N/A	2, 3, 4,7,8	2,3,7,8	N/A	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7,8	N/A	2,3,4	8	8	1,2,3,4,7	1,2,3,4,7	N/A	2,3,7,8	2,3,4,7,8	N/A	N/A	8	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resource protection	1,3, 4,7	2,,3	N/A	2, 3, 4,7,8	N/A	N/A	1,3, 4,7	2,,3	N/A	2, 3, 4,7,8	3,8	N/A	1,3	3	3	3	N/A	3	8	8	1,3	3	N/A	3,8	3	N/A	N/A	8	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shoreline clean up	1,3,6,7	1,3,4,7	N/A	2, 3, 4,7,8	N/A	N/A	1,3,6,7	1,3,4,7	N/A	2, 3, 4,7,8	2,3,7,8	N/A	3	1,2,3,4,7	1,2,3,4,7	2,3,4,7,8	N/A	2,3,4	N/A	8	3	1,2,3,4,7	N/A	2,3,7,8	2,3,4,7,8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil Detection/mapping - **remotely observed methods**	N/A	3	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCENARIO 2 Conceptual Model: Ecological Resources of Concern

Habitat	Artificial Shorelines						Natural Terrestrial Shorelines						Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1								Mid-water (0 to 2 meters)								Benthic (bottom, >2 meters)						
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement						Vegetated (Trees, shrub/scrub wetlands, etc.), Grass, Sand,						Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach (at the water / land or water / air interface)								Water Column								(Attached or associated with the Bottom of the Water Column / Seabed)						
Oil Type	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2
Resources of Concern	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles and Amphibians, Aquatic & non-aquatic dependent	Macro-invertebrates	Other Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-invertebrates	Aquatic Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-invertebrates	T/E species	Plants – submerged & floating aquatic vegetation	Fishing – Commercial or Recreational	Water Intake - Surface	Mammals, Aquatic dependent	Birds, Aquatic dependent (diving ducks)	Reptiles, Aquatic & non-aquatic dependent	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates – larval life stage	Plants – submerged & floating aquatic vegetation	T/E Species	Fishing – Commercial or Recreational	Water Intakes - midwater	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates	Aquatic invertebrates	Plants – submerged aquatic vegetation	T/E Species	Fishing – Commercial or Recreational - Bottom	Water Intakes - midwater
Response Actions - Actionable Oil																																					
No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	1, 2, 3, 4,7	1, 3, 4, 7	1, 2, 3, 4, 7, 8	2, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4,7	1, 2, 3, 4,7	1, 2, 3, 4,7	1, 2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7, 8	1, 2, 3, 4,7	1, 2, 3, 4,7	1, 2, 3, 4, 7, 8	2, 3, 4, 7	1, 2, 3, 4,7	2, 3, 4, 7	8	N/A	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	8	8	N/A	N/A	N/A	N/A	N/A	8	8
Fire																																					
Let burn and controlled burn (both in-situ)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Extinguishing agents and methods	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No Fire																																					
Vapor suppression	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	8	8	2, 3, 4, 7	N/A	2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7, 8	N/A	2, 3, 4, 7	8	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil spread control	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	8	8	3	3	3, 6	3, 6	3, 6	3, 6	3, 6	N/A	8	3	3	3	3	3	3	3
On-water oil recovery	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	8	8	3	3	3	3	3	3	3	8	8	3	3	3	3	3	8	8
Resource protection	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	8	8	3,6	3, 6	3, 6	3, 6	3, 6	3, 6	3, 6	8	8	3	3	3	3	3	8	8
Shoreline clean up	1, 3, 6	1, 3, 6	1, 3, 6	3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	3, 6	3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	3, 6	1, 3, 6	3, 6	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil Detection/mapping - **remotely observed methods**	1, 3, 6	1, 3, 6	1, 3, 6	3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	1, 3, 6	3, 6	3, 6	1, 3, 6	1, 3, 6	1, 3, 6	3, 6	1, 3, 6	1, 3, 6	3, 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCENARIO 3 Conceptual Model: Ecological Resources of Concern

Habitat	Artificial Shorelines						Natural Terrestrial Shorelines						Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)								Benthic (bottom, >2 meters)						
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement						Vegetated (Trees, shrub/scrub wetlands, etc.), Grass, Sand,						Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach (at the water / land or water / air interface)								Water Column								(Attached or associated with the Bottom of the Water Column / Seabed)						
Oil Type	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2
Resources of Concern	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles and Amphibians, Aquatic & non-aquatic dependent	Macro-Invertebrates	Other Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-Invertebrates	Aquatic Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-Invertebrates	T/E species	Plants – submerged & floating aquatic vegetation	Fishing – Commercial or Recreational	Water Intake - Surface	Mammals, Aquatic dependent	Birds, Aquatic dependent (diving ducks)	Reptiles, Aquatic & non-aquatic dependent	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates – larval life stage	Plants – submerged & floating aquatic vegetation	T/E Species	Fishing – Commercial or Recreational	Water Intakes - midwater	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates	Aquatic invertebrates	Plants – submerged aquatic vegetation	T/E Species	Fishing – Commercial or Recreational - Bottom	Water Intakes - midwater
Response Actions - Actionable Oil																																					
No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A		1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fire																																					
Let burn and controlled burn (both in-situ)	1	1	1	N/A		1	1	1	1	N/A	N/A	1	1	1	1	N/A	1	N/A	8	N/A	1 5	1 5	1 5	2	N/A	N/A	1 5	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Extinguishing agents and methods	1 8	1	1	N/A		1	1 8	1	1	N/A	N/A	1	1	1	1	N/A	1	N/A	8	N/A	1 5	1 5	1 5	2	N/A	N/A	1 5	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No Fire																																					
Vapor suppression	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8	N/A										N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil spread control	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
On-water oil recovery	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resource protection	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shoreline clean up	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil Detection/mapping - Physical methods	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil Detection/mapping - **remotely observed methods**	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 3 4	N/A	N/A	1 3 4 7 8	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	1 2 3 4 7	2 3 4	2 3 4	N/A	1 3 4 7 8	1 3 4 7 8	1 2 3 4 7	2 3 4 7 8	2 3 4 7 8	2 3 4	1 2 3 4 7	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCENARIO 4 Conceptual Model: Ecological Resources of Concern

Habitat	Artificial Shorelines						Natural Terrestrial Shorelines						Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1								Mid-water (0 to 2 meters)								Benthic (bottom, >2 meters)						
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement						Vegetated (Trees, shrub/scrub wetlands, etc.), Grass, Sand, Gravel						Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach (at the water / land or water / air interface)								Water Column								(Attached or associated with the Bottom of the Water Column / Seabed)						
Oil Type	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2
Resources of Concern	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles and Amphibians, Aquatic & non-aquatic dependent	Macro-invertebrates	Other Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-invertebrates	Aquatic Vertebrates	T/E species	Mammals, Aquatic & non-aquatic dependent	Birds, Aquatic & non-aquatic dependent	Reptiles, Aquatic & non-aquatic dependent	Macro-invertebrates	T/E species	Plants – submerged & floating aquatic vegetation	Fishing – Commercial or Recreational	Water Intake - Surface	Mammals, Aquatic dependent	Birds, Aquatic dependent (diving ducks)	Reptiles, Aquatic & non-aquatic dependent	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates – larval life stage	Plants – submerged & floating aquatic vegetation	T/E Species	Fishing – Commercial or Recreational	Water Intakes - midwater	Aquatic Vertebrates – fish, reptiles, amphibians	Macro-invertebrates	Aquatic invertebrates	Plants – submerged aquatic vegetation	T/E Species	Fishing – Commercial or Recreational - Bottom	Water Intakes - midwater
Response Actions - Actionable Oil																																				
No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fire																																				
Let burn and controlled burn (both in-situ)	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	2,3,4,5,7	2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	2,3,4,5,7	2,3,4,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	2,3,4,5,7	1,2,3,4,5,7	345	2347	N/A	2347	2347	2347	2347	2,3,4,5,7	2347	2347	2347	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Extinguishing agents and methods	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	2,3,4,5,7	2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	2,3,4,5,7	2347	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	1,2,3,4,5,7	2,3,4,5,7	1,2,3,4,5,7	345	2347	N/A	2347	2347	2347	2347	2,3,4,5,7	2347	2347	2347	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No Fire																																				
Vapor suppression	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil spread control	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
On-water oil recovery	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resource protection	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shoreline clean up	1,2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	2,3,4,6,7	2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	2,3,4,6,7	2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	1,2,3,4,6,7	2,3,4,6,7	1,2,3,4,6,7	3,4, 6	2,3,4,6,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil detection/mapping - **physical contact methods**	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil detection/mapping - **remotely observed methods**	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	1,2,3,4,7	2,3,4,7	1,2,3,4,7	3,4	2,3,4,7	N/A	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	2,3,4,7	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCENARIO 5 Conceptual Model: Ecological Resources of Concern

Habitat	Artificial Shorelines						Natural Terrestrial Shorelines						Intertidal Shoreline (Exposed & Sheltered) / Surface Water (0 - 1 meter)								Mid-water (0 to 2 meters)									Benthic (bottom, >2 meters)						
Sub habitats	Bulkheads, Riprap, Manmade Structures, Pavement						Vegetated (Trees, shrub/scrub wetlands, etc.), Grass, Sand, Gravel						Marsh, Swamp, Tidal flats, Sand Beaches, Cobble/Boulder Beach (at the water / land or water / air interface)								Water Column									(Attached or associated with the Bottom of the Water Column / Seabed)						
Oil Type	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D1/D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2
Resources of Concern	**Mammals**, Aquatic & non-aquatic dependent	**Birds**, Aquatic & non-aquatic dependant	**Reptiles and Amphibians**, Aquatic & non-aquatic dependent	**Macro-invertebrates**	**Other Vertebrates**	**T/E species**	**Mammals**, Aquatic & non-aquatic dependent	**Birds**, Aquatic & non-aquatic dependent	**Reptiles**, Aquatic & non-aquatic dependent	**Macro-invertebrates**	**Aquatic Vertebrates**	**T/E species**	**Mammals**, Aquatic & non-aquatic dependent	**Birds**, Aquatic & non-aquatic dependent	**Reptiles**, Aquatic & non-aquatic dependent	**Macro-invertebrates**	**T/E species**	**Plants** – submerged & floating aquatic vegetation	**Fishing – Commercial or Recreational**	**Water Intake - Surface**	**Mammals**, Aquatic dependent	**Birds**, Aquatic dependent (diving ducks)	**Reptiles**, Aquatic & non-aquatic dependent	**Aquatic Vertebrates** – fish, reptiles, amphibians	**Macro-invertebrates** – larval life stage	**Plants** – submerged & floating aquatic vegetation	**T/E Species**	**Fishing – Commercial or Recreational**	**Water Intakes - midwater**	**Aquatic Vertebrates** – fish, reptiles, amphibians	**Macro-invertebrates**	**Aquatic invertebrates**	**Plants** – submerged aquatic vegetation	**T/E Species**	**Fishing – Commercial or Recreational - Bottom**	**Water Intakes - midwater**
Response Actions - Actionable Oil																																				
No response action except monitoring (air: flammability, benzene, etc.; soil; water; and stranded onshore oil)	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
Fire																																				
Let burn and controlled burn (both in- situ)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Extinguishing agents and methods	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No Fire																																				
Vapor suppression	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
Oil spread control	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
On-water oil recovery	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
Resource protection	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
Shoreline clean up	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
Oil detection/mapping - **physical contact methods**	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8
Oil detection/mapping - **remotely observed methods**	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2 ,3, 4, 7	2, 3, 4, 7	1, 2, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 3, 4, 7	1, 2, 3, 4, 7	2, 3 4, 7	1, 2, 3, 4, 7	2, 3, 4	8	N/A	1, 2, 3, 4, 7	1, 2, 3, 4, 7	1, 2, 3, 4, 7	2, 3, 4, 7, 8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4	8	8	2, 3, 4, 7	2, 3, 4, 7	2, 3, 4, 7	N/A	2, 3, 4, 7	8	8

Appendix H: Modeling Results

Scenario 1: 100,000 gallons Bakken released from 4 Rail Cars – 50,000 burned - Arsenal Bridge, Philadelphia

Oil Budget Table – Scenario 1 (from ADIOS2):

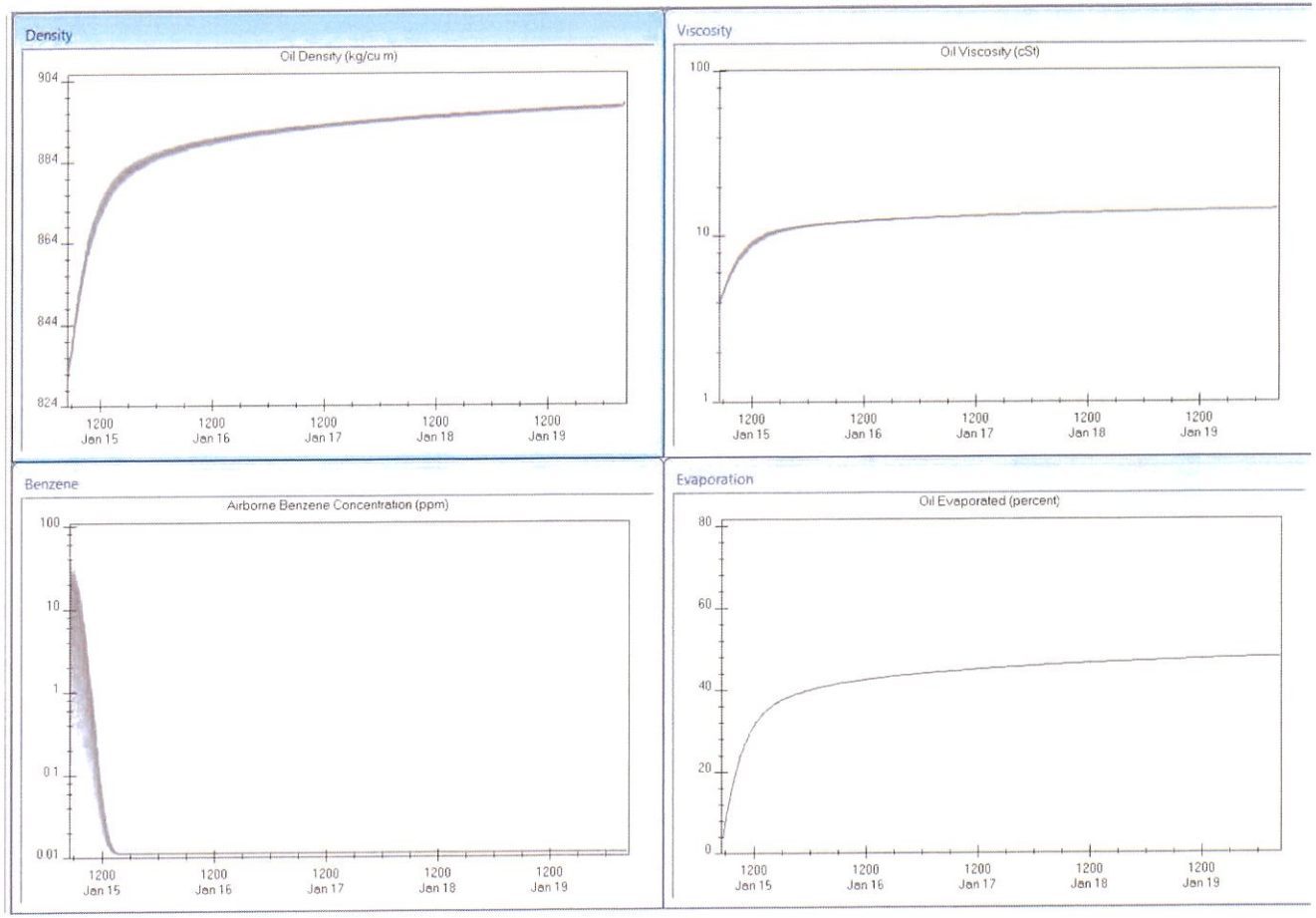
Hours into Spill	Released (gallons)	Evaporated (percent)	Remaining (percent)
1	50,000	5	95
2	50,000	12	88
4	50,000	22	78
6	50,000	28	72
8	50,000	32	68
10	50,000	35	65
12	50,000	37	61
18	50,000	40	60
24	50,000	41	59
30	50,000	42	58
36	50,000	43	57
42	50,000	44	56
48	50,000	44	56
54	50,000	45	55
60	50,000	45	55
66	50,000	46	54
72	50,000	46	54
78	50,000	46	54
84	50,000	47	53
90	50,000	47	53
96	50,000	47	53
102	50,000	47	53
108	50,000	47	53
114	50,000	48	52
120	50,000	48	52

Weathering Table – Scenario 1 (from ADIOS2):

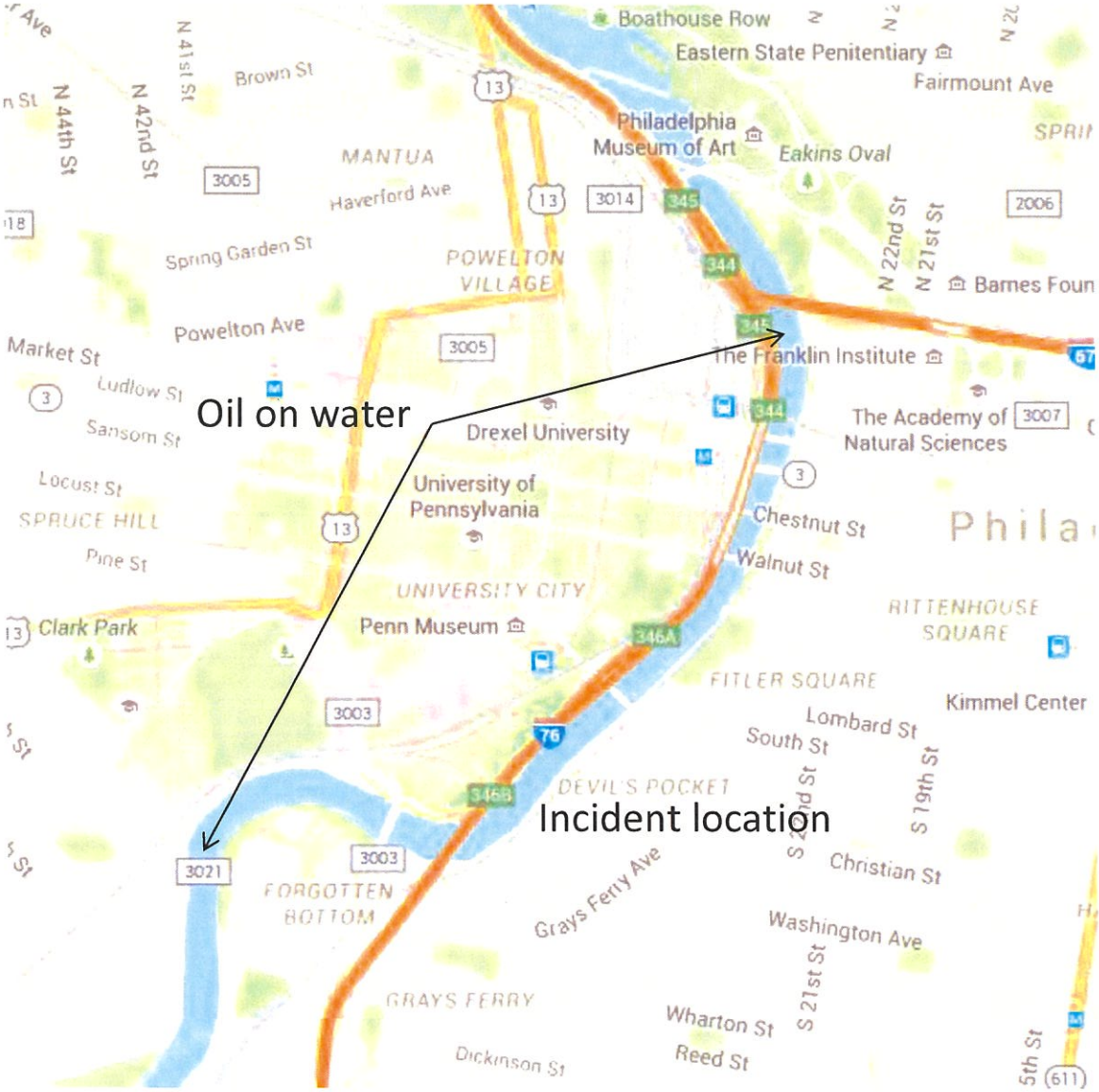
Time (hours)	0	6	12	24	36	48	72	96
Total floating oil	50,000	33,242	31,000	9,400	8,000	5,750	3,900	3,050
Emulsion	0	0	0	0	0	0	0	0
Evaporated	0	16,758	19,000	17,600	21,500	26,750	31,750	35,050
Dispersed (natural)	0	0	0	0	0	0	0	0
In-situ burned	0	0	0	0	0	0	0	0
Stranded	0	0	0	23,000	20,500	17,500	14,350	11,900
Stranded oil emulsion	0	0	0	0	0	0	0	0
Oil budget validity check	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Water in oil	0	0	0	0	0	0	0	0
Emulsion Factor	0	0	0	0	0	0	0	0
% evaporation	0	0.28	0.38	0.352	0.43	0.535	0.635	0.701
% natural dispersion	0	0	0	0	0	0	0	0
% stranding	0	0	0	0.46	0.41	0.35	0.287	0.238
% mechanical	0	0	0	0	0	0	0	0
% dispersion (chemical)	0	0	0	0	0	0	0	0
% in-situ burn	0	0	0	0	0	0	0	0

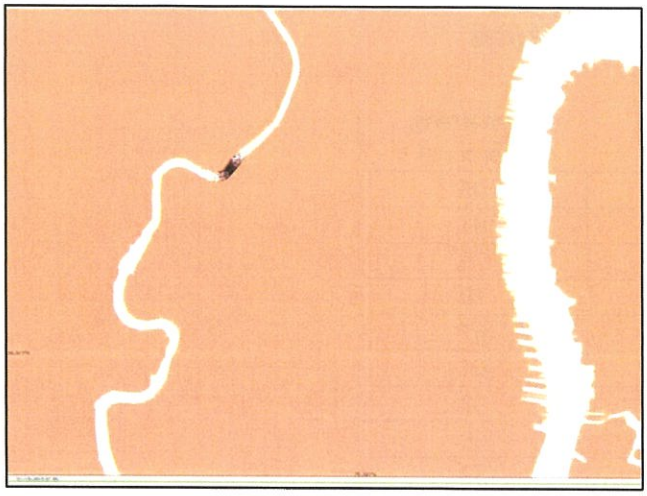
Oil Weathering Graphs – Scenario 1 (from ADIOS2):

- **Oil Type**
  - BAKKEN, ANALYSIS OF OIL FROM LAC-MEGANTIC DERAILMENT
  - Location = none listed
  - Synonyms = none listed
  - Product Type = crude
  - API = 41.8
  - Pour Point = unknown
  - Flash Point = unknown
  - Density = 0.827 g/cc at 50 deg F
  - Viscosity = 3.6 cSt at 50 deg F
  - Adhesion = unknown
  - Aromatics = unknown
- **Emulsification**
  - Mousse begins to form when 100% of the oil has evaporated.
- **Wind and Wave Conditions**
  - Wind Speed = 6 mph from 0 degrees
  - Wave Height = computed from wind speed, unlimited fetch (default)
- **Water Properties**
  - Temperature = 50 deg F
  - Salinity = 0 ppt
  - Sediment Load = 50 g/m3 (avg. river/estuary)
  - Current = 0.5 mph towards 0 degrees
- **Release Information**
  - **Instantaneous Release**
    - Time of Release = January 15, 0500 hours
    - Amount Spilled = 50000 gal

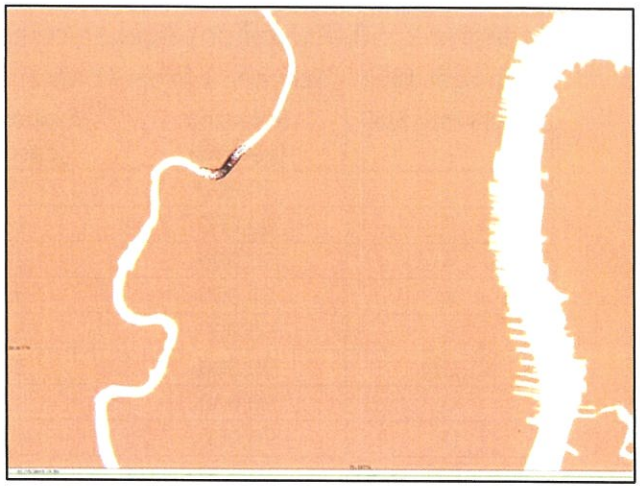


Extent of Oiling First 4 Days – Scenario 1

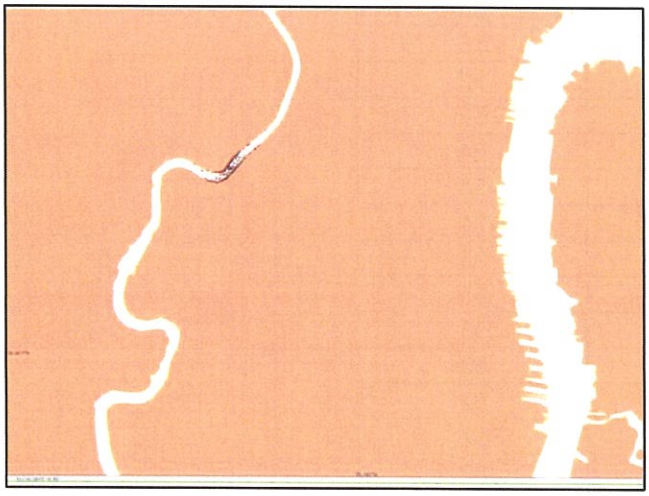




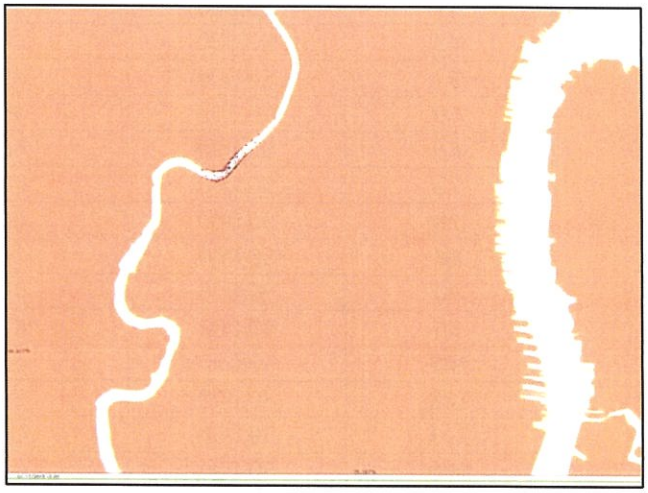
Hour 1



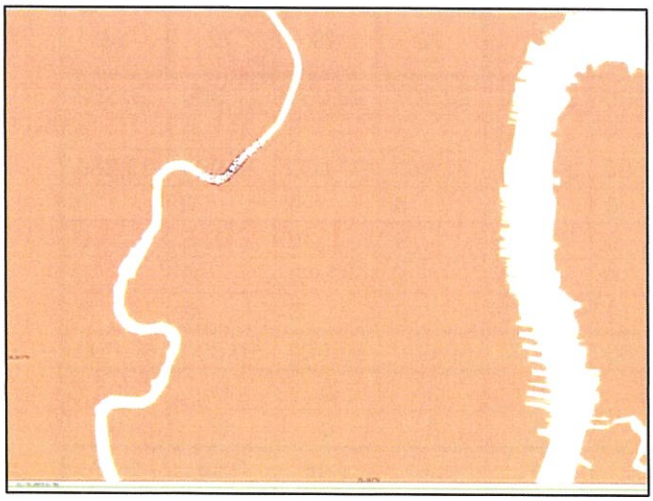
Hour 5



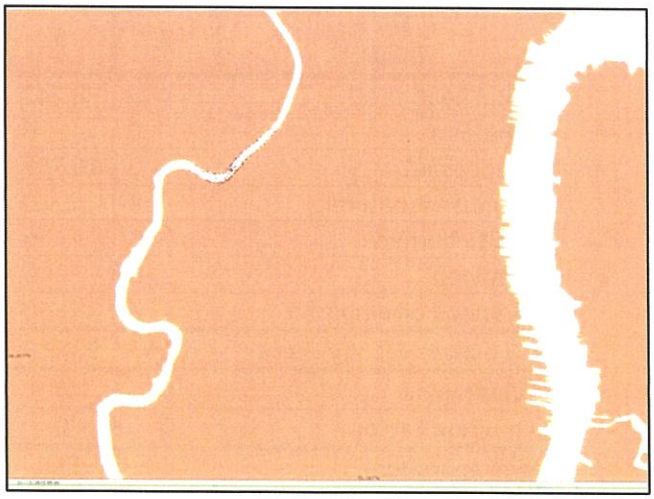
Hour 15



Hour 28



Hour 34



Hour 48

GNOME Trajectories for Scenario 1

Scenario 2: 50,000 gallons Bakken released from Barge

Oil Budget Table – Scenario 2 (from ADIOS2):

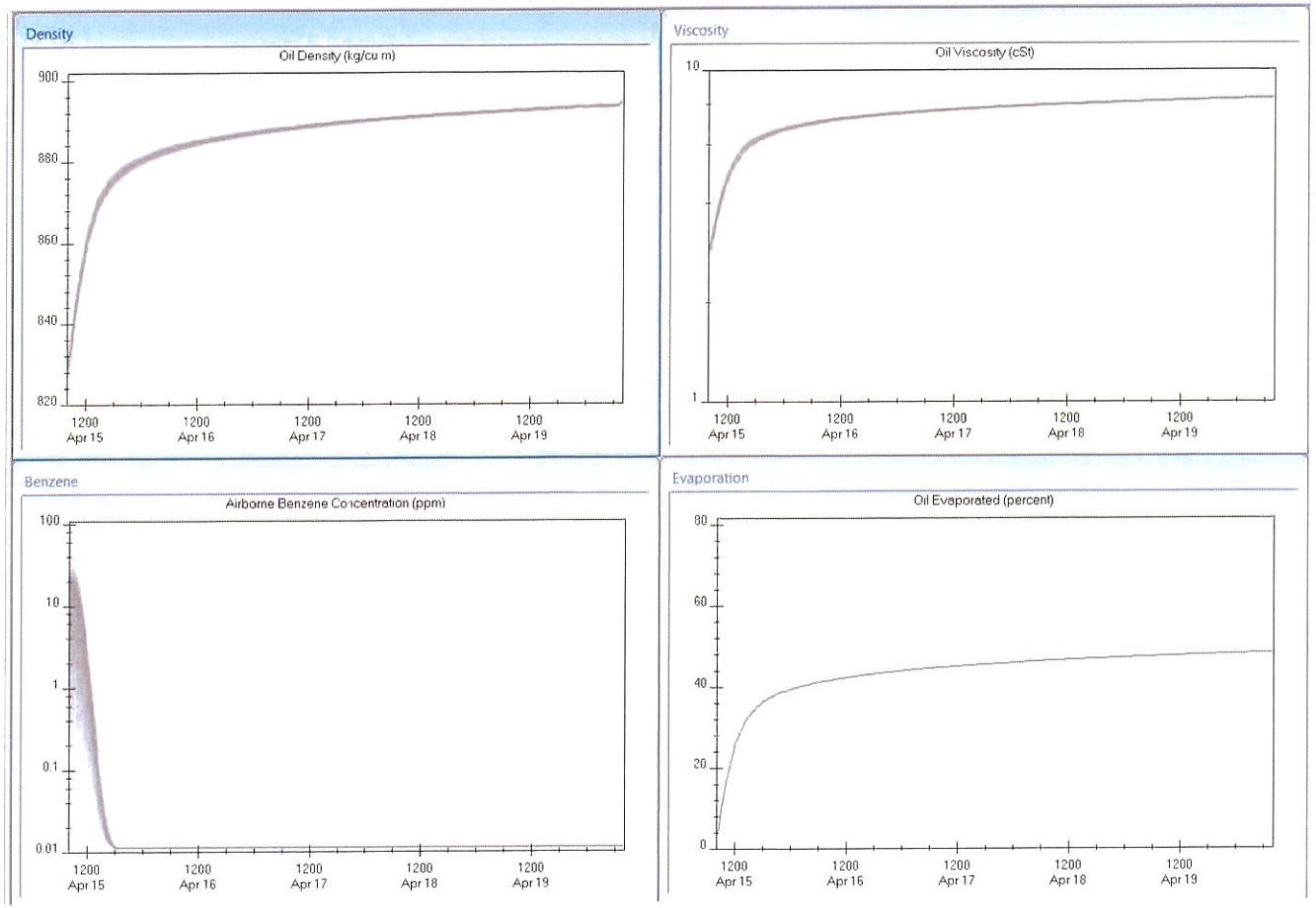
Hours into Spill	Released (gallons)	Evaporated (percent)	Remaining (percent)
1	50,000	5	95
2	50,000	13	87
4	50,000	24	76
6	50,000	30	70
8	50,000	33	67
10	50,000	36	64
12	50,000	37	63
18	50,000	40	60
24	50,000	41	59
30	50,000	42	58
36	50,000	43	57
42	50,000	44	56
48	50,000	44	56
54	50,000	45	55
60	50,000	45	55
66	50,000	46	54
72	50,000	46	54
78	50,000	46	54
84	50,000	47	53
90	50,000	47	53
96	50,000	47	53
102	50,000	47	53
108	50,000	48	52
114	50,000	48	52
120	50,000	48	52

Weathering Table – Scenario 2 (from ADIOS2):

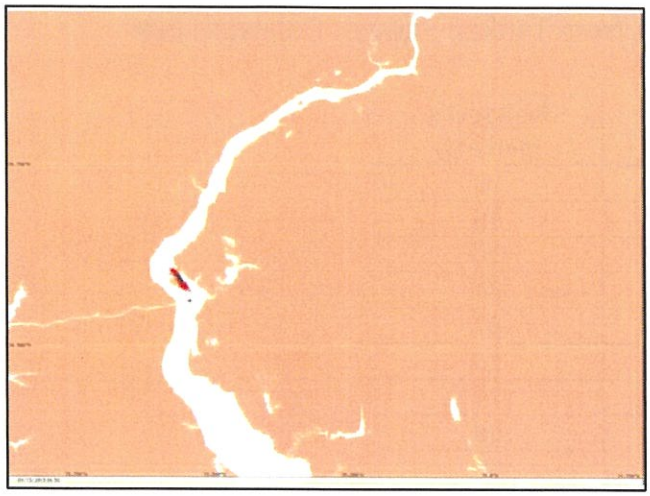
Time (hours)	0	6	12	24	36	48	72	96
Total floating oil	50,000	33,242	31,500	29,500	28,500	28,000	27,000	26,500
Emulsion	0	0	0	0	0	0	0	0
Evaporated	0	16,758	18,500	20,500	21,500	22,000	23,000	23,500
Dispersed (natural)	0	0	0	0	0	0	0	0
In-situ burned	0	0	0	0	0	0	0	0
Stranded	0	0	0	0	0	0	0	0
Stranded oil emulsion	0	0	0	0	0	0	0	0
Oil budget validity check	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Water in oil	0	0	0	0	0	0	0	0
Emulsion Factor	0	0	0	0	0	0	0	0
% evaporation	0	0.30	0.37	0.41	0.43	0.44	0.46	0.47
% natural dispersion	0	0	0	0	0	0	0	0
% stranding	0	0	0	0	0	0	0	0
% mechanical	0	0	0	0	0	0	0	0
% dispersion (chemical)	0	0	0	0	0	0	0	0
% in-situ burn	0	0	0	0	0	0	0	0

Oil Weathering Graphs – Scenario 2 (from ADIOS2):

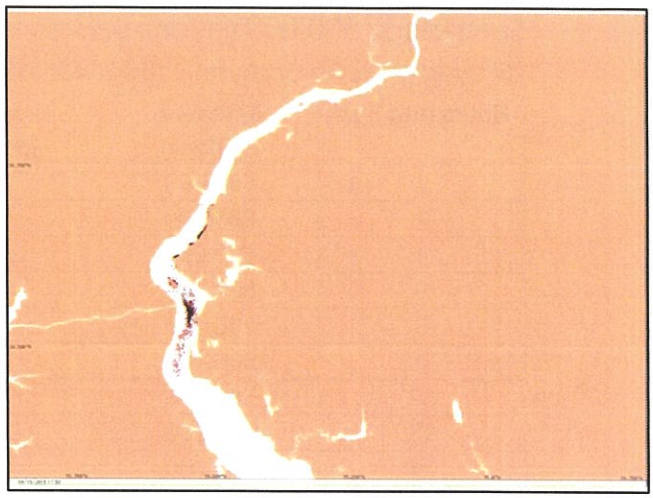
- **Oil Type**
  - BAKKEN, ANALYSIS OF OIL FROM LAC-MEGANTIC DERAILMENT
  - Location = none listed
  - Synonyms = none listed
  - Product Type = crude
  - API = 41.8
  - Pour Point = unknown
  - Flash Point = unknown
  - Density = 0.823 g/cc at 61 deg F
  - Viscosity = 2.6 cSt at 61 deg F
  - Adhesion = unknown
  - Aromatics = unknown
- **Emulsification**
  - Mousse begins to form when 100% of the oil has evaporated.
- **Wind and Wave Conditions**
  - Wind Speed = 3 mph from 0 degrees
  - Wave Height = computed from wind speed, unlimited fetch (default)
- **Water Properties**
  - Temperature = 60 deg F
  - Salinity = 15 ppt
  - Sediment Load = 50 g/m3 (avg. river/estuary)
  - Current = 2.1 mph towards 12 degrees
- **Release Information**
  - **Instantaneous Release**
    - Time of Release = April 15, 0800 hours
    - Amount Spilled = 50000 gal



Extent of Oiling First 4 Days – Scenario 2



Hour 1



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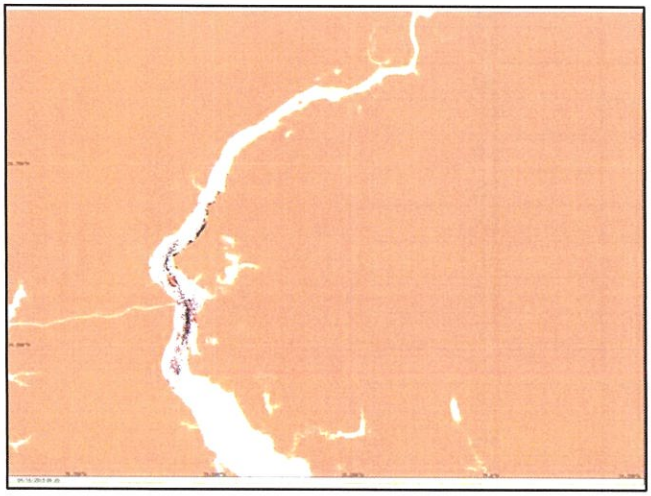

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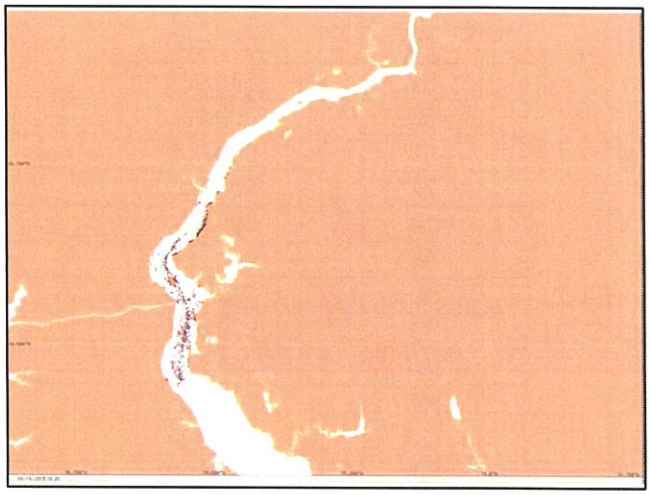
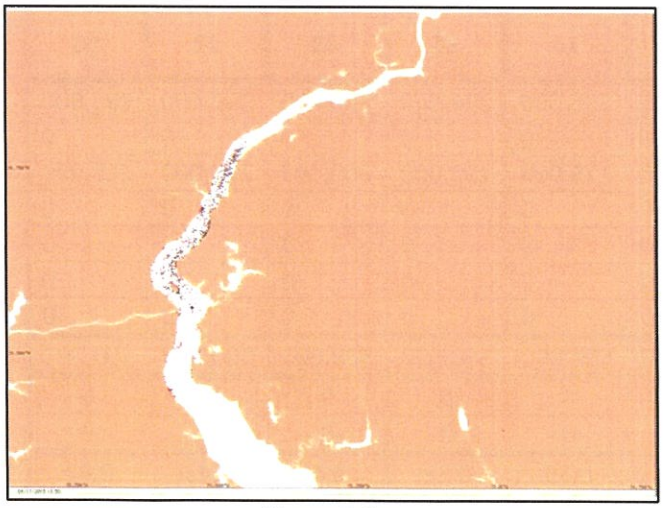
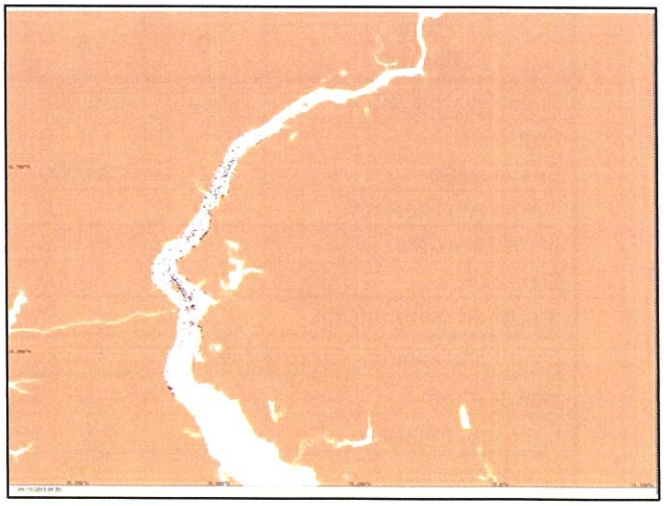


Hour 18



Hour 28



Hour 48

NOME Trajectories for Scenario 2

Scenario 3: 500,000 gallons Bakken released from Tanker – Lower Delaware Bay

Oil Budget Table – Scenario 3 (from ADIOS2):

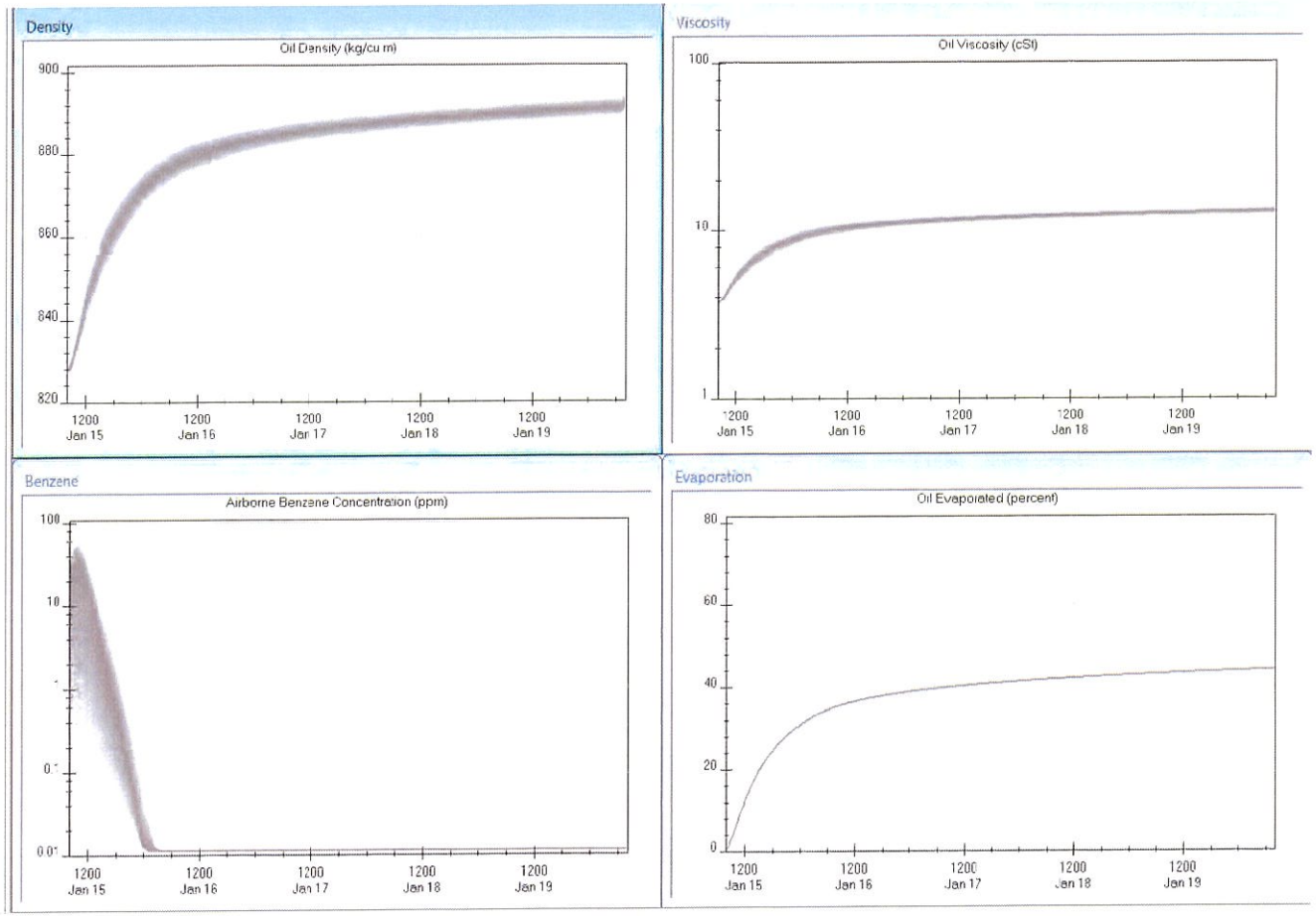
Hours into Spill	Released (gallons)	Evaporated (percent)	Remaining (percent)
1	500,000	1	99
2	500,000	4	96
4	500,000	10	90
6	500,000	16	84
8	500,000	20	80
10	500,000	24	76
12	500,000	26	74
18	500,000	32	68
24	500,000	35	65
30	500,000	37	63
36	500,000	38	62
42	500,000	39	61
48	500,000	40	60
54	500,000	40	60
60	500,000	41	59
66	500,000	41	59
72	500,000	42	58
78	500,000	42	58
84	500,000	42	58
90	500,000	43	57
96	500,000	43	57
102	500,000	43	57
108	500,000	43	57
114	500,000	44	56
120	500,000	44	56

Weathering Table – Scenario 3 (from ADIOS2):

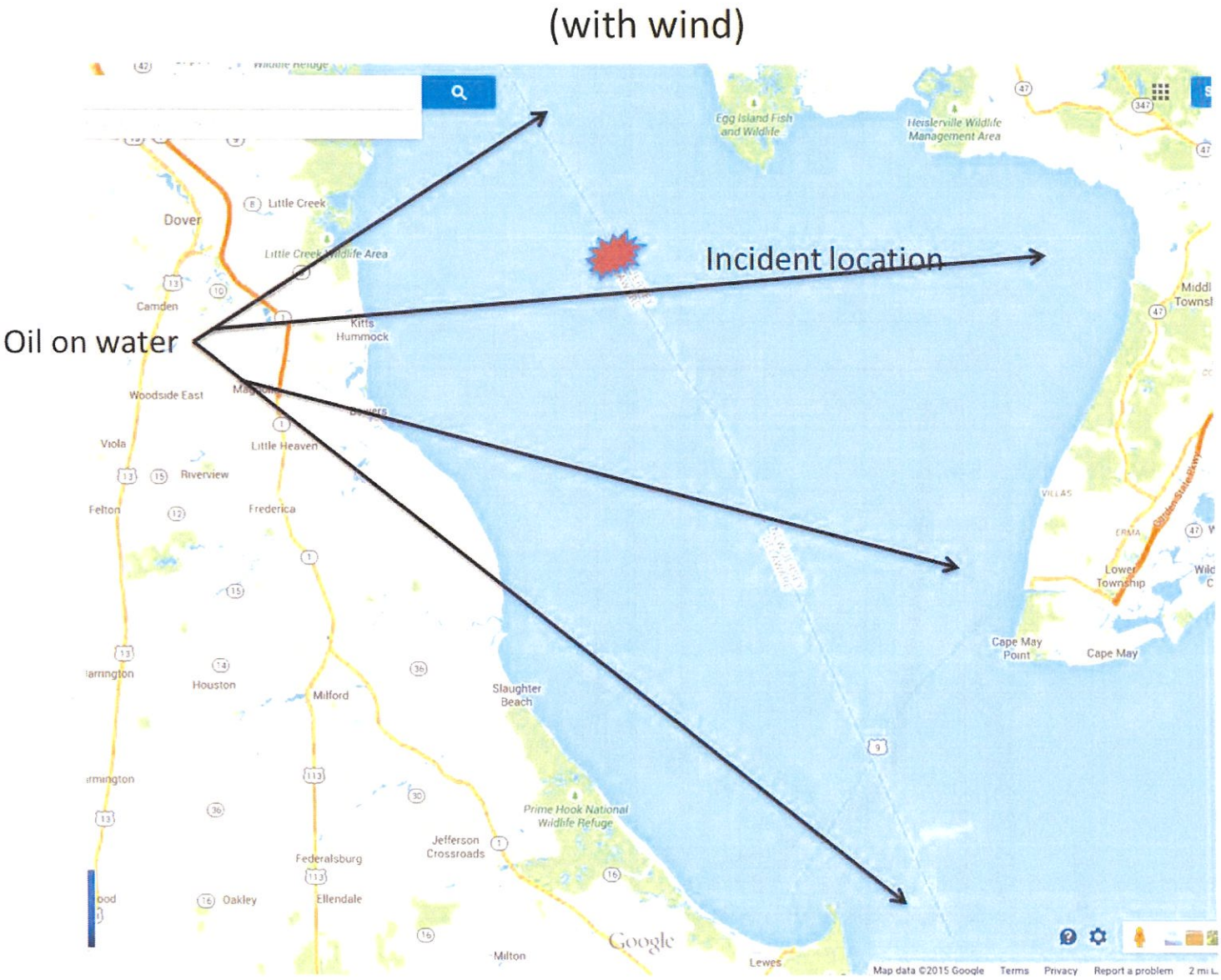
Time (hours)	0	6	12	24	36	48	72	96
Total floating oil	500,000	420,000	370,000	325,000	310,000	300,000	290,000	285,000
Emulsion	0	0	0	0	0	0	0	0
Evaporated	0	80,000	130,000	175,000	190,000	200,000	210,000	215,000
Dispersed (natural)	0	0	0	0	0	0	0	0
In-situ burned	0	0	0	0	0	0	0	0
Stranded	0	0	0	0	0	0	0	0
Stranded oil emulsion	0	0	0	0	0	0	0	0
Oil budget validity check	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Water in oil	0	0	0	0	0	0	0	0
Emulsion Factor	0	0	0	0	0	0	0	0
% evaporation	0	0.16	0.26	0.35	0.38	0.4	0.42	0.43
% natural dispersion	0	0	0	0	0	0	0	0
% stranding	0	0	0	0	0	0	0	0
% mechanical	0	0	0	0	0	0	0	0
% dispersion (chemical)	0	0	0	0	0	0	0	0
% in-situ burn	0	0	0	0	0	0	0	0

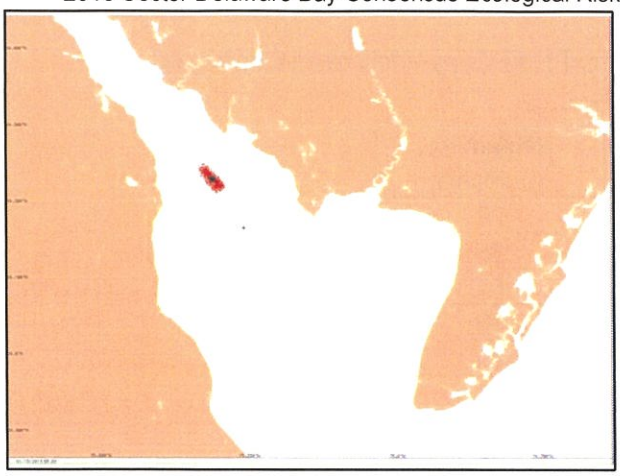
Oil Weathering Graphs – Scenario 3 (from ADIOS2):

- **Oil Type**
  - BAKKEN, ANALYSIS OF OIL FROM LAC-MEGANTIC DERAILMENT
  - Location = none listed
  - Synonyms = none listed
  - Product Type = crude
  - API = 41.8
  - Pour Point = unknown
  - Flash Point = unknown
  - Density = 0.827 g/cc at 50 deg F
  - Viscosity = 3.6 cSt at 50 deg F
  - Adhesion = unknown
  - Aromatics = unknown
- **Emulsification**
  - Mousse begins to form when 100% of the oil has evaporated.
- **Wind and Wave Conditions**
  - Wind Speed = 3 mph from 0 degrees
  - Wave Height = computed from wind speed, unlimited fetch (default)
- **Water Properties**
  - Temperature = 50 deg F
  - Salinity = 15 ppt
  - Sediment Load = 50 g/m3 (avg. river/estuary)
  - Current = 2.0 mph towards 0 degrees
- **Release Information**
  - **Instantaneous Release**
    - Time of Release = January 15, 0800 hours
    - Amount Spilled = 500000 gal

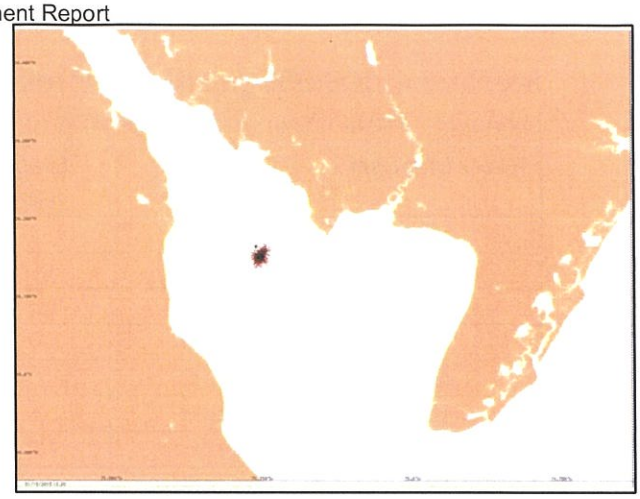


Extent of Oiling First 4 Days – Scenario 3

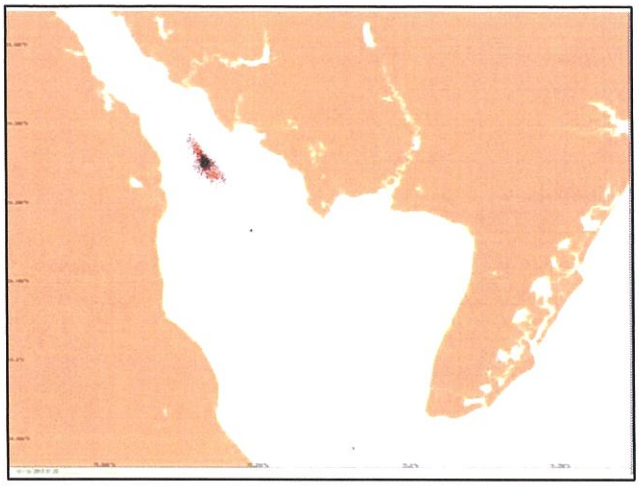




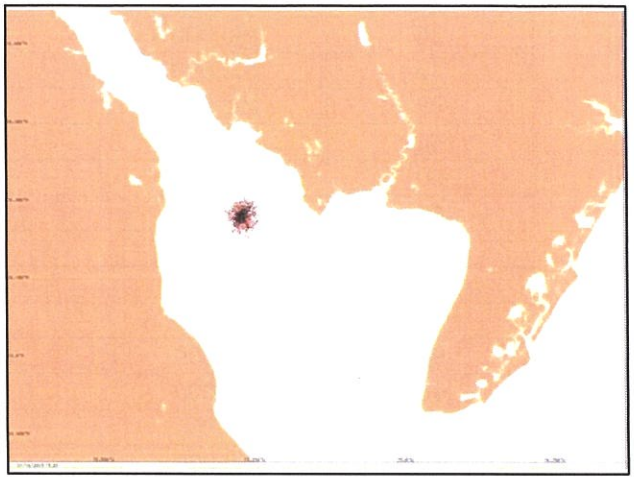
Hour 1



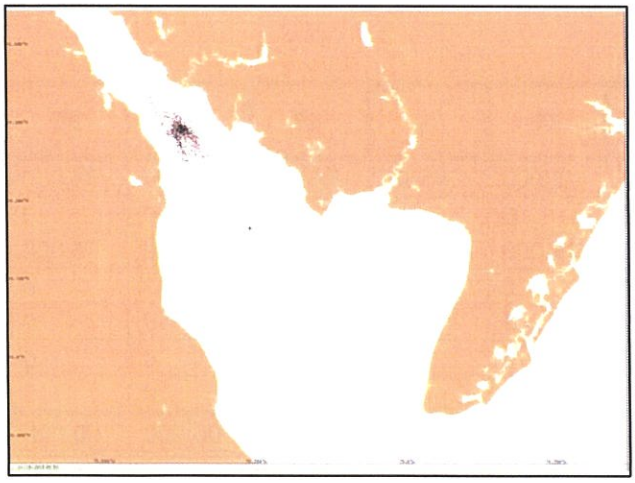
Hour 5



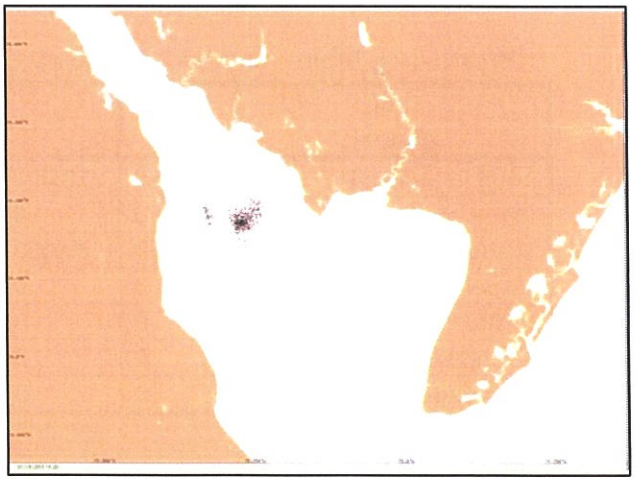
Hour 14



Hour 18



Hour 39



Hour 42

GNOME Trajectories for Scenario 3

Scenario 4: 100,000 gallons Dilbit released from 4 Rail Cars – Mantua Creek, NJ

Oil Budget Table – Scenario 4 (from ADIOS2):

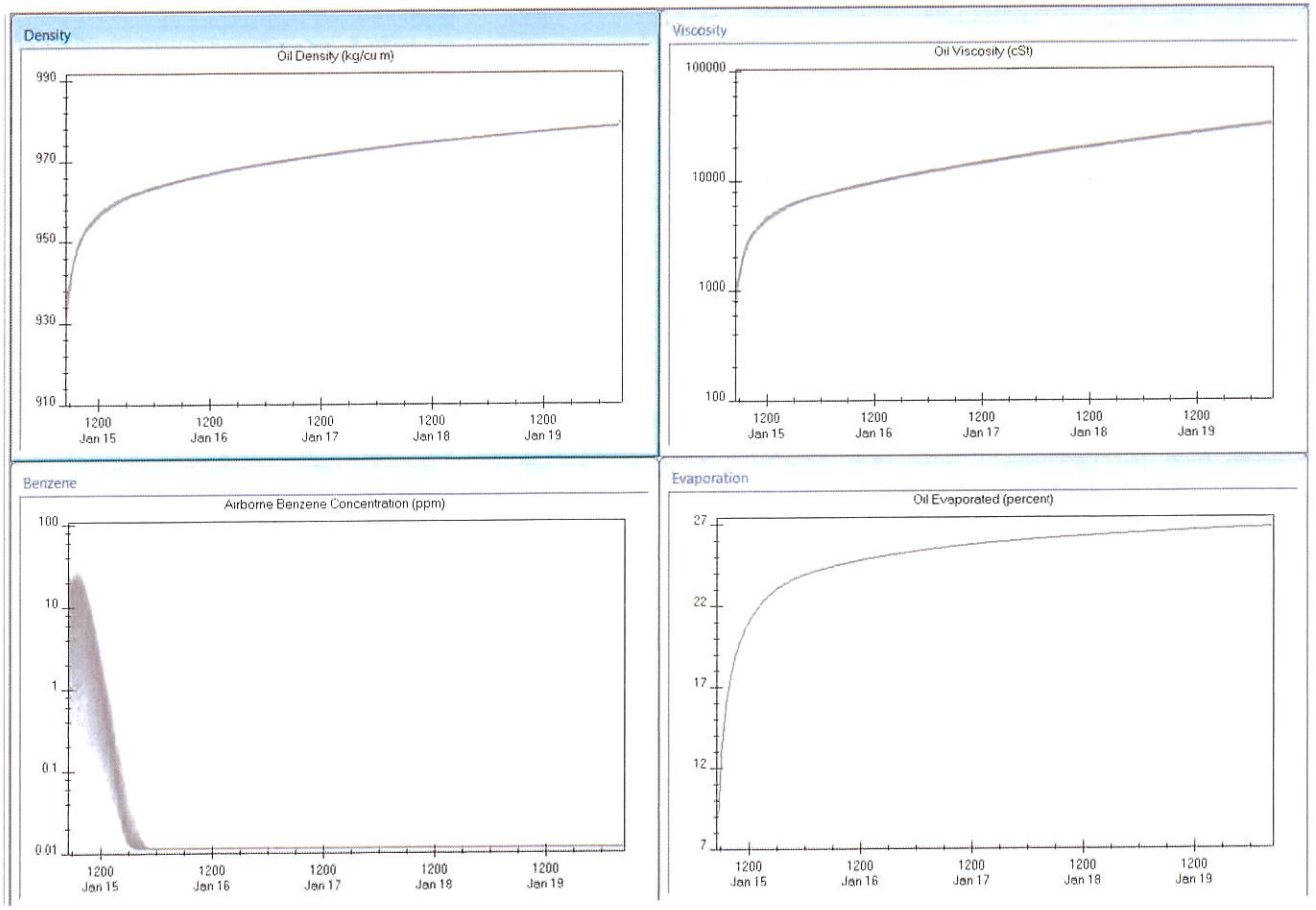
Hours into Spill	Released (gallons)	Evaporated (percent)	Remaining (percent)
1	100,000	10	90
2	100,000	15	85
4	100,000	19	81
6	100,000	20	80
8	100,000	21	79
10	100,000	22	78
12	100,000	23	77
18	100,000	24	76
24	100,000	24	76
30	100,000	25	75
36	100,000	25	75
42	100,000	25	75
48	100,000	25	75
54	100,000	26	74
60	100,000	26	74
66	100,000	26	74
72	100,000	26	74
78	100,000	26	74
84	100,000	26	74
90	100,000	26	74
96	100,000	26	74
102	100,000	27	73
108	100,000	27	73
114	100,000	27	73
120	100,000	27	73

Weathering Table – Scenario 4 (from ADIOS2):

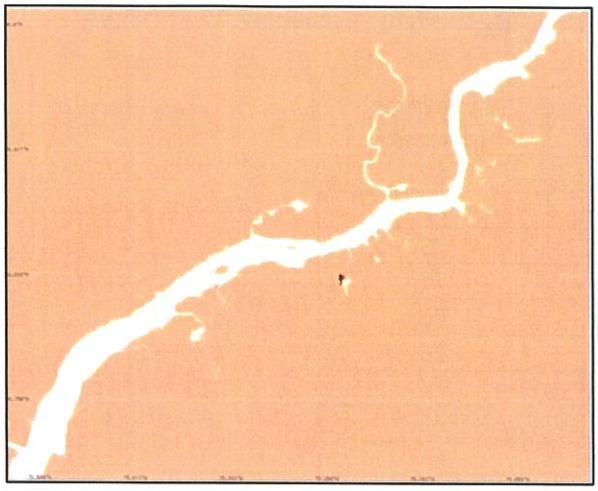
Time (hours)	0	6	12	24	36	48	72	96
Total floating oil	100,000	78,000	76,000	75,000	74,000	74,000	73,000	73,000
Emulsion	0	0	0	0	0	0	0	0
Evaporated	0	20,000	23,000	24,000	25,000	25,000	26,000	26,000
Dispersed (natural)	0	0	0	0	0	0	0	0
In-situ burned	0	0	0	0	0	0	0	0
Stranded	0	0	0	0	0	0	0	0
Stranded oil emulsion	0	0	0	0	0	0	0	0
Oil budget validity check	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Water in oil	0	0	0	0	0	0	0	0
Emulsion Factor	0	0	0	0	0	0	0	0
% evaporation	0	0.20	0.23	0.24	0.25	0.25	0.26	0.26
% natural dispersion	0	0	0	0	0	0	0	0
% stranding	0	0	0	0	0	0	0	0
% mechanical	0	0	0	0	0	0	0	0
% dispersion (chemical)	0	0	0	0	0	0	0	0
% in-situ burn	0	0	0	0	0	0	0	0

Oil Weathering Graphs – Scenario 4 (from ADIOS2):

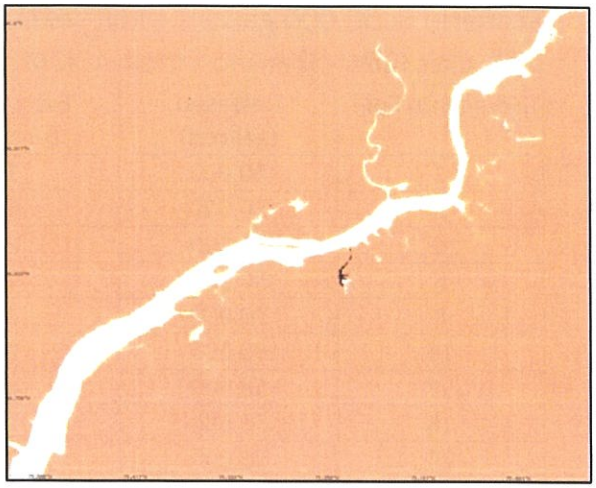
- **Oil Type**
  - COLD LAKE BLEND
  - Location = ALBERTA, CANADA
  - Synonyms = COLD LAKE DILBIT
  - Product Type = crude
  - API = 22.6
  - Pour Point = -45 deg C
  - Flash Point = -35 deg C
  - Density = 0.920 g/cc at 50 deg F
  - Viscosity = 294.5 cSt at 50 deg F
  - Adhesion = unknown
  - Aromatics = unknown
- **Emulsification**
  - Mousse begins to form when 6% of the oil has evaporated.
- **Wind and Wave Conditions**
  - Wind Speed = 2 mph from 0 degrees
  - Wave Height = computed from wind speed, unlimited fetch (default)
- **Water Properties**
  - Temperature = 50 deg F
  - Salinity = 0 ppt
  - Sediment Load = 50 g/m3 (avg. river/estuary)
  - Current = 0.2 mph towards 0 degrees
- **Release Information**
  - **Instantaneous Release**
    - Time of Release = January 15, 0500 hours
    - Amount Spilled = 100000 gal



Extent of Oiling First 4 Days – Scenario 4



Hour 1



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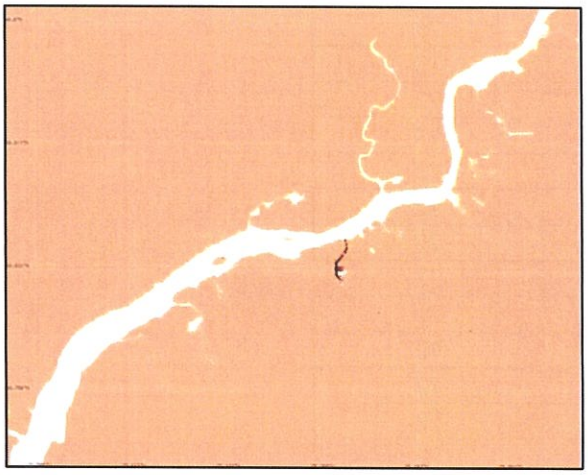

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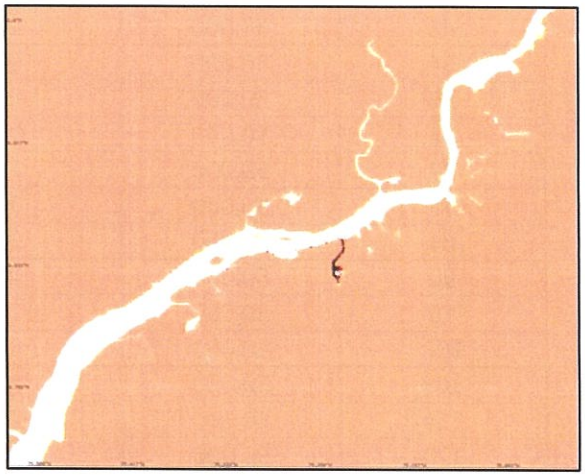

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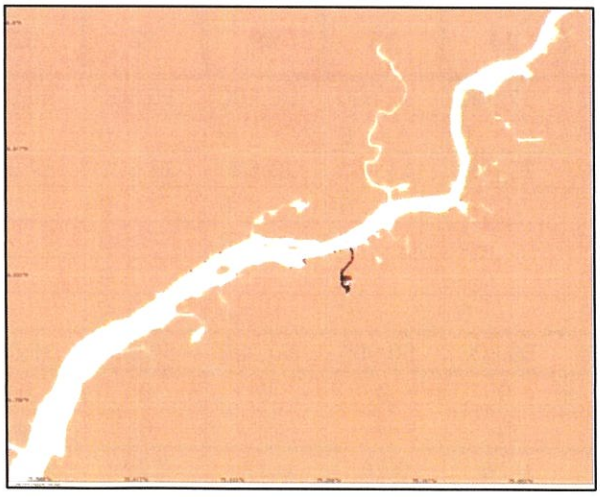
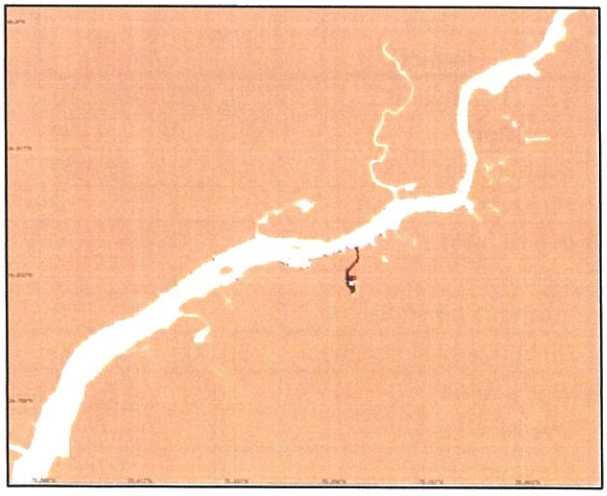


Hour 34



Hour 36

GNOME Trajectories for Scenario 4

Scenario 5: 50,000 gallons Dilbit released from Barge – Marcus Hook Anchorage

Oil Budget Table – Scenario 5 (from ADIOS2):

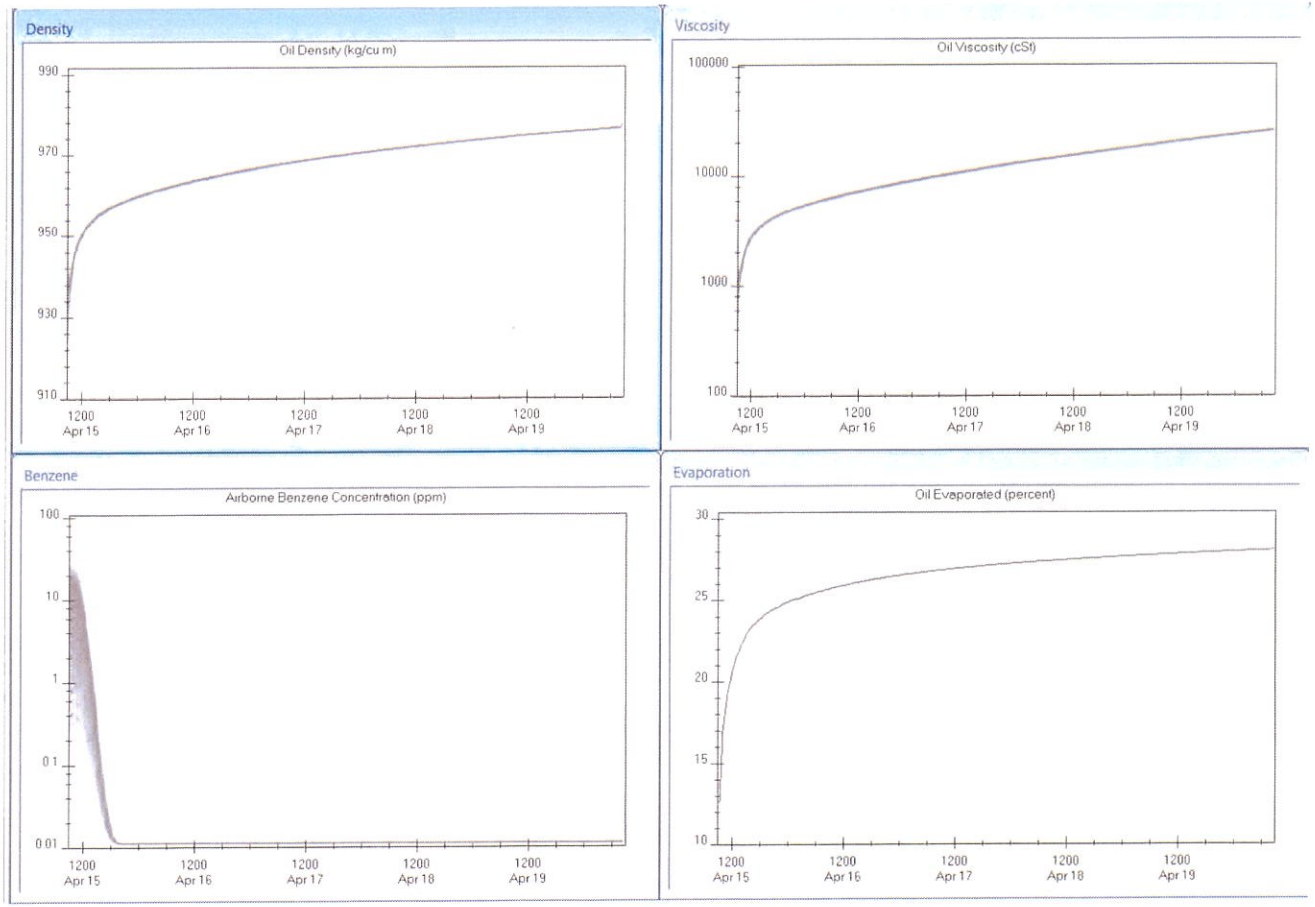
Hours into Spill	Released (gallons)	Evaporated (percent)	Remaining (percent)
1	50,000	13	87
2	50,000	18	82
4	50,000	21	79
6	50,000	23	77
8	50,000	24	76
10	50,000	24	76
12	50,000	24	76
18	50,000	25	75
24	50,000	26	74
30	50,000	26	74
36	50,000	26	74
42	50,000	27	73
48	50,000	27	73
54	50,000	27	73
60	50,000	27	73
66	50,000	27	73
72	50,000	27	73
78	50,000	28	72
84	50,000	28	72
90	50,000	28	72
96	50,000	28	72
102	50,000	28	72
108	50,000	28	72
114	50,000	28	72
120	50,000	28	72

Weathering Table – Scenario 5 (from ADIOS2):

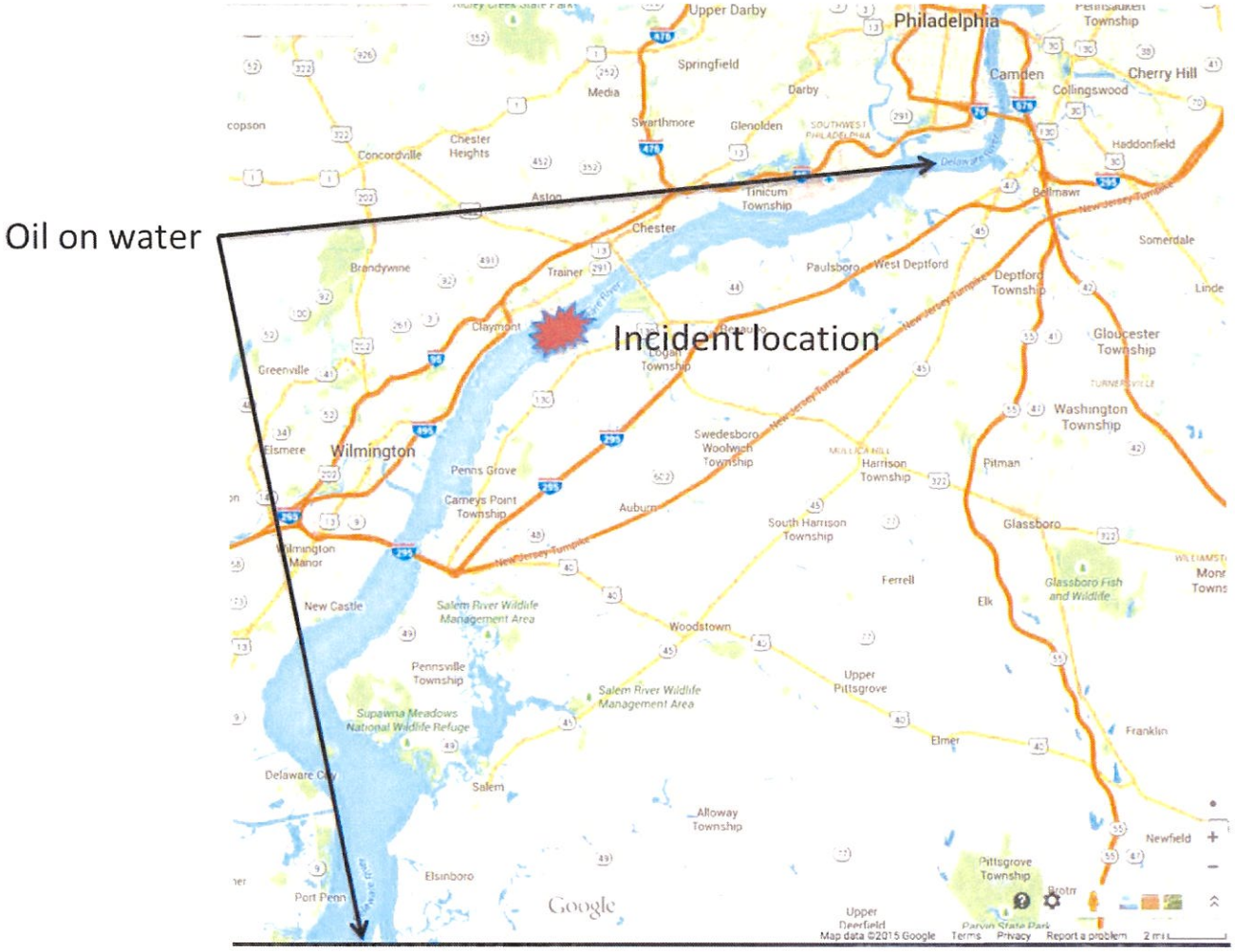
Time (hours)	0	6	12	24	36	48	72	96
Total floating oil	50,000	38,500	38,000	37,000	37,000	36,500	36,500	36,000
Emulsion	0	0	0	0	0	0	0	0
Evaporated	0	11,500	12,000	13,000	13,000	13,500	13,500	14,000
Dispersed (natural)	0	0	0	0	0	0	0	0
In-situ burned	0	0	0	0	0	0	0	0
Stranded	0	0	0	0	0	0	0	0
Stranded oil emulsion	0	0	0	0	0	0	0	0
Oil budget validity check	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Water in oil	0	0	0	0	0	0	0	0
Emulsion Factor	0	0	0	0	0	0	0	0
% evaporation	0	0.23	0.24	0.26	0.26	0.27	0.27	0.28
% natural dispersion	0	0	0	0	0	0	0	0
% stranding	0	0	0	0	0	0	0	0
% mechanical	0	0	0	0	0	0	0	0
% dispersion (chemical)	0	0	0	0	0	0	0	0
% in-situ burn	0	0	0	0	0	0	0	0

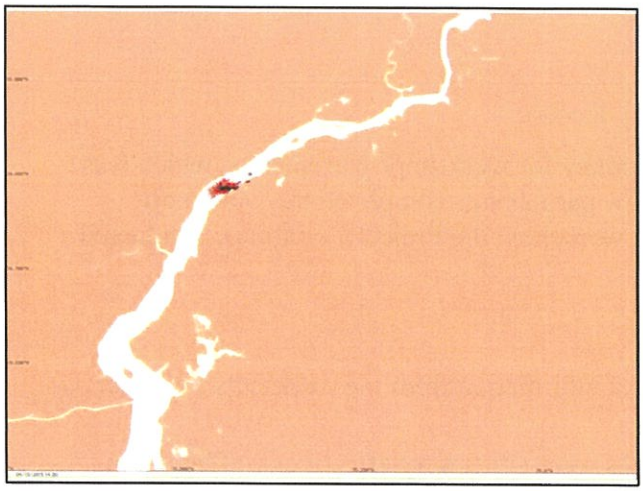
Oil Weathering Graphs – Scenario 5 (from ADIOS2):

- **Oil Type**
  - COLD LAKE BLEND
  - Location = ALBERTA, CANADA
  - Synonyms = COLD LAKE DILBIT
  - Product Type = crude
  - API = 22.6
  - Pour Point = -45 deg C
  - Flash Point = -35 deg C
  - Density = 0.916 g/cc at 61 deg F
  - Viscosity = 209.7 cSt at 61 deg F
  - Adhesion = unknown
  - Aromatics = unknown
- **Emulsification**
  - Mousse begins to form when 6% of the oil has evaporated.
- **Wind and Wave Conditions**
  - Wind Speed = 2 mph from 0 degrees
  - Wave Height = computed from wind speed, unlimited fetch (default)
- **Water Properties**
  - Temperature = 60 deg F
  - Salinity = 0 ppt
  - Sediment Load = 50 g/m3 (avg. river/estuary)
  - Current = 2.0 mph towards 0 degrees
- **Release Information**
  - **Instantaneous Release**
    - Time of Release = April 15, 0900 hours
    - Amount Spilled = 50000 gal

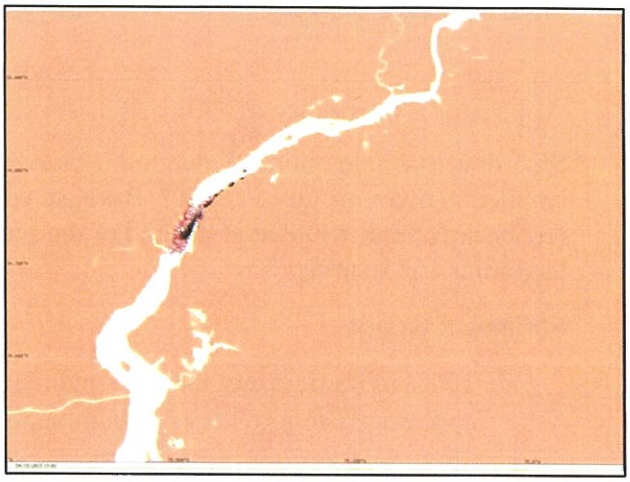


Extent of Oiling First 4 Days – Scenario 5





Hour 1



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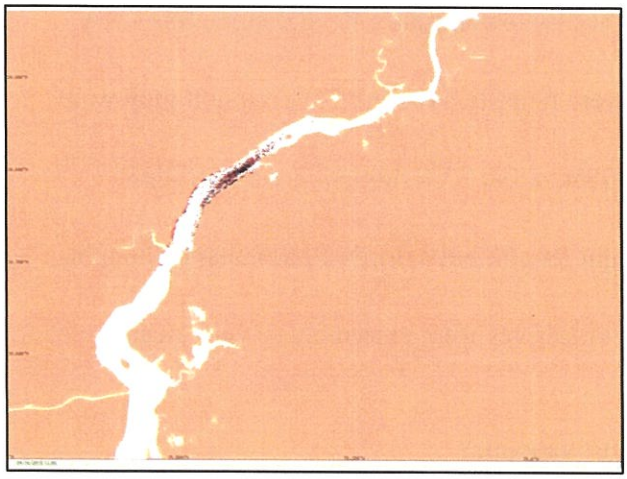

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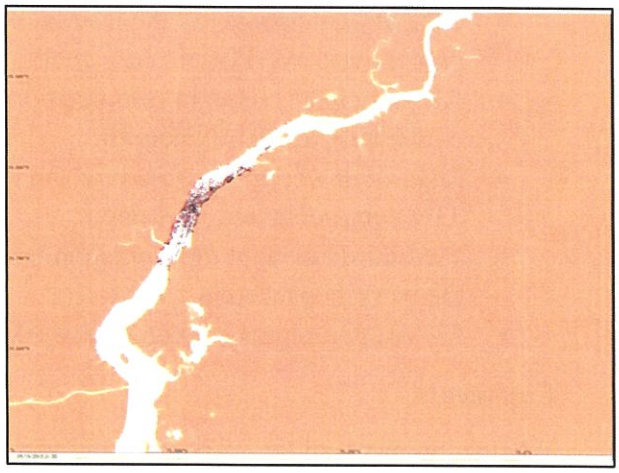
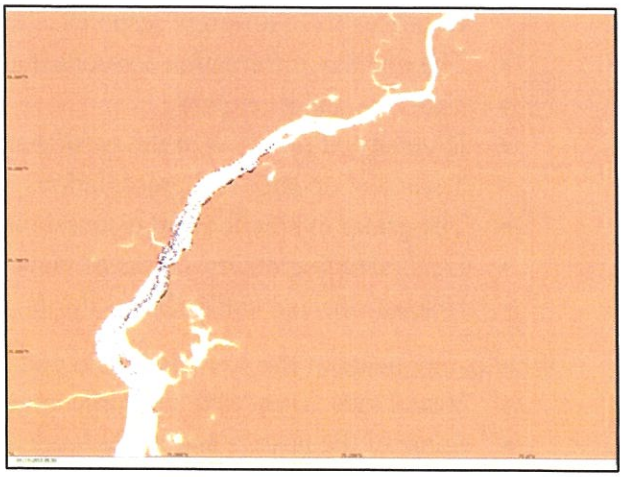


Hour 16

Hour 43



Hour 46

GNOME Trajectories for Scenario 5

Appendix I: Summary of Online CERA Survey Results

SEA developed on online evaluation in Survey Monkey for workshops participants, which was emailed to them on July 21, 2015. Because very few participants completed the workshop feedback form distributed at the end of the second workshop, the Project Committee conducted the online ERA survey.

Statistical Results

- 100% of participants surveyed gained useful information from the workshops, with an opportunity to provide open comments.
- 83% of participants felt the ERA Workshops were either very effective or effective in accomplishing the aim of assessing and reaching consensus about the potential risks of responding to Bakken and dilbit oils in the five Delaware Bay and River scenarios.
- 83% of participants felt the lead facilitator's ability to communicate and guide this ERA process was excellent or very good.
- All participants thought resource materials were helpful, although 25% thought they were moderately to slightly helpful.
- Regarding workgroup structure and engagement, about 33% thought it was excellent, 33% very good, and 33% good.
- Two-thirds thought the workshop was the right length; but a third of participants thought the workshops were too long.
- 57% of participants thought the workshop's objectives were extremely or very clear.

Comments

What components of the workshops did you find most valuable?

- I knew little about oil and related issues so I learned a lot.
- The discussions within the scenario small groups regarding impacts on sensitive resources from different response alternatives.
- The one day information sessions that began the workshop were valuable.
- Talks by subject experts.
- Diversity of opinions of the participants.
- Technical updates and presentations.
- The group interaction and discussions.
- Understanding others' points of view.
- Discussions and deliberations during the group breakouts.

What components of the workshops did you find least valuable?

- Visual aids. They were not large enough.
- Some of the posters and slides were difficult to see.
- Scenario workgroups (i.e., breakout sessions). The directions and assumptions for evaluating risk could have been clearer and better guided.
- The long days.
- Some of the presentations, while interesting, took time away from the breakout sessions.

Was the length of the workshops appropriate?

- It was really hard to give up 3 entire days- it seemed like the science community could have come together to discuss their issues a little more before the rest of us joined in.
- No, but only because I could not make the second two days. More notice would have been better.
- 4 days was too much time. I was unable to attend the workshop in its entirety.
- The days could have been shortened.

Is there anything else you'd like to share about the ERA Workshops?

- We need more of them.
- Overall, I like the idea of having all the players in one room to gain consensus. The execution of day two could have been better. Thank you for taking the time to put this together. It was valuable to me for assessing the risks of Oil by Rail in our region.
- Nice interaction by all. More involvement by the Railroads Operational and HAZMAT staffs and their contribution to the increase of oil movement by rail.

Feedback at the Workshop

The most common comments submitted on the feedback form following the workshops were:

- More time in workgroups, less time in plenary sessions.
- More structure to workgroups, e.g., common ground rules, better division of individuals per group.
- Participants wanted to know more about Bakken and dilbit, e.g., fate, transport, behavior, toxicity, and impact on animals in the water column.
- Participants learned a lot from the presentations by the rail companies on rail operations and response.
- Working with 5 scenarios may be too ambitious, not able to get in-depth into the scenarios or compare amongst groups.

Fowlers Beach

Bioremediation of Experimental Oil Spill on Delaware's Shoreline

Environ. Sci. Technol. **1996**, *30,* 1764−1775

Bioremediation of an Experimental Oil Spill on the Shoreline of Delaware Bay

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In the summer of 1994, a field study was undertaken in Delaware in which light crude oil was intentionally released onto plots to evaluate bioremediation. The objectives were to obtain credible statistical evidence to determine if bioremediation with inorganic mineral nutrients and/or microbial inoculation enhanced the removal of crude oil contaminating a sandy beach and to compute intrinsic and enhanced biodegradation rates. Biodegradation was tracked by GC/MS analysis of selected components, and the measured concentrations were corrected for abiotic removal by hopane normalization. A randomized block design was used to assess treatment effects. Three treatments were evaluated: a no-nutrient addition control, addition of water-soluble nutrients, and addition of water-soluble nutrients supplemented with a natural microbial inoculum from the site. Although substantial hydrocarbon biodegradation occurred in the untreated plots, statistically significant differences between treated and untreated plots were observed in the biodegradation rates of total alkane and total aromatic hydrocarbons. First-order rate constants for the disappearance of individual hopane-normalized alkanes and PAHs were computed, and the patterns of loss were typical of biodegradation. Significant differences were not observed between plots treated with nutrients alone and plots treated with nutrients and the indigenous inoculum. The high rate of oil biodegradation that was observed in the untreated plots was attributed to the background nitrogen that was measured at the site. Even though oil loss was enhanced by nutrient addition, active bioremediation in the form of exogenous nutrient addition might not be appropriate in cases where background nutrient levels are already sufficiently high to support high intrinsic rates of hydrocarbon biodegradation.

Introduction

A number of studies of oil spill bioremediation on marine shorelines have been conducted (*1*−*13*). These studies have concluded that bioremediation enhances the removal of crude oil several times more than the intrinsic rate. Much skepticism remains in the field, however, because data from all of these investigations have been equivocal to some extent. One reason for the uncertainty is a fundamental flaw in the experimental design of many of these studies. That is, the studies usually used pseudoreplication to test for treatment effects, in which either the treatments were not replicated or replicates were not statistically independent (*14*). The pseudoreplicate designs usually resulted from intense subsampling of unreplicated plots (*1*, *2*, *8*−*11*, *13*). Without full replication and random interspersion of treatments, it is impossible to ascribe statistically significant differences in the response variable(s) to the treatments (*14*). The reason is simply that unknown, uncontrollable variables (unidirectional longshore currents, spatially distinct underground flows, prevailing winds, etc.) may exist in different parts of the same experimental area that may impart bias to one of the treatments. The only way to control this is to replicate the treatments and to randomly locate and interdisperse them on the experimental plane. Then, if systematic geomorphological or other physical biases exist in certain areas, the statistical analysis can easily account for them. Two studies that used proper replication and randomization to demonstrate significant treatment effects were conducted in terrestrial environments rather than on marine beaches (*15*, *16*). Since the physical factors affecting oil and nutrient removal, as well as the persistence of introduced microorganisms, are so different in terrestrial and beach ecosystems, it is not possible to extrapolate from these studies to conclude that bioremediation will also be effective on oil-contaminated coasts.

Another problem common to many field studies is the differences in the way the treated and control plots are manipulated (*1*, *2*, *8*−*11*, *13*). It is important to keep experimental manipulation of the treatments identical except for the one variable being tested, otherwise differences cannot be attributed unambiguously to the process being evaluated. For example, in one of the studies (*8*), the control plot was unamended and untouched whereas the treated plot was watered and tilled daily in addition to the nutrient and microbial amendments. This confounds conclusions regarding the cause of any observed differences.

Two recent reports have pointed to the need for more controlled studies of bioremediation for cleanup of oil-contaminated beaches (*17*, *18*) because the current database is inadequate to provide guidance to spill responders. In particular, the relative advantages of biostimulation (i.e.,

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addition of nutrients alone) and/or bioaugmentation (addition of nutrients plus hydrocarbon-degrading bacteria) need further study (*17*). The goals of this project were to quantify the effectiveness of intrinsic biodegradation due to natural levels of background nutrients already present in the Fowler Beach area of Delaware Bay, to demonstrate the effectiveness of biostimulation and/or bioaugmentation, to determine the extent of any resulting rate enhancement, and to provide guidelines that can be used by spill responders and on-scene coordinators for the effective bioremediation of oil-contaminated sandy shores. Other goals were to quantify the biological effects of the oil and of the bioremediation treatments using various types of toxicity bioassays. Preliminary results of the toxicology work have been published elsewhere (*19*).

Since huge quantities of crude oil and refined petroleum products are transported through Delaware Bay each year, the State of Delaware is concerned about the ecological impact of a large oil spill in the area. Large quantities of migratory birds feed on the eggs deposited by horseshoe crabs (*Limulus polyphemus*) in the intertidal sands of the Delaware and New Jersey shores. Thus, an oil spill that occurred during spawning season could have catastrophic effects on these bird populations as well as future generations of horseshoe crabs.

Experimental Section

Approach. The null hypothesis was that biostimulation and/or bioaugmentation will not increase the rate or extent of removal of measured oil components over background. A randomized complete block design with repeated measures was used to assess treatment effects. Five areas of beach were selected based on the depth to a layer of peat below the surface of the sand that extended from a saltwater marsh several hundred meters west of the beach area. Each area ("block") was large enough to accommodate four experimental units or test plots. The blocks were situated in a row on the beach parallel to the shoreline. Three treatments were tested on oiled plots: a no-nutrient addition control, addition of water-soluble nutrients, and addition of water-soluble nutrients supplemented with a natural microbial inoculum from the site. A fourth treatment, an unoiled and untreated plot, served as a background control for the biological recovery studies. The four treatments were randomized in each of the five blocks.

Experience from previous studies (*20*−*22*) suggested that, to minimize edge effects in a small plot study such as this, oil should be applied near the spring high tide line. A schematic diagram of the block layout is summarized in Figure 1. The five blocks of four treatments were located on one long beach as shown. Each treatment plot measured 36 m^2 in area (4 m × 9 m). The distance between plots within a block was 10 m. The minimum distance between blocks was 10 m, although 104 m separated blocks 1 and 2 and 154 m separated blocks 4 and 5. The plots were laid out using standard surveying equipment. The top of each plot was positioned at the same elevation, measured relative to benchmarks (fence posts) placed on the high dune area, so that all plots would experience the same levels of submersion and exposure. Three steel fence posts were driven in the middle of each plot on a line bisecting the longitudinal axis of the plot. These were used to monitor the change in beach topography with time (by measuring the distance from the tops of the posts to the sand surface) as tide and wave action caused erosion and accretion of the sand within the plots. Such topographical alterations could artificially affect oil concentrations measured.

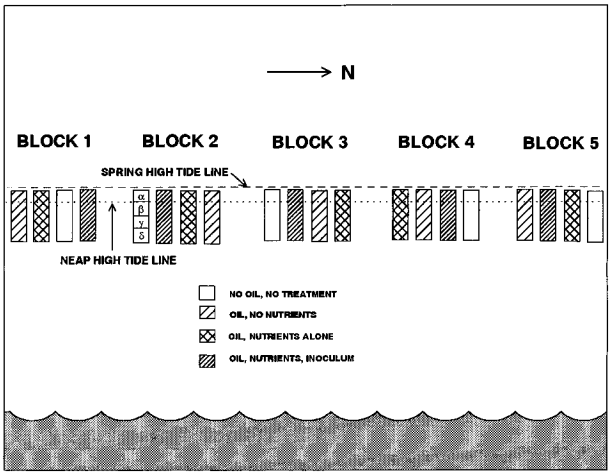

FIGURE 1. Layout of the randomized complete block design showing actual random order of plots on Fowler Beach.

Detailed Description of Blocks. Each block was equipped with its own gasoline-powered generator to supply power to four electric pumps, one for each of the four plots. The pumps supplied seawater with or without bioremediation amendments to their respective plots. Adjacent to each pump was a polyethylene reservoir holding 800 L of seawater containing the appropriate amendments for daily application to the plots. Slickbar booms were used to contain the oil and free-moving oiled sand within the plots. These booms were 30 m in length and contained 0.6 m long plastic floats riveted into a Kevlar skirted sheet extending about 0.6 m below the water surface. The booms were held in place between pairs of steel pipe driven approximately 1 m below the surface of the sand and spaced every 2.3 m around the perimeter of each plot. The booms floated on the water during flooding tides to contain floating oil and served as dams containing oiled sand when the tide ebbed. A sorbent boom was placed around the Slickbar boom as an added safety precaution in the event of an accidental release beyond the primary containment. The sorbent boom was removed several days after application of the oil, when floating oil was no longer observed. Length measurements were taken from the tops of the inner steel posts retaining the booms to the sand surface to supplement the beach topography data.

Application of Oil to Plots. The crude oil used was Bonny Light (Escravos), which is imported from Nigeria. It had a specific gravity of 0.848, API gravity of 35.3, Reed vapor pressure of 6.9, viscosity of 5.6 CST at 21 °C, a pour point of −3 °C, and a sulfur content of 0.11% by weight. It was weathered prior to application by placing about 3 m^3 in a 3.6 m diameter plastic tank, connecting a pump and hose, and continuously spraying and recirculating the oil within the tank for 2 days to evaporate the light fraction. Following this, the weathered oil was placed into 210-L drums (136 L/drum) to await application. Oil was applied manually by two four-membered teams on July 1, 1994. Two persons held onto each end of a 4 m length of pipe connecting a hose to a pump that led into the 210-L drum containing the oil. The oil was pumped through the hose out of four atomizer nozzles attached to the pipe manifold. The persons applying the oil walked slowly up and down the plot while a third person lifted the trailing hose over the steel pipe holding the containment booms in place. The

fourth person held a stopwatch and timed the walking pace of the appliers. The 136 L of oil was applied uniformly in 14 sweeps of the plot over a period of about 7 min. A total of 2040 L of crude oil was released onto the 15 plots.

Nutrient Application. The minimum nitrate concentration needed to support the maximum growth rate of alkane degraders under continuous flow conditions ranges between 0.5 and 2.5 mg of N/L (*23*). Since nitrate in the interstitial pore water is quickly diluted to background levels whenever the incoming tide completely submerges the plot (*24*), we applied nutrients every day. To achieve the target 1.5 mg/L average interstitial pore water concentrations, we assumed a 100-fold safety factor to account for dilution. Thus, the nutrients added to each of the 10 designated reservoirs consisted of 2 kg of technical grade sodium nitrate (330 g of nitrogen) and 128 g of sodium tripolyphosphate ($Na_5P_3O_{10}$), which is more soluble in seawater than orthophosphate. The nutrients were added to seawater in the appropriate reservoirs and dissolved by recirculating immediately prior to application to the plots. Once a week, 30 L of a suspended mixed population of hydrocarbon-degrading bacteria was also added to the inoculum plots (see below).

The sprinkler system used for supplying the nutrients consisted of Schedule-40 PVC pipe (3.8 cm i.d.) connected to six Maxi-Bird impact sprinkler heads per plot (Rainbird, Inc., Glendora, CA), each rated at 6 L/min. Electric pumps (rated at 70 L/min) were connected to the PVC sprinkler manifold via 15 m × 1.9 cm diameter garden hoses. Seawater was applied to all plots regardless of whether they received nutrients, inoculum, or no amendment at all.

Inoculum Preparation. The indigenous inoculum was grown for 2 weeks in two 210-L stainless steel drums. To allow weekly inoculation with fresh 2-week cultures, each drum was offset in time from the other by 1 week. The drums contained 170 L of seawater from Delaware Bay, the weathered Bonny Light crude oil (600 mL) as the sole carbon source, and the same nutrients used on the beach. The original culture consisted of a mixed consortium isolated from the same beach several months prior to the experiment and grown on the same Bonny Light crude oil. The organisms were not characterized as to genus and species. The number of alkane and aromatic degraders measured in the drums were 1.9×10^5/mL and 2.5×10^4/mL, respectively. The oil in the drums became emulsified within 1 day following each inoculation, signifying actively metabolizing cultures.

Sample Size, Frequency, and Handling. Sand samples were collected every 14 days from the 15 oiled plots. Each plot was divided into four equal sectors (labeled α, β, γ, and δ, landward to seaward, respectively). Subsamples were collected from each sector to determine if differences existed in oil biodegradation according to the length of time under water. Two subsamples from each sector were collected according to a predetermined random number sequence that disallowed subsequent resampling from the same hole, composited into one sample, frozen, and shipped to Cincinnati for extraction and analysis by GC/MS. Thus, 60 samples, stratified within plots according to location within the intertidal zone and spread among 15 independent plots, were collected at each sampling event.

The subsamples consisted of two cores, each 7 cm in diameter × 14 cm deep, from one hole and two identical cores from another hole from the same plot sector. The samples were composited and mixed by a trowel in a galvanized bucket and placed in a prelabeled 3.8-L paint can. After the composited samples were thoroughly mixed, subsamples were taken from the mixture for other types of analyses (microbiological and toxicological). A portion of each composited sample was frozen and archived in the event that a re-analysis was needed at a later time.

Microbiological Analysis. Subsamples from each sector of each plot, including the five unoiled plots (80 samples altogether), were placed in Whirlpak bags, brought back under ice to the on-site mobile laboratory trailer, and immediately processed for most probable number (MPN) analysis of alkane- and PAH-degrading bacteria (*25*). Approximately 10 g wet weight (exact weight was recorded after weighing on a top-loading balance) was placed in a dilution bottle containing 90 mL of sterile detachment solution (1 g/L disodium pyrophosphate and 20 g/L NaCl) and shaken for 1 h at 300 rpm. The samples were then placed onto a Beckman Biomek 1000 Laboratory Workstation for automated serial 10-fold dilutions in 96-well microtiter MPN plates. The growth medium was Bushnell-Haas (*26*) supplemented with 2% sodium chloride.

Oil Chemistry. Frozen sand samples from the field were shipped to Cincinnati for processing. Either 100 or 500 g of sand was mixed with an equal volume of anhydrous Na_2SO_4. This mixture was extracted by sonicating three times for 10 min each with 150 or 450 mL of dichloromethane (DCM), respectively. This extract was poured through a funnel packed with anhydrous Na_2SO_4 into a tared round-bottom flask. The extract was then concentrated to dryness with a rotary evaporator. The flask was reweighed to determine the total DCM-extractable organic material (EOM). The residue was redissolved in DCM and diluted to a volume based on the amount of oil present. The final DCM extract was then solvent-exchanged to hexane. A 1.0-μL aliquot of the hexane extract was injected into a Hewlett-Packard 5890 Series II gas chromatograph equipped with an HP 5971A mass selective detector (MSD). The MSD was operated in the selected ion monitoring (SIM) mode for quantifying specific saturated hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), and sulfur heterocyclic constituents.

The GC was equipped with a DB-5 open tubular column (30 m long, 0.25 mm i.d., and 0.25 μm film thickness) and a split/splitless injection port operating in the splitless mode. Operating conditions for the GC were as follows: injection port, 290 °C; transfer line, 320 °C; initial GC oven temperature, 55 °C held for 3 min; first temperature ramp rate, 5 °C/min to 280 °C, held for 5 min; second temperature ramp rate, 3 °C/min to 310 °C, held for 10 min. The total run time was 73 min. All analyte data were normalized to the conservative, nonbiodegradable biomarker C_{30}-17α-(*H*),21β(*H*)-hopane (*27*, *28*).

Nutrient Analysis. Concentrations of nitrate-N in the interstitial pore water of oiled plots were measured each day by collecting a sand core from each of the four sectors of a randomly selected test plot and the longitudinal midpoint of a nonnutrient control plot [to prevent interference with samples for oil analysis, the nutrient samples were all collected at the edges of the plots (i.e., within 30 cm of the boom)]. Each of the five samples was extracted with 1.0 L of deionized water on a shaker (the water had been previously acidified by adding 1.0 mL of concentrated H_2SO_4 to 500 mL of deionized water). Nitrate concentrations were quantified on an autoanalyzer after the pH was neutralized to 7.0 with 10 N NaOH. The method used was

based on cadmium reduction of nitrate to nitrite (*29*). Results were reported as milligram of nitrate-N/liter of interstitial water after determining the water content of the sample gravimetrically.

Laboratory Analysis of Biodegradation. To determine the rate of biodegradation of oil components in closed laboratory flasks for comparison to field observations, 500-mL respirometer flasks (*30*) were partially filled with 250 mL of artificial seawater, 5.0 g/L weathered crude oil was added to each flask, and the reactors were inoculated with a mixed culture of oil-degrading bacteria isolated previously from Slaughter Beach, DE, which is located about 1 mi north of the Fowler Beach area. The flasks were sacrificed periodically, and the entire contents was extracted with DCM followed by solvent exchange into hexane for GC/MS analysis of the PAH components of the oil.

Statistical Analysis and First-Order Hopane-Normalized Biodegradation Model. Oil constituents can be lost from a beach by physical washout, dissolution, volatilization, and biodegradation. An underlying assumption of this work is that a nonbiodegradable constituent of oil (namely, hopane) can be used to estimate the first three loss rate mechanisms and that the actual biodegradation rate of an analyte can be estimated from the difference between its total loss rate and its physical loss rate as estimated from the hopane loss rate. For this assumption to be true, the physical washout rate of the oil must be dominant, and the individual physical loss removal mechanisms of dissolution and volatilization must be negligible. Furthermore, due to the lack of more information about the mechanism of biodegradation of each analyte, the rate of biodegradation is assumed to be first order. Based on the aforementioned assumptions, the total loss rate of an analyte, $((dA/dt)_t$, the total loss rate of hopane, $(dH/dt)_t$, and the biodegradation rate of the analyte, $-kA$, are related by the following equation:

$$\left(\frac{dA}{dt}\right)_t - \frac{A}{H}\left(\frac{dH}{dt}\right)_t = -kA \qquad (1)$$

where A is the concentration of an analyte, H is the concentration of hopane, and k is the first-order biodegradation rate constant for an analyte. Using the definition of the derivative of a quotient, eq 1 can be rewritten as

$$\frac{d\left(\frac{A}{H}\right)}{dt} = -k\left(\frac{A}{H}\right) \qquad (2)$$

Integrating eq 2 yields the following first-order relationship:

$$\left(\frac{A}{H}\right) = \left(\frac{A}{H}\right)_0 e^{-kt} \qquad (3)$$

where (A/H) is the time-varying hopane-normalized concentration of an analyte, and $(A/H)_0$ is the value of that quantity at time$_0$.

Nonlinear regression analysis was used to estimate the first order rate of oil biodegradation for each of the three treatments and for comparison of the treatments. The coefficients of determination (r^2), which were derived from all the data (i.e., five replicates per sampling event × eight sampling events), were determined by the adjustment method of Kvalseth (*31*). Rate coefficients and intercepts of the three treatments were compared for statistical differences. Statistically valid variability estimates and power curves were obtained to aid the design of future bioremediation studies.

Results

Visual Observations. The crude oil was applied at low tide on the morning of July 1, 1994. The application was quite uniform, as the coarse sand absorbed the oil almost instantly as it was applied. The waves were mildly rough during the first high tide several hours later as winds picked up from the southeast. Waves breaking on the plots caused some oil to be lifted over the containment booms, and visible sheens were observed floating on the water. The sorbent booms were slightly discolored by the escaped oil. The amount of oil that actually escaped, however, was negligible. The mean concentration of total petroleum hydrocarbons (gravimetric residue weight) in samples collected from all 15 plots 4 days after application was 4.74 g/kg, which is within 5% of the amount of oil (5.0 g/kg) originally calculated to be applied.

During the course of the experiment, significant movement of sand took place within the plots due to tide and wave action. This was especially evident at the periphery of the plots because of the damming effect caused by the skirted containment booms. The three steel fence posts driven in the middle of each plot along with the steel posts retaining the boom that fell on the same transect served as a means of measuring the resultant change in topography.

Physical Loss of Oil. To distinguish physical loss from biodegradative loss of oil, the concentration of hopane in the sand was quantified in each sample. The measured overall means and standard deviations of the hopane concentrations at T_0, (i.e., the day nutrients and inoculum were first applied) according to position within the intertidal zone were α-sector, 3.58 ± 1.82 mg/kg; β-sector, 3.73 ± 1.56 mg/kg; γ-sector, 2.90 ± 1.05 mg/kg; and δ-sector, 1.38 ± 1.05 mg/kg. Knowing that the concentration of hopane in Bonny Light crude oil was 597 ng/mg oil (from GC/MS analysis), we computed the theoretical hopane concentration in the sand at T_0 to be 2.83 mg/kg sand (assuming that we sampled the entire oiled depth). This agrees well with the measured overall mean hopane concentration, which was 2.90 ± 1.07 mg/kg (averaged over all sectors). Note that the hopane concentrations were higher in the α- and β-sectors of the plots and lower in the δ-sector. This was caused by the breaking waves churning the oiled beach matrix and carrying it landward, which is typical of the oil deposition pattern in an actual spill event (*20*, *21*).

Figure 2a summarizes the overall disappearance of hopane with time from each of the three oiled treatments. The data, which were averaged over all intertidal sectors, represent plot mean hopane losses. First-order nonlinear regression curves for each treatment were fitted to the data, and no differences in rate coefficients or y-intercepts were found. Thus, an overall first-order curve was plotted through the pooled data, and a hopane half-life of 28 days was calculated. This was interpreted to represent physical loss of crude oil due to wave action and tidal inundation, since hopane was assumed to be nonbiodegradable in the time period of this experiment (*1*, *27*, *28*, *32*). Figure 2b is a similar plot showing the temporal loss of total extractable organic material from the plots. The half-life was 20 days. The EOM first-order rate coefficient was significantly higher than the hopane disappearance rate. The difference in loss rates (and half-lives) between hopane and EOM is attributed to biodegradation because EOM includes both

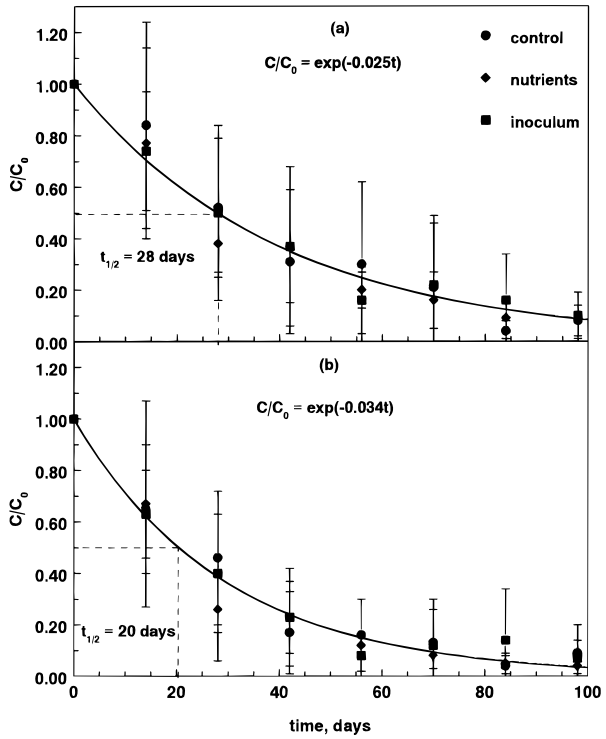

FIGURE 2. First order decay of (a) hopane and (b) total extractable organic matter during the experimental time period.

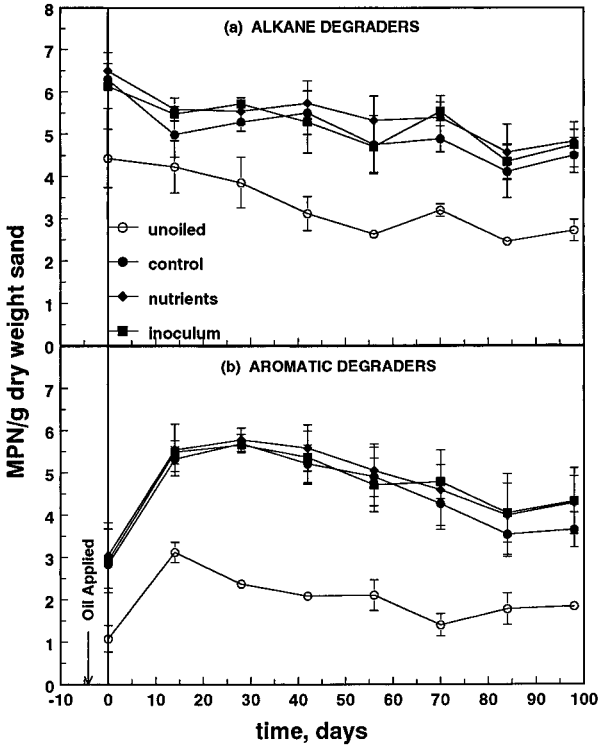

FIGURE 3. Growth of (a) total alkane degraders and (b) total aromatic degraders in treated, untreated, and unoiled plots.

TABLE 1

Summary of Nitrate Concentrations by Block (mg of Nitrate-N/L of Interstitial Water)

	control		nutrients		inoculum	
block	mean	SD	mean	SD	mean	SD
1	0.7	0.7	3.9	1.4	2.6	2.3
2	0.8	0.9	9.5	3.3	3.9	3.2
3	1.3	1.1	6.2	3.8	1.1	0.5
4	0.6	0.5	3.6	2.1	5.5	5.5
5	0.8	1.3	8.6	7.9	4.2	2.4
total	0.8	0.3	6.4	2.7	3.5	1.7

biodegradable and nonbiodegradable components. However, EOM is not a sensitive enough indicator to discern treatment differences.

Nutrient Persistence. Table 1 summarizes the daily nitrate data from the oiled plots by block. The control plots receiving only seawater with no nutrients had measurable concentrations of nitrate (mean of 0.82 mg/L), which were approximately half the 1.5 mg/L target level desired for maximum biodegradation. The concentrations in the nutrient and inoculum treated plots were substantially higher. The Fowler Beach area of Delaware Bay was close to farm land, where runoff could easily account for the high background levels found. Samples along the shoreline of Delaware Bay were collected late in the project at considerable distances south and north of our experimental location and even in the Chesapeake Bay area, and the same high nitrate levels were measured. High nutrient levels are common in this coastal area (*38*).

Microbiological Analysis. Figure 3 summarizes the results of the alkane and aromatic degrader population data for all sampling events. No statistically significant differences were evident among the three oiled treatments at any sampling event. The populations in all the oiled plots were significantly higher than the unoiled plots. Even though the treatment differences were not statistically significant, the populations in the nutrient-amended plots were always greater than the nonamended (oiled) controls by about half an order or magnitude, especially in the latter weeks of the study. Note that the populations of alkane and aromatic degraders in the oiled plots were 2 orders of magnitude higher than those in the unoiled controls at T_0, which was 4 days after oil was applied. This suggests that considerable and rapid increases in the microbial populations occurred within 4 days due solely to exposure to crude oil and the natural background levels of nutrients present. The number of alkane degraders in both unoiled and oiled plots slowly decreased over time, while aromatic degraders increased almost 3 orders of magnitude in the first 2 weeks, leveled off, and then decreased. The aromatic degraders even increased in the unoiled plots, suggesting that enough oil may have initially escaped from the oiled plots onto the unoiled plots to cause a stimulation in growth. Note, however, that the amount of oil required to stimulate growth to approximately 1000 PAH degraders/g of dry sand is extremely low (<1 g of oil/plot) relative to the amount of oil added to each of the oiled plots (approximately 110 kg of oil/plot). One plausible explanation that could account for the observed lack of change in the alkane degrader populations was that they were already at their maximum field capacity at T_0.

Total Target Analytes. Results from the biweekly samplings are summarized in Figure 4a,b which shows the hopane-normalized concentrations of total target alkanes (i.e., the sum of all alkane analytes from *n*-C_{10} to *n*-C_{35} plus pristane and phytane) (Figure 4a) and total target aromatics (i.e., the sum of all groups of PAHs and sulfur heterocyclics analyzable by GC/MS and their alkyl-substituted homologues) (Figure 4b) in the nutrient-treated, inoculum-treated, and control plots as a function of time. Each data

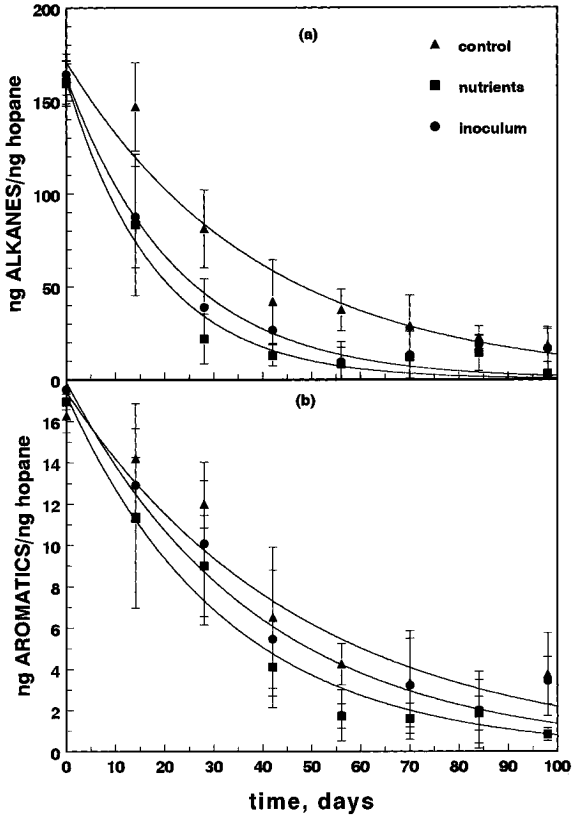

FIGURE 4. First-order declines in (a) total target alkanes ($nC_{10}-nC_{35}$ plus pristane and phytane) and (b) total target aromatics, including alky-substituted homologues (error bars represent ± one standard deviation unit).

TABLE 2

Summary of Rate Coefficients, *Y*-Intercepts, and Coefficients of Determination for the Total Analyte Biodegradation Data

	alkanes			aromatics		
treatment	intercept	k, day^{-1}	r^2	intercept	k, day^{-1}	r^2
control	171.1	−0.026	0.879	17.4	−0.021	0.839
nutrients	161.8	−0.056[a]	0.901	17.3	−0.031[a]	0.886
inoculum	163.0	−0.045[a]	0.911	17.9	−0.026[a]	0.829

[a] Rate coefficient significantly different from control ($p < 0.05$).

point is the mean of five independent replicates, and the error bars represent one standard deviation unit. The *y*-intercepts of the three treatments were not significantly different but the first-order rate coefficients were. Both the alkane and the aromatic biodegradation rates in the nutrient- and inoculum-treated plots were significantly greater than the control. Table 2 summarizes the intercepts, rate coefficients, and coefficients of determination (r^2) for the first-order relationships.

Individual Analytes. Figure 5 summarizes for each of the treatments the first-order biodegradation rate constants of individual alkanes calculated by nonlinear regression. The estimated initial concentrations (*y*-intercepts) were equivalent for all treatments, but the first-order rate coefficients were significantly different among the treatments for all of the analytes. The hopane-normalized loss rates in the nutrient- and inoculum-treated plots were significantly greater than the unamended controls. Hopane-normalized rate constants for nutrient plots averaged approximately 2.3-fold higher than control plots for normal alkanes and about 1.6-fold higher for the isoprenoid hydrocarbons. The latter result was expected, since branched alkanes are known to be more resistant to biodegradation than their straight-chain counterparts (*33*). Rate differences were somewhat lower for the inoculum and control plot comparisons, the inoculum plots yielding about 1.8-fold higher rate constants than the control plots for normal alkanes and 1.5-fold higher for the isoprenoids.

TABLE 3

Comparison of First-Order Rate Constants of Homologous PAHs Determined in the Laboratory and the Field

	field		laboratory		
PAH	k, day^{-1}	k relative to highest substituted homologue	k, day^{-1}	k relative to highest substituted homologue	ratio, k_{Field}/k_{Lab}
nap	0.302	13.727	0.734	4.170	3.29
C_1-nap	0.108	4.909	0.603	3.426	1.43
C_2-nap	0.045	2.045	0.340	1.932	1.06
C_3-nap	0.031	1.409	0.227	1.290	1.09
C_4-nap	0.022	1.000	0.176	1.000	
phe	0.046	3.067	0.365	3.614	0.85
C_1-phe	0.030	2.000	0.212	2.099	0.95
C_2-phe	0.020	1.333	0.162	1.604	0.83
C_3-phe	0.015	1.000	0.101	1.000	
flu	0.049	2.722	0.367	2.603	1.05
C_1-flu	0.029	1.611	0.246	1.745	0.92
C_2-flu	0.022	1.222	0.171	1.213	1.01
C_3-flu	0.018	1.000	0.141	1.000	
dbt	0.043	3.308	0.322	3.320	1.00
C_1-dbt	0.023	1.769	0.196	2.021	0.88
C_2-dbt	0.019	1.462	0.147	1.515	0.97
C_3-dbt	0.013	1.000	0.097	1.000	

Figure 6 summarizes the comparative hopane-normalized first-order biodegradation rate constants of the individual PAH groups. Figure 6a compares the nutrient plots to the controls, while Figure 6b compares the inoculum plots to the controls. The rate constants for the nutrient-treated plots were significantly higher than the control for 16 of the 27 PAHs measured, whereas the rate constants for the inoculum-treated plots were higher for only 4 of the 27 compounds. The overall patterns of decay for all treatments were indicative of biologically mediated degradation reactions (*34*, *35*), i.e., the rate constants were higher for all parent compounds except pyrene and chrysene and progressively lower as more alkyl groups appeared on the ring structure. Rate constants for the parent and monomethylated naphthalene group were equal to or even greater than those of the lowest molecular weight alkanes in the nutrient-treated plots. Rate constants for the three-ring polycyclics were approximately equivalent to those of the intermediate carbon number alkanes in the unamended control plots or the high carbon number alkanes of the nutrient-treated plots. The naphthobenzothiophenes had the highest rate constants among the four-ring PAH groups. Concentrations of the pyrene and chrysene groups in this particular crude oil were close to the detection limit of the instrument, so calculated biodegradation rate constants are less accurate than for other compounds.

Table 3 compares the first-order biodegradation rate constants of the hopane-normalized two- and three-ring PAH compounds measured in the field to the rate constants measured in sealed laboratory respirometer flasks. Also shown in Table 3 are the rates of the hopane-normalized

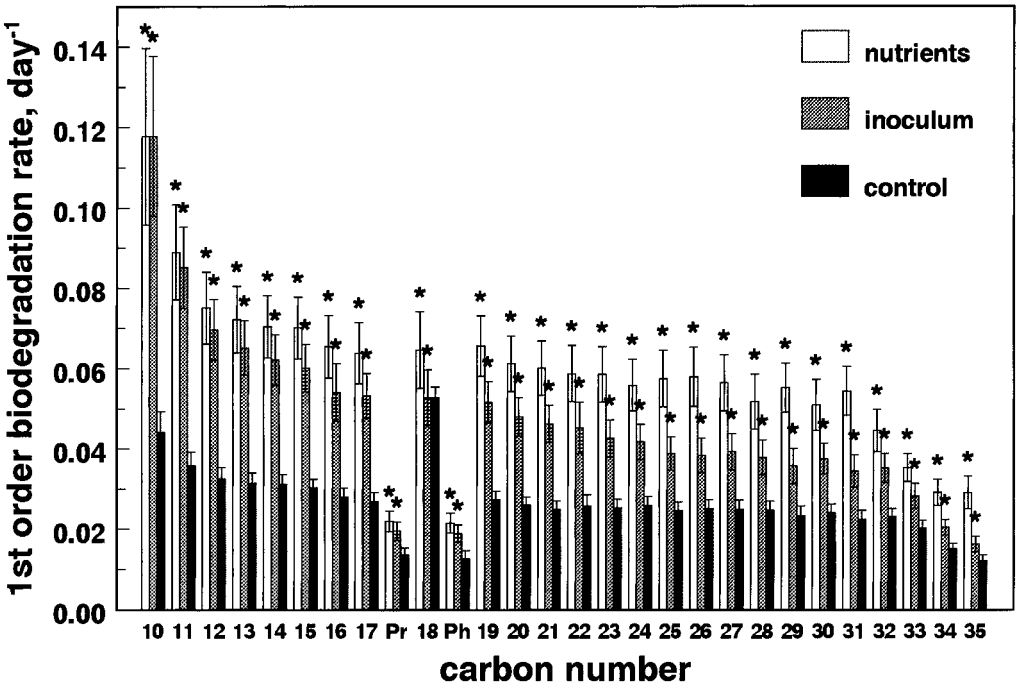

FIGURE 5. First-order biodegradation rates of all individual normal and branched alkanes computed by nonlinear regression of the data over the entire 14-week experimental time period [error bars represent ± one standard deviation unit, and asterisks identify significant differences from untreated control plots ($p < 0.05$)].

parent and substituted homologous PAHs relative to their respective highest and least volatile substituted homologue. For all compounds except naphthalene and C1-naphthalene, the agreement in biodegradation rates of the substituted homologues relative to their respective highest substituted homologue was nearly identical between laboratory and field, i.e., ratios ranged from 0.83 to 1.09 (last column, Table 3). The reason why the agreement broke down for naphthalene and C1-naphthalene was that the latter compounds are significantly more volatile than the others; consequently, rate constants of these two compounds were greater in the field. These results verify our interpretation that the pattern of loss of homologous PAHs measured in this field study are indicative of biodegradation as opposed to mere physical loss or solubility differences. Losses measured in the field represent losses due to washout, dissolution, volatilization, and biodegradation, whereas losses measured in a sealed flask can only be biodegradative. Since the relative rates measured in the field closely approximated those measured in the laboratory, differences in the dissolution and volatilization rates among homologues were negligible relative to differences in the biodegradation rates. Hopane normalization, which accounts for losses due primarily to washout, eliminates the uncertainty caused by all the physical factors acting on the oil components.

Positional Effects within the Intertidal Zone. Figure 7 summarizes the hopane-normalized first-order rate constants of the three treatments as a function of the plot sectors (i.e., α, β, γ, and δ) from which the samples were taken. The greatest differences between treated and control plots for both the saturate and the aromatic fractions of the oil were evident in the α-sector of the plots, i.e., the location closest to the high dune area of the beach. Somewhat lower rates occurred in the β-, γ-, and δ-sectors. These data suggest that more biodegradation occurred in the upper intertidal zone than in the lower intertidal area. This upper area of the beach is submerged the least and is thus likely to be exposed to higher aerobic conditions for a longer time period. It is also less subject to churning action of breaking waves, which occurs more on the lower portion of the beach. Thus, nutrients added for bioremediation purposes would persist longer in the higher intertidal zone and would be more available for continued biostimulation. To provide further support for this conclusion, we estimated the average time of submersion for each sector from available tide tables. The α-sector was under water for approximately 0.5 h/day, the β-sector for 2.5 h/day, the γ-sector for 6.5 h/day, and the δ-sector for 11 h/day. Submersion times were estimated independently for each tidal cycle. These time estimates begin when the tide reached the midpoint of each sector on the rising tide and when it reached the same point on the subsequent falling tide. These submersion times are based on average tidal elevations to the midpoints of the four sectors and represent the average time of submersion from rising tide to falling tide.

Statistical Power Analysis. A statistical power test was performed to determine the number of replicates that would be needed in future studies where the investigator wished to determine differences among treatments, given similar experimental conditions and variability as experienced in this study. Figure 8a presents power curves for the saturate fraction (similar power curves, not shown due to space limitations, were generated for the aromatic fraction) for a varying sample size (number of replicate plots) and a constant variance (σ). Figure 8b presents similar power curves for a constant sample size but varying σ. For a power of 80% (i.e., the probability that significant differences between two or more treatments are detected when indeed they exist), the difference in hopane-normalized alkanes between treated and untreated plots at any sampling time would have to be >120 at two replicates, 63 at three replicates, 47 at four replicates, 39 at five replicates, 31 at seven replicates, and 25 at 10 replicates to be statistically detectable at the variance experienced (Figure 8a). Actual

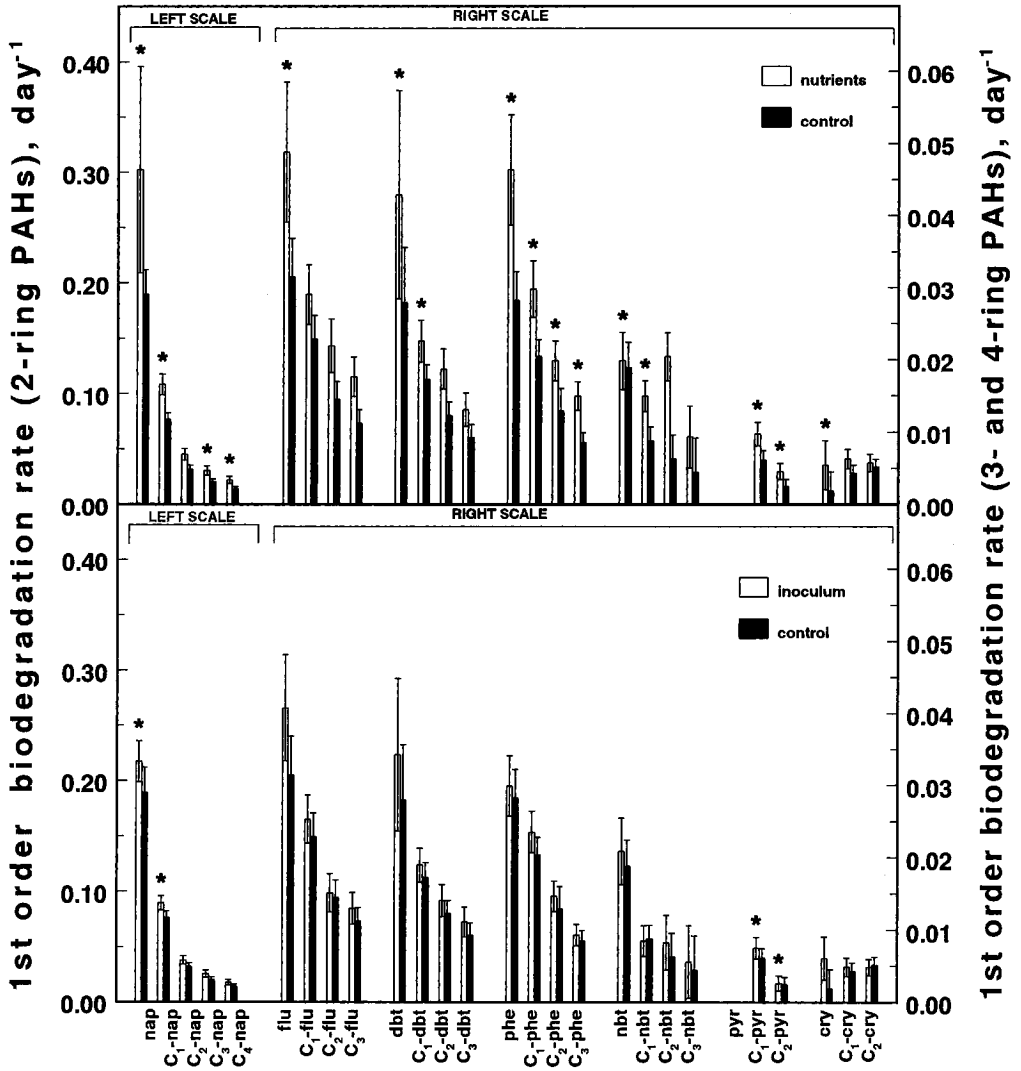

FIGURE 6. First-order biodegradation rates of all aromatics and their alkyl-substituted homologues. (a) Comparison of nutrient and control plots; (b) comparison of inoculum and control plots [error bars represent ± one standard deviation unit, and asterisks identify significant differences from untreated control plots ($p < 0.05$)].

observed differences averaged over weeks 4, 6, and 8 were 41 ng of alkanes/ng of hopane. Had only four replicate plots been used, the difference of 41 ng of alkanes/ng of hopane between the nutrient-treated plots and the control plots would not have been detectable. If the difference had been greater than 63 at any of those sampling events (i.e., due to a lower intrinsic biodegradation rate), we would have been able to detect such a treatment difference with as little as three replicates of each treatment.

For a power of 80% with a constant number of replicate plots (five), the difference in hopane-normalized alkanes between treated and untreated plots would have to be 20 at a variance of 8.3, 39 at a variance of 16.3 (the actual variance encountered in this study), 61 at a variance of 25.3, and 85 at a variance of 35.3 to be statistically detectable. Thus, if the expected variance in a future field study is 50% higher than that encountered in Delaware, a difference of 61 ng of alkanes/ng of hopane would have to exist to be statistically detectable with five replicates.

Topographical Changes. The plot-averaged change in elevation of beach sand relative to initial sand elevations determined at the time of the initiation of the experiment was computed for every sampling event. This calculation was performed along a transect bisecting the plot perpendicular to the water edge. Each plot had three internal posts and two edge posts along the transect. Depth measurements from the top of a post to the surface sand elevation were used for the calculations. The plot-averaged change in elevation was calculated from the changes in elevations measured along the posts using the trapezoidal rule according to the equation:

$$\Delta h = \frac{1}{\sum_{i=1}^{4} \Delta x_i} \sum_{i=1}^{4} (\Delta h_i + \Delta h_{i+1}) \frac{\Delta x_i}{2}$$

where Δh is the plot-averaged change in elevation (cm); Δh_i is the change in elevation at post$_i$ (cm); and Δx_i is the distance between post$_i$ and post$_{i+1}$ (cm).

These Δh data computed by the above procedure indicate very little change in average plot elevation over time: the average change was 1.1 ± 2.9 cm for the oiled control plots, 0.4 ± 2.5 cm for the nutrient plots, −2.4 ± 2.3 cm for the plots receiving both nutrients and inoculum, and −3.4 ± 4.6 cm for the unoiled control plots. It is clear from these data that little net sand movement occurred between the plots and the surrounding beach. Further-

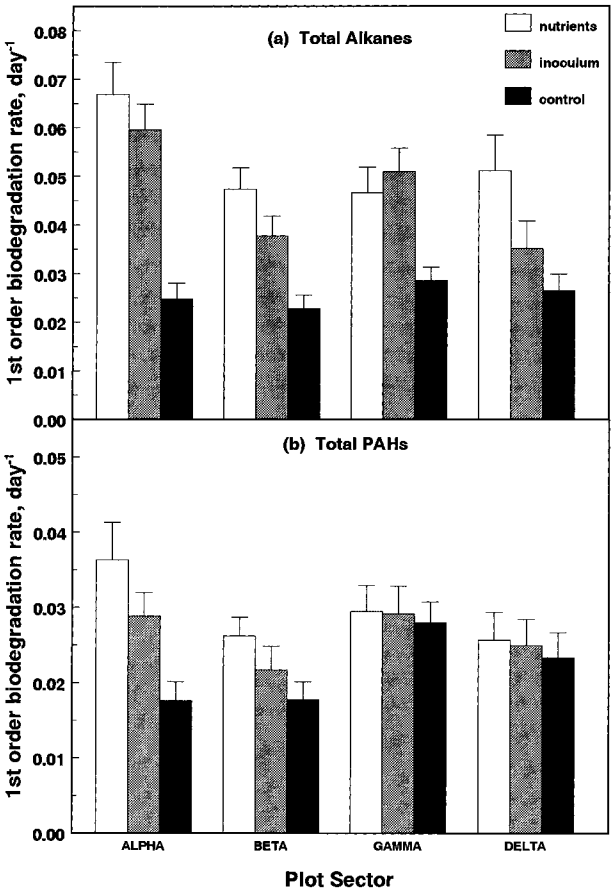

FIGURE 7. First-order biodegradation rates of (a) total target alkanes and (b) total target aromatics according to location within the intertidal zone (α-sector is closest to the high dune area; δ-sector is closest to the water) (error bars represent $\pm$ one standard deviation unit).

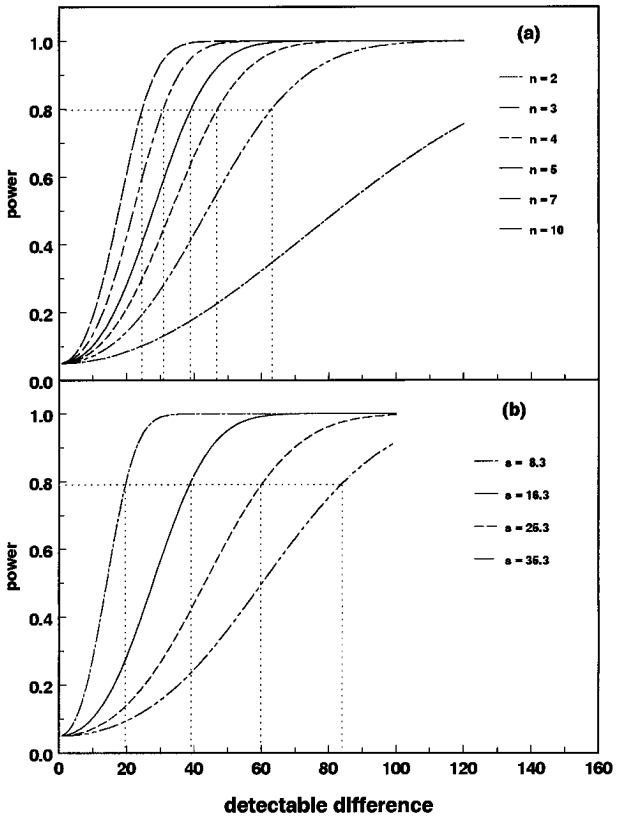

FIGURE 8. Statistical power curves for hopane-normalized total alkanes (a) for varying *n* and constant σ of 16.3 and (b) for varying σ and constant *n* of 5.

more, no meaningful difference existed between the boomed plots and the unboomed, unoiled plots relative to net changes in sand elevation. Although no net change in elevation occurred in the unboomed portions of the beach, we observed considerable movement of sand with rising and falling tides throughout the experimental period. This type of dynamic sand movement is exactly what would happen with oiled sand in a real spill where the whole beach is contaminated. However, in the latter instance, sand movement will not result in a major change in oil concentration in any one location because the whole beach is oiled. The fact that the boomed plots were able to retain the oiled sand for the duration of the study implies that results observed from this bioremediation study should closely simulate results expected from a study where the entire beach is oiled.

Discussion

In designing bioremediation experiments on a sandy beach, one has to contend with the fact that sand is transported into, out of, and along a beach by several mechanisms. Some of the mechanisms responsible for the movement of sand are tidal action, wind action, long-shore currents, animal and human activity, and storms. Since our permit limited the application of oil to 4×9 m plots, any movement of sand might have resulted in oiled sand leaving and fresh sand entering the plot. If the whole beach were contaminated, this movement of sand would not result in any major experimental problems since both the sand entering and leaving the plot would be contaminated; however, when only the plots are contaminated, any movement of sand will result in artificially accelerated dilution of the oiled sand. The use of hopane as a biomarker provides a procedure for overcoming this problem so that losses due to biodegradation can be isolated. However, dilution may result in toxicity reduction for which hopane normalization cannot account.

The two previously reported studies, which used replication and randomization to support the demonstration that significant treatment effects occurred, were conducted in terrestrial environments rather than on marine beaches (*15*, *16*). However, the abiotic loss mechanisms that act upon both the petroleum substrate and the nutrient amendments are substantially different in a beach environment as compared to a soil environment. The intertidal zones of beaches have much higher inputs of energy and flow-through of materials. The huge influx of seawater from tidal inundation can bring about substantial losses of hydrocarbons due to dilution. Surface waves as well as the interaction of tides and underground water flow are extremely important transport mechanisms for nutrients and bacteria and will affect the ability of exogenously introduced microorganisms to survive and colonize successfully. Consequently, the experimental design in a beach remediation field study is critical for providing the information needed to support objective conclusions on treatment effects. A randomized complete block design is ideally suited to test the biostimulation/bioaugmentation hypothesis.

Results presented in this paper were derived from five independent replicates of three separate and distinct oiled treatments. The reason why randomization was so im-

portant was to enable inferences on treatment effects over the whole experimental plane, not just the plots of interest. If a researcher has conducted a pseudoreplicate experiment and has assumed that no other effects except a treatment effect are present, then the inference will be limited to just the two plots of beach used in the experiment rather than the whole beach area, since a random sample of the plots, not the whole beach, was used. This has been the case in the vast majority of field studies reported (*1*, *2*, *8*−*11*, *13*). In this study, we did not want to limit our conclusions to the experimental plots; rather, we wanted to be able to infer treatment effects over the entire beach. The only way to accomplish this objectively was to sample randomly over the whole beach or a representative section of it.

The information from the statistical power analyses is useful for designing future research experiments involving three treatments in a randomized block design. If an experimenter has good reason to assume a certain variance and an expected treatment difference after a specified time period, the power curves from Figure 8 can be used as an aid in designing the experiment.

Clearly, bioremediation of crude oil spilled on a sandy beach in the temperate climate of the east coast can take place extremely rapidly. The nitrogen concentrations naturally present along the coast of Delaware Bay were high enough to sustain rapid intrinsic rates of biodegradation without human intervention. Although biostimulation with an exogenous source of inorganic mineral nutrients did indeed significantly accelerate the rate of hydrocarbon biodegradation, the incremental increase in biodegradation rate over the intrinsic rate (i.e., slightly greater than 2-fold for the alkanes and 50% for the PAHs) (Table 2) might not have been high enough to warrant a recommendation to actively initiate a major, perhaps costly bioremediation action in the event of a large crude oil spill in that area. This finding suggests that, in the event of a catastrophic oil spill impacting a shoreline, the first task is to measure the natural nutrient concentrations in that environment to determine if they are already high enough to sustain significant intrinsic biodegradation. If they are high enough, the next task is to determine if such a nutrient loading is typical for that area and season (i.e., determine the impact of chronic runoff from nearby agricultural practices or pollution from an upstream wastewater treatment plant or industrial discharge). Continuously renewable concentrations approaching 1−2 mg of nitrogen/L of interstitial pore water should support near optimum hydrocarbon biodegradation activity. The decision to supplement natural nutrient levels with an exogenous source should be based on how high the natural levels are relative to this threshold. If we had conducted this study on a beach with a similar temperature regime but subtantially lower background levels of nitrogen and had encountered the same biodegradation rates in the nutrient-treated plots, the rate enhancement factor would have been considerable because the background rate would likely have been substantially lower than that observed. In such a case, the decision to implement bioremediation would be unambiguous.

With respect to bioaugmentation as a means of enhancing cleanup of an oil spill, results from this study suggest that supplementation of natural populations with indigenous cultures from the same site may not result in further enhancement over and above simple nutrient addition. This conclusion could be extended to include allochthonous sources of microorganisms because if indigenous cultures that are adapted to the environmental conditions of the site do not accelerate the degradation rates, organisms enriched from different environments, grown in the laboratory, and not acclimated to a particular climatic or geographical location should be even less able to compete with the natural populations. The reason for this is that hydrocarbon degraders are ubiquitous in nature (*36*), and when an oil spill occurs at a given site, the large influx of biodegradable carbon will cause an immediate response in the abundance of hydrocarbon-degrading populations (*37*). If nutrients are limiting, however, the rate of oil biodegradation will be less than optimal. Supplying nutrients will enhance the succession initiated by the spill, but supplying added microorganisms will not because they still lack the necessary nitrogen and phosphorus to support growth on the oil carbon.

Perhaps of even more importance are the factors that determine the carrying capacity for hydrocarbon degraders in a marine beach environment. The most important influence is likely the physical removal rate caused by scouring of biomass when breaking waves tumble sand grains. If that is the case and indigenous bacteria are present, then they can grow to the carrying capacity rapidly if sufficient nutrients are present. Adding exogenous hydrocarbon degraders cannot increase the population density because physical removal will control it. In the present study, if nutrient supplementation was sufficient to bring the background biodegradation rate to near its maximum, bioaugmenting the natural populations is unlikely to stimulate the rate further. Of course, this assumes that what we observed was very near the maximum biodegradation rate and that such a rate was determined by something other than the growth rate of hydrocarbon degraders (e.g., oxygen concentration, maximum bacterial population density, surface area available for attachment). If this is the case, then we cannot assume that bioaugmentation is always unnecessary. This study suggests that, in addition to surveying the background nutrient levels at a spill site, the background hydrocarbon-degrading populations should also be determined as part of the site assessment. These levels should then be compared to some standard to determine if bioaugmentation is necessary. Such a standard does not exist at this time, but future research that would define the carrying capacities of various environments and the mechanisms that control them could be fruitful in this regard.

The differences that we observed in the rates of disappearance of homologous PAHs cannot be explained by differences in solubility or volatility. The biodegradation rates observed in sealed respirometer flasks showed nearly identical relative disappearance rates to those observed in the field. This lends credence to our conclusion that the patterns that we observed in the field were indicative of biodegradation, because losses due to volatilization and dissolution cannot occur in a closed system. Normalizing all measured analyte concentrations to hopane markedly facilitates conclusions regarding analyte biodegradability in the field. One must assume that hopane does not biodegrade at rates approaching the other analytes and that hopane is subject to the same physical loss factors to which all other oil components are subject. Based on the experience of this and other studies (*1*, *27*, *28*, *32*), the first assumption is well justified. The second assumption, however, is less certain. Hopane, which is a saturated, high molecular weight alkane, behaves like one with respect to

physical/chemical loss mechanisms. Despite this weakness, hopane normalization is useful as a first approximation for monitoring the progress of biodegradation in the field. No truly universal surrogates are available, and the extreme biological recalcitrance of hopane places it among the most reliable of available biomarkers. Used in combination with biodegradability differences within homologous series, hopane normalization can provide strong evidence in support of a biological removal mechanism during remedial operations.

In summary, we have shown that significant intrinsic biodegradation of petroleum hydrocarbons can take place naturally if sufficient nutrients already exist in the impacted area. We have also demonstrated statistically significant rate enhancement even in the presence of an already high intrinsic rate by supplementing natural nutrient levels with inorganic mineral nutrients. We affirmed that the decision to apply nutrients and microorganisms should depend on the background concentrations available at the contaminated site. We have shown that bioaugmentation will likely not significantly contribute to cleanup of an oil spill. We have developed for the first time from field data first-order biodegradation rate constants for the resolvable normal and branched alkanes and the important two- and three-ring PAH groups (and at least one four-ring PAH group) present in light crude oil. We have shown that the relative biodegradation rates of homologous PAHs measured in the field are close to those measured in the laboratory, thus corroborating the rates as being due to biodegradation and not physical washout or solubility differences. We have confirmed the importance of hopane as a useful biomarker for tracking biodegradation success in the field. We have demonstrated that maintenance of a threshold concentration of about 1−2 mg of nitrate-N/L of interstitial pore water will permit close to maximum hydrocarbon bioremediation. We have shown that better hydrocarbon biodegradation takes place in the upper intertidal zone than in the lower intertidal zone. And, finally, we demonstrated that the experimental conditions imposed by the booms surrounding the plots did not diminish our ability to simulate the sand movement that takes place naturally on a beach from long-shore currents and tidal inundations.

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Literature Cited

(1) Bragg, J. R.; Prince, R. C.; Harner, E. J.; Atlas, R. M. *Nature* **1994**, *368*, 413−418.

(2) Halmo, G. In *1985 International Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1985.

(3) Lee, K.; Levy, E. M. In *Proceedings of the 1987 International Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1987.

(4) Lee, K.; Levy, E. M. In *Aquatic Toxicology and Water Quality Management*; Nriagu, J. A., Ed.; John Wiley and Sons, Inc.: New York, 1989.

(5) Lee, K.; Levy, E. M. In *Proceedings of the 1989 International Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1989.

(6) Lee, K.; Levy, E. M. In *Proceedings of the 1991 International Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1991.

(7) Lee, K.; Tremblay, G. H.; Levy, E. M. In *Proceedings of the 1993 International Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1993.

(8) Rosenburg, E.; Legmann, R.; Kushmaro, A.; Taube, R.; Adler, R.; Ron, E. Z. *Biodegradation* **1992**, *3*, 337−350.

(9) Sendstad, E. In *Proceedings of the 3rd Arctic and Marine Oil Spill Program*; Environment Canada: Ottawa, 1980.

(10) Sveum, P. In *Proceedings of the 10th Arctic and Marine Oilspill Program*; Environment Canada: Ottawa, 1987.

(11) Sveum, P.; Ladousse, A. In *Proceedings of the 1989 International Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1989.

(12) Pritchard, P. H.; Costa, C. F. *Environ. Sci. Technol.* **1991**, *25*, 372−379.

(13) Pritchard, P. H.; Mueller, J. G.; Rogers, J. C.; Kremer, F. V.; Glaser, J. A. *Biodegradation* **1992**, *3*, 315−335.

(14) Hurlbert, S. H. *Ecol. Monogr.* **1984**, *54* (2), 187−211.

(15) Westlake, D. W. S.; Jobson, A. M.; Cook, F. D. *Car. J. Microbiol.* **1978**, *24*, 245−260.

(16) Jobson, A. M.; McLaughlin, M.; Cook, F. D.; Westlake, D. W. S. *Appl. Microbiol.* **1974**, *27*, 166−171.

(17) Office of Technology Assessment. *Bioremediation for Marine Oil Spills*; U.S. Government Printing Office: Washington, DC, 1991.

(18) Science Advisory Board. *SAB Review of the Alaskan Bioremediation Oil Spill Project*; U.S. Environmental Protection Agency: Washington, DC, 1992; EPA-SAB-EPEC-LTR-92-015.

(19) Mearns, A.; Doe, K.; Fisher, W.; Hoff, R.; Lee, K.; Siron, R.; Mueller, C.; Venosa, A. D. *Proceedings of the 18th Arctic and Marine Oilspill Program Technical Seminar*; Environment Canada: Ottawa, 1995; Vol. 2, pp 1133−1144.

(20) Owens, E. H.; Robson, W. *Arctic* **1987**, *40* (Suppl. 1), 230−243.

(21) Owens, E. H.; Harper, J. R.; Robson, W.; Boehm, P. D. *Arctic* **1987**, *40* (Suppl. 1), 109−123.

(22) Hayes, M. O.; et al. In *Proceedings of the 1979 Oil Spill Conference*; American Petroleum Institute: Washington, DC, 1979; pp 192−198; API Publication 4308.

(23) Venosa, A. D.; Haines, J. R.; Suidan, M. T.; Wrenn, B. A.; Strohmeier, K. L.; Eberhart, B. L.; Holder, E. L.; Wang, X. In *Symposium on Bioremediation of Hazardous Wastes: Research, Development, and Field Evaluations*; U.S. Environmental Protection Agency, Office of Research and Development: Washington, DC, 1994; EPA/600/R-94/075; pp 103−108.

(24) Venosa, A. D.; Suidan, M. T.; Wrenn, B. A.; Haines, J. R.; Strohmeier, K. L.; Holder, E. L.; Eberhart, B. L. In *Twentieth Annual RREL Research Symposium*, U.S. Environmental Protection Agency: Cincinnati, OH, 1994; EPA/600/R-94/011; pp 139−143.

(25) Wrenn, B. A.; Venosa, A. D. *Can. J. Microbiol.*, in press.

(26) Bushnell, L. D.; Haas, F. F. *J. Bacteriol.* **1941**, *41*, 653−673.

(27) Peters, K. E.; Moldowan, J. M. *The Biomarker Guide*; Prentice Hall: Englewood Cliffs, NJ, 1993; 363 pp.

(28) Seifert, W. K.; Moldowan, J. M. *Geochim. Cosmochim. Acta* **1979**, *43*, 111−126.

(29) Technicon Industrial Systems. *Industrial Method No. 158−71W*; Technicon Industrial Systems: Tarrytown, NY, 1972; 3 pp.

(30) Venosa, A. D.; Haines, J. R.; Nisamaneepong, W.; Govind, R.; Pradhan, S.; Siddique, B. *J. Ind. Microbiol.* **1992**, *10*, 13−23.
(31) Kvalseth, T. O. *Am. Stat.* **1985**, *39*, 279−285.
(32) Butler, E. L.; Douglas, G. S.; Steinhauer, S.; Prince, R. C.; Aczel, T.; Hsu, C. S.; Bronson, M. T.; Clark, J. R.; Lindstrom, J. E. In *On-Site Bioreclamation: Processes for Xenobiotic and Hydrocarbon Treatment*; Hinchee, R. E., Offenbuttel, R. F., Eds.; Butterworth-Heinemann: Boston, 1994; p 515.
(33) Pirnik, M. P.; Atlas, R. M.; Barth, R. *J. Bacteriol.* **1974**, *119*, 868.
(34) Cerniglia, C. E. *Biodegradation* **1992**, *3*, 351.
(35) Bayona, J. M.; Albaiges, J.; Solonas, A. M.; Pares, R.; Garrigues, P.; Ewald, M. *Int. J. Environ. Anal. Chem.* **1986**, *23*, 289.
(36) Prince, R. C. *Crit. Rev. Microbiol.* **1993**, *19* (4), 217−242.
(37) Pierce, R. H.; Cundell, A. M.; Traxler, R. W. *Appl. Microbiol.* **1975**, *29* (5), 646−652.
(38) Sharp, J. H. University of Delaware, personal communication, 1995.

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Human Health and Socioeconomic Effects

HUMAN HEALTH AND SOCIOECONOMIC EFFECTS OF THE DEEPWATER HORIZON OIL SPILL IN THE GULF OF MEXICO

By Paul A. Sandifer, Alesia Ferguson, Melissa L. Finucane, Melissa Partyka, Helena M. Solo-Gabriele, Ann Hayward Walker, Kateryna Wowk, Rex Caffey, and David Yoskowitz

In the wake of the Deepwater Horizon oil spill, hundreds of miles of floating barriers, known as boom, were anchored in place to prevent oil from stranding on the shore and to reduce impacts to sensitive areas such as marshes and bird nesting grounds, as well as areas valued for human use like this fishing spot north of Dauphin Island, Alabama. *Photo credit: US Navy Photo by Chief Mass Communication Specialist Joe Kane, Fleet Combat Camera Group Pacific (Released)*

ABSTRACT. The Deepwater Horizon (DWH) oil spill is the only declared Spill of National Significance in US history, and it significantly impacted the health of people and communities in the Gulf of Mexico region. These impacts amplified adverse effects of prior disasters and may compound those of future traumas. Studies, both to date and ongoing, show some negative mental and physical health outcomes associated with DWH in some spill workers, as well as some coastal residents in all Gulf States. The spill was also associated with negative effects in the living resources, tourism, and recreation sectors, at least in the short term. Compared with others, people dependent on these sectors reported more health and financial concerns. Consumer concerns about the safety and marketability of seafood persisted well after data demonstrated very low risk. Parents were concerned about possible exposures of children as they played on beaches, but this risk was found to be minor. Spill-related stress was an overarching factor associated with adverse health outcomes, and some residents reported greater stress from navigating the legal and claims processes following the spill than from the spill itself. Research revealed a serious lack of baseline health, environmental, and socioeconomic data against which to compare spill effects. This finding highlighted the need for ongoing observing systems to monitor health and socioeconomic parameters and establish continuous baselines of such information.

INTRODUCTION

The Deepwater Horizon (DWH) oil spill was the largest ever in United States (National Commission, 2011) and the only Spill of National Significance. However, large oil spills, defined by NOAA (2017) as exceeding 100,000 barrels (420,000 gal) of oil are relatively rare, and very large ones even more so. Between 1969 and 2017, only 44 large oil spills (45 including the long-leaking Taylor Energy wells in the Gulf of Mexico; Mason et al., 2019) have occurred in US waters (NOAA, 2017), with about one-third of these in the Gulf.

Although they are rare, large oil spills can adversely impact the health of responders, cleanup workers, and residents, and the public welfare of affected communities (Walker et al., in press; Figure 1). The DWH spill also resulted in deaths of 11 oil industry workers. Physical and mental health effects have been reported and are closely related in disaster contexts (Aguilera et al., 2010; Palinkas, 2015; Ohrnberger et al., 2017; H.J. Osofsky et al., 2018), in part because environmental contamination results in significant stress (Hallman and Wandersman, 1992). How people adapt to repeated exposure to stress depends on an array of psychological, sociodemographic, economic, social, physical, and other variables (McEwen, 2005; Norris et al., 2008). Inhabitants of the Gulf region are particularly susceptible to oil spill health impacts due to widespread, preexisting health disparities, continuing exposure to contaminants, and location in a disaster-prone region (Lichtveld et al., 2016; Slack et al., 2020). Not surprisingly, the DWH oil spill, like Hurricane Katrina and other disasters, "had its greatest impact among those with the least" (Abramson et al., 2010).

From its beginning, the Gulf of Mexico Research Initiative (GoMRI) recognized the need for human-focused as well as environmental impact research. It sponsored a public health workshop and broadly advertised a request for research proposals focused on human health effects. Although articles explicitly focused on human health comprised only a small portion of research publications supported by GoMRI funding, they present important findings (Eklund et al., 2019). Additional health-related research was supported via the US National Institute of Environmental Health Sciences (NIEHS), in part with BP funding, some of which is summarized here.

DWH impacts on individuals, families, groups, businesses, and communities were extensive, and they compounded negative effects of previous disasters such as Hurricane Katrina in the Gulf. In turn, these effects are likely to exacerbate traumas of subsequent disasters as well as ongoing threats from chemical pollution, oil seeps, and harmful algal blooms. In this article, we describe potential, perceived, and actual impacts, beginning with the people expected to be most exposed to toxic substances—the response and cleanup workers—followed by effects on those who resided in spill-affected areas, possible hazards to children at play on beaches, seafood contamination risks, and socioeconomic effects on the Gulf's iconic fisheries and tourism industries and communities. We conclude with a discussion of the need for a human health observing system in the Gulf and a list of major findings and critical research needs for the future.

HEALTH EFFECTS ON RESPONDERS AND CLEAN-UP WORKERS

Oil spill response and cleanup workers (hereafter referred to as workers) can be exposed to a variety of hazards, including the oil and its components, burning oil, dispersants, and cleaning agents, plus mixtures of oil, dispersants, and other chemicals. Other work stressors include high heat and humidity, musculoskeletal strain, long working hours, and financial (e.g., job loss) and psychological (e.g., depression, anxiety) effects.

Between 1970 and 2009, there were 458 tanker spills greater than 700 metric tonnes (approximately 222,500 gals) of oil (IOTPF, 2009); 38 of those spills affected human populations. Of those 38 spills, only eight that occurred between 1989 and 2007 were studied in some detail for human health effects (Kwok et al., 2017a): *Exxon Valdez* (US), *Braer* (UK), *Sea Empress* (UK), *Prestige* (Spain), *Tasman Spirit* (Pakistan), *Erika* (France), *Nadhodka* (Japan), and the *Hebei Spirit* (South Korea) (B.-M. Kim et al., 2009; Aguilera et al., 2010; Jung et al., 2013).

Response to the *Exxon Valdez* oil spill led to many changes in oil spill preparedness, training, response, and worker safety and health, including use of personal protective equipment (PPE) in the United States (OSHA, 2020) and globally. Most studies of human health effects occurred in non-US countries where many workers from the community as well as volunteers engaged in oil spill cleanup with little protective gear. Studies that included pre-disaster health data were generally small, had shorter follow-up periods, and primarily investigated acute health symptoms. Acute health impacts were studied for up to one year after oil spill exposure in workers and affected community members to assess anxiety and post-traumatic stress, eye and skin irritation, and respiratory tract consequences (Palinkas et al., 1993; Zock et al., 2007; Na et al., 2012). Several studies reported longer-term respiratory symptoms in workers responding to the *Hebei Spirit* (Gwack et al., 2012) and *Prestige* (Zock et al., 2012) oil spills.

Human health studies following the DWH spill, the largest of their kind in history, are ongoing. Two epidemiological studies examine effects on the health of workers: the NIEHS Gulf Long Term Follow-Up Study (GuLF STUDY; Kwok et al., 2017a) and the US Coast Guard (USCG) Deepwater Horizon Oil Spill Cohort study (Rusiecki et al., 2018). These study teams have collaborated, and both are assessing potential long-term effects, including cancer.

The GuLF STUDY is assessing a

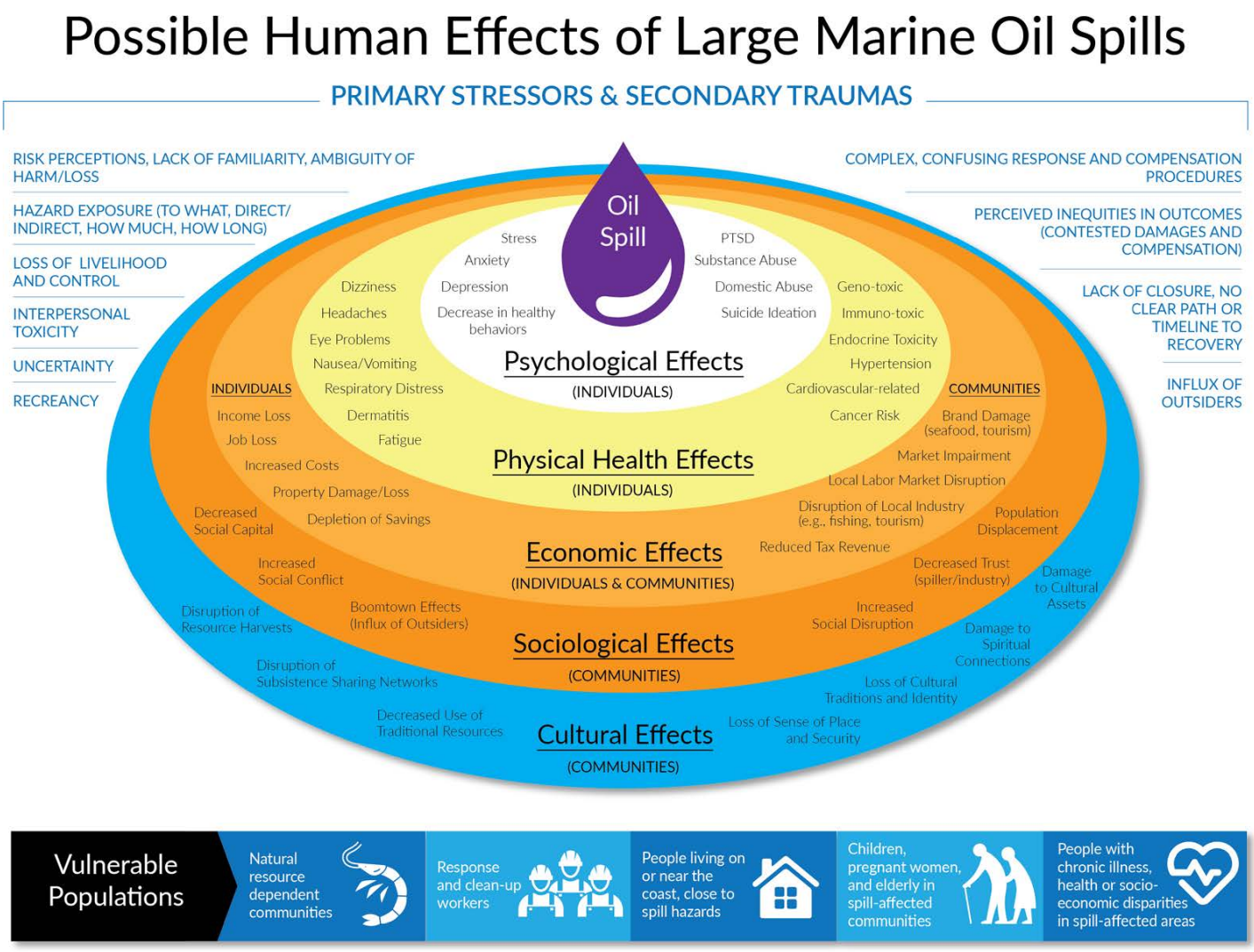

FIGURE 1. A summary of human effects research findings from studies on nine large oil spills: *Exxon Valdez* (USA), *Braer* (UK), *Sea Empress* (UK), *Prestige* (Spain), *Tasman Spirit* (Pakistan), *Erika* (France), *Nadhodka* (Japan), *Hebei Spirit* (South Korea), and Deepwater Horizon (USA). Relatively few spills have been shown to directly and adversely affect human mental and/or physical health, although many may have socioeconomic, ecological, or other effects of concern (Murphy et al., 2016). Whether any direct human effects occur from future spills will depend upon incident-specific conditions such as spilled oil type and volume, location, time of year, response actions, and safety and health protocols. Human susceptibilities to oil spill effects may be increased by pre-existing conditions, incident-specific and general life stressors, traumas, and previous disaster experience. Original concept developed by NASEM (2017) and adapted from Figure 3 in Beyer et al. (2016). Redrawn with permission from Sandifer and Walker (2018), with modifications.

range of human health effects, including worker access to mental health services (Lowe et al., 2015). It uses extensive data on actual and estimated exposures and health outcomes derived from surveys, home visits, and clinical records. Such limitations as self-reporting errors, confounding factors, and potential biases are documented in all papers and are frequently investigated with sensitivity analyses. The full cohort includes 32,608 people. Approximately 25,000 of these were actual workers, and the remainder were non-workers for comparison (i.e., people who were trained but not hired). The period of oil spill work activities was from April 20, 2010, through June 2011. Workers performed a variety of tasks with different exposure profiles under the primary categories of response, support operations, cleanup on water, decontamination, cleanup on land, and administration (Kwok et al., 2017a). The ultimate goal of the GuLF STUDY was to quantify exposures to total hydrocarbons (THC) and BTEX-H (benzene, toluene, ethylbenzene, xylene, hexane) via air measurements as a means of estimating potential toxic effects of THC and BTEX-H on workers (Kwok et al., 2017a).

The USCG cohort study consisted of 53,519 USCG personnel, 8,696 of whom responded to the spill and 44,823 who were not responders. The USCG study used health data from military medical encounters and cross-sectional survey data. Importantly, the USCG study can access a substantial amount of baseline health data for its participants, because medical data are available for all active-duty Coast Guard members from 2007 forward (Rusiecki et al., 2018). For the study, exposure levels and symptoms were based on self-reported and clinical data from the total cohort. While many health studies use self-reported information, including for toxic exposures, such data can be subject to recall and other biases (IOM, 1994; Williamson, 2007). Both the GuLF and USCG studies are continuing, with additional health effect papers expected.

Worker Exposures

To determine effects, physical health assessments evaluate elements of exposure pathways (ATSDR, 2005). THC and BTEX are generally considered to be the more toxic components of oil. THC is a composite of the volatile chemicals from the oil and was used as a surrogate for the workers' "oil experience." The exposure assessment used BP monitoring samples and agency short-term studies and accounted for oil changes due to weathering.

Kwok et al. (2017a), Rusiecki et al. (2018), and Ng et al. (2019) provided details of potential worker exposures and their measurements and estimations. Primary exposure pathways to the oil, burning oil (particulates), and oil spill chemicals are inhalation and direct contact (skin and eye). Due to the way offshore and onshore air quality measurements and exposure estimates were made, reported or observed symptoms cannot be linked to a specific crude oil chemical. From available data, it appears that total hydrocarbon exposure levels for workers likely were low compared to occupational standards (Middlebrook et al., 2012). However, an onshore study conducted from May 1 to September 30, 2010, assessed coastal ambient air quality for benzene and particulate concentrations ($PM_{2.5}$; Nance et al., 2016) using air monitoring data from the US Environmental Protection Agency (EPA) and BP. The EPA's Air Quality Index was compared prior to and during the spill. Onshore concentrations were generally higher following the spill, with benzene 2 to 19 times higher and $PM_{2.5}$ 10 to 45 times higher. Both concentrations were high enough to exceed public health criteria, with coastal areas near the spill and cleanup activities indicating measurable exposure disparities.

Worker Health Findings

GuLF STUDY findings to date have included nonfatal and fatal heart disease and reduced lung function in some workers. Reduced lung function has been documented in workers exposed to oily plants and wildlife compared to unexposed workers (Gam et al., 2018a). While Kwok et al. (2017b) linked reduced lung function with adverse mental health outcomes, Gam et al. (2018 a,b,c) found no association of depression and post-traumatic stress with lung function. Lawrence et al. (2020) reported improvements in lung function decrements four to six years after the spill, with those with the highest exposure exhibiting the greatest improvement.

When Strelitz et al. (2018) compared individual workers involved in DWH cleanup work with non-workers, they found a positive association between several oil spill related exposures and an increased risk of nonfatal heart attacks one to three years post spill. Factors associated with oil spill work, such as heat, strenuous conditions, physical exertion, and the health limitations of the individual worker, make it difficult to ascertain whether the risk of heart disease can be related directly to exposure to oil spill pollutants (Strelitz et al., 2019a). However, risk of heart disease has been associated with oil pollutants, cleanup activities, burned oil particulates, and volatile organic compounds (Strelitz et al., 2019b). The emotional stress related to the spill was also a possible cause of increased physical health risks such as heart attacks (Strelitz et al., 2018). Other analyses suggest that physical health symptoms contribute to cleanup workers' risk for mental health issues (Lowe, 2016). However, fishers who had longer periods of cleanup work and thus potentially higher work-related oil exposure also had higher income, which in turn is associated with lower anxiety and depression (Lowe et al., 2016).

The USCG study reported positive associations between exposure to crude oil, and in some cases oil and dispersant mixtures, and acute respiratory symptoms (Alexander et al., 2018); neurological symptoms including headache, lightheadedness, difficulty concentrating, numbness/tingling sensa-

tion, blurred vision, and memory loss/confusion (Krishnamurthy et al., 2019); heat stress (Erickson et al., 2018); and skin issues, as well as some gastrointestinal and genitourinary symptoms that have not previously been well evaluated (Rusiecki et al., 2018).

Dispersants

Dispersants warrant separate mention given the widespread public concern about their unprecedented use during DWH (Starbird et al., 2015; Kwok et al., 2017a). Although studied for decades by oil spill scientists, dispersants remain a controversial response option (Bostrom et al., 2015; Walker et al., 2018). Robust protocols for their application on the water surface were implemented during DWH (Houma ICP, 2010; ASTM, 2018), including monitoring for environmental effects and some air monitoring for 2-butoxyethanol, one of the components in Corexit EC9527A. Although 2-butoxyethanol had been removed from Corexit EC9500A as a result of health concerns related to the *Exxon Valdez* spill (NRC, 2005), it remained in Corexit EC9527A, which was used only in surface applications for about a month during the DWH spill (McGowan et al., 2017). Dispersants were also applied at the wellhead to mitigate impacts from surface oil slicks and to reduce levels of volatile organic compounds near the source. Because the measurements and support documentation related to the dispersants were insufficient to allow reliable estimation of exposure levels across the Gulf (Stewart et al., 2018), the GuLF STUDY used responses to survey questions to assess dispersant exposure and estimated that about 10% of its cohort could have been exposed to dispersants (Kwok et al., 2017a). Findings by McGowan et al. (2017) suggest associations between exposure to dispersants, specifically Corexit EC9527A or Corexit EC9500A, and acute adverse health effects (e.g., respiratory and eye irritation and chest tightness at the time of the oil spill work as well as symptoms that were present at the time of study enrollment one to three years after the spill). Although only 5% of the Coast Guard personnel who responded to the Deepwater Horizon Oil Spill Cohort study health questionnaire reported contact with both oil and dispersants, for example, through assignments to conduct Special Monitoring of Applied Oil Spill Technologies (Levine et al., 2011), self-reported adverse neurological health effects were worse for those workers than for those exposed only to oil, and heat exposure also exacerbated symptoms (Krishnamurthy et al., 2019). However, these authors cautioned that self-reported information can be subject to bias, and they did not have information about who was where and when in reference to possible exposures.

HEALTH EFFECTS ON NON-WORKERS

Human impacts of oil spills are much less studied than environmental impacts (Murphy et al., 2016), physical health effects are better researched among spill workers than in other populations (Laffon et al., 2016; Eklund et al., 2019), and mental health distress is better researched among community residents (Finucane et al., 2020a). Many, if not all, of the health effects noted for workers probably also apply to the general population that may be exposed, although the magnitude of the exposures may be considerably greater for workers.

Oil and associated chemical components have a wide range of known or putative toxic outcomes, including endocrine disrupting, carcinogenic, cytotoxic, immunotoxic, mutagenic, and genotoxic effects (Solomon and Janssen, 2010; Bhattacharya et al., 2016; Du et al., 2016; Laffon et al., 2016; Doctors for Environment Australia, 2019; Holme et al., 2019). Exposures can occur through physical contact with contaminants in air, water, or on materials; disruptions of routine behaviors; socioeconomic impacts; or other pathways (Hobfoll, 1991; Eisenberg and McKone, 1998; Slack et al., 2020).

Physical health problems or indicators identified with oil exposure include assorted respiratory issues; irritation of skin, eyes, nose, throat; chest pain; cardiovascular disease; gastrointestinal complaints; headaches, dizziness, fatigue, memory issues; and abnormal blood cell counts and liver and kidney function tests (e.g., Nance et al., 2016; Singleton et al., 2016; Afshar-Mohajer et al., 2018, 2019; Strelitz et al., 2019a). Laboratory experiments suggest that dispersant and dispersant-oil mixtures produce effects indicative of lung diseases such as asthma and chronic obstructive pulmonary disease (Liu et al., 2016) and mixtures may affect the gut microbiome (J.N. Kim et al., 2012).

Evidence for mental health distress associated with the DWH oil spill is mixed (Finucane et al., 2020a). Two large, population-based surveys in the Gulf Coast region suggest only modest or minimal changes in mental or behavioral health—at the aggregate level—before versus after the DWH spill (Gould et al., 2015). However, results across a range of other, more targeted studies indicate increased reports from individuals of symptoms consistent with depression, anxiety, and post-traumatic stress (Grattan et al., 2011; H.J. Osofsky et al., 2011, 2015; Buttke et al., 2012a,b; Gill et al. 2012, 2014; Morris et al., 2013; Drescher et al., 2014; Cherry et al., 2015; Fan et al., 2015; Aiena et al., 2016; Rung et al., 2016, Gaston et al., 2017; Kwok et al., 2017b). Substantial portions of coastal households (e.g., nearly 38% of an Alabama sample; Ritchie et al., 2018) were involved directly or indirectly in DWH-related claims, settlements, or litigation activity. Research on the compensation process suggests it was perceived by residents as random and lacking transparency, and resulted in additional psychological stress for individuals and corrosive effects on communities (Mayer et al, 2015; Ritchie et al., 2018; Halmo et al., 2019).

Even years after the spill, Gulf Coast residents report DWH-associated distress, but this may vary for different

social groups, in part because of differing prior trauma, life disruption (especially income loss), or available support (Arata et al., 2000; Grattan et al., 2011; Morris et al., 2013, Cherry et al., 2015; Rung et al., 2016; Ayer et al., 2019; Ramchand et al., 2019; Bell et al., 2020; Parks et al., 2020). Higher levels of social support, sense of community, and perceived resiliency seem to be protective against spill-related stress. However, social support was not ameliorative for all groups, such as those with high attachment to damaged resources (e.g., fishing households; Parks et al., 2020) or nonreligious people living in highly religious areas (Drakeford et al., 2019). Ayer et al. (2019) reported that, after controlling for other traumatic experiences, individuals with higher levels of DWH exposure were not at greater risk for behavioral health problems, except for illness anxiety.

Fishers and Seafood Workers

Fishers and seafood workers are often members of tight-knit cultural communities (Picou and Gill, 1996; Marshall et al., 2007), and the cultural identity of the Gulf Coast region is intertwined with fishing (Henry and Bankston, 2002). Short-term fishing moratoria were enacted immediately following DWH (see Seafood Safety section), and even when the moratoria were lifted, uncertainty about the contamination of fishing grounds continued for fishers and seafood workers (Simon-Friedt et al., 2016). In addition to pre-existing economic pressures (Harrison, 2020), the ongoing disruption and stress from the DWH spill contributed to the unique vulnerability of these workers (Gill et al., 2012; Lee and Blanchard, 2012; Cope et al., 2013, 2016; Parks et al., 2018). While greater social support is typically helpful in bolstering mental health, it may operate differently among renewable resource communities (Freudenburg, 1992; Gill et al., 2014). Indeed, Parks et al. (2020) found that fishing households with greater social support were more susceptible to depressive symptoms six years after the DWH oil spill.

Cope et al. (2013) evaluated suites of self-reported mental and physical health issues via the Louisiana Community Oil Spill Survey, conducted in spill-affected parishes in June 2010 while the DWH oil spill was ongoing, and again in October 2010 and April 2011. A physical health index was calculated based on responses to questions about how worries about the spill manifested as physical symptoms. The index was significantly higher (indicating more health concerns) among fishing households, and while the index declined in subsequent survey waves for those not involved in the fishing industry, it grew stronger over time for people in the industry. Parks et al. (2018) used the same data source to examine disruption of routine behaviors, including sleep, following the spill. On average, respondents reported difficulty with about one-third of the activities. Again, respondents with ties to the fishing industry were more likely than non-fishers to report disruption to routine behaviors.

Women, Pregnant Women, and Children

Results of previous studies revealing adverse reproductive health effects for people exposed to petroleum hydrocarbons led to concerns about potential impacts on pregnant women in the Gulf following the DWH spill (Merhi, 2010). In the case of the DWH event, women physically exposed to the spill or who experienced negative economic impacts reported physical symptoms such as wheezing or irritated eyes and nose (Peres et al., 2016). Similarly, pregnant women who lived near the *Hebei Spirit* spill site in South Korea reported more eye irritation, headaches, and pain than those further away (B.-M. Kim et al., 2009). With regard to reproductive health, Harville et al. (2018) found little evidence of DWH spill exposure being associated with increased miscarriages or infertility in women from southeastern Louisiana, although spills in Nigeria have been linked with increased mortality rates among newborn children (Bruederle and Hodler, 2019). Among patients (predominantly African American women) seeking care at a Federally Qualified Health Center in an underserved area affected by DWH, post-traumatic stress disorder was associated with headaches, chest pains, dizziness, or trouble sleeping (Langhinrichsen-Rohling et al., 2017). However, where patients received post-disaster, integrated health services, perceptions of personal resilience increased and negative physical symptoms decreased (H.J. Osofsky et al., 2018).

Children are especially vulnerable to oil spills due to their physiology (high respiratory and metabolic rates, developing immune and hormonal systems, small stature), behavior (e.g., inquisitive play; Tipre et al., 2017; Slack et al., 2020), and poorly developed ability to estimate risk (Fischhoff et al., 2010) (see section on Beach Exposures). Children exposed to the DWH oil spill were twice as likely to have mental and physical health problems compared to those who were not exposed, and African American children and those from low-income households had higher prevalence of health effects (Abramson et al., 2010). Based on health status reports for children four, six, and eight years after the spill, general health and numbers of recent physical health problems (respiratory symptoms, eye and/or vision issues, skin problems, headaches, or unusual bleeding) were worse in households that experienced physical exposure to the spill or job/economic losses (Slack et al., 2020).

PHYSICAL HEALTH EFFECTS TO POPULATIONS FOLLOWING BEACH CONTAMINATION: CHILDREN'S EXPOSURES AS AN EXAMPLE

Health-related exposures associated with oil spills can be estimated through quantitative risk assessment of health impacts. The risk assessment process addresses hazard identification (chemicals of concern and their environmental concentrations), exposure assessment (human activities that lead to exposure through

ingestion, skin contact, or inhalation), and dose-response evaluation (amounts of the chemicals likely to enter and be absorbed in the body (Figure 2; NRC, 2009; Ferguson et al., 2020a). The effect is an estimate of risk typically provided in units of probability.

Hazard Assessment

The first step in quantifying risks is to estimate the concentrations of oil spill chemicals within human exposure zones such as beaches. Thousands of chemicals can be found in crude oils. They can be broadly categorized into hydrocarbon, non-hydrocarbon, organometallic, and metallic compounds (Huba and Gardinali, 2016). Chemicals of concern in crude oil, those potentially toxic to humans, are the volatile aromatic hydrocarbons, BTEX-H, and the polycyclic aromatic hydrocarbons (PAHs) (ATSDR, 2005). Mitigation of oil spills can also include the use of dispersants, for which potential toxicities to humans are under debate (Ferguson et al., 2020a; NASEM, 2020; Quigg et al., 2021, in this issue); their use would need to be considered in risk assessments for future oil spills. Of the chemicals listed above, the PAHs and their degradation products have the most significant impacts at beaches because they weather slowly and are generally the most toxic (ATSDR, 2005). Also, toxicological profiles are not currently available for many oil chemicals and degradation products and for vulnerable populations for which information is very limited (e.g., pregnant women and children; Aeppli et al., 2012; White et al., 2016; Farrington, 2019).

Immediately after the DWH explosion, large-scale sampling efforts were initiated by the EPA, BP, and other organizations. Their measurements of oil spill chemicals were available within environmental matrices, including nearshore water and beach sediments, where beachgoers could be affected. Although these data provide snapshots of chemical concentrations, a more complete picture in time and space possibly could be obtained by using the data in oil spill models to predict oil spill chemical concentrations in nearshore environments. The General NOAA Operational Modeling Environment (GNOME) was used to help inform the Coast Guard-led response efforts about the areal extent of oil contamination. Initial efforts have been made to evaluate how well predictions from GNOME coincide with chemical concentration measurements (Montas et al., 2020; J. Xia et al., 2020, 2021), opening the possibility for future use of operational models to forecast oil spill chemical concentration distributions and provide an important first step for risk assessment.

Exposure Assessment

Different groups of humans can be exposed to oil spill chemicals at beaches, including response workers who actively engage in cleanup of contaminated shorelines and recreational users of these areas. Here, we focus on the recreational user category, and specifically on children who may be exposed to incidental residual oil that remains after beach cleaning and also to low level oiling that may occur from continuous leaks (e.g., Taylor Energy wells, seeps) and the redistribution of sunken oil. As noted elsewhere, children are a vulnerable constituency for exposures to contaminants in soil and sands, including potentially at beaches (Freeman et al., 2005; Xue et al., 2007; Beamer et al., 2012; Ferguson et al., 2019). In addition to factors noted previously, a child's mouth and nose are generally closer to the ground than an adult's, resulting in greater inhalation of pollutants that accumulate in sediments. Also, children's play habits involve intimate contact with and potential ingestion of beach sand (Shoaf et al., 2005), and they tend to dig, bury themselves, and sit in the very shallow water, which typically has the highest levels of contaminants (Shah et al., 2011; Wright et al., 2011). Although these behaviors are specific to the beach environment, they had not been quantified prior to research supported by GoMRI following the DWH. GoMRI-supported studies have quantified children's behaviors on beaches in Miami, Florida, and Galveston, Texas, through surveys (Ferguson et al., 2019), sand adherence studies (Ferguson et al., 2020b,c; Perone et al., 2020; Tomenchok et al., 2020), and videotaping of children and translating the videos to quantitative values that describe child beach play behavior (Alicia Ferguson, North Carolina Agricultural and Technical State University, *pers. comm.*, 2021). Collectively, these studies have documented child beach play behaviors that can now be utilized in risk assessment analyses.

Dose-Response Assessment

Effects from the uptake of chemicals are typically separated into two types: non-cancerous (acute and chronic) and cancerous. Non-cancerous effects are evaluated by comparing the estimated dose to minimum risk levels for chemical compounds. If the dose is greater than the corresponding minimum risk level, then non-cancerous illnesses are likely to occur. To estimate the probability of cancer, a slope factor is needed and can be obtained for some oil chemicals from

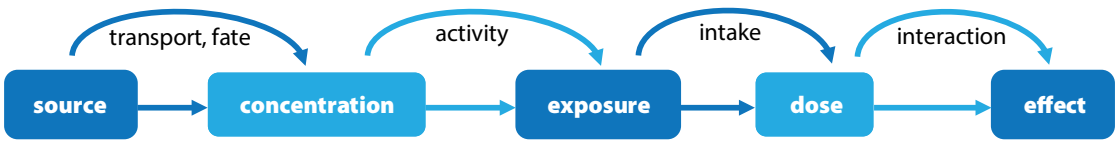

FIGURE 2. Framework for a risk assessment modeling platform.

toxicological profiles available through the US Center for Disease Control's (CDC's) Agency for Toxic Substances & Disease Registry and EPA's Integrated Risk Information System.

Risk Assessment Framework

Available information about hazard characterization, exposure assessment, and dose-response assessment has been incorporated in a risk assessment framework. Although work is currently ongoing to quantify children's activities, results to date indicate that children who play at beaches that were cleaned after oil contamination are unlikely to experience non-cancerous acute or chronic health effects. Additionally, increased cancer risks are very low, within the 10^{-6} order of magnitude (i.e., about one in a million; Black et al., 2016, Altomare et al., 2021), given toxicological information available at the time. Also, simultaneous exposure to multiple chemical contaminants was not compounded in the analysis. Moreover, mental health outcomes can manifest in physical outcomes from chemical exposures and were not integrated into the analysis.

SEAFOOD SAFETY

Oil Spills and Fisheries Closures

Following all oil spills in marine waters, the potential contamination of seafood supplies and the subsequent risks posed to human health from seafood consumption are of major concern to government authorities and community members where the spill occurred (Gohlke et al., 2011; Dickey and Huettel, 2016; Wickliffe et al., 2018). The magnitude and duration of the DWH spill posed a significant threat to the well-being of Gulf Coast communities, many of which depend upon safe and productive fisheries (Dickey and Huettel, 2016). At the time of the spill, Gulf fisheries accounted for around 16% of all US domestic landings (Shepard et al., 2013), fueling concerns of Gulf residents and non-residents about the safety of the nation's seafood supply.

In anticipation of potential contamination, surveillance testing of seafood around the periphery of the spill began on April 28, 2010. Just four days later, May 2, 2010, the first emergency fishery closure was announced. This was only the second time in US history that a fishery in federal waters was closed because of an oil spill (Fitzgerald and Gohlke, 2014). Shortly thereafter, on May 24, the federal government declared a fisheries disaster for the states of Alabama, Mississippi, Louisiana, and Florida (K. Xia et al., 2012). By early June, at the height of the spill, nearly 37% of federal waters in the Gulf of Mexico Exclusive Economic Zone were closed to fishing along with state waters extending from Louisiana to the panhandle of Florida and some public beaches (Ylitalo et al., 2012). Though federal fishing waters began to reopen as early as the end of June 2010, it was not until April 2011 that all federal waters, including those immediately surrounding the wellhead, were fully opened. Sampling of previously closed waters continued through June 2011 (Ylitalo et al. 2012). Although most fishery closures in state waters were lifted by August/September 2010, it was several more years before the most heavily impacted coastal waters in Louisiana were considered safe for fishing (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

Federal Response to Human Health Concerns

Higher molecular weight PAHs, like those that made up ~3.9% of the oil from the DWH well, are of particular concern for seafood safety because of their persistence in the environment, potential for uptake in aquatic species, and toxic or carcinogenic effects (Goldstein et al., 2011; Allan et al., 2012). Though the use of dispersants (Corexit 9500A and 9527) had been approved by the EPA, and they were determined to have minimal toxicity in laboratory experiments (Judson et al., 2010), their unprecedented use led to public concern about potential accumulation in seafood supplies (Ylitalo et al., 2012).

The federal response to seafood safety followed a similar approach to that used in the response to the *Exxon Valdez* spill in 1990, with minor modifications based on the difference in the nature of the Gulf oil and the environmental conditions in which the spill occurred (Ylitalo et al., 2012; Dickey and Huettel, 2016). Finfish and shellfish samples were collected from multiple seafood sources and at multiple locations and depths in areas free or cleared of oil (Ylitalo et al., 2012). Seafood samples were not collected from areas where oil was visibly present on the surface or chemically detected in the water column since these locations were closed to fishing (USFDA, 2010). Samples were screened for the presence and concentrations of 13 PAHs determined to have the most potential to harm consumers as well as dioctyl sodium sulfosuccinate (DOSS), an indicator compound for the dispersant Corexit 9500A. Levels of concern for each targeted compound were calculated based on a variety of factors that included estimated dose, mean adult body weight, and averaged seafood consumption rates for the 90th percentile of seafood consumers (USFDA, 2010). These levels were considered to be safe or associated with negligible cancer and non-cancer risk for the US population (Ylitalo et al., 2012). However, the risk level, estimated duration of exposure, and the use of national demographic values for body weight, consumption rate, and longevity were extensively scrutinized (Gohlke et al., 2011; Ylitalo et al., 2012; Wilson et al., 2015; Dickey and Huettel, 2016). There was particularly strong criticism around the adequacy of information about exposure risks and how those risks were communicated to vulnerable populations (Rotkin-Ellman et al., 2012; K. Xia et al., 2012; Sathiakumar et al., 2017), such as pregnant women and Vietnamese-American fishers and their families.

After nearly 10,000 samples and months of testing, federal and state authorities determined that Gulf seafood from reopened areas was safe for consumption (Ylitalo et al., 2012; Dickey and Huettel, 2016). While individual PAHs

of the 13 considered to be most harmful and/or carcinogenic were detected in many seafood samples, the concentrations were at least two orders of magnitude below levels of public health concern (Ylitalo et al., 2012). Further, DOSS was detected in less than 1% of samples and at very low concentrations. Though heavy metals were also a concern for many, particularly for vulnerable populations (Zilversmit et al., 2017), they were not included in the federal or state testing protocols (Fitzgerald and Gohlke, 2014). However, trace metal levels in both finfish and shellfish samples did not exceed background levels as determined by independent testing (Fitzgerald and Gohlke, 2014; Zilversmit et al., 2017).

Sathiakumar et al. (2017) specifically examined additional exposure risks to children from the coastal area of Mobile, Alabama, compared to children living inland. They concluded that there was no increased risk of exposure despite higher seafood consumption rates among coastal children compared to the general population. Further, Wickliffe et al. (2018) found that, even with consumption rates of both shrimp and finfish set at highly conservative values for human health (0.7 lbs [0.3 kg] per week and upward of 8.3 lbs [3.8 kg] per week, respectively), nearly three times the rates used to calculate the federal threshold levels of concern, concentrations in seafood samples did not constitute an unacceptable lifetime cancer risk.

Widespread fisheries closures following the DWH event reduced the probability of contaminated seafood entering into commerce. However, comparisons of pre- and post-spill consumption of seafood in multiple populations found a significant decrease in consumption in the immediate aftermath of the spill (Sathiakumar et al., 2017; Zilversmit et al., 2017; Wickliffe et al., 2018). Though the federal response to the spill, including the seafood testing program, drew much public scrutiny and concern, results from independent studies largely corroborated the federal effort. While some researchers found shortcomings in the federal approach, including the narrow scope of the PAHs included in chemical screening (Andersson and Achten, 2015; Dickey and Huettel, 2016; Farrington, 2019), based on toxicity information available at the time, no studies concluded that there was an excess exposure risk from consuming Gulf seafood in the months and years after the oil spill (Gohlke et al., 2011; Dickey and Huettel, 2016; Wickliffe et al., 2018). However, it is also largely agreed that the communication of exposure risks in general, and to vulnerable populations specifically, left much to be desired (Greiner et al., 2013; Dickey and Huettel, 2016).

SOCIOECONOMIC IMPACTS ON FISHERIES, TOURISM, AND COMMUNITIES

The DWH spill resulted in numerous socioeconomic impacts, including effects on the fishing, tourism, and transportation sectors, and others that may affect community vulnerability and resilience. Similar to investigations related to human health impacts, GoMRI supported research on DWH socioeconomic effects but at comparatively modest levels, with resulting publications constituting only approximately 6% of total GoMRI-funded publications and about 4.2% of total competitive grant funds awarded (Petrolia, 2014; Finucane et al., 2020a). While much progress has been made in longitudinal monitoring of biophysical parameters, there is a lack of similarly robust efforts to monitor a suite of socioeconomic variables that could be used to assess the value of non-market resources, or identify cultural attributes, attitudes, social connectivity, or resilience in an oil spill or other disaster context (NRC, 2013; Yoskowitz et al., 2015).

Economic Impacts

In an initial study, Sumaila et al. (2012) utilized input-output analysis to estimate economic impacts for commercial fishing, recreational fishing, and marine aquaculture. They projected the highest total economic losses to commercial and recreational fishing, US $4.9 billion and $3.5 billion, respectively. The largest commercial fisher losses were predicted for shrimpers, which accounted for almost 85% of the study's projected impact to that sector. In a separate analysis, Asche et al. (2012) suggested that, due to market integration, any increase in prices (driven by spill-related reductions in supply) would not offset expected revenue losses to domestic shrimpers. Rather, imports of farmed shrimp would rapidly increase to satisfy demand, meaning that while consumers would be mostly unaffected, producers could face significant and additive supply shocks. Overall, such impacts were expected to result in significant loss of income to shrimpers, as well as in boat building or repair, restaurants, and other businesses.

Notably, analysis is still needed to confirm economic impacts to fisheries 10 years after the spill. For example, while studies alluded to significant impacts to US shrimpers, in 2011, the year following the DWH spill, the Gulf produced >216 million pounds (98 million kilograms) of heads-on shrimp at a commercial landings value of >US $421 million (NOAA, 2020), accounting for about 68% of US shrimp landings that year (NRC, 2013). For comparison, average Gulf shrimp landings for the period 1990–2009 were 236 million pounds (107 million kilograms), with a range of 181–290 million pounds/yr (82–132 million kilograms/yr). While evidence does show reduced demand and a decrease in seafood sales directly after the spill (McGill, 2011), it is not clear whether these effects persisted. For example, the total commercial landings value for all species in the Gulf (Texas, Louisiana, Mississippi, Alabama, and Florida West Coast) for the seven years following the spill (2011–2017) was US $6.8 billion (Consumer Price Index [CPI] adjusted), whereas landings for the seven years preceding the spill (2003–2009) had a total CPI adjusted value of US $5.9 billion (NOAA Fisheries data, CPI adjusted).

Using biophysical projections from the Atlantis ecosystem model (Ainsworth et al., 2018) with input-output analysis, Court et al. (2020) modeled total economic impacts for the 10 years following the spill for commercial fishing revenues and recreational fishing expenditures. Results indicate that, across both sectors, impacts could include losses totaling US $2.3 billion composed of $1.2 billion in gross regional product, $700 million in labor income, and $160 million each in federal and state tax revenues. However, more research is needed to reconcile modeled outputs and actual landings data, particularly for sectors anticipated to incur significant impacts such as the shrimping industry.

With nearly 223,000 km^2 of fishable waters and public beaches closed or showing oil spill advisories during the months-long spill event (Ylitalo et al., 2012), the tourism industry was also impacted. Misperception also contributed to tourism impacts, with one report demonstrating that the public was unaware of locations and extent of damage and believing Louisiana waterways to be closed when they remained open (MDRG, 2010). Of those surveyed, 44% believed the oil spill caused damages on par with Hurricane Katrina, and 29% of tourists canceled or postponed planned trips to Louisiana due to the spill (MDRG, 2010). Another study found that about US $147 million in tourism and recreation claims were paid between August 2010 and March 2012. While this amount only represented 2% of total claims, it spanned 23 different business types within the industry, including airlines, aquaria, entertainment, water sports, wildlife watching, and more. Claims for impacts to retail, sales, and services were about US $1.9 billion representing 31% of total claims, while those for food, beverage, and lodging amounted to US $1.6 billion and 26% of the total (Eastern Research Group, 2014). Analysis of claims across the Gulf further found significant impacts on resorts, charter fishing, and marinas/docks/ice houses, though hotels and restaurants were most impacted. Effects differed among the states, with Texas receiving a relatively small amount of paid claims, while individuals in Florida and Louisiana received US $340 million and $227 million, respectively, and businesses US $164 million and $88 million, respectively (Eastern Research Group, 2014). Though individuals and businesses clearly suffered economic losses, counties with over 1,000 employees in tourism experienced only temporary or no declines in tourism-related employment, followed by growth, though there were exceptions. For example, Hancock County, Mississippi, experienced a 7.7% decline in tourism employment compared to 2009 (Eastern Research Group, 2014).

An important finding is that consumer perception matters and is an important driver of economic impacts. A review of news articles and interviews found numerous inaccurate portrayals of conditions, with media sensationalism contributing to a perception that the entire Gulf coast was contaminated with oil (Eastern Research Group, 2014). To counter such misinformation in the future, Nelson et al. (2018) offer a spatially explicit approach for evaluating and visualizing risks to tourism or other economic sectors.

Other studies also lend insights for future research. In a case study of New Orleans, Porter (2011) argues that fishing and tourism should be viewed as a cluster of overlapping geographic space, knowledge, and impact, for example, with tourism concentrated on recreational fishing and the seafood culture. Such interdependence may limit opportunities for growth where risks of economic and environmental crisis persist, yet innovation could address some risks to external shocks. For example, a tourism subsector could focus on ecotourism and demonstrate how the city and ecosystem remained resilient to the DWH disaster, which could provide a new kind of growth (Porter, 2011). Researchers also investigated non-market impacts of the oil spill. Alvarez et al. (2014) used choice modeling to estimate compensation due to marine anglers from non-market value losses at a mean of US $585 million with a 95% confidence interval. Petrolia (2014) offers that perhaps the most prominent change for research resulting from the disaster was an expansion to an ecosystem services approach to damage assessment. The National Research Council (NRC, 2013) assessed oil spill impacts on the provisioning ecosystem service of seafood and fish-based products, as well as the cultural services provided through recreational fishing (among other case studies). Results suggested that, while fishery closures may have decreased landings in the immediate aftermath of the spill (McCrea-Strub et al., 2011; NRC, 2013), increased catch rates were later observed for a large group of regularly harvested species (Fodrie and Heck, 2011; NRC, 2013). However, impacts from the spill to fishery harvest may take years or even decades to materialize, particularly regarding cascading effects through marine food chains (NRC, 2013).

Community Resilience Impacts

Resilience is "the capacity of a system to absorb shocks and disturbance and still maintain function" (Berkes and Folke, 1998), or "the capacity of a social-ecological system to adapt to change through self-organization and learning" (Berkes et al., 2003). Finucane et al. (2020a) examined a set of adaptive capacities that may diminish impacts of an ecological disaster like the DWH, finding that although the spill resulted in differing economic impacts across fisheries, tourism, and oil and gas sectors with location, the aggregate impacts were primarily short term. However, at the household level, and particularly in poorer households, financial impacts were still being felt years later. Further, community well-being showed signals of distress related to the spill across multiple studies. Distress was expressed differently across different groups, with those tied to natural resources for their livelihoods exhibiting higher rates, including through an erosion of trust (Finucane et al., 2020a).

Similarly, Cope et al. (2016) found levels of distrust across communities regarding information provided by both BP and the federal government, with trust in state government being somewhat stable. Mayer et al. (2015) reported that, although the compensation process helped to mitigate economic impacts, apparent confusion, lack of transparency, and perceived inequality in the process eroded trust and strained community relations. In addition to those reliant on natural resources, other groups identified as having higher vulnerability to the spill included populations that exhibit disadvantages related to rural environment, dependence, older age, and socioeconomic and/or educational disparities, as well as living in mobile homes (Cope and Slack, 2017), being of minority ethnicity (e.g., Vietnamese; Patel et al. 2018), or being female (Lightfoot et al., 2020). In a case study of Apalachicola, place, heritage, and moral identity were found not to be fixed community attributes but rather to provide individuals with varying resources, which in turn impact disaster recovery (Clarke and Mayer, 2017). This has important implications for institutional recovery frameworks—often crafted by external actors—in a precarious Gulf region where resilience may vary locally. For future spills and other disasters, more attention should be given to the researcher-community relationship, where cultural norms and trust are critical for successful engagement with local residents (Lesen et al., 2019; Finucane, 2020b).

NEED FOR A COMMUNITY HEALTH OBSERVING SYSTEM

Environmental disasters of various kinds and magnitudes occur frequently in the Gulf region (NOAA, 2020; Sandifer et al., 2020; Smith, 2020), with one often following another and compounding the impacts of the previous incident. Examples include the 2010 DWH oil spill that followed the catastrophic effects of Hurricane Katrina in 2005, and the health effects of which were then compounded by subsequent disasters such as Hurricane Harvey in 2017, and others (J.D. Osofsky et al., 2014; Shultz et al., 2015; SAMHSA, 2018). Recurrent disasters take a heavy toll on human health in the region, where many people already suffer significant health and economic disparities (Lichtveld and Arosemena, 2014; Lichtveld et al., 2016). Climate change, land subsidence, and population and development pressures are all likely to increase the incidence and severity of environmental disasters in the Gulf region, along with their accompanying adverse effects on human health (Sandifer et al., 2020).

Previous studies of health effects of Gulf disasters, as well as other sections of this article, demonstrate the lack of, and critical need for, baseline health information with which to compare effects of future disasters (Sandifer et al., 2020). Ongoing health monitoring is essential to develop and maintain such a baseline and capture acute, chronic, and long-term health impacts, as well as secondary complicating events that occur in the intervals between major disasters. Recognizing the urgent need for a health observing system in the Gulf of Mexico region analogous to the kinds of atmospheric and oceanic observing systems well established for monitoring and predicting hurricanes and other extreme weather events, GoMRI commissioned a design study. The intent was to devise a framework that would provide for continuous collection of health information to ensure existence of adequate pre-, during, and post-disaster information for comparative purposes and to improve emergency planning and public health response. The resulting framework (Sandifer et al., 2020) builds upon and leverages existing ongoing national health surveys and includes new longitudinal cohort studies designed to elucidate long-term health trends and disaster-associated health effects in the five Gulf states. The system's new cohort studies must continue indefinitely, be large enough to represent the risk-prone coastal areas and populations known to be particularly vulnerable to disasters, and include mental and physical health assessments and measures of stress. In addition to collecting and providing information on direct and indirect health impacts to individuals, the system should also incorporate community data. As far as we are aware, this is the only observing system designed for a disaster-prone area and focused explicitly on disaster-related health effects.

Components of the proposed Gulf of Mexico Community Health Observing System would include: three cross-sectional surveys, the National Health and Nutrition Examination Survey (NHANES; https://www.cdc.gov/nchs/nhanes/), the Behavioral Risk Factor Surveillance Survey (BRFSS; https://www.cdc.gov/brfss/), and the National Health Interview Survey (NHIS; https://www.cdc.gov/nchs/nhis/); a proposed new Augmented BRFSS survey for the Gulf states; the new National Institutes of Health (NIH) All of Us national longitudinal study (https://allofus.nih.gov/); and proposed new Large, Small, and Disaster-Specific Gulf of Mexico longitudinal cohort studies (**Figure 3**). The cohort studies are designed to build upon one another and are the unique and most important parts of the observing system. Another significant strength of the system is its ability to adapt rapidly as needs arise and new biomedical and other technologies are developed.

The geographic focus of the proposed observing system is the 68 coastal counties of the five Gulf states. These are counties that either have a Gulf shoreline or are near the coast and contain Federal Emergency Management Agency (FEMA)-identified areas with high risk for tidal and/or storm surge flooding (Ache et al., 2013). A statistically representative sample of volunteers from the populations in these counties is proposed, with stratification to ensure proportionate inclusion of both urban and rural populations and with additional, targeted recruitment as necessary to enroll adequate numbers of people deemed par-

ticularly vulnerable or typically underrepresented (e.g., ethnic minorities, the underserved, and those who suffer health, health care, and economic disparities). Initially, volunteer participants are expected to be recruited using a mail-address sampling frame, followed by use of electronic communication means to the greatest extent possible.

If implemented, assessments of mental and physical health in the new cohort studies will include information obtained via detailed health questionnaires, clinical examinations, biological specimens, electronic health records, and use of wearable health devices. These will be augmented with data from secondary sources such as information from State Health Departments and the CDC, national community surveys, environmental exposure databases, social media, remote sensing, and others. Biomarker data derived from biological samples are expected to be used as indicators of health status, including for calculation of measures of chronic stress and its impacts on physical and mental health.

Primary users of information from the health observing system will be public health and medical professionals, emergency managers and responders, and clinical and academic researchers. Secondary users are likely to include political, community, and business leaders, and many others. Data and information products are expected to be used to assess disaster-related health effects; enhance disaster planning and response; improve protection for disaster responders and workers; build individual and community resilience; and promote new clinical, biomedical, and public health research and practice.

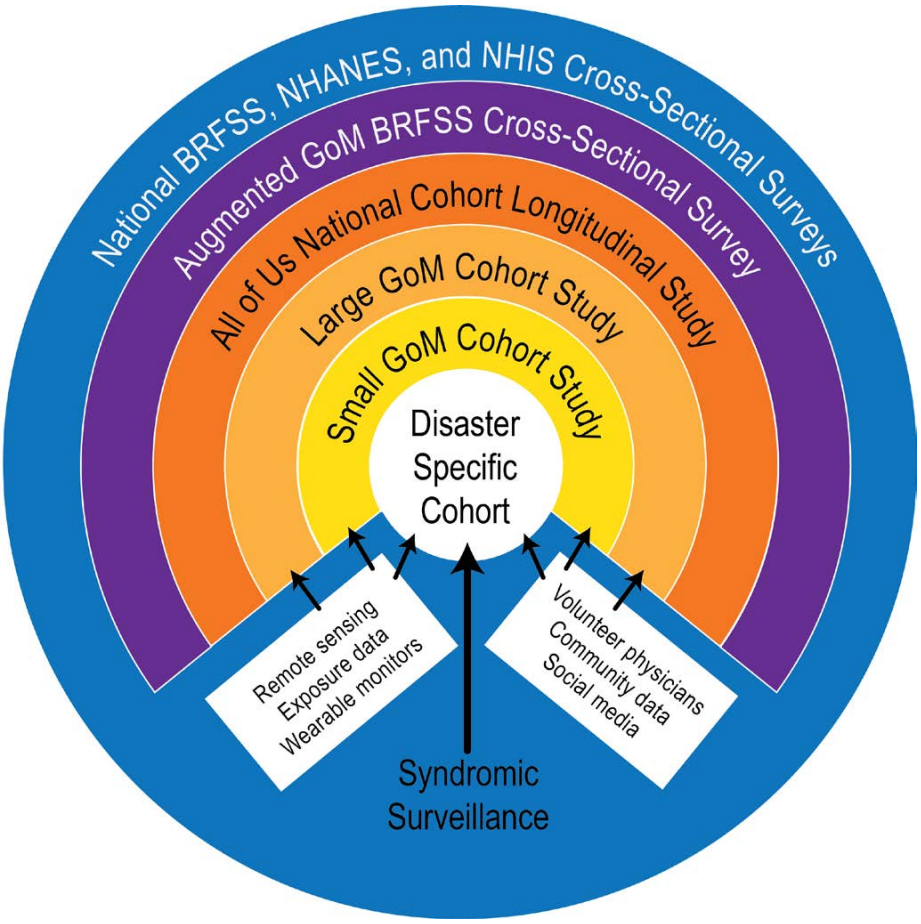

FIGURE 3. A conceptual framework for a Gulf of Mexico Community Health Observing System. *From Sandifer et al. (2020)*

CONCLUSIONS, GAPS, AND OPPORTUNITIES

A broad range of mental and physical health impacts has been attributed to oil spills in general and the DWH disaster in particular, but in most cases definitive cause-and-effect linkages are lacking. Overall, mental and physical health effects and their interactions are inadequately studied for oil spill workers, their families, and others who may be exposed to or affected by them. Besides spill workers, special attention is needed to vulnerable people, including individuals with chronic illness or who suffer health and health-care disparities and/or socioeconomic deprivations, lack strong social support, the elderly, and natural-resource-dependent communities.

A common theme across studies is the overarching role of stress (e.g., from physical exposure, job or income loss, compensation/litigation processes, or behavioral disruption) as an important factor associated with poor mental and physical health outcomes.

Human health findings were severely limited by a lack of baseline health data, long delays in implementing major health research activities following the spill, heavy reliance on self-reported and cross-sectional survey data, limited collection of clinical health information, and a paucity of long-term, longitudinal cohort studies. Health studies need to be initiated before, during, or immediately following a large spill and must continue long enough to identify long-term effects and secondary surges of chronic illnesses. Critically needed are cohort studies that start before a major spill and continue through it and onward for a long period after.

Considerable information about components of oil (e.g., benzene) and their potential toxicity to humans was available before the DWH spill, but many gaps in knowledge were identified, including effects of field-relevant exposures to oil components, engine exhaust, and other chemicals (e.g., dispersants and decontamination cleaners) as well as these in combination with additional stressors

such as heat and humidity. Recent studies indicate that children who played at beaches that were cleaned after oil contamination are at low risk for acute or chronic health effects. However, further development of models to forecast the distribution of fresh and weathered oil is needed to predict potential human exposures and inform the common response question, "How clean is clean enough?" Also, toxicological profiles are not currently available for many oil chemicals and degradation products and for vulnerable populations for which information is very limited (e.g., pregnant women and children). A better understanding is needed of impacts from exposures to multiple chemicals, and that incorporates mental health impacts from oil spills that contribute to adverse physical outcomes.

When fisheries were reopened following closures after the spill, Gulf seafood was demonstrated to be safe for human consumption within guidelines existing at the time. However, there was much uncertainty and persistent worry about seafood safety, even years after the spill. For future large spills that affect fishing zones, thorough and rapid appraisals of seafood safety should be undertaken immediately after the spills, followed by plain language communication regarding consumption risks based on appropriate demographic information (e.g., race/ethnicity, age, sex/gender identification, pregnancy, chronic illness, weight, seafood consumption habits), and there should be regular updates. Better health advisories targeted to vulnerable populations and those who use beaches and coastal recreation areas are needed. Collaboration between government and stakeholder groups for monitoring of seafood should be enhanced, and additional social science research should be supported to improve risk communication strategies and outcomes.

There is a lack of systematic collection and integration of socioeconomic data necessary to assess near- and long-term societal impacts of oil spills. Also lacking is a concerted effort to aggregate existing data, identify and fill gaps in longitudinal data collection, and make data and information products broadly available to enhance community disaster resiliency and recovery. As an example, even 10 years after the DWH spill, the long-term psychosocial impacts resulting from the extensive fisheries closures have yet to be fully understood, although extensive data have been collected.

Major Opportunities for the Future

Establishment of the proposed Gulf of Mexico Community Health Observing System would be a major step toward improving health care planning and response and in identifying and characterizing acute, chronic, and poorly known adverse health effects of oil spills and other disasters. The system could be modified for use in other disaster-prone regions.

To inform future oil spill response protocols, findings of worker-related health effects studies should be viewed in the context of oil spill response practices, including operationally relevant exposures, worker safety and health standards, and pollutant and dispersant monitoring protocols, perhaps facilitated by an expert workshop involving researchers, preparedness and response decision-makers, and the Occupational Safety and Health Administration (OSHA) (Holliday and Park, 1993; Science and Policy Associates, Inc., 1993).

There is an urgent need for and the opportunity to develop a socioeconomic observing system. Such a system would link the most significant available socioeconomic data streams, identify additional needed information and suggest how it should be collected, and aggregate the data so as to be useful in analytical efforts to accurately estimate social and economic impacts of future large spills.

DEDICATION. This article is dedicated to the memory of Ciro V. Sumaya, MD, MPHTM, founding Dean of the Texas A&M School of Public Health and a member of the GoMRI Research Board. It was he who, in 2013, convened the GoMRI Public Health Workshop, the report from which has helped to guide GoMRI's efforts ever since on the DWH explosion's and spill's effects on human health. We mourn his tragic death and miss him very much.

REFERENCES

Abramson, D., I. Redlener, T. Stehling-Ariza, J. Sury, A. Banister, and Y.S. Park. 2010. *Impact on Children and Families of the Deepwater Horizon Oil Spill: Preliminary Findings of the Coastal Impact Study*. National Center for Disaster Risk Preparedness, Research Brief 2010:8, Columbia University, Mailman School of Public Health, New York, 19 pp.

Ache, B.W., K.M. Crossett, P.A. Pacheco, J.E. Adkins, and P.C. Wiley. 2013. "The Coast" is complicated: A model to consistently describe the nation's coastal population. *Estuaries and Coasts* 38(1):151–155, https://doi.org/10.1007/s12237-013-9629-9.

Aeppli, C., C.A. Carmichael, R.K. Nelson, K.L. Lemkau, W.M. Graham, M.C. Redmond, D.L. Valentine, and C.M. Reddy. 2012. Oil weathering after the DWH disaster led to the formation of oxygenated residues. *Environmental Science and Technology* 46:8,799–8,807, https://doi.org/10.1021/es3015138.

Afshar-Mohajer, N., C. Li, A.M. Rule, J. Katz, and K. Koehler. 2018. A laboratory study of particulate and gaseous emissions from crude oil and crude oil-dispersant contaminated seawater due to breaking waves. *Atmospheric Environment* 179:177–186, https://doi.org/10.1016/j.atmosenv.2018.02.017.

Afshar-Mohajer, N., M.A. Fox, and K. Koehler. 2019. The human health risk estimation of inhaled oil spill emissions with and without adding dispersant. *Science of the Total Environment* 654:924–932, https://doi.org/10.1016/j.scitotenv.2018.11.110.

Aguilera, F., J., Mendez, E. Pasaro, and B. Laffon. 2010. Review on the effects of exposure to spilled oils on human health. *Journal of Applied Toxicology* 30(4):291–301, https://doi.org/10.1002/jat.1521.

Aiena, B.J., E.M. Buchanan, C.V. Smith, and S.E. Schulenberg. 2016. Meaning, resilience, and traumatic stress after the Deepwater Horizon oil spill: A study of Mississippi coastal residents seek-

ing mental health services. *Journal of Clinical Psychology* 72(12):1,264–1,278, https://doi.org/10.1002/jclp.22232.

Ainsworth, C.H., C.B. Paris, N. Perlin, L.N., Dornberger, W.F. Patterson III, E. Chancellor, S. Murawski, K. Daly, I.C. Romero, F. Coleman, and H. Perryman. 2018. Impacts of the Deepwater Horizon oil spill evaluated using an end-to-end ecosystem model. *PLoS ONE* 13(1):e0190840, https://doi.org/10.1371/journal.pone.0190840.

Alexander, M., L.S. Engel, N. Olaiya, L.Wang, J. Barrett, L. Weems, E.G. Schwartz, and J.A. Rusiecki. 2018. The Deepwater Horizon oil spill Coast Guard cohort study: A cross-sectional study of acute respiratory health symptoms. *Environmental Research* 162:196–202, https://doi.org/10.1016/j.envres.2017.11.044.

Allan, S.E., B.W. Smith, and K.A. Anderson. 2012. Impact of the Deepwater Horizon oil spill on bioavailable polycyclic aromatic hydrocarbons in Gulf of Mexico coastal waters. *Environmental Science and Technology* 46(4):2,033–2,039, https://doi.org/10.1021/es202942q.

Altomare, T., P.M. Tarwater, A.C. Ferguson, H.M. Solo-Gabriele, and K.D. Mena. 2021. Estimating health risks to children associated with recreational play on oil spill-contaminated beaches. *International Journal of Environmental Research and Public Health* 18(1):126, https://doi.org/10.3390/ijerph18010126.

Alvarez, S., S. Larkin, J. Whitehead, and T. Haab. 2014. A revealed preference approach to valuing non-market recreational fishing losses from the Deepwater Horizon oil spill. *Journal of Environmental Management* 145:199–209, https://doi.org/10.1016/j.jenvman.2014.06.031.

Andersson, J.T., and C. Achten. 2015. Time to say goodbye to the 16 EPA PAHs? Toward an up-to-date use of PACs for environmental purposes. *Polycyclic Aromatic Compounds* 35(2–4):330–354, https://doi.org/10.1080/10406638.2014.991042.

Arata, C.M., J.S. Picou, G.D. Johnson, and T.S. McNally. 2000. Coping with technological disaster: An application of the conservation of resources model to the *Exxon Valdez* oil spill. *Journal of Traumatic Stress* 13(1):23–39, https://doi.org/10.1023/A:1007764729337.

Asche, F., L.S. Bennear, A. Oglend, and M.D. Smith. 2012. U.S. shrimp market integration. *Marine Resource Economics* 27:181–92, https://doi.org/10.5950/0738-1360-27.2.181.

ASTM International. 2018. *Standard Guide for Oil Spill Dispersant Application Equipment: Boom and Nozzle Systems*. ASTM F1413/F1413M-18, ASTM International, West Conshohocken, PA, 3 pp., https://doi.org/10.1520/F1413_F1413M-18.

ATSDR (Agency for Toxic Substances and Disease Registry). 2005. The five elements of an exposure pathway. Chapter 6, Section 6.1.1 in *Public Health Assessment Guidance Manual (2005 Update).* ATSDR, Atlanta, GA, https://www.atsdr.cdc.gov/hac/phamanual/ch6.html#6.1.

Ayer, L., C. Engel, A. Parker, R. Seelam, and R. Ramchand. 2019. Behavioral health of Gulf Coast residents 6 years after the Deepwater Horizon oil spill: The role of trauma history. *Disaster Medicine and Public Health Preparedness*13(3):497–503, https://doi.org/10.1017/dmp.2018.84.

Beamer, P.C., E. Luik, R.A. Canales, and J.O. Leckie. 2012. Quantified outdoor micro-activity data for children aged 7–12 years old. *Journal of Exposure Science and Environmental Epidemiology* 22:82–92, https://doi.org/10.1038/jes.2011.34.

Bell, T.R., J. Langhinrichsen-Rohling, and C.N. Selwyn. 2020. Conservation of resources and suicide proneness after oilrig disaster. *Death Studies* 44(1):48–57, https://doi.org/10.1080/07481187.2018.1521885.

Berkes, F., and C. Folke, eds. 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge University Press, Cambridge, UK, 476 pp.

Berkes, F., J. Colding, and C. Folke, eds. 2003. *Navigating Social-Ecological System:. Building Resilience for Complexity*. Cambridge University Press, Cambridge, UK, 416 pp.

Beyer, J., H.C. Trannum, T. Bakke, P.V. Hodson, and T.K. Collier. 2016. Environmental effects of the Deepwater Horizon oil spill: A review. *Marine Pollution Bulletin* 110:28–51, https://doi.org/10.1016/j.marpolbul.2016.06.027.

Bhattacharya, D., T.P. Clement, A. Shankar, R. Taylor, and E.W. Harville. 2016. Evaluating the neurotoxic effects of Deepwater Horizon oil spill residues trapped along Alabama's beaches. *Life Sciences* 155:161–166, https://doi.org/10.1016/j.lfs.2016.05.002.

Black, J.C., J.N. Welday, B. Buckley, A. Ferguson, P.L. Gurian, K.D. Mena, L. Yang, E. McCandlish, and H.M. Solo-Gabriele. 2016. Risk assessment for children exposed to beach sands impacted by oil spill chemicals. *International Journal of Environmental Research and Public Health* 13(9):853, https://doi.org/10.3390/ijerph13090853.

Bostrom, A., A.H. Walker, T. Scott, R. Pavia, T.M. Leschine, and K. Starbird. 2015. Oil spill response risk judgments, decisions, and mental models: Findings from surveying US stakeholders and coastal residents. *Human and Ecological Risk Assessment: An International Journal* 21(3):581–604, https://doi.org/10.1080/10807039.2014.947865.

Bruederle, A., and R. Hodler. 2019. Effect of oil spills on infant mortality in Nigeria. *Proceedings of the National Academies of Sciences of the United States of America* 116(12):5,467–5,471, https://doi.org/10.1073/pnas.1818303116.

Buttke, D., S. Vagi, T. Bayleyegn, K. Sircar, T. Strine, M. Morrison, M. Allen, and A. Wolkin. 2012a. Mental health needs assessment after the Gulf Coast oil spill—Alabama and Mississippi, 2010. *Prehospital and Disaster Medicine* 27(5):401–408, https://doi.org/10.1017/S1049023X12001100.

Buttke, D., S. Vagi, A. Schnall, T. Bayleyegn, M. Morrison, M. Allen, and A. Wolki. 2012b. Community assessment for public health emergency response 53 (CASPER) one year following the Gulf Coast oil spill: Alabama and Mississippi, 2011. *Prehospital and Disaster Medicine* 27(6):496–502, https://doi.org/10.1017/S1049023X12001380.

Cherry, K.E., L. Sampson, P.F. Nezat, A. Cacamo, L.D. Marks, and S. Galea. 2015. Long-term psychological outcomes in older adults after disaster: Relationships to religiosity and social support. *Aging and Mental Health* 19(5):430–443, https://doi.org/10.1080/13607863.2014.941325.

Clarke, H.E., and B. Mayer. 2017. Community recovery following the Deepwater Horizon oil spill: Toward a theory of cultural resilience. *Society & Natural Resources* 30(2):129–144, https://doi.org/10.1080/08941920.2016.1185556.

Cope, M.R., T. Slack, T.C. Blanchard, and M.R. Lee. 2013. Does time heal all wounds? Community attachment, natural resource employment, and health impacts in the wake of the BP Deepwater Horizon disaster. *Social Science Research* 43:872–881, https://doi.org/10.1016/j.ssresearch.2012.12.011.

Cope, M.R., T. Slack, T.C. Blanchard, and M.R. Lee. 2016. It's not whether you win or lose, it's how you place the blame: Shifting perceptions of recreancy in the context of the Deepwater Horizon oil spill. *Rural Sociology* 81(3):295–315, https://doi.org/10.1111/ruso.12096.

Cope, M.R., and T. Slack. 2017. Emplaced social vulnerability to technological disasters: Southeast Louisiana and the BP Deepwater Horizon oil spill. *Population Environment* 38:217–241, https://doi.org/10.1007/s11111-016-0257-8.

Court, C., A.W. Hodges, K. Coffey, C.H. Ainsworth, and D. Yoskowitz. 2020. Effects of the Deepwater Horizon oil spill on human communities: Catch and economic impacts. Chapter 33 in *Deep Oil Spills*. S.A. Murawski, C.H, Ainsworth, S. Gilber, D.J. Holland, C.B. Paris, M. Schluter, and D.L. Wetzel, eds, Springer, https://doi.org/10.1007/978-3-030-11605-7_33.

Deepwater Horizon Natural Resource Damage Assessment Trustees. 2016. *Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement.* https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Dickey, R., and M. Huettel. 2016. Seafood and beach safety in the aftermath of the Deepwater Horizon oil spill. *Oceanography* 29(3):196–293, https://doi.org/10.5670/oceanog.2016.83.

Doctors for Environment Australia. 2019. Oil spills and health don't mix. Fact sheet, https://www.dea.org.au/wp-content/uploads/2021/01/DEA-Oil-Spills-fact-sheet-final-06-19.pdf.

Drakeford, L., V. Parks, T. Slack, R. Ramchand, M. Finucane, and M.R. Lee. 2019. Oil spill disruption and problem drinking: Assessing the impact of religious context among Gulf coast residents. *Population Research and Policy Review* 39:1–28, https://doi.org/10.1007/s11113-019-09520-7.

Drescher, C.F., S.E. Schulenberg, and C.V. Smith. 2014. The Deepwater Horizon oil spill and the Mississippi Gulf Coast: Mental health in the context of a technological disaster. *American Journal of Orthopsychiatry* 84(2):142–151, https://doi.org/10.1037/h0099382.

Du, Y., X. Xu, M. Chu, Y. Guo, and J. Wang. 2016. Air particulate matter and cardiovascular disease: The epidemiological, biomedical and clinical evidence. *Journal of Thoracic Disease* 8(1):E8–E19, https://doi.org/10.3978/j.issn.2072-1439.2015.11.37.

Eastern Research Group Inc. 2014. *Assessing the Impacts of the Deepwater Horizon Oil Spill on Tourism in the Gulf of Mexico Region*. OCS Study BOEM 2014-661, US Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA, 192 pp.

Eisenberg, J.N.S., and T.E. McKone. 1998. Decision tree method for the classification of chemical pollutants: Incorporation across chemical variability and within chemical uncertainty. *Environmental Science and Technology* 32:3,396–3,404, https://doi.org/10.1021/es970975s.

Eklund, R.L., L.C. Knapp, P.A. Sandifer, and R.C. Colwell. 2019. Oil spills and human health: Contributions of the Gulf of Mexico Research Initiative. *GeoHealth* 3(12):391–406, https://doi.org/10.1029/2019GH000217.

Erickson, E.A., L.S. Engel, K. Christenbury, L. Weems, E.G. Schwartz, and J.A. Rusiecki. 2018. Environmental heat exposure and heat-related symptoms in United States Coast Guard Deepwater Horizon disaster responders. *Disaster Medicine and Public Health Preparedness* 13(3):561–569, https://doi.org/10.1017/dmp.2018.120.

Fan, A.Z., M.R. Prescott, G. Zhao, C.A. Gotway, and S. Galea. 2015. Individual and community-level determinants of mental and physical health after the Deepwater Horizon oil spill: Findings from the Gulf States Population Survey. *Journal of Behavioral Health Services and Research* 42(1):23–41, https://doi.org/10.1007/s11414-014-9418-7.

Farrington, J.W. 2019. Need to update human health risk assessment protocols for polycyclic aromatic hydrocarbons in seafood after oil spills. *Marine Pollution Bulletin* 150:110744, https://doi.org/10.1016/j.marpolbul.2019.110744.

Ferguson, A., C. Del Donno, E. Obeng-Gyasi, K. Mena, T. Kaur Altomare, R. Guerrero, M. Gidley, L. Montas, and H.M. Solo-Gabriele. 2019. Children's exposure-related behavior patterns and risk perception associated with recreational beach use. *International Journal of Environmental Research and Public Health* 16:2783, https://doi.org/10.3390/ijerph16152783.

Ferguson, A.C., K.D. Mena, and H.M. Solo-Gabriele. 2020a. Assessment for oil spill chemicals: Current knowledge, data gaps and uncertainties addressing human physical health risk. *Marine Pollution Bulletin* 150:110746, https://doi.org/10.1016/j.marpolbul.2019.110746.

Ferguson, A., A.K. Dwivedi, E. Ehindero, F. Adelabu, K. Rattler, H.R. Perone, L. Montas, K. Mena, and H. Solo-Gabriele. 2020b. Soil, hand, and body adherence measures across four beach areas: Potential influence on exposure to oil spill chemicals. *International Journal of Environmental Research and Public Health* 17:4196, https://doi.org/10.3390/ijerph17124196.

Ferguson, A., K. Rattler, H. Perone, A.K. Dwivedi, E. Obeng-Gyasi, K.D. Mena, and H.M. Solo-Gabriele. 2020c. Soil-skin adherence measures from hand press trials in a Gulf study of exposures. *Journal of Exposure Science and Environmental Epidemiology* 31:158–169, https://doi.org/10.1038/s41370-020-00269-2.

Finucane, M.L., A.G. Clark-Ginsberg, A.M. Parker, A.U. Becerra-Ornelas, N. Clancy, R. Ramchand, T. Slack, V. Parks, L. Ayer, A.F. Edelman, and others. 2020a. *Building Community Resilience to Large Oil Spills: Findings and Recommendations from a Synthesis of Research on the Mental Health, Economic, and Community Distress Associated with the Deepwater Horizon Oil Spill*. RAND Corporation, Santa Monica, CA, 80 pp.

Finucane, M.L., M.J., Blum, R. Ramchand, A.M. Parker, S. Nataraj, N. Clancy, G. Cecchine, A. Chandra, T. Slack, G. Hobor, and others. 2020b. Advancing community resilience research and practice: Moving from "me" to "we" to "3D." *Journal of Risk Research* 23(1):1–10, https://doi.org/10.1080/13669877.2018.1517377.

Fischhoff, B., W.B. de Bruin. A.M. Parker, S.G. Millstein, and B.L. Halpern-Felsher. 2010. Adolescents' perceived risk of dying. *Journal of Adolescent Health* 46(3):265–269, https://doi.org/10.1016/j.jadohealth.2009.06.026.

Fitzgerald, T.P., and J.M. Gohlke. 2014. Contaminant levels in Gulf of Mexico reef fish after the Deepwater Horizon oil spill as measured by a fishermen-led testing program. *Environmental Science & Technology* 48(3):1,993–2,000, https://doi.org/10.1021/es4051555.

Fodrie, F.J., and K.L.J. Heck Jr. 2011. Response of coastal fishes to the Gulf of Mexico oil disaster. *PLoS ONE* 6:e21609, https://doi.org/10.1371/journal.pone.0021609.

Freeman, N.C., P. Hore, K. Black, M. Jimenez, L. Shelden, N. Tulve, and P. Lioy. 2005. Contributions of children's activities to pesticide hand loadings following residential pesticide application. *Journal of Exposure Science and Environmental Epidemiology* 15:81–88, https://doi.org/10.1038/sj.jea.7500348.

Freudenburg, W.R. 1992. Addictive economies: Extractive industries and vulnerable localities in a changing world economy. *Rural Sociology* 57(3):305–332, https://doi.org/10.1111/j.1549-0831.1992.tb00467.x.

Gam, K.B., L.S. Engel, R.K. Kwok, M.D. Curry, P.A. Stewart, M.R. Stenzel, J.A. McGrath, W.B. Jackson II, M.Y. Lichtveld, and D.P. Sandler. 2018a. Association between Deepwater Horizon oil spill response and cleanup work experiences and lung function. *Environment International* 121:695–702, https://doi.org/10.1016/j.envint.2018.09.058.

Gam, K.B., R.K. Kwok, L.S. Engel, M.D. Curry, P.A. Stewart, M.R. Stenzel, J.A. McGrath, W.B. Jackson II, R.L. Jensen, M.Y. Lichtveld, and others. 2018b. Exposure to oil spill chemicals and lung function in Deepwater Horizon disaster response workers. *Journal of Occupational and Environmental Medicine* 60(6):e312–e318, https://doi.org/10.1097/JOM.0000000000001292.

Gam, K.B., R.K. Kwok, L.S. Engel, M.D. Curry, P.A. Stewart, M.R. Stenzel, J.A. McGrath, W.B. Jackson II, R. Jensen, A.P. Keil, and others. 2018c. Lung function in oil spill response workers 1–3 years after the Deepwater Horizon disaster. *Epidemiology* 29(3):315–322, https://doi.org/10.1097/EDE.0000000000000808.

Gaston, S.A., J. Volaufova, E.S. Peters, T.F. Ferguson, W.T. Robinson, N. Nugent, E.J. Trapido, and A.L. Rung. 2017. Individual-level exposure to disaster, neighborhood environmental characteristics, and their independent and combined associations with depressive symptoms in women. *Social Psychiatry and Psychiatric Epidemiology* 52(9):1,183–1,194, https://doi.org/10.1007/s00127-017-1412-y.

Gill, D.A., S. Picou, and L.A. Ritchie. 2012. The *Exxon Valdez* and BP oil spills: A comparison of initial social and psychological impacts. *American Behavioral Scientist* 56(1):3–23, https://doi.org/10.1177/0002764211408585.

Gill, D.A., L.A. Ritchie, J.S. Picou, J. Langhinrichsen-Rohling, M.A. Long, and J.W. Shenesey. 2014. The Exxon and BP oil spills: A comparison of psychosocial impacts. *Natural Hazards* 74(3):1,911–1,932, https://doi.org/10.1007/s11069-014-1280-7.

Gohlke, J.M., D. Doke, M. Tipre, M. Leader, and T. Fitzgerald. 2011. A review of seafood safety after the Deepwater Horizon blowout. *Environmental Health Perspectives* 119(8):1,062–1,069, https://doi.org/10.1289/ehp.1103507.

Goldstein, B.D., H.J. Osofsky, and M.Y. Lichtveld. 2011. The Gulf oil spill. *New England Journal of Medicine* 364(14):1,334–1,348, https://doi.org/10.1056/NEJMra1007197.

Gould, D.W., J.L. Teich, M.R. Pemberton, C. Pierannunzi, and S. Larson. 2015. Behavioral health in the Gulf Coast region following the Deepwater Horizon oil spill: Findings from two federal surveys. *Journal of Behavioral Health Services and Research*. 42(1):6–22, https://doi.org/10.1007/s11414-014-9441-8.

Grattan, L.M., S. Roberts, W.T. Mahan Jr., P.K. McLaughlin, W.S. Otwell, and J.G. Morris Jr. 2011. The early psychological impacts of the Deepwater Horizon oil spill on Florida and Alabama communities. *Environmental Health Perspectives* 119(6):838–843, https://doi.org/10.1289/ehp.1002915.

Greiner, A.L., L.P. Lagasse, R.A. Neff, D.C. Love, R. Chase, N. Sokol, and K.C. Smith. 2013. Reassuring or risky: The presentation of seafood safety in the aftermath of the British Petroleum Deepwater Horizon oil spill. *American Journal of Public Health* 103(7):1,198–1,206, https://doi.org/10.2105/AJPH.2012.301093.

Gwack, J., J.H. Lee, Y.A. Kang, K.J. Chang, M.S. Lee, and J.Y. Hong. 2012. Acute health effects among military personnel participating in the cleanup of the Hebei spirit oil spill, 2007, in Taean county, Korea. *Osong Public Health and Research Perspectives* 3(4):206–212, https://doi.org/10.1016/j.phrp.2012.10.001.

Hallman, W.K., and A. Wandersman. 1992. Attribution of responsibility and individual and collective coping with environmental threats. *Journal of Social Issues* 48(4):101–118, https://doi.org/10.1111/j.1540-4560.1992.tb01947.x.

Halmo, D.B., D. Griffith, and B.W. Stoffle. 2019. "Out of sight, out of mind:" Rapid ethnographic assessment of commercial fishermen's perspectives on corporate/state response to the Deepwater Horizon disaster. *Human Organization* 78(1):1–11, https://doi.org/10.17730/0018-7259.78.1.1.

Harrison, J.A., 2020. "Down here we rely on fishing and oil": Work identity and fishers' responses to the BP oil spill disaster. *Sociological Perspectives* 63(2):333–350, https://doi.org/10.1177/0731121419881140.

Harville, E.W., A. Shankar, K. Zilversmit, and P. Buekens. 2018. The Gulf oil spill, miscarriage, and infertility: The GROWH study. *International Archives of Occupational and Environmental Health* 91(1):47–56, https://doi.org/10.1007/s00420-017-1257-4.

Henry, J.M., and C.L. Bankston III. 2002. *Blue Collar Bayou: Louisiana Cajuns in the New Economy of Ethnicity*. Praeger Publishers, Westport, CT, 264 pp.

Hobfoll, S.E. 1991. Conservation of resources: A new attempt at conceptualizing stress. *American Journal of Community Psychology* 9:91–103, https://doi.org/10.1037/0003-066X.44.3.513.

Holliday, M.G., and J.M. Park. 1993. *Occupational Health Implications of Crude Oil Exposure: Literature Review and Research Needs*. Michael Holliday & Associates, MSRC Technical Report Series 93-007, Marine Spill Response Corporation, Washington, DC, 55 pp.

Holme, J.A., B.C. Brinchmann, M. Refsnes, M. Lag, and J. Ovrenik. 2019. Potential role of polycyclic aromatic hydrocarbons as mediators of cardiovascular effects from combustion particles. *Environmental Health* 18:74, https://doi.org/10.1186/s12940-019-0514-2.

Houma ICP Aerial Dispersant Group. 2010. *After Action Report, Deepwater Horizon MC 252 Aerial Dispersant Response*. 80 pp., http://www.mdl2179trialdocs.com/releases/release201501260800005/TREX-013037.pdf

Huba, A.K., and P.R. Gardinali. 2016. Characterization of a crude oil weathering series by ultra-high-resolution mass spectrometry using multiple ionization modes. *Science of the Total Environment* 563–564:600–610, https://doi.org/10.1016/j.scitotenv.2016.03.233.

IOM (Institute of Medicine). 1994. *Veterans and Agent Orange: Health Effects of Herbicides used in Vietnam.* Committee to Review the Health Effects in Vietnam Veterans of Exposure to Herbicides, National Academy Press, Washington, DC, 832 pp.

ITOPF (International Tanker Owners Pollution Federation Limited). 2009. Oil tanker spill statistics: 2009. International Tanker Owners Pollution Federation Limited, London, http://www.bpb.de/system/files/pdf/JXV4OZ.pdf.

Judson, R.S., M.T. Martin, D.M. Reif, K.A. Houck, T.B. Knudsen, D.M. Rotroff, M. Xia, S. Sakamuru, R. Huang, P. Shinn, and others. 2010. Analysis of eight oil spill dispersants using rapid, in vitro tests for endocrine and other biological activity. *Environmental Science and Technology* 44(15):5,979–5,985, https://doi.org/10.1021/es102150z.

Jung, S.-C., K.-M. Kim, K.S. Lee, S. Roh, W.-C. Jeong, S.-J. Kwak, I.-J. Lee, Y.-H. Choi, S.R. Noh, J.-I. Hur, and Y.-K. Lee. 2013. Respiratory effects of the Hebei Spirit oil spill on children in Taean, Korea. *Allergy, Asthma and Immunology Research* 5(6):365–370, https://doi.org/10.4168/aair.2013.5.6.365.

Kim, B.-M., E.K. Parks, S.-Y. Lee, M. Ha, E.-J. Kim, H. Kwon, Y.-C. Hong, W.-C. Jeong, J. Hur, H.-K. Cheong, and others. 2009. BTEX exposure and its health effects in pregnant women following the *Hebei Spirit* oil spill. *Journal of Preventive Medicine and Public Health* 42:96–103, https://doi.org/10.3961/jpmph.2009.42.2.96.

Kim, J.N., B.-S. Kim, S.J. Kim, and C.E. Cerniglia. 2012. Effects of crude oil, dispersant, and oil-dispersant mixtures on human fecal microbiota in an in vitro culture system. *mBio* 3(5):e00376-12, https://doi.org/10.1128/mBio.00376-12.

Krishnamurthy, J., L.S. Engel, L. Wang, E.G. Schwartz, K. Christenbury, B. Kondrup, J. Barrett, and J.A. Rusiecki. 2019. Neurological symptoms associated with oil spill response exposures: Results from the Deepwater Horizon Gulf Coast Guard Cohort Study. *Environment International* 131:104963, https://doi.org/10.1016/j.envint.2019.104963.

Kwok, R.K., L.S. Engel, A.K. Miller, A. Blair, M.D. Curry, W.B. Jackson, P.A. Stewart, M.R. Stenzel, L.S. Birnbaum, L.S., D.P. Sandler, and GuLF STUDY Research Team. 2017a. The GuLF STUDY: A prospective study of persons involved in the Deepwater Horizon oil spill response and clean-up. *Environmental Health Perspectives* 125(4):570–578, https://doi.org/10.1289/EHP715.

Kwok, R.R., J.A. McGrath, S.R. Lowe, L.S. Engel, W.B. Jackson II, M.D. Curry, J. Payne, S. Galea, and D.P. Sandler. 2017b. Mental health indicators associated with oil spill response and clean-up: Cross-sectional analysis of the GuLF STUDY cohort. *Lancet Public Health*, https://doi.org/10.1016/S2468-2667(17)30194-9.

Laffon, B., E. Pasaro, and V. Valdiglesias. 2016. Effects of exposure to oil spills on human health: Updated review. *Journal of Toxicology and Environmental Health, Part B* 19(3–4):105–128, https://doi.org/10.1080/10937404.2016.1168730.

Langhinrichsen-Rohling, J., C.N. Selwyn, S. Jackson, K. Johns, C. Wornell, H. Finnegan, and M.B. Smith-West. 2017. The prevalence and mental and physical health correlates of posttraumatic stress disorder symptoms in vulnerable and underresourced primary care patients referred to a behavioral health provider. *Journal of Public Health Management and Practice* 23(6 Suppl):S32–S39, https://doi.org/10.1097/PHH.0000000000000654.

Lawrence, K.G., A.P. Keil, S. Garantziotis, D.M. Umbach, P.A. Stewart, M.R. Stenzel, J.A. McGrath, W.B. Jackson, R.K. Kwok, M.D. Curry, and others. 2020. Lung function in oil spill responders 4–6 years after the Deepwater Horizon disaster. *Journal of Toxicology and Environmental Health, Part A* 83(6):233-248, https://doi.org/10.1080/15287394.2020.1745111.

Lee, M.R., and T.C. Blanchard. 2012. Community attachment and negative affective states in the context of the BP Deepwater Horizon disaster. *American Behavioral Scientist*, 56(1):24–47, https://doi.org/10.1177/0002764211409384.

Lesen, A.E., C. Tucker, M.G. Olson, and R.J. Ferreira. 2019. 'Come back at us': Reflections on researcher-community partnerships during a post-oil spill Gulf Coast resilience study. *Social Science* 8(1):8, https://doi.org/10.3390/socsci8010008.

Levine, E., J. Stout, B. Parscal, A.H. Walker, and K. Bond. 2011. Aerial dispersant monitoring using SMART protocols during the Deepwater Horizon spill response. International Oil Spill Conference Proceedings 2011(1):abs225.

Lichtveld, M.Y., and F.A. Arosemena. 2014. Resilience in the aftermath of the Gulf of Mexico oil spill: An academic-community partnership to improve health education, social support, access to care, and disaster preparedness. *International Oil Spill Conference Proceedings* 2014(1):156–169, https://doi.org/10.7901/2169-3358-2014.1.156.

Lichtveld, M., S. Sherchan, K.B. Gam, R.K. Kwok, C. Mundorf, A. Shankar, and L. Soares. 2016. The Deepwater Horizon oil spill through the lens of human health and the ecosystem. *Current Environmental Health Reports* 3(4):370–378, https://doi.org/10.1007/s40572-016-0119-7.

Lightfoot, E.S., A.E. Lesen, and R.J. Ferreira. 2020. Gender and resilience in Gulf Coast communities: Risk and protective factors following a technological disaster. *International Journal of Disaster Risk Reduction* 50:101716, https://doi.org/10.1016/j.ijdrr.2020.101716.

Liu, Y.Z., A.M. Roy-Engel, M.C. Baddoo, E.K. Flemington, G. Wang, and H. Wang. 2016. The impact of oil spill to lung health—Insights from RNA-seq study of human airway epithelial cells. *Gene* 578(1):38–51, https://doi.org/10.1016/j.gene.2015.12.016.

Lowe, S.R., R.K. Kwok, J. Payne, L.S Engel, S. Galea, and D.P. Sandler. 2015. Mental health service use by cleanup workers in the aftermath of the Deepwater Horizon oil spill. *Social Science & Medicine* 130:125–134, https://doi.org/10.1016/j.socscimed.2015.02.009.

Lowe, S.R. 2016. Why does disaster recovery work influence mental health? Pathways through physical health and household income. *American Journal of Community Psychology* 58(3–4):354–364, https://doi.org/10.1002/ajcp.12091.

Marshall, N.A., D.M. Fenton, P.A. Marshall, and S.G. Sutton. 2007. How resource dependency can influence social resilience within a primary resource industry. *Rural Sociology* 72(3): 359–390, https://doi.org/10.1526/003601107781799254.

Mason, A.L., J.C. Taylor, and I.R. MacDonald, eds. 2019. *An Integrated Assessment of Oil and Gas Release into the Marine Environment at the Former Taylor Energy MC20 Site*. NOAA Technical Memorandum NOS NCCOS 260, Silver Spring, MD, 147 pp., https://doi.org/10.25923/kykm-sn39.

Mayer, B., K. Running, and K. Bergstrand. 2015. Compensation and community corrosion: Perceived inequalities, social comparisons, and competition following the Deepwater Horizon oil spill. *Sociological Forum* 30(2):369–390, https://doi.org/10.1111/socf.12167.

McCrea-Strub, A., D. Zeller, U.R. Sumaila, J. Nelson, A. Balmford, and D. Pauly. 2011. Understanding the cost of establishing marine protected areas. *Marine Policy* 35:1–9, https://doi.org/10.1016/j.marpol.2010.07.001.

McEwen, B.S. 2005. Stress or stressed out: What is the difference? *Journal of Psychiatry and Neuroscience* 30(5):315–318.

McGill, K. 2011. "Survey Measures Post-Oil Spill Seafood Attitudes." The Associated Press, January 31, 2011, https://www.cbsnews.com/news/survey-measures-post-oil-spill-seafood-attitudes/.

McGowan, C.J., R.K. Kwok, L.S. Engel, M.R. Stenzel, P.A. Stewart, and D.P. Sandler. 2017. Respiratory, dermal, and eye irritation symptoms associated with Corexit™ EC9527A/EC9500A following the Deepwater Horizon oil spill: Findings from the GuLF STUDY. *Environmental Health Perspectives* 125(9), https://doi.org/10.1289/EHP1677.

MDRG (Market Dynamics Research Group). 2010. Oil Spill Research Report: National Regional Wave 2. Louisiana Department of Culture and Tourism: Market Dynamics Research Group.

Merhi, Z.O. 2010. Gulf Coast oil disaster: Impact on human reproduction. *Fertility and Sterility* 94(5):1,575–1,577, https://doi.org/10.1016/j.fertnstert.2010.08.036.

Middlebrook, A.M., D.M. Murphy, R. Ahmadov, E.L. Atlas, R. Bahreini, D.R. Blake, J. Brioude, J.A. De Gouw, F.C. Fehsenfeld, G.J. Frost, and J.S. Holloway. 2012. Air quality implications of the Deepwater Horizon oil spill. *Proceedings of the National Academy of Sciences of the United States of America* 109(50):20,280–20,285, https://doi.org/10.1073/pnas.1110052108.

Montas, L., A.C. Ferguson, K.D. Mena, and H.M. Solo-Gabriele. 2020. Categorization of nearshore sampling data using oil slick trajectory predictions. *Marine Pollution Bulletin* 150:110577, https://doi.org/10.1016/j.marpolbul.2019.110577.

Morris, J.G. Jr., L.M. Grattan, B.M. Mayer, and J.K. Blackburn. 2013. Psychological responses and resilience of people and communities impacted by the Deepwater Horizon oil spill. *Transactions of the American Clinical and Climatological Association* 124:191–201.

Murphy, D., B. Gemmell, L. Vaccari, C. Li, H. Bacosa, M. Evans, C. Gemmell, T. Harvey, M. Jalali, and T.H.R. Niepa. 2016. An in-depth survey of the oil spill literature since 1968: Long term trends and changes since Deepwater Horizon. *Marine Pollution Bulletin* 113(1–2):371–379, https://doi.org/10.1016/j.marpolbul.2016.10.028.

Na, J.U., M.S. Sim, I.J. Jo, and H.G. Song. 2012. The duration of acute health problems in people involved with the cleanup operation of the *Hebei Spirit* oil spill. *Marine Pollution Bulletin* 64(6):1,246–1,251, https://doi.org/10.1016/j.marpolbul.2012.03.013.

Nance, E., D. King, B. Wright, and R.D. Bullard. 2016. Ambient air concentrations exceeded health-based standards for fine particulate matter and benzene during the Deepwater Horizon oil spill. *Journal of the Air & Water Management Association* 66(2):224–236, https://doi.org/10.1080/10962247.2015.1114044.

NASEM (National Academies of Science, Engineering, and Medicine). 2017. *Preparing for a Rapid Response to Major Marine Oil Spills: Protecting and Assessing the Health and Well-Being of Communities: Proceedings of a Workshop—in Brief*. The National Academies Press, Washington, DC, https://doi.org/10.17226/24924.

NASEM. 2020. *The Use of Dispersants in Marine Oil Spill Response*. The National Academies Press, Washington, DC, 340 pp., https://doi.org/10.17226/25161.

National Commission on the BP Oil Spill and Offshore Drilling. 2011. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*. Report to the President, US Government Printing Office, Washington, DC, 398 pp., https://www.govinfo.gov/content/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf.

Nelson, J.R., T.H. Grubesic, L. Sim, and K. Rose. 2018. A geospatial evaluation of oil spill impact potential on coastal tourism in the Gulf of Mexico. *Computers, Environment and Urban Systems* 68:26–36, https://doi.org/10.1016/j.compenvurbsys.2017.10.001.

Ng, M., J.W. Cherrie, A. Sleeuwenhoek, M. Stenzel, R.K. Kwok, L.S. Engel, J.M. Cavallari, A. Blair, D.P. Sandler, and P. Stewart. 2019. GuLF DREAM: A model to estimate dermal exposure among oil spill response and clean-up workers. *Annals of Work Exposures and Health*, wxz037, https://doi.org/10.1093/annweh/wxz037.

NOAA (National Oceanic and Atmospheric Administration). 2017. "Largest Oil Spills Affecting U.S. Waters Since 1969," https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/largest-oil-spills-affecting-us-waters-1969.html.

NOAA. 2020. National Marine Fisheries Service, Office of Science and Technology, Commercial Landings Query. https://foss.nmfs.noaa.gov/apexfoss/f?p=215:200.

Norris, F.H., S.P. Stevens, B. Pfefferbaum, K.F. Wyche, and R.L. Pfefferbaum. 2008. Community resilience as a metaphor, theory, set of capacities,

and strategy for disaster readiness. *American Journal of Community Psychology* 41(1–2):127–150, https://doi.org/10.1007/s10464-007-9156-6.
NRC (National Research Council). 2005. *Oil Spill Dispersants: Efficacy and Effects*. The National Academies Press, Washington, DC, 396 pp., https://doi.org/10.17226/11283.
NRC. 2009. *Science and Decisions: Advancing Risk Assessment*. The National Academies Press, Washington, DC, 422 pp., https://doi.org/10.17226/12209.
NRC. 2013. *An Ecosystem Services Approach to Assessing the Impacts of the Deepwater Horizon Oil Spill in the Gulf of Mexico*. The National Academies Press, Washington, DC, 246 pp., https://doi.org/10.17226/18387.
Ohrnberger, J., E. Fichera, and M. Sutton. 2017. The relationship between physical and mental health: A mediation analysis. *Social Science & Medicine* 195:42–49, https://doi.org/10.1016/j.socscimed.2017.11.008.
OSHA (Occupational Safety and Health Administration). 2020. Training Marine Oil Spill Response Workers Under OSHA's Hazardous Waste Operations and Emergency Response Standard. OSHA 3172. https://www.osha.gov/publications/3172.
Osofsky, H.J., J.D. Osofsky, and T.C. Hansel. 2011. Deepwater Horizon oil spill: Mental health effects on residents in heavily affected areas. *Disaster Medicine and Public Health Preparedness* 5(4):280–286, https://doi.org/10.1001/dmp.2011.85.
Osofsky, H.J., T.C. Hansel, J.D. Osofsky, and A. Speier. 2015. Factors contributing to mental and physical health care in a disaster-prone environment. *Behavioral Medicine* 41(3):131–137, https://doi.org/10.1080/08964289.2015.1032201.
Osofsky, H.J., C.F. Weems, R.A. Graham, J.D. Osofsky, T.C. Hansell, and L.S. King. 2018. Perceptions of resilience and physical health symptom improvement following post disaster integrated health services. *Disaster Medicine and Public Health Preparedness* 13(2):223–229, https://doi.org/10.1017/dmp.2018.35.
Osofsky, J.D., H.J. Osofsky, C.F. Weems, T.C. Hansel, and L.S. King. 2014. Effects of stress related to the Gulf oil spill on child and adolescent mental health. *Journal of Pediatric Psycholo*gy 41(1):65–72, https://doi.org/10.1093/jpepsy/jsu085.
Palinkas, L.A., J.S. Petterson, J. Russell, and M.A. Downs. 1993. Community patterns of psychiatric disorders after the *Exxon Valdez* oil spill. *American Journal of Psychiatry* 150(10):1,517–1,523, https://doi.org/10.1176/ajp.150.10.1517.
Palinkas, L.A. 2015. Behavioral health and disasters: Looking to the future. *Journal of Behavioral Health Services and Research* 42:86–95, https://doi.org/10.1007/s11414-013-9390-7.
Parks, V., L. Drakeford, M.R. Cope, and T. Slack. 2018. Disruption of routine behaviors following the Deepwater Horizon oil spill. *Society & Natural Resources* 31(3):277–290, https://doi.org/10.1080/08941920.2017.1377794.
Parks, V., T. Slack, R. Ramchand, L. Drakeford, M.L. Finucane, and M.R. Lee. 2020. Fishing households, social support, and depression after the Deepwater Horizon oil spill. *Rural Sociology* 85(2):495–518, https://doi.org/10.1111/ruso.12297.
Patel, M.M., L.Y. Saltzman, R.J. Ferreira, and A.E. Lesen. 2018. Resilience: Examining the impacts of the Deepwater Horizon oil spill on the Gulf Coast Vietnamese American community. *Social Sciences* 7:203, https://doi.org/10.3390/socsci7100203.
Peres, L.C., E. Trapido, A.L. Rung, D. J. Harrington, E. Oral, Z. Fang, E. Fontham, and E.S. Peters. 2016. The Deepwater Horizon oil spill and physical health among adult women in Southern Louisiana: The women and their children's health (WaTCH) study. *Environmental Health Perspectives* 124(8):1,208–1,213, https://doi.org/10.1289/ehp.1510348.
Perone, H., K. Rattler, A.C. Ferguson, K.D. Mena, and H.M. Solo-Gabriele. 2020. Review of methods to determine hand surface area of children less than six years old: A case study. *Environmental Geochemistry and Health* 43:209–219, https://doi.org/10.1007/s10653-020-00699-9.
Petrolia, D.R. 2014. What have we learned from the Deepwater Horizon disaster? An economist's perspective. *Journal of Ocean & Coastal Economics* 2014:1.1, https://doi.org/10.15351/2373-8456.1002.
Picou, J.S., and D.A. Gill. 1996. The *Exxon Valdez* oil spill and chronic psychological stress. *American Fisheries Society Symposium* 18:879–893.
Porter, J. 2011. *Regional Economic Resilience and the Deepwater Horizon Oil Spill: The Case of New Orleans' Tourism and Fishing Clusters*. Spatial and Organizational Dynamics Discussion Papers, No. 2011-12. CIEO-Research Centre for Spatial and Organizational Dynamics, University of Algarve, 14 pp.
Quigg, A., J.W. Farrington, S. Gilbert, S.A. Murawski, and V.T. John. 2021. A decade of GoMRI dispersant science: Lessons learned and recommendations for the future. *Oceanography* 34(1):98–111, https://doi.org/10.5670/oceanog.2021.119.
Ramchand, R., R. Seelam, V. Parks, B. Ghosh-Dastidar, M.R. Lee, and M. Finucane. 2019. Exposure to the Deepwater Horizon oil spill, associated resource loss, and long-term mental and behavioral outcomes. *Disaster Medicine and Public Health Preparedness* 13(5–6):889–897, https://doi.org/10.1017/dmp.2019.3.
Ritchie, L.A., D.A. Gill, and M.A. Long. 2018. Mitigating litigating: An examination of psychosocial impacts of compensation processes associated with the 2010 BP *Deepwater Horizon* oil spill. *Risk Analysis* 38(8):1,656–1,671, https://doi.org/10.1111/risa.12969.
Rotkin-Ellman, M., K.K. Wong, and G.M. Solomon. 2012. Seafood contamination after the BP Gulf oil spill and risks to vulnerable populations: A critique of the FDA risk assessment. *Environmental Health Perspectives* 120(2):157–161, https://doi.org/10.1289/ehp.1103695.
Rung, A.L., S. Gaston, E. Oral, W.T. Robinson, E. Fontham, D.J. Harrington, E. Trapido, and E.S. Peters. 2016. Depression, mental distress, and domestic conflict among Louisiana women exposed to the *Deepwater Horizon* oil spill in the WaTCH study. *Environmental Health Perspectives* 124(9):1,429–1,435, https://doi.org/10.1289/EHP167.
Rusiecki, J., M. Alexander, E.G. Schwartz, L. Wang, L. Weems, J. Barrett, L. Christenbury, D. Johndrow, R.H. Funk, and L.S. Engel. 2018. The Deepwater Horizon oil spill Coast Guard cohort study. *Journal of Occupational and Environmental Medicine* 75(3):165–175, https://doi.org/10.1136/oemed-2017-104343.
SAMHSA (Substance Abuse and Mental Health Services Administration). 2018. *Behavioral Conditions in Children and Youth Exposed to Natural Disasters*. Disaster Technical Assistance Center, Supplemental Research Bulletin, 20 pp.
Sandifer, P.A., and A.H. Walker. 2018. Enhancing disaster resilience by reducing stress-associated health impacts. *Frontiers in Public Health* 6:373, https://doi.org/10.3389/fpubh.2018.00373.
Sandifer, P., L. Knapp, M. Lichtveld, R. Manley, D. Abramson, R. Caffey, D. Cochran, T. Collier, K. Ebi, L. Engel, and others. 2020. Framework for a community health observing system for the Gulf of Mexico region: Preparing for future disasters. *Frontiers in Public Health* 8:578463, https://doi.org/10.3389/fpubh.2020.578463.
Sathiakumar, N., M. Tipre, A. Turner-Henson, L. Chen, M. Leader, and G. Gohlke. 2017. Post-Deepwater Horizon blowout seafood consumption patterns and community-specific levels of concern for selected chemicals among children in Mobile County, Alabama. *International Journal of Hygiene and Environmental Health* 220:1–7, https://doi.org/10.1016/j.ijheh.2016.08.003.
Science and Policy Associates, Inc. 1993. *MSRC Workshop Report: Research on Worker Health & Safety, January 7–8, 1993, Washington, DC*. Marine Spill Response Corporation, Washington, DC, MSRC Technical Report Series 93-012, 30 pp.
Shah, A.H., A.M. Abdelzaher, M. Phillips, R. Hernandez, H.M. Solo-Gabriele, J.G. Scorzetti, J.W. Fell, M.R. Diaz, T.M. Scott, J. Lukasik, and others. 2011. Indicator microbes correlate with pathogenic bacteria, yeasts, and helminths in sand at a subtropical recreational beach site. *Journal of Applied Microbiology* 110:1,571–1,583, https://doi.org/10.1111/j.1365-2672.2011.05013.x.
Shepard, A.N., J.F. Valentine, C.F. D'Elia, D. Yoskowitz, and D.E. Dismukes. 2013. Economic impact of Gulf of Mexico ecosystem goods and services and integration into restoration decision-making. *Gulf of Mexico Science* 31(1), https://doi.org/10.18785/goms.3101.02.
Shoaf, M.B., J.H. Shirai, G. Kedan, J. Schaum, and J.C. Kissel. 2005. Child dermal sediment loads following play in a tide flat. *Journal of Exposure Science and Environmental Epidemiology* 15:407–412, https://doi.org/10.1038/sj.jea.7500418.
Shultz, J.M., L. Walsh, D.R. Garfin, F.E. Wilson, and Y. Neria. 2015. The 2010 Deepwater Horizon oil spill: The trauma signature of an ecological disaster. *Journal of Behavioural Health Services and Research* 42(1):58–76, https://doi.org/10.1007/s11414-014-9398-7.
Simon-Freidt, B., J.L. Howard, M.J. Wilson, D. Gauthe, D. Bogen, D. Nguyen, E. Frahm, and J.K. Wickliffe. 2016. Louisiana residents' self-reported lack of information following the Deepwater Horizon oil spill: Effect on seafood consumption and risk perception. *Journal of Environmental Management* 180:526–537, https://doi.org/10.1016/j.jenvman.2016.05.030.
Singleton, B., J. Turner, L. Walter, N. Lathan, D. Thorpe, P. Ogbevoen, J. Daye, D. Alcorn, S. Wilson, J. Semien, and others. 2016. Environmental stress in the Gulf of Mexico and its potential impact on public health. *Environmental Research* 146:108–115, https://doi.org/10.1016/j.envres.2015.12.019.
Slack, T., R.A. Kroeger, S. Stroop, K.S. Keating, J. Sury, J. Brooks, T. Chandler, and J. Beedasy. 2020. Deepwater Horizon oil spill exposure and child health: A longitudinal analysis. *Population and Environment*, https://doi.org/10.1007/s11111-020-00354-6.
Smith, A.B. 2020. 2010–2019: "2010–2019: A Landmark Decade of U.S. Billion-Dollar Weather and Climate Disasters." NOAA Climate.gov, https://www.climate.gov/news-features/blogs/beyond-data/2010-2019-landmark-decade-us-billion-dollar-weather-and-climate.
Solomon, G.M., and S. Janssen. 2010. Health effects of the Gulf oil spill. *Journal of the American Medical Association* 304(10):1,118–1,119, https://doi.org/10.1001/jama.2010.1254.
Starbird, K., D. Dailey, A.H. Walker, T.M. Leschine, R. Pavia, and A. Bostrom. 2015. Social media, public participation, and the 2010 BP Deepwater Horizon oil spill. *Human and Ecological Risk Assessment: An International Journal* 21(3):605–630, https://doi.org/10.1080/10807039.2014.947866.

Stewart, P.A., M.R. Stenzel, G. Ramachandran, S. Banerjee, T.B. Huynh, C.P. Groth, R.K. Kwok, A. Blair, L.S. Engel, and D.P. Sandler. 2018. Development of a total hydrocarbon ordinal job-exposure matrix for workers responding to the Deepwater Horizon disaster: The GuLF STUDY. *Journal of Exposure Science & Environmental Epidemiology 28*(3):223–230, https://doi.org/10.1038/jes.2017.16.

Strelitz, J., L.S. Engel, R.K. Kwok, A.K. Miller, A. Blair, and D.P. Sandler. 2018. Deepwater Horizon oil spill exposures and nonfatal myocardial infarction in the GuLF STUDY. *Environmental Health* 17(1):69, https://doi.org/10.1186/s12940-018-0408-8.

Strelitz, J., A.P. Keil, D.B. Richardson, G. Heiss, M.D. Gammon, R.K. Kwok, D.P. Sandler, and L.S. Engel. 2019a. Self-reported myocardial infarction and fatal coronary heart disease among oil spill workers and community members 5 years after Deepwater Horizon. *Environmental Research* 168:70–79, https://doi.org/10.1016/j.envres.2018.09.026.

Strelitz, J., D.P. Sandler, A.P. Keil, D.B. Richardson, G. Heiss, M.D. Gammon, R.K. Kwok, P.A. Stewart, M.R. Stenzel, and L.S. Engel. 2019b. Exposure to total hydrocarbons during cleanup of the Deepwater Horizon oil spill and risk of heart attack across 5 years of follow-up. *American Journal of Epidemiology* 188(5):917–927, https://doi.org/10.1093/aje/kwz017.

Sumaila, U.R., A.M. Cisneros-Montemayor, A. Dyck, L. Huang, W. Cheung, J. Jacquet, K. Kleisner, V. Lam, A. McCrea-Strub, W. Swartz, and others. 2012. Impact of the Deepwater Horizon well blowout on the economics of US Gulf fisheries. *Canadian Journal of Fisheries & Aquatic Sciences* 69:499–510, https://doi.org/10.1139/f2011-171.

Tipre, M., A. Turner-Henson, H.K. Tiwari, J. Gohlke, L. Chen, M. Leader, and N. Sathiakumar. 2017. Post-Deepwater Horizon oil spill exposure patterns among children in Mobile County, Alabama. *Journal of Occupational and Environmental Medicine* 59(10):993–999, https://doi.org/10.1097/JOM.0000000000001112.

Tomenchok, L.E., M.L. Gidley, K.D. Mena, A.C. Ferguson, and H. Solo-Gabriele. 2020. Children's abrasions in recreational beach areas and a review of possible wound infections. *International Journal of Environmental Research and Public Health* 17:4060, https://doi.org/10.3390/ijerph17114060.

USFDA (US Food and Drug Administration). 2010. *Protocol for Interpretation and Use of Sensory Testing and Analytical Chemistry Results for Re-Opening Oil-Impacted Areas Closed to Seafood Harvesting Due to The Deepwater Horizon Oil Spill*. Washington, DC, 12 pp., https://www.fda.gov/food/food-safety-during-emergencies/protocol-interpretation-and-use-sensory-testing-and-analytical-chemistry-results-re-opening-oil.

Walker, A.H., D. Scholz, M. McPeek, D. French-McCay, J. Rowe, M. Bock, H. Robinson, and R. Wenning. 2018. Comparative risk assessment of spill response options for a deepwater oil well blowout: Part III. Stakeholder engagement. *Marine Pollution Bulletin* 133:970–979, https://doi.org/10.1016/j.marpolbul.2018.05.009.

Walker, A.H., R. McKinnon, L. Ritchie, D. Gill, T. Hasenaeur, and J. Giese. In press. Oil spill preparedness and response: Building the capacity to protect public welfare and support community resilience. *International Oil Spill Conference Proceedings*, May 2021 (1).

White, H.K., C.H. Wang, P.L. Williams, D.M. Findley, A.M. Thurston, R.L. Simister, C. Aeppli, R.K. Nelson, and C.M. Reddy. 2016. Long-term weathering and continued oxidation of oil residues from the Deepwater Horizon spill. *Marine Pollution Bulletin* 113:380–386, https://doi.org/10.1016/j.marpolbul.2016.10.029.

Wickliffe, J.K., B. Simon-Freidt, J.L. Howard, E. Frahm, B. Meyer, M.J. Wilson, D. Pangeni, and E.B. Overton. 2018. Consumption of fish and shrimp from southeast Louisiana poses no unacceptable risks attributable to high priority polycyclic aromatic hydrocarbons. *Risk Analysis* 38(9):1,944–1,961, https://doi.org/10.1111/risa.12985.

Wilson, M.J., S. Frickel, D. Nguyen, T. Bui, S. Escher, B.R. Simon, J. Howard, K. Miller, and J.K. Wickliffe. 2015. A targeted health risk assessment following the Deepwater Horizon oil spill: Polycyclic aromatic hydrocarbon exposure in Vietnamese-American shrimp consumers. *Environmental Health Perspectives* 123(2):152–159, https://doi.org/10.1289/ehp.1408684.

Williamson A. 2007. Using self-report measures in neurobehavioural toxicology: Can they be trusted? *NeuroToxicology* 28(2):227–234, https://doi.org/10.1016/j.neuro.2006.03.009.

Wright, M., A. Abdelzaher, H. Solo-Gabriele, S. Elmir, and L.E. Fleming. 2011. The inter-tidal zone is the pathway of input of enterococci to a subtropical recreational marine beach. *Water Science & Technology* 63:542–549, https://doi.org/10.2166/wst.2011.255.

Xia, J., W. Zhang, A.C. Ferguson, K.D. Mena, T.M. Özgökmen, and H.M. Solo-Gabriele. 2020. Use of chemical concentration changes in coastal sediments to compute oil exposure dates. *Environmental Pollution* 259:11358, https://doi.org/10.1016/j.envpol.2019.113858.

Xia, J., W. Zhang, A.C. Ferguson, K.D. Mena, T. Özgökmen, and H.M. Solo-Gabriele. 2021. A novel method to evaluate chemical concentrations in muddy and sandy coastal regions before and after oil exposures. *Environmental Pollution* 269:116102, https://doi.org/10.1016/j.envpol.2020.116102

Xia, K., G. Hagood, C. Childers, J. Atkins, B. Rogers, L. Ware, K, Armbrust, J. Jewell, D. Diaz, N. Gatian, and H. Folmer. 2012. Polycyclic aromatic hydrocarbons (PAHs) in Mississippi seafood from areas affected by the Deepwater Horizon oil spill. *Environmental Science & Technology* 46(10):5,310–5,318, https://doi.org/10.1021/es2042433.

Xue, J., V. Zartarian, J. Moya, N. Freeman, W. Auyeung, and P. Beamer. 2007. A meta-analysis of children's hand-to-mouth frequency data for estimating non-dietary ingestion exposure. *Risk Analysis* 27:411–420, https://doi.org/10.1038/jes.2009.42.

Ylitalo, G.M., M.M. Krahn, W.W. Dickoff, J.E. Stein, C.C. Walker, C.L. Lassiter, E.S. Garret, L.L. Desfosse, K.M. Mitchell, B.T. Noble, and others. 2012. Federal seafood safety response to the Deepwater Horizon oil spill. *Proceedings of the National Academies of Sciences of the United States of America* 109(50):20,274–20,279, https://doi.org/10.1073/pnas.1108886109.

Yoskowitz, D., and M. Russell. 2015. Human dimensions of our estuaries and coasts. *Estuaries and Coasts* 38:1–8, https://doi.org/10.1007/s12237-014-9926-y.

Zilversmit, L., J. Wickliffe, A. Shankar, R.J. Taylor, and E.W. Harville. 2017. Correlations of biomarkers and self-reported seafood consumption among pregnant and non-pregnant women in southeastern Louisiana after the gulf oil spill: The GROWH study. *International Journal of Environmental Research and Public Health* 14(7):1–12, https://doi.org/10.3390/ijerph14070784.

Zock, J-P., G. Rodríguez-Trigo, F. Pozo-Rodríguez, J.A. Barberà, L. Bouso, Y. Torralba, J.M. Antó, F.P. Gómez, C. Fuster, and H. Verea. 2007. Prolonged respiratory symptoms in clean-up workers of the *Prestige* oil spill. *American Journal of Respiratory and Critical Care Medicine* 176(6):610–616, https://doi.org/10.1164/rccm.200701-016OC.

Zock, J.-P., G. Rodríguez-Trigo, E. Rodríguez-Rodríguez, A. Espinosa, F. Pozo-Rodríguez, F. Gómez, C. Fuster, G. Castaño-Vinyals, J.M. Antó, and J.A. Barberà. 2012. Persistent respiratory symptoms in clean-up workers 5 years after the *Prestige* oil spill. *Occupational and Environmental Medicine* 69(7):508–513, https://doi.org/10.1136/oemed-2011-100614.

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Annex II

ESA Consultations

Endangered Species Act &

Essential Fish Habitat

Post Response Guidance

Endangered Species Act (ESA) and Essential Fish Habitat (EFH)
Post-Response Procedures

The purpose of this document is to inform the Federal On-Scene Coordinator (FOSC) of the potential need to conduct consultations **after** the emergency response phase of an incident is over, though every effort should be made to engage the Services early on concerning potential or actual response actions. During the course of emergency response operations, an FOSC must document and track environmental compliance implementation procedures regarding ESA Section 7 and EFH including, but not limited to: Incident Command System (ICS) Form 232-CG Resources at Risk Summary reports, Incident Briefing Form (ICS 201), ESA/EFH Emergency Consultation checklists, etc. The FOSC must comply with consultation requirements for ESA Section 7 and EFH pursuant to 50 Code of Federal Regulations (CFR) § 402.05 and 50 CFR § 600.920.

During a response, the FOSC is responsible for directing response actions so that ESA listed species are not put at risk, or that formally designated Critical Habitats of ESA listed species and/or EFHs are not destroyed. This process is accomplished through pre-spill planning consultations, along with documenting the results of those consultations within Regional Contingency Plans and Area Contingency Plans, as appropriate. However, spill response remains incredibly dynamic and not all federal actions and impacts can be appropriately planned for. For actions not covered by a pre-spill consultation that are used, or are considered for use during an emergency response, the FOSC must follow ESA and/or EFH emergency response procedures and complete ESA and/or EFH consultations in collaboration with the Services once the emergency phase of the response has ended.

There are three criteria for evaluating the effects of response actions on ESA listed species and designated Critical Habitats, and two criteria for evaluating the effects of response actions on EFH. These criteria are used by the FOSC to determine the type of ESA consultation required with National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS), and/or type of EFH consultation required with NMFS. Depending on the incident response, the FOSC may coordinate with the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC), Department of the Interior (DOI) representative, subject matter experts, and/or the Services to determine whether response actions had one of the following effects.

For ESA listed species and designated Critical Habitats:

(1) The action had **No Effect** (none at all, negative or positive);

(2) The action **May Affect**, but was **Not Likely to Adversely Affect (NLAA)**, listed species or adversely modify or destroy designated Critical Habitat; or

(3) The action **May Affect,** and was **Likely to Adversely Affect (LAA)**, listed species and likely adversely modified or destroyed designated Critical Habitat.

For EFH:

(1) The action had **No Adverse Effect**; or

(2) The action **May Adversely Affect** (**Adverse Effects** are anything that changes the quality or quantity of EFH).

"No effect" or "no adverse effect" is the appropriate determination if the response actions occurred in an area where no ESA listed species and designated Critical Habitats occur and no EFH is present, or

if the action and the stressors of that action would not affect ESA listed species, designated Critical Habitats, or EFH. To assist with "no effect" determinations, the FOSC should ask whether ESA listed species or designated Critical Habitats were exposed to the action or the effects of the action. If not, then "no effect" is the appropriate determination. For example, if there is a seasonality to the presence of an ESA listed species, and the action occurs within the season where the species is not present during the time of response actions, then a "no effect" determination is acceptable. An example of this is nesting loggerhead sea turtles in the Gulf of Mexico. If shoreline cleanup is to occur at the time when there are no nests and no nesting activity, then the action would have no effect on loggerheads. However, it is important to check whether other sea turtle species may be nesting in the area. This "no effect" determination must be documented within the respective unit's administrative record. Similarly, if the "no adverse effects" on EFH determination is made, this should also be documented.

If the FOSC determines that emergency response actions "may affect" ESA listed species and/or designated Critical Habitat—that is, species or designated Critical Habitats are likely to be exposed to the response actions—then the FOSC shall follow the consultation processes identified in 50 CFR § 402 during and following the emergency operations.

If the FOSC has made a "may affect" determination during an emergency response, the FOSC must engage in emergency consultation with USFWS and/or NMFS as soon as practicable. This engagement with the Services during the response will likely aid in reducing the likelihood of adverse effects on listed species and/or designated Critical Habitats and should help the FOSC meet their responsibility to engage in the post-response consultation once the response has ended. In accordance with the 2001 Memorandum of Agreement (MOA), these consultations shall remain active until the conclusion of emergency response operations.

Pursuant to 50 CFR § 402.14(c), the FOSC must submit a written request to the Services once the emergency response phase is over. The type of consultation and request to the Service(s) will depend upon the type of effects the response actions had on listed species and/or designated Critical Habitat. If the FOSC determines that the response actions were NLAA (***informal consultation***), the FOSC must then submit a letter to the Service(s) with the details below, their determination, and request concurrence on that NLAA determination. If the FOSC determines that the response actions were LAA, the FOSC must submit an initiation package (and/or Biological Evaluation) to begin ***formal consultation*** after the emergency phase of the response is over. This process is necessary to document and evaluate any adverse effects that may have occurred as a result of response actions. The FOSC cannot make a determination on jeopardy or adverse modification of critical habitat, this is the responsibility of the Services. Therefore, the FOSC must work with the Services to evaluate response actions determined LAA (by the FOSC), and if those response actions resulted in jeopardy or adverse modification of critical habitat. Due to the nature of emergency consultation, determinations of jeopardy or adverse modification of critical habitat are challenging to evaluate during a response. However, any recommendations provided by the Services during the response and the consultation, after the fact, must be documented in the resulting emergency BO and can be integrated into future response actions and response plans.

The following information must be provided to the Services in order to begin an informal or formal consultation:

(1) A description of the agency response action(s) taken;

(2) A description of the specific area that may have been affected by response actions to include listed species and designated Critical Habitat;

(3) A description of Best Management Practices (BMPs)[1] that were followed, if applicable;

(4) A description of the manner in which any ESA listed species or designated Critical Habitat may have been affected by the response action, and an analysis of any cumulative effect;

(5) Any relevant reports, including environmental impact statements, environmental assessments, or biological evaluations prepared, if applicable; and

(6) Any other relevant available information on the response action, listed species, or designated Critical Habitat.

Informal consultations conclude with a Letter of Concurrence from the Service(s). Formal consultations conclude with a Biological Opinion (BO) from the Service(s). For examples of template letters, BOs, or any additional ESA Section 7 templates or document, please refer to NRT.org[2]

FOR FURTHER GUIDANCE WITHIN THE U.S. Coast Guard (USCG), PLEASE CONSULT WITH:

U.S. Coast Guard Natural Resources, COMDTINST 5090.3A (series)
Commanding Officer's Environmental Guide, COMDTPUB P5090.1 (series)

[1] BMPs may be actions already listed or applied within an applicable Regional Contingency Plan (RCP)/Area Contingency Plan (ACP), or BMPs may be recommendations from the Services for the actions taken during a specific incident.

[2] National Response Team (NRT) National Environmental Compliance (NEC) Homepage link: https://nrt.org/Main/Resources.aspx?ResourceType=Endangered%20Species%20Act%20(ESA)%20Section%207&ResourceSection=2

RRT 3 Environmental BMPs for Coastal Zone Oil Spill Response

REGIONAL RESPONSE TEAM III (RRT3)

Environmental Best Management Practices (BMPs) for Oil Spill Response in Regional Response Team 3 (RRT3) Coastal Zone

Appendix 9-A6

December 2023.1

RECORD OF CHANGES

The Regional Response Team III (RRT3) Executive Committee approved the RRT3 Environmental Best Management Practices (BMPs) for Coastal Zone Oil Spill Response on December 6, 2023. Maintenance of this plan is the responsibility of the RRT3 Consultation, Natural Resources, and Damage Assessment (CNRDA) Workgroup. Minor changes may be made periodically, and an update and review will be conducted at least once per year, at a minimum, to validate points of contact. The most current version of the plan will be posted on the RRT3 Website under the Regional Contingency Plan (RCP) Appendix 9 and the USCG District 5 District Response Advisory Team (D5 DRAT) Sharepoint site.

DECEMBER 2023 EDITION

Change Number	Date of Change/Review	Person & Agency Making Change	Description of Change/Update
2023.1	09JAN2024	Elisha Cook, USCG	Updated Tri-State Bird Rescue to 24/7 contact info.
2023.2			
2023.3			
2023.4			
2023.5			
2023.6			
2023.7			
2023.8			
2023.9			
2023.10			
2023.11			
2023.12			
2023.13			
2023.14			
2023.15			

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USE OF THE ENVIRONMENTAL BMPS FOR OIL SPILL RESPONSE IN THE COASTAL ZONE

Regional Response Team III (RRT3) is committed to implementing measures to reduce and avoid potential impacts on federally listed and managed species, designated critical habitat, Essential Fish Habitat (EFH), and cultural/historical resources. The RRT3 has compiled the following collection of Best Management Practices (BMPs) to avoid and/or minimize impacts to trust resources under the Marine Mammal Protection Act (MMPA) and Migratory Bird Treaty Act (MBTA), to serve as recommendations under the Endangered Species Act (ESA) Section 7 consultation regulations to avoid and minimize effects to endangered and threatened species and critical habitat, to minimize and avoid adverse effects on identified categories of EFH under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and to avoid and minimize effects to cultural and historic resources under the National Historic Preservation Act (NHPA) Section 106.

Background and Purpose

The purpose of this document is to provide recommendations and guidance to the Federal On-Scene Coordinator (FOSC) to avoid and minimize impact to fish, wildlife, and cultural/historic resources during a response to an oil spill.

All BMPs are provided as recommendations and guidance, developed in coordination with Department of Commerce National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), and U.S. Department of the Interior's (DOI) U.S. Fish and Wildlife Service (USFWS), to avoid and minimize impact to fish and wildlife resources during a response to an oil spill. These agencies are referred to as "the Services." State Historic Preservation Office (SHPO) input for cultural/historic resource considerations during oil spill response operations is also included within this guidance document.

This document is not intended to cover all possible scenarios or every individual species. The BMPs provided in this document are general in nature for oil spill response actions and enable the FOSC to quickly implement BMPs for response actions at the onset of a response. Due to area, environmental, and situational differences amongst potential operation areas, the RRT3 maintains this list of BMPs as an appendix to the Regional Contingency Plan and will update and revise the list as additional BMPs are developed, and/or updated information becomes available regarding the effectiveness and feasibility of implementing the BMPs. Incident specific BMPs may need to be developed to account for incident specific variances based on spilled products, species or location specific concerns, and types of response actions utilized and/or considered.

Direction to USCG Fifth District Units

The U.S. Coast Guard (USCG) Fifth District units will take these BMPs into consideration when carrying out oil spill response operations. This guidance will be used to cover oil spill and/or hazardous substance response actions within the Fifth Coast Guard District coastal zone, which includes Delaware, District of Colombia, Maryland, portions of New Jersey, North Carolina, portions of Pennsylvania, and Virginia.

The regional NOAA SSC and/or DOI Regional Environmental Officer **shall** be informed whenever the FOSC engages in emergency consultation with the Services. The SHPO **shall** be notified for NHPA consultations.

U. S. Coast Guard (USCG) District Incident Management and Preparedness Advisors (IMPAs) and District Response Advisory Teams (DRATs) are excellent resources to consult with regarding application of BMPs.

The USCG IMPA and DRAT are available 24/7 via District Command Centers.

Note: *This is a guidance document only. Units are encouraged to suggest modifications to this document to the RRT3's Consultation, Natural Resources, and Damage Assessment (CNRDA) Workgroup.*

ENVIRONMENTAL BMPS FOR COASTAL OIL SPILL RESPONSE

General Response Operations

☐ Response personnel may not attempt to scare, herd, disturb, or harass any protected species to encourage them to leave the area. Coordination with National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC), U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) Stranding Coordinator, or appointed point of contact, may result in authorization for these actions.

☐ Report stranded, injured, sick, trapped, entangled, or dead wildlife to the Incident Commander (IC) and Environmental Unit as soon as possible to ensure appropriate agency notifications are made. *Utilize the 'USFWS Wildlife Spill Response Survey' within the Survey123 app if available and being utilized for incident* ArcGIS Survey123 Downloads (esri.com)*.The USFWS species are preloaded into the Wildlife Spill Response Survey, however any species including NMFS species can be recorded in the app.*

☐ If a sea turtle is stranded, injured, or sick, and actively moving, it should be retained onboard a vessel or if on land, responders should remain with the turtle until the stranding/rehabilitation personnel provide guidance on what action should be taken, which could include transferring the turtle to a designated stranding/rehabilitation facility.

☐ If a sea turtle is stranded, injured, or sick but unresponsive (doesn't move its head or flippers when handled), you should follow the handling and resuscitation guidelines after you have called the NOAA hotline at 866-755-NOAA (6622). Do not assume that an inactive turtle is dead. The onset of rigor mortis and/or rotting flesh are often the only definite indications that a turtle is dead. Releasing an unresponsive turtle into any amount of water may drown it. Unresponsive sea turtles may recover following resuscitation.

- For your and the turtle's safety, always pick it up by the shell and keep your hands away from the head. Sea turtles have been known to revive up to 24 hours after resuscitation procedures have been followed. In accordance with Sea Turtle Resuscitation Regulations (50 CFR 223.206(d)(1)), steps for resuscitation can be found at https://media.fisheries.noaa.gov/dam-migration/sea_turtle_handling_and_resuscitation_measures.pdf.

☐ Handling live sturgeon should be minimized and used only when necessary. Sturgeon should be supported by a sling or net when being moved. Live sturgeon must never be held vertically by the tail or gills and should never be tied by the tail. Sturgeon should be kept in water to the maximum extent possible to reduce stress.

- For a non-responsive or overly stressed sturgeon, personnel must allow the animal to recover in floating net pens or in well-aerated onboard live tanks and shielded from direct sunlight. Alternatively, the sturgeon may be immersed in clean river water and moved back and forth to aid water passage over the gills.
- The sturgeon should be released as soon as possible when it has recovered. At water temperatures <7°C (44°F) and >27°C (80°F), holding time of a recovered sturgeon must not be greater than 30 minutes. A spotter should watch the fish as it is released making sure it stays submerged and does not need additional recovery immediately after release.
- Sturgeon are extremely sensitive to chlorine and other sanitizing solutions. Use care when using any of these products around sturgeon.

☐ If any impacted sea turtle, sturgeon, or marine mammal (or their parts) are observed, NMFS should be contacted for collection protocols. If a Wildlife Branch is stood up, coordination for response and collection should be communicated through the NMFS representative in the Wildlife Branch. NMFS may authorize collection by spill response personnel if species specific responders are not available (and delegation authority is allowed under the appropriate permit) and will provide instructions on proper handling and disposition. For impacted marine mammals and sea turtles, call the NMFS Regional Marine Animal Hotline: 866-755-NOAA (6622), Option zero to speak with NMFS staff. For sturgeon, reports should be made to NMFS Protected Resources Division by phone (978-281-9328) and e-mail (nmfs.gar-sturgeon-salvage@noaa.gov) as soon as possible.

- Do not dispose of any federal trust resource marine mammal or turtle parts until examination and documentation is conducted. Disposal will not take place until federal trustees (NOAA/USFWS) give final approval.
- Wildlife operations present some unique challenges to evidence handling requirements that often must be resolved early in response. Important data and samples are collected during oil spill response that ultimately may be used to assess exposure of species to oil and injuries resulting from that exposure. This information and material ultimately may be used for legal purposes including both criminal and civil proceedings. The potential for litigation associated with an oil spill requires specific measures when collecting, handling, and transferring samples and data. Coordinate with federal trustees (NOAA General Counsel's Office and the DOI Office of the Solicitor) to ensure chain of custody (CoC) protocols are followed. The CoC record should include the names of sample collectors, sample identification numbers, date and time of sample collection, location of sample collection, and names and signatures of all persons handling the sample in the field and in the laboratory. The documents provided below provide chain of custody information:
    - Guidelines for Oil Spill Response and Natural Resource Damage Assessment: Sea Turtles at https://media.fisheries.noaa.gov/dam-migration/opr-61_final.pdf.
    - NOAA Pinniped and Cetacean Oil Spill Response Guidelines at https://repository.library.noaa.gov/view/noaa/10479.
    - Additional chain of custody forms for other NOAA resources can be found at https://www.diver.orr.noaa.gov/field-forms-and-templates.

☐ Human Safety Considerations:

- Prior planning, training, and protective equipment should be provided for responders that may need to engage directly with marine mammals.
- Zoonotic pathogens are another risk of handling marine mammals.
- Safety perimeters around pinniped colonies should be established.

Vessel Operations

☐ All response vessel operators and crew must watch for and avoid collision with species protected under the ESA and MMPA (sea turtles, manatees, seals, dolphins, whales, Atlantic and short-nose sturgeon). The Environmental Unit can provide an updated list of protected species in the response area. When available a dedicated wildlife observer should be assigned for each response area.

☐ All response vessels shall maintain minimum distances specified below for specific species:

- 1,500-ft distance (500 yards) from North Atlantic right whale.
- 300-ft, as practicable, from all other marine mammals (i.e., dolphins, other whales, seals/pinnipeds, and porpoises):
  - Seal colonies will likely flush (i.e., move away from) from haul outs into the water at greater distances than 300-ft. Consideration should be given to the potential presence of pups on haul outs in certain seasons. A biologist associated with an authorized marine mammal stranding response program experienced in marine mammal/protected species identification should be onboard to advise location of boom deployment distances when possible.
- 300-ft from waterfowl /seabird aggregation sites. Large numbers of sea birds and waterfowl winter in coastal waters bays and tributaries, with flocks of up to 5,000 individuals. Boat operations must maintain a minimum distance from waterfowl / sea bird aggregation sites.
- 150-ft from sea turtles.
- 50-ft from manatees (rare in RRT3). All in-water operations, including vessels, must be shut down if a manatee comes within 50 ft of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-ft radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 ft of the operation. All on-site project personnel are responsible for observing water-related activities for the presence of manatees. Animals must not be herded away or harassed into leaving.
- 100-ft from all other protected species not already listed above. Stop operating mechanical equipment, including response vessels, immediately if any protected species is observed within a 100-ft radius and resume after the species has departed the area of its own volition.

☐ All response vessels should:

- If marine mammals, sea turtles, or bird colonies are observed within the response area, report to Environmental unit via Wildlife Hotline and/or USFWS Wildlife Spill Response Survey in Survey123 (if established). If Environmental Unit is not yet established, report to the Operations Section. If there is the potential for damage to marine resources, it is recommended that an Environmental Unit be established. Reports should be submitted by the end of the current operational period.
- When sea turtles, dolphins, or whales are sighted while the vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until they have left the area.
- Report if a whale is observed within the envelope of the NOAA spill trajectory for the next 48 hours.

- Any vessel collisions with and/or injury or impacts to any protected species (sea turtles, manatees, dolphins, whales, etc.) shall be reported to the Wildlife Hotline immediately. Likewise, report any stranded, injured, trapped, entangled, or dead protected species to the Wildlife Hotline as soon as possible for further guidance on what action should be taken.
- Mariners shall check various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sightings in the area.
  - Vessels 65 ft in length or longer must comply with the Right Whale Ship Strike Reduction Rule (50 CFR 224.105), which includes reducing speeds to 10 knots or less in Seasonal Management Areas.
    - Reduce speed to 10 knots or less when a right whale sighting is reported, mother/calf pairs, or groups of marine mammals are observed, when safety permits.
    - Secure all materials on vessels to prevent inadvertent loss overboard.

☐ All response vessels will follow marked channels and/or routes using the maximum water depth whenever possible.

☐ All response vessels shall operate at "Idle Speed/No Wake" at all times while in water depths where the draft of the vessel provides less than a 4-ft clearance from the bottom, and after a protected species has been observed in and has departed the area or adjacent to sensitive/environmentally important shorelines.

☐ Avoid vessel grounding, prop and bow/keel/skeg scarring, and prop washing in tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties.

☐ Avoid/minimize anchoring and spudding on tidal marsh, seagrass, and oyster reef habitats; anchor and spud on bare sand and mud bottoms, while avoiding archaeological sites or other historic properties. As soon as practically possible, consult with the State Historic Preservation Office (SHPO) and Tribal Historic Preservation Office (THPO) to determine proximity of archeological/historic sites and specific best management practices for those areas.

☐ Avoid/minimize shading of seagrasses with large vessels and barges for more than a few days; move large vessels and barges from over seagrasses onto bare sand or mud substrates when not undergoing active operations (such as in barge staging areas).

☐ Where equipment or crews must gain access across tidal marsh, seagrass, or oyster habitats, use shallow draft vessels to minimize disturbance, as applicable.

☐ Identify pinniped colonies in the response area as soon as possible and avoid disrupting the group as much as can be reasonably achieved. A response vessel should have a biologist experienced in marine mammal/protected species identification to observe and direct the response team to minimize impacts to groups of seals.

☐ If manatees are present, all water-based work and vessel operations must be in accordance with USFWS Standard Manatee Conditions for In-Water Activities (fws.gov). All response personnel shall be instructed about the presence of manatees and the need to avoid collisions with and injury to manatees. Advise all response personnel that there are civil and criminal penalties for harming, harassing, or killing manatees. Notify USFWS if manatees are observed.

On-water Mechanical Operations

(On-water Containment, Recovery, Protection)

☐ A biologist experienced in marine mammal/protected species identification or dedicated crew member is required for all skimming, booming, burning, and dispersant operations, with responsibility for avoiding marine mammals, sea turtles, birds, and reporting distressed or deceased animals.

☐ Stop operating mechanical equipment, including response vessels, immediately if a protected species is observed within a 50-ft radius and resume after the species has departed the area of its own volition.

☐ Entanglement:

- All in-water equipment (including hard and sorbent booms) must be properly secured with materials that reduce the risk of entanglement of marine species. Booms, lines, and other equipment must be made of materials that reduce the risk of entanglement of marine species. Keep all in-water lines (rope, chain and cable, including the lines to secure boom, buoys, anchors, etc.) stiff, taut, and non-looping. Floating line should be used as appropriate.
- Where feasible, the use of equipment with breakaway capabilities is advised to prevent or minimize the risk of entanglement of marine species.
- The Sea Turtle Stranding and Salvage Network (STSSN) should be contacted if sea turtles are entangled or entrapped during offshore operations.

☐ Entrapment:

- In-water equipment (including hard and sorbent boom) must be placed in a manner that does not entrap species within the work area or block access for them to navigate around the work area.
- If protected species become entrapped in an enclosed area, notify NMFS immediately. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised, then activities may cease so the animal can either leave on its own or be moved under the direction of NMFS.
- The Sea Turtle Stranding and Salvage Network (STSSN) should be contacted if sea turtles are entangled or entrapped during offshore operations.

On-water Chemical Countermeasures

(Dispersants, Solidifiers, Herding Agents, Elasticity Modifiers)

☐ A biologist experienced in marine mammal/protected species identification or dedicated crew member is required for all skimming, booming, burning, and dispersant operations, with responsibility for avoiding marine mammals, sea turtles, birds, and reporting distressed or deceased animals.

☐ Where approved, dispersants should not be used within a 3-nautical mile radius of marine mammal species (e.g., whales, dolphins, seals, sealions, and manatees). The radius should increase to 10-nautical miles if North Atlantic right whales are observed in the area.

☐ Where approved, avoid dispersant applications near bird concentration areas and minimize bird exposure from wind drift of applied dispersant.

Other Countermeasures

(In-situ Burn, Bioremediation)

- ☐ A biologist experienced in marine mammal/protected species identification or dedicated crew member is required for all skimming, booming, burning, and dispersant operations, with responsibility for avoiding marine mammals, sea turtles, birds, and reporting distressed or deceased animals.
- ☐ Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observers on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported to the Environmental Unit immediately.
- ☐ Avoid burning near bird concentration areas and minimize bird exposure from wind drift of smoke.
- ☐ Avoid burning near archaeological sites or other historic properties, particularly when these are not completely submerged.

Aircraft Operations

(Airplanes, Helicopters, Drones/Unmanned Aircraft Systems)

☐ Prior to operating Unmanned Aircraft Systems (UAS) coordinate with respective land managers to get specific UAS limitations.

☐ UAS flights should be limited to 100 feet above ground level (AGL) above resting birds on land or water (i.e., not in flight). Rotary aircraft should limit elevations to 300-400 feet AGL. If hazing/disturbances occur, increase altitude and report adjusted height to the Environmental Unit.

☐ Fixed-wing aircraft should follow NOAA marine mammal aerial survey protocols for speed (100 mph preferred), height (1000 feet AGL), and dwell time and for aircraft choice.

- For flyovers for identifying animals in the area are best done from aircraft that can fly low and slow and remain in an area for an extended period.

☐ Aircraft must stay >1,000 feet above bird nesting and aggregation sites and limit repetitive passes to minimize disturbance.

☐ Where deemed applicable, wildlife observers may be deployed on aircraft to report and record sightings of ESA species and/or other wildlife.

Vehicle Operations

(All-Terrain Vehicles, Automobiles/Trucks Heavy Equipment)

- ☐ Prior to vehicle operations, a biologist experienced in shorebird species identification is required to evaluate beaches for use by shorebirds (nesting, fledgling) each day.
- ☐ Prior to vehicle operations, the SHPO and THPO (if applicable) should be consulted to avoid disturbance of archaeological sites or other historic properties.
- ☐ Generally, preference is given to operations during daytime periods to minimize impacts to sea turtles and nesting shorebirds. Prior to any nighttime operations, it is highly recommended to consult with the Services for guidance.
- ☐ Utilize a lightweight vehicle with low tire pressure (10 psi), such as an All-Terrain Vehicle (ATV) or Mule whenever possible to reduce sand compaction and/or rutting.
- ☐ Utilize the same trackline for vehicle operations to minimize disturbance to multiple areas.
- ☐ Power wash vehicles prior to operating on beach areas to prevent spread of invasive species (e.g., Asian sand sedge).
- ☐ Enter the beach only at designated access points and proceed directly to the hard-packed sand near or below the high tide line. Stay below the tide line when driving if no oil is present and it is safe to do so.
- ☐ Do not drive in dune habitat.
- ☐ Avoid driving over the wrack line or areas of dense sargassum (otherwise known as seaweed), which may contain sea turtle hatchlings or newly hatched birds.
- ☐ Do not enter posted sea turtle or shorebird nest sites and minimize time spent around these sites. Most of these will be marked with posts and signs, but not all.
- ☐ Drive slowly. Travel should be slow enough to observe any bird eggs, chicks, or sea turtle hatchlings in the vehicle's line of travel. Be aware that bird chicks often feed along the water's edge. They may freeze in place rather than run away when ATVs or other vehicles approach.
- ☐ Check under and around vehicles and heavy equipment parked in shoreline areas before they are moved. Shorebirds (piping plover and red knot) are especially vulnerable when they are roosting at night, and extra care should be taken at these times. However, by this time of year, it is likely that these two federally threatened shorebird species have departed the area.

Shoreline Response Operations

(Protection/Containment: Pre-impact Debris Removal, Deflection/Protection Boom, Barriers/Berms, Flooding; Shoreline Treatment / Cleanup: Natural Recovery, Washing/Flushing, Physical Removal, Vegetation Cutting/Removal, Vacuum)

- ☐ In shallow nearshore areas with sensitive habitats, consider land-side access from roads, bulkheads, or other developed areas for operations.
- ☐ Avoid and minimize response disturbance to sensitive shoreline habitats and in particularly sand dunes and wetlands. Of particular concern are areas with Federally listed species in dune habitats such as tiger beetle, seabeach amaranth, and nesting birds. Contact the Environmental Unit to identify updated locations with these listed species in dune habitats.
- ☐ Where equipment or crews must access areas across tidal marsh, seagrass, or oyster habitats, use shallow draft vessels or specialized equipment with low pressure/flotation tires, equipment mats, walk boards, or other comparable methods to minimize disturbance, as applicable.
- ☐ Keeping clean wrack in general proximity is ideal, but it is not necessary to move it a substantial distance and back—use reasonable judgment.
- ☐ Following response work on beaches, return the beach to its original profile at the end of each day.
- ☐ Do not enter sites where birds are nesting or roosting and maintain a buffer of at least 300 ft from these sites. If birds are flushed, move away from the area, and observe a larger buffer distance to avoid and minimize disturbance.
- ☐ When working in or near bird migratory/wintering areas, work crews should be limited to the minimum number of personnel and equipment required to complete response activities in an efficient time frame and as is feasible to minimize disturbance.
- ☐ Be aware of the potential for sea turtle nesting activity if any operations are planned on Atlantic Ocean-facing sand beaches. Nests, eggs, and hatchlings may be present from May through November.
- ☐ Adult sea turtles, crawls, nests, eggs, hatchlings, and critical habitat should be protected during response activities on sea turtle nesting beaches, including hatchling turtles as they emerge from the nest and crawl to the sea. If a sea turtle nest is inadvertently excavated during assessment or response activities, all work shall cease in that area immediately and the Environmental Unit should be contacted.
- ☐ Upon locating any dead, injured, or sick sea turtle, birds, or marine mammals, or if eggs or nests are disturbed during response activity, initial notification must be made to the Environmental Unit as soon as possible. The Environmental Unit will make further notifications to the appropriate agency contacts.
- ☐ Contact the Unified/Incident Command (UC/IC) and Environmental Unit prior to conducting any response efforts that require substantial ground disturbance as additional SHPO coordination may be required. Federally recognized tribes with interest in the area and the THPO may be contacted if applicable.
- ☐ Cease all activities involving subsurface disturbance and immediately contact the UC/IC and Environmental Unit if prehistoric/historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time (and leave all artifacts in place). The SHPO and/or THPO must be notified. Response activities

shall not resume without verbal and/or written authorization from the UC/IC in consultation with the designated Historic Preservation Specialist (HPS) and document decisions; if there is no designated HPS then the UC/IC should receive guidance from the SHPO and/or THPO. If unmarked human remains are encountered during response activities, stop all work immediately and report to the UC/IC and Environmental Unit through your chain of command.

Staging Areas / Support Facilities

☐ Equipment and material staging areas must be located outside of areas of natural/native vegetation and known endangered species habitats, including federally threatened plant(s) that may be present in dunes. Areas proposed for equipment and material staging should be determined in consultation with the SHPO and/or THPO to avoid disturbance of archaeological sites or other historic properties. Contact the Environmental Unit (if established) for assistance.

☐ Use existing beach access areas and trails only.

☐ All trash resulting from the response should be removed from the area as appropriate or disposed of properly in covered wildlife-proof trash receptacles.

Waste Management

☐ All trash resulting from the response should be removed from the area as appropriate or disposed of properly in covered wildlife-proof trash receptacles.

Grounded or Displaced Vessel Response/Removal Operations

- ☐ Avoid and minimize response disturbance to sensitive benthic and shoreline habitats including tidal marshes, oyster reefs, seagrasses, sand beaches, and dunes.
- ☐ Contact the Environmental Unit prior to conducting any response efforts that require significant ground disturbance as U.S. Army Corps of Engineers (USACE) and/or State permits may be required. Additionally, substantial ground disturbance beyond the initial disturbance caused by the grounding may require additional SHPO coordination for historic sites and/or THPO for tribal coordination.
- ☐ Contact the Environmental Unit if significant sediment disturbance is anticipated, as further coordination with USACE may be required.
- ☐ Contact the Environmental Unit if filling of wetlands or surface waters or dredging that creates or expands surface waters is anticipated, as emergency permitting from State Agencies may be required.
- ☐ Turbidity control measures may be implemented if significant turbidity increases are expected during response actions. Such control measures include:
    - Install floating turbidity barriers with weighted skirts that extend to within 1-ft of the bottom around all work areas that are in, or adjacent to, surface waters, if heavy turbidity is expected.
    - Use these turbidity barriers throughout vessel removal to control erosion and siltation and ensure that turbidity levels within the project area do not exceed background conditions (i.e., the normal water quality levels from natural turbidity).
    - Position turbidity barriers in a way that does not block species entry to or exit from designated critical habitat.
    - Monitor and maintain turbidity barriers in place until the authorized work has been completed and the water quality in the project area has returned to background conditions.
- ☐ Avoid response vessel grounding, prop and bow/keel/skeg scarring, and prop washing in tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties.
- ☐ Avoid/minimize anchoring and spudding on tidal marsh, seagrass, and oyster reef habitats; anchor and spud on bare sand and mud bottoms, while avoiding archaeological sites or other historic properties. Consult with the SHPO and/or THPO to determine proximity of archeological/historic sites.
- ☐ If spudding on seagrasses cannot be avoided, fill spud holes to grade with clean sand, as feasible, to minimize impacts. Consult the Environmental Unit for any remediation requirements.
- ☐ Avoid/minimize shading of seagrasses with large vessels and barges for more than a few days; move large vessels and barges from over seagrasses onto bare sand or mud substrates when not undergoing active operations (such as in barge staging areas).
- ☐ Prior to hoisting, refloating, or repositioning grounded or displaced vessels, work crews should evaluate the immediate area and determine an ingress/egress path that will have the least impact to tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties. Contact the Environmental Unit for assistance.
- ☐ Temporary stakes/buoys should be used to mark the ingress/egress path, if applicable, to assist in staying on course and to avoid the areas of greatest tidal marsh, oyster reef, and seagrass habitat extent and quality.

- ☐ In shallow areas with sensitive shoreline and bottom habitats, consider land-side access from roads, bulkheads, or other developed or disturbed areas for response operations, where feasible.
- ☐ Where equipment or crews must access grounded or displaced vessels across tidal marsh, seagrass, or oyster habitats, use shallow draft vessels or specialized equipment with low pressure/flotation tires, equipment mats, walk boards, or other comparable methods to minimize disturbance, as applicable.
- ☐ Avoid pulling grounded or displaced vessels or other items across or onto tidal marsh, seagrass, and oyster reef habitats - items should be hoisted or refloated if possible. Use of lift bags, rollers, equipment mats, and other methods should be evaluated to minimize impacts, such as rutting and keel scarring.
- ☐ Avoid digging, jetting, excavation, and similar methods in tidal marsh, seagrass, oyster reef habitats, and archaeological sites or other historic properties to refloat or reposition displaced vessels.
- ☐ If the above suite of habitat based BMPs cannot be applied, further USACE and State permits (see above) and Essential Fish Habitat (EFH) consultation may be required.

For further guidance and assistance with Best Management Practices (BMPs) during a response/incident, please contact the Environmental Unit (if established). BMPs that are utilized should be documented by the FOSC via the RRT3 ESA/EFH Biological Evaluation Guidance & Form for USCG Fifth District Coastal Zone.

ENVIRONMENTAL POINTS OF CONTACT

Primary Environmental Agencies / Organizations

If the Environmental Unit is not stood up, the key points of contact for environmental, wildlife, and historic preservation concerns during an oil spill response are provided below.

U.S. Coast Guard Fifth District Response Advisory Team (DRAT)

- David Pugh, david.e.pugh1@uscg.mil, 757-373-4133 (cell)
- Elisha Cook, elisha.fs.cook@uscg.mil, 757-630-1430 (cell)

National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC)

- Frank Csulak, frank.csulak@noaa.gov, 732-371-1005

U.S. Fish and Wildlife Service (USFWS) Response Coordinators

- Sarah Shaeffer (NJ, NY, DE, Eastern PA/Delaware Watershed), sarah_scheaffer@fws.gov, 609-833-1476
- Jo Ann Banda (MD, Western PA, VA, WV, DC), joann_banda@fws.gov, 804-824-2413 (office), 804-694-7647 (cell)
- Brian Spears (NC), brian_spears@fws.gov, 251-284-5295 (cell), 251-928-9765 (office)

Department of the Interior (DOI)

- John Nelson, john_nelson@ios.doi.gov, 215-597-5012 (office), 215-266-5155 (cell)
- Joyce Stanley, joyce_stanley@ios.doi.gov, 404-331-4524 (office), 404-852-5415 (cell)

Tri-State Bird Rescue and Research

- 1-800-261-0980, oilprograms@tristatebird.org, https://tristatebird.org/oil-spill-response/

Report a Stranded or Injured Marine Mammal or Sea Turtle

Northeast Marine Mammal and Sea Turtle Stranding and Entanglement Hotline, 866-755-NOAA

New Jersey

- Marine Mammal Stranding Center, 609-266-0538, https://mmsc.org/

Delaware

- MERR Institute, 302-228-5029, https://www.merrinstitute.org/

Maryland

- Maryland Marine Animal Reporting Hotline, 800-628-9944
- Maryland Department of Natural Resources Cooperative Oxford Laboratory (Dead animals only), https://dnr.maryland.gov/fisheries/Pages/oxford/stranding.aspx
- National Aquarium in Baltimore, Marine Animal Rescue Program, https://www.aqua.org/Support/BLUEprint/animal-care-and-rescue-center

Virginia

- Virginia Aquarium and Marine Science Center, 757-385-7575, https://www.virginiaaquarium.com/research-and-conservation/stranding-response

North Carolina

- NOAA Fisheries Southeast Marine Mammal Stranding Hotline, 877-WHALE-HELP
- NOAA Fisheries Southeast Sea Turtle Stranding/Salvage Network Hotline, 844-SEA-TRTL
- Sturgeon Salvage Network, 844-STURG-911
- Giant Manta Ray Reporting, 727-824-5312, manta.ray@noaa.gov
- North Carolina Sea Turtle Stranding and Salvage Network Hotline, 252-241-7367
- North Carolina Division of Marine Fisheries, 252-241-5119
- University of North Carolina–Wilmington Marine Mammal Stranding Program, 910-515-7354

State Historic Preservation Office Contacts

For the most current list of SHPO contacts please see the National Conference of State Historic Preservation Officers website at ncshpo.org/directory/.

New Jersey SHPO; Department of Environmental Protection, Historic Preservation

- Kate Marcopul, kate.marcopul@dep.nj.gov, 609-633-2397; http://www.state.nj.us/dep/hpo/

Pennsylvania SHPO; PA Historic Preservation Office

- Andrea MacDonald, amacdonald@pa.gov, 717-787-4215; http://www.phmc.pa.gov/Preservation

Delaware SHPO; Division of Historical and Cultural Affairs

- Gwen Davis, gwen.davis@delaware.gov, 302-736-7410; http://history.delaware.gov/
- Sarah Carr, sarah.carr@delaware.gov, 302-736-7431

West Virginia SHPO; Division of Culture & History

- Susan Pierce, Susan.M.Pierce@wv.gov, 304-558-0240; http://www.wvculture.org/

Maryland SHPO; Maryland Historical Trust

- Susan Langley, susan.langley@maryland.gov, 410-697-9564 (office), 410-353-8777 (cell); https://mht.maryland.gov/
- Troy Nowak, troy.nowak@maryland.gov, 410-697-9577 (office), 240-291-1267 (cell)

Washington D.C. Historic Preservation Office

- David Maloney, david.maloney@dc.gov, 202-442-8800; http://planning.dc.gov/historicpreservation
- Steve Callcott, steve.callcott@dc.gov, 202-741-5247

Virginia SHPO; Department of Historic Resources

- Julie Langan, julie.langan@dhr.virginia.gov, julie.langan@dhr.virginia.gov, 804-482-6087; http://www.dhr.virginia.gov/
- Stephanie Williams, stephanie.williams@dhr.virginia.gov, 804-482-6082

North Carolina SHPO; Division of Archives and History

- Darin Waters, darin.waters@ncdcr.gov, 919-814-6636; https://www.ncdcr.gov/state-historic-preservation-office
- Ramona Murphy Bartos, ramona.bartos@ncdcr.gov, 919-814-6583

LIST OF ABBREVIATIONS

Abbreviation	Definition
AGL	Above Ground Level
ATV	All-Terrain Vehicle
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CNRDA	Consultation, Natural Resources, and Damage Assessment
CoC	Chain of Custody
D5	District 5 *(U.S. Coast Guard)*
DC	District of Colombia
DE	Delaware
DOI	Department of the Interior
DRAT	District Response Advisory Team
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ENVL	Environmental Unit Leader
FOSC	Federal On-Scene Coordinator
ft	Feet *(unit of measurement)*
GIS	Geographic Information System
IC	Incident Commander
IMPA	Incident Management Preparedness Advisor *(U.S. Coast Guard)*
MBTA	Migratory Bird Treaty Act
MD	Maryland
MERR	Marine Education, Research, & Rehabilitation
MMPA	Marine Mammal Protection Act
mph	Miles per hour *(measurement of speed)*
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NC	North Carolina

NHPA	National Historic Preservation Act
NJ	New Jersey
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOAA SSC	NOAA Scientific Support Coordinator
NY	New York
PA	Pennsylvania
psi	Pound per square inch *(measurement of pressure)*
RCP	Regional Contingency Plan
RRT3	Regional Response Team III
SHPO	State Historic Preservation Office
STSSN	Sea Turtle Stranding and Salvage Network
THPO	Tribal Historic Preservation Office
UAS	Unmanned Aircraft System
UC	Unified Command
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
VA	Virginia
WV	West Virginia

RRT 3 ESA EFH Section 7

Coastal Zone Consult Guide & Form

REGIONAL RESPONSE TEAM III (RRT3)

Endangered Species Act (ESA) and Essential Fish Habitat (EFH) Biological Evaluation (BE) Guidance and Form for U.S. Coast Guard Fifth District Coastal Zone

Pre-Spill Consultation, Emergency Consultation, and Post-Response Procedures

Appendix 9-A3

February 2022.2

RECORD OF CHANGES

Maintenance of this plan is the responsibility of the Regional Response Team III (RRT3) Consultation, Natural Resources, and Damage Assessment (CNRDA) Workgroup. Minor changes may be made periodically, and an update and review will be conducted at least once per year, at a minimum, to validate points of contact. The most current version of the plan will be posted on the RRT3 Website under the Regional Contingency Plan (RCP) Appendix 9 and the USCG District 5 District Response Advisory Team (D5 DRAT) Sharepoint site.

FEBRUARY 2022 EDITION

Change Number	Date of Change/Review	Person & Agency Making Change	Description of Change/Update
2022.1	08 DEC 2022	Elisha Cook, USCG D5 DRAT	Added a Record of Changes table. Validated & updated Section 7 POCs in Enclosure 1.
2022.2	24 MAR 2023	Elisha Cook, USCG D5 DRAT	Validated & updated Section 7 POCs in Enclosure 1 for North Carolina.
2022.3			
2022.4			
2022.5			
2022.6			
2022.7			
2022.8			
2022.9			
2022.10			
2022.11			
2022.12			
2022.13			
2022.14			
2022.15			

Endangered Species Act and Essential Fish Habitat Consultation Guidance for Coastal Zone

The U.S. Coast Guard (USCG) Fifth District units will use this biological evaluation (BE) form to conduct Endangered Species Act (ESA) Section 7 and Essential Fish Habitat (EFH) consultation with the Department of Commerce National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), and U.S. Department of the Interior's (DOI) U.S. Fish and Wildlife Service (USFWS). These agencies are referred to as "the Services." This form will be used to cover oil spill and/or hazardous substance response actions within the Fifth Coast Guard District coastal zone, which includes Delaware, District of Colombia, Maryland, portions of New Jersey, North Carolina, portions of Pennsylvania, and Virginia.

Background and Purpose

The purpose of this document is to help the Federal On-Scene Coordinator (FOSC) determine whether to initiate ESA consultation and EFH coordination in accordance with 50 CFR § 402.05 and 50 CFR § 600.920(a)(1) and to assist the FOSCs through the process.

The FOSC should check the following databases and contacts for each of the Services to help identify the presence of federally listed threatened or endangered species or designated Critical Habitats or EFH:

- Environmental Response Management Application (ERMA): https://erma.noaa.gov/atlantic#/
  - Geographic Response Strategies (GRS): Located in ERMA under 'Response Planning – Area Contingency Plans – Sector [Delaware Bay, Maryland NCR, Hampton Roads, North Carolina]'
  - NOAA Environmental Sensitivity Index (ESI) Maps: Located in ERMA under 'Natural Resources, Habitats, & Managed Areas – Environmental Sensitivity Index'
- NOAA ESA Species Matrix: Posted on RRT III website at https://www.nrt.org/site/doc_list.aspx?site_id=72
- Greater Atlantic Region ESA Section 7 Mapper: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater
- EFH Mapper: https://www.habitat.noaa.gov/apps/efhmapper/
- Atlantic Marine Assessment Program for Protected Species (AMAPPS) Marine Mammal Model Viewer: https://apps-nefsc.fisheries.noaa.gov/AMAPPSviewer/
- Information for Planning and Consultation (IPaC) within the USFWS Environmental Conservation Online System (ECOS): https://ecos.fws.gov/ipac/

The FOSC should then evaluate response actions and their potential impacts, if any, on federally listed threatened or endangered species or designated Critical Habitats or EFH. The scope of the consultation is focused on the agency's response actions during an incident, **NOT** the incident itself.

The three ESA thresholds, which are used to determine action necessary by the FOSC, are:

(1) **No Effect** (none at all, negative or positive);

(2) **May Affect**; Not Likely to Adversely Affect, (NLAA); and

(3) **May Affect; Likely to Adversely Affect** (LAA).

The two EFH thresholds, which are used to determine action necessary by the FOSC, are:

(1) **Would Not Adversely Affect** (WNAA); and

(2) **May Adversely Affect** (MAA).

Whenever an FOSC makes a determination that federal response actions **may affect** ESA-listed (threatened or endangered) species and/or designated Critical Habitat or **may adversely affect** EFH, **the action agency shall initiate consultation protocols**. For emergency consultation, the FOSC shall initiate this consultation, as soon as practicable, via verbal or email notification. The form shall be sent via email to the Services after the consultation is initiated.

Responders should not delay emergency response actions while awaiting a response from the Services. If the FOSC determines consultations are not practicable during emergency response operations, refer to the NRT's Post-Response Procedures guidance for ESA Section 7 and EFH compliance requirements.

Depending on the scale and scope of emergency response actions, pre-spill planning consultations can minimize the level of effort of emergency consultation(s) and, in certain circumstances, even alleviate the need for emergency consultation(s). If pre-spill planning consultations were completed with the Services, BMPs may be incorporated into the GRSs, Area Contingency Plans (ACP), and Regional Contingency Plans (RCP).

More guidance regarding Section 7 consultation can be found in the 2001 Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan (2001 MOA) and the NRT's National Environmental Compliance (NEC) Subcommittee ESA guidance page at NRT.org[1]. The 2001 MOA provides a framework for cooperation and participation among parties involved in oil spill planning and response. It outlines procedures to streamline ESA compliance process before, during, and after an incident. EFH consultations should be completed simultaneously with ESA Section 7 consultations. Additional NMFS ESA Section 7 consultation guidance can be found on the Greater Atlantic Region[2] site and for USFWS guidance can be found on the Northeast Region[3] site.

For all Section 7 Consultations

The regional NOAA SSC and/or DOI Regional Environmental Officer **shall** be informed whenever the FOSC engages in emergency consultation with the Services.

The NOAA SSC may be able to facilitate communications between the USCG and the Services; however, it is the sole responsibility of the FOSC to initiate, conduct, and complete the consultation.

The DOI Regional Environmental Officer may also be able to facilitate communications between the action agencies and USFWS.

U. S. Coast Guard (USCG) District Incident Management and Preparedness Advisors (IMPAs) and District Response Advisory Teams (DRATs) are excellent resources for all required consultations (ESA, EFH, State Historic Preservation Office (SHPO), and Tribal Historic Preservation Office (THPO)).

The USCG IMPA and DRAT are available 24/7 via District command centers.

[1] National Response Team (NRT) National Environmental Compliance (NEC) Homepage link: https://nrt.org/Main/Resources.aspx?ResourceType=Endangered%20Species%20Act%20(ESA)%20Section%207&ResourceSection=2

[2] NMFS Greater Atlantic Region Section 7 Consultations link: https://www.greateratlantic.fisheries.noaa.gov/protected/section7/index.html

[3] USFWS Northeast Region Section 7 Consultation link: https://www.fws.gov/northeast/EcologicalServices/federalconsultation.html

Note: This is a guidance document only. Units are encouraged to suggest modifications to this document to the RRT3's Consultation, Natural Resources, and Damage Assessment (CNRDA) Workgroup.

FOR FURTHER GUIDANCE WITHIN THE USCG, PLEASE CONSULT WITH:
U.S. Coast Guard Natural Resources, COMDTINST 5090.3A (series)
Commanding Officer's Environmental Guide, COMDTPUB P5090.1 (series)

ESA/EFH Consultation Form

Section 7 primary points of contact for RRT3 coastal zone area of responsibility and North Carolina (under USCG District 5) are included in Enclosure (1). The Section 7 Consultation Form is included as Enclosure (2).

When used for emergency consultation this form is intended to provide as much detailed information as possible to the Services within 48 hours of the federal action agency undertaking emergency response actions. It is not intended to be comprehensive, and **responders should not delay emergency response actions while awaiting a response from the Services**. This form assists FOSCs in meeting their statutory obligations to conduct emergency consultation under Section 7 of the ESA and/or designated EFHs. This form is also designed to document communication efforts between the Action Agencies and the Services as well as provide a consistent template for use in compiling relevant information and recommendations during emergency response operations.

Note: The Services will review the supplied information and respond with Best Management Practices (BMP) to mitigate potential impacts to any ESA-listed (threatened or endangered) species and/or designated Critical Habitat and/or EFH. The measures and BMPs are then incorporated into response actions and specialists may be brought into the response to provide additional oversight and guidance via Pollution Removal Funding Authorization (PRFA).

Once this form is submitted, the Services will consider the proposed response actions and use ENCLOSURE 2: DOCUMENTATION OF ESA SECTION 7 AND EFH EMERGENCY CONSULTATION DURING EMERGENCY RESPONSE ACTIVITIES – USFWS/NMFS RESPONSE to provide recommendations, which may include information on species and designated Critical Habitats in the area, suggested conservation measures / best management practices, etc.

Enclosures

(1) Section 7 Primary Points of Contact

(2) ESA Section 7 / EFH Consultation Form

Section I – FOSC Response Activities

Section II – Service Response

ENCLOSURE 1: SECTION 7 PRIMARY POINTS OF CONTACT
RRT3 COASTAL ZONE AREA OF RESPONSIBILITY

NOAA SSC for RRT3

Mr. Frank Csulak
NOAA
61 Inlet Drive
Point Pleasant, New Jersey 08742
Phone: (732) 371-1005
After Hours Number: (206) 526-4911
E-mail: frank.csulak@noaa.gov

NOAA NMFS Representative for RRT3

NOAA Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
NOAA Fisheries Service
Gloucester, Massachusetts 01930
Phone: (978) 281-9300
E-mail: nmfs.gar.garfo@noaa.gov

USFWS Representatives for RRT3

Response Coordinator for MD, Western PA, VA, WV and DC

Ms. Jo Ann Banda
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, Virginia 23061
Phone: (804) 824-2413
Cell: (804) 694-7647
E-mail: joann_banda@fws.gov

Response Coordinator for NJ, NY, DE, Eastern PA (Delaware Watershed)

Ms. Sarah Scheaffer
U.S. Fish and Wildlife Service
New Jersey Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, New Jersey 08205
Phone: (609) 833-1476
E-mail: sarah_scheaffer@fws.gov

New England Area

Mr. Andrew Major
U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301
Cell: (603) 748-8082
E-mail: Andrew_major@fws.gov

DOI Representative for RRT3

Mr. John Nelson
Office of Environmental Policy and Compliance
U.S. Department of the Interior
Phone: (215) 597-5012
Cell: (215) 266-5155
E-mail: john_nelson@ios.doi.gov

NORTH CAROLINA COASTAL ZONE ONLY

NOAA SSC for Sector North Carolina

Mr. Frank Csulak
NOAA
61 Inlet Drive
Point Pleasant, New Jersey 08742
Phone: (732) 371-1005
After Hours Number: (206) 526-4911
E-mail: frank.csulak@noaa.gov

NOAA NMFS Representative for Sector North Carolina

NOAA Southeast Regional Office
263 13th Avenue South
NOAA Fisheries Service
St. Petersburg, Florida 33701
Phone: (727) 824-5312
E-mail: nmfs.ser.esa.consultations@noaa.gov

USFWS Representatives for Sector North Carolina

Mr. Brian Spears, Regional Spill Response Coordinator
U.S. Fish and Wildlife Service
Phone: (251) 928-9765
Cell: (251) 284-5295
E-mail: brian_spears@fws.gov

DOI Representative for Sector North Carolina

Ms. Joyce A. Stanley, MPA
Regional Environmental Officer
U.S. Department of the Interior
Office of Environmental Policy and Compliance
Phone: (404) 331-4524
Cell: (404) 852-5415
Fax: (404) 331-1736
E-mail: joyce_stanley@ios.doi.gov

ENCLOSURE 2: ESA SECTION 7 / EFH CONSULTATION FORM

This form will be utilized by the U.S. Coast Guard (USCG) Federal On-Scene Coordinator (FOSC) for pre-spill, emergency, and post-response Endangered Species Act (ESA) Section 7 consultations. It will be filled out by the USCG and used by the Department of the Interior's (DOI) U.S. Fish & Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) to review response actions for potential impacts to federally listed species. The form provides information to initiate and conclude emergency consultations under ESA §7 and to document (1) a "No Effect" determination, (2) to request technical assistance, or (3) to document up to the May Affect, Not Likely to Adversely Affect threshold. Additionally, information beyond this form may be required by the Services.

FOSCs (or their designated representative) should complete Section I after initial notification is made to the Services. Section I should be filled out with the best available information accounting for all response actions taken or being considered. For emergency consultations, only tables A – E must be completed prior to forwarding to the Services. FOSCs may work with Service representatives during the emergency consultation process to determine the presence and effects to species/habitats and implementation of conservation measures in Tables F - L. **Section II is intended to be submitted blank to the Services, so the Services can both acknowledge the request for consultation as well as begin to consider the FOSC's actions or proposed actions during the emergency response.** This form should also be used to provide updates to the Services as the incident evolves and FOSC actions are adjusted based on operational objectives. When needed and applicable, this form will also be completed to inform and evaluate additional needs for compliance with the following authorities: Magnuson-Stevens Fishery Conservation and Management Act (for Essential Fish Habitat [EFH]), Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA).

SECTION I. FOSC RESPONSE ACTIVITIES

☐ Initial Report [Date] ☐ Updated Report [Date]		
FROM: USCG FOSC Insert USCG FOSC Unit	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: USFWS Office	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: NMFS ESA Office	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: NMFS EFH Office	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: NOAA Scientific Support Coordinator	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: DOI Regional Environmental Officer	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: Fifth District Response Advisory Team	**Name:** David Pugh **Email:** David.E.Pugh1@uscg.mil	**T:** (757) 398-6376 **C:** (757) 373-4133
	Name: Elisha Cook **Email:** Elisha.FS.Cook@uscg.mil	**T:** (757) 398-7780 **C:** (757) 630-1430
COPY: EPA On-Scene Coordinator for Region	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.

A. CONSULTATION DETAILS	
Name of Unit Requesting Consultation	Click or tap here to enter text.
Type of Consultation Requested	Select consultation type from dropdown menu.
FOSC	Rank/Name Email Phone Number
FOSCR	Rank/Name Email Phone Number
Person Completing Form	Rank/Name Email Phone Number
Date Form Initially Completed	Date
Date Consultation / Technical Assistance Completed	Date
Are there **previously completed ESA consultation documents** that are applicable to this area / action (e.g., dispersants, in-situ burning, surface washing agents)	☐ Yes ☐ No List any previous consultations documents.

B. INCIDENT / EVENT DETAILS	
Name of Incident	Incident Name
Date of Incident	Enter Date
Type of Incident / Event (e.g., vessel grounding, vessel collision, pipeline, transfer, training/exercise)	Click or tap here to enter text.
Product(s) Released / Discharged	Click or tap here to enter text.
Volume Released / Discharged (in gallons)	Enter volume in gallons.
Potential Volume (in gallons)	Enter volume in gallons.
Has the release / discharge been stopped, ongoing, or is status unknown?	Click or tap here to enter text.
Is the released / discharge contained, spreading, or is the status unknown?	Click or tap here to enter text.
Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83; online conversion: https://www.fcc.gov/media/radio/dms-decimal])	Latitude°N Longitude°W Choose Datum
Location (nearest landmark / town)	Click or tap here to enter text.
Location Type (check all that apply below) ☐ Port / Industrial / Canal ☐ Riverine ☐ Inshore / Estuarine ☐ Nearshore / Coastal ☐ Offshore / EEZ ☐ Lake / Lacustrine (freshwater) ☐ Wetland (freshwater)	Click or tap here to enter text.
Please attach any maps, aerial photographs, or additional information that will support the information in this consultation form. Examples of such supporting documentation include, but are not limited to: • Aerial images of response action area and surrounding area.	

B. INCIDENT / EVENT DETAILS

- Map of response action area with elements proposed (polygons showing proposed response action elements).
- Map of response action area with critical habitat units or sensitive habitats overlay (e.g., seagrass beds, Essential Fish Habitat, etc.).

C. INCIDENT AND RESPONSE ACTIONS

Describe the incident/event and proposed response action objectives.
Describe in detail the equipment and methods needed; the anticipated schedule (e.g., days, weeks, months) for each phase of the response; long-term vs. short-term impacts; duration of short-term impacts; dust, erosion, and sedimentation controls; restoration areas; whether the response actions are part of a larger action or plan; and what approvals will need to be obtained. Attach the ICS-201 and other ICS forms as applicable.

Click or tap here to enter text.

Action (check all that apply)	**Details / Notes** (Provide any additional pertinent details and note whether the actions have been taken or are being considered).
☐ Barriers / Berms / Fences / Dams	Click or tap here to enter text.
☐ Booming (Containment / Exclusion – provide details in notes)	Click or tap here to enter text.
☐ Culvert Blocking	Click or tap here to enter text.
☐ Dispersants	Click or tap here to enter text.
☐ Elasticity Modifiers	Click or tap here to enter text.
☐ Emulsifying Agents	Click or tap here to enter text.
☐ Flooding / Flushing	Click or tap here to enter text.
☐ In-situ Burning	Click or tap here to enter text.
☐ Manual Oil Removal / Cleaning	Click or tap here to enter text.
☐ Natural Attenuation (indicate with or without monitoring in the notes)	Click or tap here to enter text.
☐ Net Use or Trawling	Click or tap here to enter text.
☐ Nutrient Enrichment / Bioremediation	Click or tap here to enter text.
☐ Oiled Vegetation Cutting / Removal	Click or tap here to enter text.
☐ Oiled Debris Removal	Click or tap here to enter text.
☐ Physical Herding	Click or tap here to enter text.

C. INCIDENT AND RESPONSE ACTIONS	
☐ Pre-oiling Debris Removal	Click or tap here to enter text.
☐ Sand Blasting	Click or tap here to enter text.
☐ Sand Cleaning (non-chemical)	Click or tap here to enter text.
☐ Sediment Removal / Dredging	Click or tap here to enter text.
☐ Sediment Reworking / Tilling	Click or tap here to enter text.
☐ Shoreline Assessment	Click or tap here to enter text.
☐ Shoreline Cleaning	Click or tap here to enter text.
☐ Skimming	Click or tap here to enter text.
☐ Solidifiers	Click or tap here to enter text.
☐ Sorbents (specify type in notes - e.g., sausage, pom-pom, particulate: bagasse, peat moss, natural/ organic, etc.)	Click or tap here to enter text.
☐ Staging Areas / Access Points (indicate if existing or to be created)	Click or tap here to enter text.
☐ Steam Cleaning	Click or tap here to enter text.
☐ Surface Washing Agent / Chemical Shoreline Cleaners	Click or tap here to enter text.
☐ Surface Collecting Agents / Herders	Click or tap here to enter text.
☐ Trenching	Click or tap here to enter text.
☐ Vacuuming	Click or tap here to enter text.
☐ Vessel / Container Removal	Click or tap here to enter text.
Wildlife Response Actions ☐ Aerial Surveys ☐ Vessel Surveys ☐ Capture and Relocation ☐ Capture and Rehabilitation ☐ Deterrence / Hazing ☐ Nest Protection ☐ Necessary Holding Location ☐ Other	Click or tap here to enter text.
☐ OTHER (description in notes)	Click or tap here to enter text.

D. VESSELS / VEHICLES	
Vessel / Vehicle (check all that apply)	**Details / Notes** (Provide any additional pertinent details and note whether the actions have been taken or are being considered).
☐ Airplanes	Click or tap here to enter text.
☐ All-Terrain Vehicles (ATVs)	Click or tap here to enter text.
☐ Boats / Airboats	Click or tap here to enter text.
☐ Drones / Unmanned Aerial Systems (UASs)	Click or tap here to enter text.
☐ Heavy Equipment	Click or tap here to enter text.
☐ Helicopters	Click or tap here to enter text.
☐ Staging Areas	Click or tap here to enter text.
☐ Truck or other automobile	Click or tap here to enter text.
☐ OTHER (description in notes)	Click or tap here to enter text.

E. RESPONSE ACTION AREA / HABITAT TYPES

Provide a description of the existing environment (e.g., vegetation type, substrate type, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction) and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the response action(s). If possible, provide name of waterbody in the "Details / Notes" column.

The information provided in this section will be used in both ESA Emergency Consultation and Essential Fish Habitat (EFH) analyses, so please provide additional information to the maximum extent practicable, particularly if there is an EFH Habitat Areas of Particular Concern (HAPC) that may be found in the response action area. The Essential Fish Habitat Mapper tool may be used to identify EFH and/or HAPCs in the action area: https://www.habitat.noaa.gov/apps/efhmapper/efhreport/

Click or tap here to enter text.

Habitat Type (check all that occur in the response action area)	**Habitat Exposed / Not Exposed to response action(s)?**	**Details / Notes** (Provide details on response actions occurring in identified habitats)
☐ Artificial Reefs (including oyster reefs)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Beach	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Coastal Lagoon	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Corals	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Dune	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Emergent Marsh	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.

E. RESPONSE ACTION AREA / HABITAT TYPES		
☐ Freshwater ☐ Intermediate ☐ Brackish ☐ Saltwater		
☐ Forested Wetland (swamp)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Intertidal Sand / Mud / Algal Flats	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Lake / Lacustrine (freshwater)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Marine (open water)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Marsh (tidal / salt)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Riverine / Riparian (freshwater)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Rocky Intertidal	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Submerged Aquatic Vegetation	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Wetland (freshwater)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ OTHER (list below) Enter habitat type.	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ OTHER (list below) Enter habitat type.	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.

F. NMFS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED

(Optional to complete prior to Emergency Consultation)

Identify all species and critical habitat under NMFS jurisdiction that may be found in the response action area.

- For Sector Delaware Bay, Maryland-NCR, or Virginia refer to the Greater Atlantic Region ESA Section 7 Mapper to identify ESA-listed species and critical habitat in the action area: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater
- For Sector North Carolina refer to the South Atlantic Species and Critical Habitat List: https://www.fisheries.noaa.gov/southeast/consultations/north-carolina

If all consequences of proposed response actions occur in a location that does not contain any listed or proposed NMFS species or designated/proposed critical habitats, OR if those response actions and their effects have been covered under previous existing consultations, please check the appropriate box below. If one of these boxes is checked, you may skip this section.

F. NMFS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

☐ All direct and indirect effects of the proposed response actions occur in a location that does not contain any listed or proposed NMFS species or designated/proposed critical habitats.

☐ All direct and indirect effects of the proposed response actions have been accounted for under an existing ESA Section 7 consultation.

Threatened / Endangered Species	Critical Habitat	Determinations (see definitions below)	For "No Effect" select justification
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

Determination Definitions (applicable to both species and designated critical habitat determinations):

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed or proposed species or designated/proposed critical habitat.

NLAA = may affect, not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed or proposed species or designated/proposed critical habitat, or there may be beneficial effects to these resources. The USCG would request the Services to concur with the not likely to adversely affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the §7 consultation process is completed.

LAA = may affect, likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed or proposed species or designated/proposed critical habitat. The USCG would request formal

F. NMFS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

consultation with the Services for a response action(s) with a likely to adversely affect determination; the Services' response would be a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its cumulative effects, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal §7 consultation and will require additional information.

G. USFWS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

Identify all species and critical habitat under USFWS jurisdiction that may be found in the response action area.

- The USFWS Information for Planning and Consultation (IPaC) tool may be used to identify ESA-listed species and critical habitat in the action area: https://ecos.fws.gov/ipac/

If all consequences of proposed response actions occur in a location that does not contain any listed or proposed USFWS species or designated/proposed critical habitats, OR if those response actions and their effects have been covered under previous existing consultations, please check the appropriate box below. If one of these boxes is checked, you may skip this section.

☐ All direct and indirect effects of the proposed response actions occur in a location that does not contain any listed or proposed USFWS species or designated/proposed critical habitats.

☐ All direct and indirect effects of the proposed response actions have been accounted for under an existing ESA Section 7 consultation.

Threatened / Endangered Species	**Critical Habitat**	**Determinations** (see definitions below)	**For "No Effect" select justification**
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

G. USFWS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

Determination Definitions (applicable to both species and designated critical habitat determinations):

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed or proposed species or designated/proposed critical habitat.

NLAA = may affect, not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed or proposed species or designated/proposed critical habitat, or there may be beneficial effects to these resources. The USCG would request the Services to concur with the not likely to adversely affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the §7 consultation process is completed.

LAA = may affect, likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed or proposed species or designated/proposed critical habitat. The USCG would request formal consultation with the Services for a response action(s) with a likely to adversely affect determination; the Services' response would be a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its cumulative effects, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal §7 consultation and will require additional information.

H. ESSENTIAL FISH HABITAT AREAS OF PARTICULAR CONCERN EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

Identify all EFH species and Habitat Areas of Particular Concern (HAPC) that may be found in the response action area.

- The Essential Fish Habitat Mapper tool may be used to identify EFH and/or HAPCs in the action area: https://www.habitat.noaa.gov/apps/efhmapper/efhreport/

If all consequences of proposed response actions occur in a location that does not contain any EFH species or HAPCs, OR if those response actions and their effects have been covered under previous existing consultations, please check the appropriate box below. If one of these boxes is checked, you may skip this section.

☐ All direct and indirect effects of the proposed response actions occur in a location that does not contain any EFH species or HAPCs.

H. ESSENTIAL FISH HABITAT AREAS OF PARTICULAR CONCERN EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

☐ All direct and indirect effects of the proposed response actions have been accounted for under an existing EFH consultation.

EFH Species	HAPCs	Determinations (see definitions below)	For "Would not adversely affect" select justification
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

Determination Definitions (applicable to both EFH and HAPC determinations):
WNAA = would not adversely affect. Would not adversely affect is the appropriate determination if the response action and the stressors of that action would not affect EFH.
MAA = may adversely affect. Adverse Effects are anything that changes the quality or quantity of EFH.

I. EFFECTS OF RESPONSE ACTIONS & MEASURES TO REDUCE IMPACTS TO LISTED SPECIES AND CRITICAL HABITATS
(Optional to complete prior to Emergency Consultation)

Explain the potential beneficial and adverse effects to each species and/or critical habitats identified in the above tables.

Describe what, when, and how the species and/or critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts, and where possible, quantify those effects. If species are present (or potentially present) and will not be adversely affected, describe your rationale. If species are unlikely to be present in the general area or action area, explain why. Describe your

I. EFFECTS OF RESPONSE ACTIONS & MEASURES TO REDUCE IMPACTS TO LISTED SPECIES AND CRITICAL HABITATS
(Optional to complete prior to Emergency Consultation)

rationale if designated or proposed critical habitats are present and will not be adversely affected. This justification provides documentation for your administrative record, avoids the need for additional correspondence, and helps expedite review.

NOTE: Species selected as "No Effect" with justification in the above tables do not need to be addressed.

Click or tap here to enter text.

Explain the measures taken to reduce adverse effects to the species identified above.

For each species for which impacts were identified, describe any conservation measures (e.g., best management practices [BMPs]) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed actions and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.

Click or tap here to enter text.

Frequently Recommended BMPs

This checklist provides standard BMPs recommended by NMFS and USFWS or developed in coordination with the Services. Please select any BMPs that will be implemented (website links to BMPs are provided below).

☐ Environmental BMPs for Oil Spill Response in Regional Response Team 3 Coastal Zone	[placeholder for link to document on RRT III website]
☐ NMFS EFH BMPs for Certain Response Activities to Accidental Discharges of Oil and Other Hazardous Materials in the Southeastern United States	https://media.fisheries.noaa.gov/dam-migration/sero_hazmat_bmps.pdf
☐ NMFS Marine Life Viewing Guidelines and Distances	https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#guidelines-&-distances
☐ NMFS Measures for Reducing the Entrapment Risk to Protected Species	https://media.fisheries.noaa.gov/dam-migration/entrapment_bmps_final.pdf
☐ NMFS Sea Turtle Handling and Resuscitation Requirements	https://media.fisheries.noaa.gov/dam-migration/sea_turtle_handling_and_resuscitation_measures.pdf
☐ NMFS Sturgeon Resuscitation Guidelines	https://media.fisheries.noaa.gov/dam-migration/sturgeon_resuscitation_card_06122020_508.pdf
☐ NMFS Vessel Strike Avoidance Measures and Reporting for Mariners	https://media.fisheries.noaa.gov/dam-migration/vessel_strike_avoidance_february_2008.pdf
☐ USFWS Avoidance and Minimization Measures for Piping Plover and Red Knot for Shoreline Activities	https://www.fws.gov/southeast/pdf/best-management-practice/piping-plover-and-red-knots-for-shoreline-activities-in-louisiana.pdf

I. EFFECTS OF RESPONSE ACTIONS & MEASURES TO REDUCE IMPACTS TO LISTED SPECIES AND CRITICAL HABITATS (Optional to complete prior to Emergency Consultation)	
☐ USFWS Standard Manatee In-Water Conditions	https://www.fws.gov/southeast/pdf/guidelines/standard-manatee-conditions.pdf
☐ National Response Team General BMPs or Conservation Measures (Appendix D)	https://www.nrt.org/sites/2/files/Pre-Spill_BEOutline_%20updated%2031Oct2018%20FINAL.docx
☐ Caribbean Regional Response Team BMPs for Oil Spill Response Operations	https://nrt.org/sites/33/files/App%207%20CRRT%20Compilation%20of%20BMPs%20Revised% 204_2020.pdf
☐ OTHER (list below) Name of BMP.	Provide a link to BMP.

J. MARINE MAMMALS
(Optional to complete prior to Emergency Consultation)

The Marine Mammal Protection Act (MMPA) prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals. The MMPA allows limited exceptions to the take prohibition, if authorized, such as the incidental take of marine mammals. The Atlantic Marine Assessment Program for Protected Species (AMAPPS) Marine Mammal Model Viewer (https://apps-nefsc.fisheries.noaa.gov/AMAPPSviewer/) maps marine life sightings and ocean conditions to help inform marine resource management decisions. The maps use whale, dolphin, and porpoise sightings data and can be sued to predict marine mammal densities.

Marine Mammals that *may be* present within the response action area	**Details / Notes** (If applicable, indicate and describe the species that may be present in the response action area)
Dolphins ☐ Yes ☐ No	Click or tap here to enter text.
Manatees ☐ Yes ☐ No	Click or tap here to enter text.
Porpoise ☐ Yes ☐ No	Click or tap here to enter text.
Seals ☐ Yes ☐ No	Click or tap here to enter text.
Whales ☐ Yes ☐ No	Click or tap here to enter text.

The following questions are designed to allow the NMFS and/or USFWS to quickly determine if response actions have the potential to result in take to marine mammals. If the information provided indicates that incidental take is possible, further discussion with the NMFS and/or USFWS is required.

(a) Is your action occurring in or on marine or estuarine waters? ☐ Yes ☐ No

(b) If yes, is your action likely to cause large-scale, ecosystem level impacts to the quality (e.g., salinity, temperature) of marine or estuarine waters? ☐ Yes ☐ No

(c) If yes, describe actions further using checkboxes in the table below. Does your action involve any of the following:

J. MARINE MAMMALS
(Optional to complete prior to Emergency Consultation)

☐ Yes ☐ No	Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz
☐ Yes ☐ No	In-water construction or demolition
☐ Yes ☐ No	Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)
☐ Yes ☐ No	In-water explosive detonation
☐ Yes ☐ No	Aquaculture
☐ Yes ☐ No	Restoration of barrier islands, levee construction, or similar projects
☐ Yes ☐ No	Fresh-water river diversions
☐ Yes ☐ No	Building or enhancing areas for water-related recreational use or fishing opportunities (e.g., fishing piers, bridges, boat ramps, marinas)
☐ Yes ☐ No	Dredging or in-water construction actions to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.
☐ Yes ☐ No	Conducting driving of sheet piles or pilings
☐ Yes ☐ No	Use of floating pipeline during dredging actions

If you checked "Yes" to any of the actions immediately above, or if the action *could impact* the quality of marine or estuarine waters, please describe the nature of the actions in more detail or indicate which section of the form already includes these descriptions.

Click or tap here to enter text.

If not already identified in Table I, please describe any additional BMPs or conservation measure that may be implemented for marine mammals.

☐ OTHER (list below) Name of BMP.	Provide a link to BMP.
☐ OTHER (list below) Name of BMP.	Provide a link to BMP.

K. BALD EAGLES
(Optional to complete prior to Emergency Consultation)

Are bald eagles present in the response area? ☐ Yes ☐ No

If YES, the following conservation measures should be implemented per the National Bald Eagle Management Guidelines: https://www.fws.gov/northeast/ecologicalservices/eagle.html

- If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all actions (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is no line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
- If a similar action (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated action.

K. BALD EAGLES
(Optional to complete prior to Emergency Consultation)

- If a vegetated buffer is present and there is no line of sight to the nest and a similar action is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated action.
- In some instances, actions conducted at a distance greater than 660 feet of a nest may result in disturbance. If an action appears to cause initial disturbance, the action shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.
- For additional information, contact the Northeast Division of Migratory Birds, Permit Branch, Eagle Coordinator. Contact information for the USFWS Northeast Division of Migratory Birds can be found at: https://www.fws.gov/northeast/migratorybirds/contactus.html.

Will you implement the above measures? ☐ Yes ☐ No

If these measures cannot be implemented, then you must contact the Service's Migratory Bird Permit Office.

- Permit Office for District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia: (413) 253-8643 or by email: permitsR5MB@fws.gov
- Permit Office for North Carolina: (404) 679-7070 or by email: permitsR4MB@fws.gov

L. MIGRATORY BIRDS
(Optional to complete prior to Emergency Consultation)

Shorebirds, coastal marsh birds, and marine birds can be found throughout the coastal zone. In accordance with the Migratory Bird Treaty Act of 1918 (as amended) and Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), please be advised that proposed response actions may be located in habitats which are commonly inhabited by these important species.

Although several surveys have been conducted to determine the location of nesting colonies, the USFWS recommends that a qualified biologist inspect the proposed response area for the presence of nesting colonies during the nesting season since they may change locations year-to-year.

- For general information regarding migratory birds: https://www.fws.gov/northeast/migratorybirds/.
- For information regarding which bird species may be present in the area, please visit: https://ebird.org/explore.
- For USFWS general conservation measures to avoid and minimize impacts to birds: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- The Mid-Atlantic coast provides critical year-round habitats for shorebirds and is part of the Atlantic Flyway. The most important habitats are the outer coastal strand of beaches, inlets, tidal flats, and saltmarsh. Providing and maintaining quality nesting, migration stopover, and wintering sites in the southeastern U.S. is extremely important for population health and stability of Atlantic Flyway shorebird populations. The focal geographic area includes the important spring staging sites of Delaware Bay, and large areas of undeveloped barrier islands and saltmarshes extending from Virginia to Georgia. Atlantic Flyway Shorebird species include the American Oystercatcher, American Golden-Plover, Snowy Plover, Wilson's Plover, Marbled Godwit, Ruddy Turnstone, Red Knot, Sanderling, Piping Plover, Greater Yellowlegs,

L. MIGRATORY BIRDS
(Optional to complete prior to Emergency Consultation)

Lesser Yellowlegs, Whimbrel, Purple Sandpiper, Semipalmated Sandpiper, Red-necked Phalarope, or Eskimo Curlew. The Atlantic Flyway Shorebird Initiative focuses on these birds: https://atlanticflywayshorebirds.org/.

- Tidal marsh birds such as the Saltmarsh Sparrow, Black Rail, American Black Duck, Bicknell's Thrush, Cerulean Warbler, Wood Thrush, Golden-winged Warbler, American Woodcock, and the coastal marsh habitat they inhabit are a focus for USFWS. The Atlantic Coast Joint Venture (ACJV) focuses on these birds: https://acjv.org/.
- Marine birds are also a focal species for management and monitoring, which include colonial waterbirds, as well as nesting shorebirds. The Atlantic Marine Bird Cooperative (AMBC) focuses on these birds: https://atlanticmarinebirds.org/.
- If the USCG would like to report any banded birds observed during response actions to aid in resighting efforts, reporting can be done here: https://www.usgs.gov/centers/pwrc/science/bird-banding-laboratory.
- Contact information for the USFWS Northeast Division of Migratory Birds can be found at: https://www.fws.gov/northeast/migratorybirds/contactus.html.

Will you implement conservation measures for shorebirds, coastal marsh birds, and marine birds (indicate which species may be present)?

☐ Yes Enter list of bird species.

☐ No Indicate why conservation measures will not be implemented.

☐ Not Applicable (i.e., not present in the action area)

M. SUBMITTING BIOLOGICAL EVALUATION (BE) FORM

The USFWS and NMFS request that all BE forms be emailed to the appropriate point of contact for review (see Enclosure 1 for list of contacts). Upon receipt, USFWS/NMFS representatives will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If modifications or additional information is necessary, USFWS/NMFS representative will work with the USCG until the BE form is considered complete. Once complete, the USCG will use the BE form to initiate and/or conduct any appropriate consultation.

For informational purposes, please add the **U.S. Dept. of the Interior's (DOI) Regional Environmental Officer (REO)** and the **NOAA Scientific Support Coordinator (SSC)** assigned to the incident to the "Cc" line of your email when submitting any version of this form to the USFWS and NMFS for review and/or concurrence. **Additionally**, please also "Cc" the Fifth District Response Advisory Team (DRAT) David.E.Pugh1@uscg.mil and Elisha.FS.Cook@uscg.mil to your email when submitting any version of this form to the USFWS and NMFS for review and/or concurrence. Also "Cc" the appropriate Environmental Protection Agency (EPA) Region 3 or 4 On-scene Coordinator.

SECTION II. USFWS / NMFS RESPONSE TO ESA SECTION 7 CONSULTATION

Name of Incident: Click or tap here to enter text.		
Date of Transmittal: [Date]		
FROM: Choose Service	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: FOSC Insert USCG FOSC Unit	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: NOAA Scientific Support Coordinator	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: DOI Regional Environmental Officer	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: Fifth District Response Advisory Team (D5 DRAT)	**Name:** David Pugh **Email:** David.E.Pugh1@uscg.mil	**T:** (757) 398-6376 **C:** (757) 373-4133
	Name: Elisha Cook **Email:** Elisha.FS.Cook@uscg.mil	**T:** (757) 398-7780 **C:** (757) 630-1430
COPY: EPA On-Scene Coordinator for Region	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.

SERVICE RECOMMENDATIONS
Service recommendations may include information on species and designated Critical Habitats in the area, suggested conservation measures / best management practices, etc.
Click or tap here to enter text.

RRT 3 ESA EFH Section 7

Coastal Zone Consult Form (Only)

ENCLOSURE 2: ESA SECTION 7 / EFH CONSULTATION FORM

This form will be utilized by the U.S. Coast Guard (USCG) Federal On-Scene Coordinator (FOSC) for pre-spill, emergency, and post-response Endangered Species Act (ESA) Section 7 consultations. It will be filled out by the USCG and used by the Department of the Interior's (DOI) U.S. Fish & Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) to review response actions for potential impacts to federally listed species. The form provides information to initiate and conclude emergency consultations under ESA §7 and to document (1) a "No Effect" determination, (2) to request technical assistance, or (3) to document up to the May Affect, Not Likely to Adversely Affect threshold. Additionally, information beyond this form may be required by the Services.

FOSCs (or their designated representative) should complete Section I after initial notification is made to the Services. Section I should be filled out with the best available information accounting for all response actions taken or being considered. For emergency consultations, only tables A – E must be completed prior to forwarding to the Services. FOSCs may work with Service representatives during the emergency consultation process to determine the presence and effects to species/habitats and implementation of conservation measures in Tables F - L. **Section II is intended to be submitted blank to the Services, so the Services can both acknowledge the request for consultation as well as begin to consider the FOSC's actions or proposed actions during the emergency response.** This form should also be used to provide updates to the Services as the incident evolves and FOSC actions are adjusted based on operational objectives. When needed and applicable, this form will also be completed to inform and evaluate additional needs for compliance with the following authorities: Magnuson-Stevens Fishery Conservation and Management Act (for Essential Fish Habitat [EFH]), Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA).

SECTION I. FOSC RESPONSE ACTIVITIES

☐ Initial Report [Date] ☐ Updated Report [Date]		
FROM: USCG FOSC Insert USCG FOSC Unit	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: USFWS Office	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: NMFS ESA Office	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: NMFS EFH Office	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: NOAA Scientific Support Coordinator	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: DOI Regional Environmental Officer	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: Fifth District Response Advisory Team	**Name:** David Pugh **Email:** David.E.Pugh1@uscg.mil	**T:** (757) 398-6376 **C:** (757) 373-4133
	Name: Elisha Cook **Email:** Elisha.FS.Cook@uscg.mil	**T:** (757) 398-7780 **C:** (757) 630-1430
COPY: EPA On-Scene Coordinator for Region	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.

A. CONSULTATION DETAILS	
Name of Unit Requesting Consultation	Click or tap here to enter text.
Type of Consultation Requested	Select consultation type from dropdown menu.
FOSC	Rank/Name Email Phone Number
FOSCR	Rank/Name Email Phone Number
Person Completing Form	Rank/Name Email Phone Number
Date Form Initially Completed	Date
Date Consultation / Technical Assistance Completed	Date
Are there **previously completed ESA consultation documents** that are applicable to this area / action (e.g., dispersants, in-situ burning, surface washing agents)	☐ Yes ☐ No List any previous consultations documents.

B. INCIDENT / EVENT DETAILS	
Name of Incident	Incident Name
Date of Incident	Enter Date
Type of Incident / Event (e.g., vessel grounding, vessel collision, pipeline, transfer, training/exercise)	Click or tap here to enter text.
Product(s) Released / Discharged	Click or tap here to enter text.
Volume Released / Discharged (in gallons)	Enter volume in gallons.
Potential Volume (in gallons)	Enter volume in gallons.
Has the release / discharge been stopped, ongoing, or is status unknown?	Click or tap here to enter text.
Is the released / discharge contained, spreading, or is the status unknown?	Click or tap here to enter text.
Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83; online conversion: https://www.fcc.gov/media/radio/dms-decimal])	Latitude°N Longitude°W Choose Datum
Location (nearest landmark / town)	Click or tap here to enter text.
Location Type (check all that apply below) ☐ Port / Industrial / Canal ☐ Riverine ☐ Inshore / Estuarine ☐ Nearshore / Coastal ☐ Offshore / EEZ ☐ Lake / Lacustrine (freshwater) ☐ Wetland (freshwater)	Click or tap here to enter text.
Please attach any maps, aerial photographs, or additional information that will support the information in this consultation form. Examples of such supporting documentation include, but are not limited to: • Aerial images of response action area and surrounding area.	

B. INCIDENT / EVENT DETAILS

- Map of response action area with elements proposed (polygons showing proposed response action elements).
- Map of response action area with critical habitat units or sensitive habitats overlay (e.g., seagrass beds, Essential Fish Habitat, etc.).

C. INCIDENT AND RESPONSE ACTIONS

Describe the incident/event and proposed response action objectives.
Describe in detail the equipment and methods needed; the anticipated schedule (e.g., days, weeks, months) for each phase of the response; long-term vs. short-term impacts; duration of short-term impacts; dust, erosion, and sedimentation controls; restoration areas; whether the response actions are part of a larger action or plan; and what approvals will need to be obtained. Attach the ICS-201 and other ICS forms as applicable.

Click or tap here to enter text.

Action (check all that apply)	**Details / Notes** (Provide any additional pertinent details and note whether the actions have been taken or are being considered).
☐ Barriers / Berms / Fences / Dams	Click or tap here to enter text.
☐ Booming (Containment / Exclusion – provide details in notes)	Click or tap here to enter text.
☐ Culvert Blocking	Click or tap here to enter text.
☐ Dispersants	Click or tap here to enter text.
☐ Elasticity Modifiers	Click or tap here to enter text.
☐ Emulsifying Agents	Click or tap here to enter text.
☐ Flooding / Flushing	Click or tap here to enter text.
☐ In-situ Burning	Click or tap here to enter text.
☐ Manual Oil Removal / Cleaning	Click or tap here to enter text.
☐ Natural Attenuation (indicate with or without monitoring in the notes)	Click or tap here to enter text.
☐ Net Use or Trawling	Click or tap here to enter text.
☐ Nutrient Enrichment / Bioremediation	Click or tap here to enter text.
☐ Oiled Vegetation Cutting / Removal	Click or tap here to enter text.
☐ Oiled Debris Removal	Click or tap here to enter text.
☐ Physical Herding	Click or tap here to enter text.

C. INCIDENT AND RESPONSE ACTIONS	
☐ Pre-oiling Debris Removal	Click or tap here to enter text.
☐ Sand Blasting	Click or tap here to enter text.
☐ Sand Cleaning (non-chemical)	Click or tap here to enter text.
☐ Sediment Removal / Dredging	Click or tap here to enter text.
☐ Sediment Reworking / Tilling	Click or tap here to enter text.
☐ Shoreline Assessment	Click or tap here to enter text.
☐ Shoreline Cleaning	Click or tap here to enter text.
☐ Skimming	Click or tap here to enter text.
☐ Solidifiers	Click or tap here to enter text.
☐ Sorbents (specify type in notes - e.g., sausage, pom-pom, particulate: bagasse, peat moss, natural/ organic, etc.)	Click or tap here to enter text.
☐ Staging Areas / Access Points (indicate if existing or to be created)	Click or tap here to enter text.
☐ Steam Cleaning	Click or tap here to enter text.
☐ Surface Washing Agent / Chemical Shoreline Cleaners	Click or tap here to enter text.
☐ Surface Collecting Agents / Herders	Click or tap here to enter text.
☐ Trenching	Click or tap here to enter text.
☐ Vacuuming	Click or tap here to enter text.
☐ Vessel / Container Removal	Click or tap here to enter text.
Wildlife Response Actions ☐ Aerial Surveys ☐ Vessel Surveys ☐ Capture and Relocation ☐ Capture and Rehabilitation ☐ Deterrence / Hazing ☐ Nest Protection ☐ Necessary Holding Location ☐ Other	Click or tap here to enter text.
☐ OTHER (description in notes)	Click or tap here to enter text.

D. VESSELS / VEHICLES	
Vessel / Vehicle (check all that apply)	**Details / Notes** (Provide any additional pertinent details and note whether the actions have been taken or are being considered).
☐ Airplanes	Click or tap here to enter text.
☐ All-Terrain Vehicles (ATVs)	Click or tap here to enter text.
☐ Boats / Airboats	Click or tap here to enter text.
☐ Drones / Unmanned Aerial Systems (UASs)	Click or tap here to enter text.
☐ Heavy Equipment	Click or tap here to enter text.
☐ Helicopters	Click or tap here to enter text.
☐ Staging Areas	Click or tap here to enter text.
☐ Truck or other automobile	Click or tap here to enter text.
☐ OTHER (description in notes)	Click or tap here to enter text.

E. RESPONSE ACTION AREA / HABITAT TYPES

Provide a description of the existing environment (e.g., vegetation type, substrate type, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction) and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the response action(s). If possible, provide name of waterbody in the "Details / Notes" column.

The information provided in this section will be used in both ESA Emergency Consultation and Essential Fish Habitat (EFH) analyses, so please provide additional information to the maximum extent practicable, particularly if there is an EFH Habitat Areas of Particular Concern (HAPC) that may be found in the response action area. The Essential Fish Habitat Mapper tool may be used to identify EFH and/or HAPCs in the action area: https://www.habitat.noaa.gov/apps/efhmapper/efhreport/

Click or tap here to enter text.

Habitat Type (check all that occur in the response action area)	**Habitat Exposed / Not Exposed to response action(s)?**	**Details / Notes** (Provide details on response actions occurring in identified habitats)
☐ Artificial Reefs (including oyster reefs)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Beach	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Coastal Lagoon	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Corals	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Dune	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Emergent Marsh	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.

E. RESPONSE ACTION AREA / HABITAT TYPES		
☐ Freshwater ☐ Intermediate ☐ Brackish ☐ Saltwater		
☐ Forested Wetland (swamp)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Intertidal Sand / Mud / Algal Flats	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Lake / Lacustrine (freshwater)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Marine (open water)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Marsh (tidal / salt)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Riverine / Riparian (freshwater)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Rocky Intertidal	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Submerged Aquatic Vegetation	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ Wetland (freshwater)	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ OTHER (list below) Enter habitat type.	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.
☐ OTHER (list below) Enter habitat type.	☐ Exposed ☐ Not Exposed	Click or tap here to enter text.

F. NMFS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED

(Optional to complete prior to Emergency Consultation)

Identify all species and critical habitat under NMFS jurisdiction that may be found in the response action area.

- For Sector Delaware Bay, Maryland-NCR, or Virginia refer to the Greater Atlantic Region ESA Section 7 Mapper to identify ESA-listed species and critical habitat in the action area: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater
- For Sector North Carolina refer to the South Atlantic Species and Critical Habitat List: https://www.fisheries.noaa.gov/southeast/consultations/north-carolina

If all consequences of proposed response actions occur in a location that does not contain any listed or proposed NMFS species or designated/proposed critical habitats, OR if those response actions and their effects have been covered under previous existing consultations, please check the appropriate box below. If one of these boxes is checked, you may skip this section.

F. NMFS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

☐ All direct and indirect effects of the proposed response actions occur in a location that does not contain any listed or proposed NMFS species or designated/proposed critical habitats.

☐ All direct and indirect effects of the proposed response actions have been accounted for under an existing ESA Section 7 consultation.

Threatened / Endangered Species	Critical Habitat	Determinations (see definitions below)	For "No Effect" select justification
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
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☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

Determination Definitions (applicable to both species and designated critical habitat determinations):

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed or proposed species or designated/proposed critical habitat.

NLAA = may affect, not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed or proposed species or designated/proposed critical habitat, or there may be beneficial effects to these resources. The USCG would request the Services to concur with the not likely to adversely affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the §7 consultation process is completed.

LAA = may affect, likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed or proposed species or designated/proposed critical habitat. The USCG would request formal

F. NMFS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

consultation with the Services for a response action(s) with a likely to adversely affect determination; the Services' response would be a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its cumulative effects, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal §7 consultation and will require additional information.

G. USFWS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

Identify all species and critical habitat under USFWS jurisdiction that may be found in the response action area.

- The USFWS Information for Planning and Consultation (IPaC) tool may be used to identify ESA-listed species and critical habitat in the action area: https://ecos.fws.gov/ipac/

If all consequences of proposed response actions occur in a location that does not contain any listed or proposed USFWS species or designated/proposed critical habitats, OR if those response actions and their effects have been covered under previous existing consultations, please check the appropriate box below. If one of these boxes is checked, you may skip this section.

☐ All direct and indirect effects of the proposed response actions occur in a location that does not contain any listed or proposed USFWS species or designated/proposed critical habitats.

☐ All direct and indirect effects of the proposed response actions have been accounted for under an existing ESA Section 7 consultation.

Threatened / Endangered Species	**Critical Habitat**	**Determinations** (see definitions below)	**For "No Effect" select justification**
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
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☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

G. USFWS THREATENED / ENDANGERED SPECIES & CRITICAL HABITAT EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

Determination Definitions (applicable to both species and designated critical habitat determinations):

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed or proposed species or designated/proposed critical habitat.

NLAA = may affect, not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed or proposed species or designated/proposed critical habitat, or there may be beneficial effects to these resources. The USCG would request the Services to concur with the not likely to adversely affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the §7 consultation process is completed.

LAA = may affect, likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed or proposed species or designated/proposed critical habitat. The USCG would request formal consultation with the Services for a response action(s) with a likely to adversely affect determination; the Services' response would be a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its cumulative effects, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal §7 consultation and will require additional information.

H. ESSENTIAL FISH HABITAT AREAS OF PARTICULAR CONCERN EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

Identify all EFH species and Habitat Areas of Particular Concern (HAPC) that may be found in the response action area.

- The Essential Fish Habitat Mapper tool may be used to identify EFH and/or HAPCs in the action area: https://www.habitat.noaa.gov/apps/efhmapper/efhreport/

If all consequences of proposed response actions occur in a location that does not contain any EFH species or HAPCs, OR if those response actions and their effects have been covered under previous existing consultations, please check the appropriate box below. If one of these boxes is checked, you may skip this section.

☐ All direct and indirect effects of the proposed response actions occur in a location that does not contain any EFH species or HAPCs.

H. ESSENTIAL FISH HABITAT AREAS OF PARTICULAR CONCERN EFFECTS DETERMINATION REQUESTED
(Optional to complete prior to Emergency Consultation)

☐ All direct and indirect effects of the proposed response actions have been accounted for under an existing EFH consultation.

EFH Species	HAPCs	Determinations (see definitions below)	For "Would not adversely affect" select justification
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
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☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.
☐ List species.	☐	Select a determination.	Select most appropriate.

Determination Definitions (applicable to both EFH and HAPC determinations):
WNAA = would not adversely affect. Would not adversely affect is the appropriate determination if the response action and the stressors of that action would not affect EFH.
MAA = may adversely affect. Adverse Effects are anything that changes the quality or quantity of EFH.

I. EFFECTS OF RESPONSE ACTIONS & MEASURES TO REDUCE IMPACTS TO LISTED SPECIES AND CRITICAL HABITATS
(Optional to complete prior to Emergency Consultation)

Explain the potential beneficial and adverse effects to each species and/or critical habitats identified in the above tables.

Describe what, when, and how the species and/or critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts, and where possible, quantify those effects. If species are present (or potentially present) and will not be adversely affected, describe your rationale. If species are unlikely to be present in the general area or action area, explain why. Describe your

I. EFFECTS OF RESPONSE ACTIONS & MEASURES TO REDUCE IMPACTS TO LISTED SPECIES AND CRITICAL HABITATS
(Optional to complete prior to Emergency Consultation)

rationale if designated or proposed critical habitats are present and will not be adversely affected. This justification provides documentation for your administrative record, avoids the need for additional correspondence, and helps expedite review.

NOTE: Species selected as "No Effect" with justification in the above tables do not need to be addressed.

Click or tap here to enter text.

Explain the measures taken to reduce adverse effects to the species identified above.

For each species for which impacts were identified, describe any conservation measures (e.g., best management practices [BMPs]) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed actions and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.

Click or tap here to enter text.

Frequently Recommended BMPs

This checklist provides standard BMPs recommended by NMFS and USFWS or developed in coordination with the Services. Please select any BMPs that will be implemented (website links to BMPs are provided below).

☐ Environmental BMPs for Oil Spill Response in Regional Response Team 3 Coastal Zone	[placeholder for link to document on RRT III website]
☐ NMFS EFH BMPs for Certain Response Activities to Accidental Discharges of Oil and Other Hazardous Materials in the Southeastern United States	https://media.fisheries.noaa.gov/dam-migration/sero_hazmat_bmps.pdf
☐ NMFS Marine Life Viewing Guidelines and Distances	https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#guidelines-&-distances
☐ NMFS Measures for Reducing the Entrapment Risk to Protected Species	https://media.fisheries.noaa.gov/dam-migration/entrapment_bmps_final.pdf
☐ NMFS Sea Turtle Handling and Resuscitation Requirements	https://media.fisheries.noaa.gov/dam-migration/sea_turtle_handling_and_resuscitation_measures.pdf
☐ NMFS Sturgeon Resuscitation Guidelines	https://media.fisheries.noaa.gov/dam-migration/sturgeon_resuscitation_card_06122020_508.pdf
☐ NMFS Vessel Strike Avoidance Measures and Reporting for Mariners	https://media.fisheries.noaa.gov/dam-migration/vessel_strike_avoidance_february_2008.pdf
☐ USFWS Avoidance and Minimization Measures for Piping Plover and Red Knot for Shoreline Activities	https://www.fws.gov/southeast/pdf/best-management-practice/piping-plover-and-red-knots-for-shoreline-activities-in-louisiana.pdf

I. EFFECTS OF RESPONSE ACTIONS & MEASURES TO REDUCE IMPACTS TO LISTED SPECIES AND CRITICAL HABITATS (Optional to complete prior to Emergency Consultation)	
☐ USFWS Standard Manatee In-Water Conditions	https://www.fws.gov/southeast/pdf/guidelines/standard-manatee-conditions.pdf
☐ National Response Team General BMPs or Conservation Measures (Appendix D)	https://www.nrt.org/sites/2/files/Pre-Spill_BEOutline_%20updated%2031Oct2018%20FINAL.docx
☐ Caribbean Regional Response Team BMPs for Oil Spill Response Operations	https://nrt.org/sites/33/files/App%207%20CRRT%20Compilation%20of%20BMPs%20Revised% 204_2020.pdf
☐ OTHER (list below) Name of BMP.	Provide a link to BMP.

J. MARINE MAMMALS
(Optional to complete prior to Emergency Consultation)

The Marine Mammal Protection Act (MMPA) prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals. The MMPA allows limited exceptions to the take prohibition, if authorized, such as the incidental take of marine mammals. The Atlantic Marine Assessment Program for Protected Species (AMAPPS) Marine Mammal Model Viewer (https://apps-nefsc.fisheries.noaa.gov/AMAPPSviewer/) maps marine life sightings and ocean conditions to help inform marine resource management decisions. The maps use whale, dolphin, and porpoise sightings data and can be sued to predict marine mammal densities.

Marine Mammals that *may be* present within the response action area	**Details / Notes** (If applicable, indicate and describe the species that may be present in the response action area)
Dolphins ☐ Yes ☐ No	Click or tap here to enter text.
Manatees ☐ Yes ☐ No	Click or tap here to enter text.
Porpoise ☐ Yes ☐ No	Click or tap here to enter text.
Seals ☐ Yes ☐ No	Click or tap here to enter text.
Whales ☐ Yes ☐ No	Click or tap here to enter text.

The following questions are designed to allow the NMFS and/or USFWS to quickly determine if response actions have the potential to result in take to marine mammals. If the information provided indicates that incidental take is possible, further discussion with the NMFS and/or USFWS is required.

(a) Is your action occurring in or on marine or estuarine waters? ☐ Yes ☐ No

(b) If yes, is your action likely to cause large-scale, ecosystem level impacts to the quality (e.g., salinity, temperature) of marine or estuarine waters? ☐ Yes ☐ No

(c) If yes, describe actions further using checkboxes in the table below. Does your action involve any of the following:

J. MARINE MAMMALS
(Optional to complete prior to Emergency Consultation)

☐ Yes ☐ No	Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz
☐ Yes ☐ No	In-water construction or demolition
☐ Yes ☐ No	Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)
☐ Yes ☐ No	In-water explosive detonation
☐ Yes ☐ No	Aquaculture
☐ Yes ☐ No	Restoration of barrier islands, levee construction, or similar projects
☐ Yes ☐ No	Fresh-water river diversions
☐ Yes ☐ No	Building or enhancing areas for water-related recreational use or fishing opportunities (e.g., fishing piers, bridges, boat ramps, marinas)
☐ Yes ☐ No	Dredging or in-water construction actions to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.
☐ Yes ☐ No	Conducting driving of sheet piles or pilings
☐ Yes ☐ No	Use of floating pipeline during dredging actions

If you checked "Yes" to any of the actions immediately above, or if the action *could impact* the quality of marine or estuarine waters, please describe the nature of the actions in more detail or indicate which section of the form already includes these descriptions.

Click or tap here to enter text.

If not already identified in Table I, please describe any additional BMPs or conservation measure that may be implemented for marine mammals.

☐ OTHER (list below) Name of BMP.	Provide a link to BMP.
☐ OTHER (list below) Name of BMP.	Provide a link to BMP.

K. BALD EAGLES
(Optional to complete prior to Emergency Consultation)

Are bald eagles present in the response area? ☐ Yes ☐ No

If YES, the following conservation measures should be implemented per the National Bald Eagle Management Guidelines: https://www.fws.gov/northeast/ecologicalservices/eagle.html

- If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all actions (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is no line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
- If a similar action (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated action.

K. BALD EAGLES
(Optional to complete prior to Emergency Consultation)

- If a vegetated buffer is present and there is no line of sight to the nest and a similar action is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated action.
- In some instances, actions conducted at a distance greater than 660 feet of a nest may result in disturbance. If an action appears to cause initial disturbance, the action shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.
- For additional information, contact the Northeast Division of Migratory Birds, Permit Branch, Eagle Coordinator. Contact information for the USFWS Northeast Division of Migratory Birds can be found at: https://www.fws.gov/northeast/migratorybirds/contactus.html.

Will you implement the above measures? ☐ Yes ☐ No

If these measures cannot be implemented, then you must contact the Service's Migratory Bird Permit Office.

- Permit Office for District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia: (413) 253-8643 or by email: permitsR5MB@fws.gov
- Permit Office for North Carolina: (404) 679-7070 or by email: permitsR4MB@fws.gov

L. MIGRATORY BIRDS
(Optional to complete prior to Emergency Consultation)

Shorebirds, coastal marsh birds, and marine birds can be found throughout the coastal zone. In accordance with the Migratory Bird Treaty Act of 1918 (as amended) and Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), please be advised that proposed response actions may be located in habitats which are commonly inhabited by these important species.

Although several surveys have been conducted to determine the location of nesting colonies, the USFWS recommends that a qualified biologist inspect the proposed response area for the presence of nesting colonies during the nesting season since they may change locations year-to-year.

- For general information regarding migratory birds: https://www.fws.gov/northeast/migratorybirds/.
- For information regarding which bird species may be present in the area, please visit: https://ebird.org/explore.
- For USFWS general conservation measures to avoid and minimize impacts to birds: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- The Mid-Atlantic coast provides critical year-round habitats for shorebirds and is part of the Atlantic Flyway. The most important habitats are the outer coastal strand of beaches, inlets, tidal flats, and saltmarsh. Providing and maintaining quality nesting, migration stopover, and wintering sites in the southeastern U.S. is extremely important for population health and stability of Atlantic Flyway shorebird populations. The focal geographic area includes the important spring staging sites of Delaware Bay, and large areas of undeveloped barrier islands and saltmarshes extending from Virginia to Georgia. Atlantic Flyway Shorebird species include the American Oystercatcher, American Golden-Plover, Snowy Plover, Wilson's Plover, Marbled Godwit, Ruddy Turnstone, Red Knot, Sanderling, Piping Plover, Greater Yellowlegs,

L. MIGRATORY BIRDS
(Optional to complete prior to Emergency Consultation)

Lesser Yellowlegs, Whimbrel, Purple Sandpiper, Semipalmated Sandpiper, Red-necked Phalarope, or Eskimo Curlew. The Atlantic Flyway Shorebird Initiative focuses on these birds: https://atlanticflywayshorebirds.org/.

- Tidal marsh birds such as the Saltmarsh Sparrow, Black Rail, American Black Duck, Bicknell's Thrush, Cerulean Warbler, Wood Thrush, Golden-winged Warbler, American Woodcock, and the coastal marsh habitat they inhabit are a focus for USFWS. The Atlantic Coast Joint Venture (ACJV) focuses on these birds: https://acjv.org/.
- Marine birds are also a focal species for management and monitoring, which include colonial waterbirds, as well as nesting shorebirds. The Atlantic Marine Bird Cooperative (AMBC) focuses on these birds: https://atlanticmarinebirds.org/.
- If the USCG would like to report any banded birds observed during response actions to aid in resighting efforts, reporting can be done here: https://www.usgs.gov/centers/pwrc/science/bird-banding-laboratory.
- Contact information for the USFWS Northeast Division of Migratory Birds can be found at: https://www.fws.gov/northeast/migratorybirds/contactus.html.

Will you implement conservation measures for shorebirds, coastal marsh birds, and marine birds (indicate which species may be present)?

☐ Yes Enter list of bird species.

☐ No Indicate why conservation measures will not be implemented.

☐ Not Applicable (i.e., not present in the action area)

M. SUBMITTING BIOLOGICAL EVALUATION (BE) FORM

The USFWS and NMFS request that all BE forms be emailed to the appropriate point of contact for review (see Enclosure 1 for list of contacts). Upon receipt, USFWS/NMFS representatives will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If modifications or additional information is necessary, USFWS/NMFS representative will work with the USCG until the BE form is considered complete. Once complete, the USCG will use the BE form to initiate and/or conduct any appropriate consultation.

For informational purposes, please add the **U.S. Dept. of the Interior's (DOI) Regional Environmental Officer (REO)** and the **NOAA Scientific Support Coordinator (SSC)** assigned to the incident to the "Cc" line of your email when submitting any version of this form to the USFWS and NMFS for review and/or concurrence. **Additionally**, please also "Cc" the Fifth District Response Advisory Team (DRAT) David.E.Pugh1@uscg.mil and Elisha.FS.Cook@uscg.mil to your email when submitting any version of this form to the USFWS and NMFS for review and/or concurrence. Also "Cc" the appropriate Environmental Protection Agency (EPA) Region 3 or 4 On-scene Coordinator.

SECTION II. USFWS / NMFS RESPONSE TO ESA SECTION 7 CONSULTATION

Name of Incident: Click or tap here to enter text.		
Date of Transmittal: [Date]		
FROM: Choose Service	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
TO: FOSC Insert USCG FOSC Unit	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: NOAA Scientific Support Coordinator	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: DOI Regional Environmental Officer	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.
COPY: Fifth District Response Advisory Team (D5 DRAT)	**Name:** David Pugh **Email:** David.E.Pugh1@uscg.mil	**T:** (757) 398-6376 **C:** (757) 373-4133
	Name: Elisha Cook **Email:** Elisha.FS.Cook@uscg.mil	**T:** (757) 398-7780 **C:** (757) 630-1430
COPY: EPA On-Scene Coordinator for Region	**Name:** Click or tap here to enter text. **Email:** Click or tap here to enter text.	**T:** Click or tap here to enter text. **C:** Click or tap here to enter text.

SERVICE RECOMMENDATIONS
Service recommendations may include information on species and designated Critical Habitats in the area, suggested conservation measures / best management practices, etc.
Click or tap here to enter text.

Annex JJ

Worst Case Spill Table

&

List of Historic Spills in SecDelBay

Worst Case Spills Table

Anticipated Potential Worst Case Spills Table

MODE	POTENTIAL SPILL AMOUNT IN GALLONS	COMMENTS
Barge	14,364,000	Anchorage lightering barge.
Facility	10,866,000	258,715 bbls.
Offshore Wind Farms	0	As of December 2023, none of the windfarm turbines are in place.
Pipeline	192,000	Real World Spill in 2000. John Heinz National Wildlife Refuge. Suspected crack in 24-inch pipe that spilled for three days.
Railroad	Tank car: • Cargo: 30,000 Locomotive: • Diesel Fuel: Between 1,000 & 7,000 • Lube Oil: Up to 410 • Coolant: Up to 380 • Battery Acid: up to 50	Each car and each locomotive can carry the estimated amounts located to the left.
Tankship	27,000,000	"Typical" 800-foot vessel.
Tank Truck	10,000	"Typical" Tank Truck used to fuel fishing boats or other commercial vessels.
World War II Legacy Underwater Threats	Northern Pacific: 38.6388, -74.3848 • Nautical Miles to Shore: 29 • Probable Fuel Remaining: $\leq$ 315,000 Cayru: 39.08345, -73.782 • Nautical Miles to Shore: 39 • Probable Fuel Remaining: $\leq$ 559,230 India Arrow: 38.55846, -73.83457 • Nautical Miles to Shore: 60 • Probable Fuel Remaining: $\leq$ 223,776 W.L. Steed: 38.4167, -72.7167 • Nautical Miles to Shore: 90 • Probable Fuel Remaining: $\leq$ 504,000	More info can be found in NOAA's Remediation of Underwater Legacy Environmental Threats (RULET) system. It is recommended that these sites be added to the ACP as these RULET vessels can be the cause of mystery spills. All sites are historically significant and gravesites.

Significant Spills In SecDelBay AOR

Significant* Oil Spill Events in Delaware River and Bay

Responsible Party	Date	Amount Spilled	Product Spilled
M/T *Elias* – ARCO, Ft. Mifflin Dock	9 April 1974	12,000 bbl of a 217,000 bbl cargo	***Bachaquero crude oil explosion, fire, spill
T/V *Corinthos* – Marcus Hook	31 Jan 1975	266,000 barrels	Fire and crude oil spill while docked at BP *Edgar M. Queeny* collided with *Corinthos*
T/V *Grand Eagle*	29 Sept 1985	435,000 gallons	Crude oil **- g**rounded MH Bar
Coastal Eagle Point	5 Dec 1985	22,000 gallons 80 tons	Benzene
Standard Chlorine	3 Jan 1986	569,000 gallons	PDCB/benzene
T/V *Intermar Alliance*	21 Mar 1986	189,000 gallons	Nigerian/Ninian Crude loss of steerage
T/V *Viking Osprey*	8 Sept 1986	295,000 gallons	Bottom scrap Marcus Hook Bar –Claymont Shoal
M/V *Jahre Spray*	7 Oct 1988	Trailing sheen - 6 miles	Nigerian crude oil
T/V *Presidente Rivera* –South of Marcus Hook	24 June 1989	435,000 gallons	#6 heavy oil – industrial grade – grounding Claymont Shoal
Barge *Worlds Radiance* – Hogg Island Terminal	21 Nov 1989	4200 gallons	Storm - Barge broke from dock while off loading – crude oil
T/V *Faith I & Ocean Barge 190*	19 Aug 1990	168,000 gallons	Gasoline **-** collision
M/V *Santa Clara* 30 miles off Cape May	3 Jan 1992	Containers	Arsenic Trioxide –containers weather
M/V *Kentucky*	22 July 1994	13,000 gallons	Crude oil – suspected grounding Marcus Hook bar-Claymont Shoal
M/V *Jahre Spray* Eagle Point Refinery	22 July 1995	56,000 gallons	West African Rabbi crude –transfer hose broke during storm
T/V *Anitra* Big Stone Anchorage	9 May 1996	42,000 gallons	Nemba and Cabinda light crude oils. Leak below water line.
Bouchard *Barge 155* Bombay Hook Anchorage	24 Oct 1996	2,000 gallons	#6 fuel from Anchor compartment while waiting out storm
T/V *Niki* - Delaware City	1996	1,500 gallons	
M/V *Mystras* - Big Stone Anchorage	18 Sep 1997	200 bbls (8,400 gallons)	Brent crude oil
Bouchard *Barge #115*- Motiva	27 Oct 1999	6,300 gallons	Vacuum gas oil - overfill
Conectiv/IRPP	Dec 1999	750,000 gallons	subsurface diesel spill
Tug John Terecamo Near Ft. Mifflin	15 June 2001	2,000 gallons	Hit by propeller of Tanker –grounded to avoid sinking. Diesel fuel
Motiva Acid Spill Delaware City	17 July 2001-	Land based spill- 10,000 gallons to water	Spent sulfuric acid and water mixture – fire/explosion
T/V *Athos I* – Vicinity of CITGO docks, Paulsboro. NJ	26 Nov 2004	265,000 gallons	Crude oil – heavy Hit submerged objects
M/V *Bermuda Islander*	26 April 2006	Original mystery spill- ? gals	Oil trailing six miles

IPC Spill- Christina River, Wilmington	15 July 2006	2,100 gal	Waste oil – land based tank/line leak
T/V *Tigani* CITGO Dock	7 Oct 2007	1,600 gallons	#6 Bunker C oil – cracked scupper line that passed through a bunker tank – leaking while docked
Sunken Tugs - Schuylkill River	29 July 2008	1,200 gallons?	fuel oil/waste oil spill

*"Significant" is a relative term that is used in the title to mean amount spilled, level of response or the notoriety of the event.

***The petroleum industry generally classifies crude oil:
By the geographic location it is produced in (e.g. West Texas Intermediate, Brent),
Its API (American Petroleum Institute) gravity (an oil industry measure of density),
and by its sulfur content.

Crude oil may be considered *light* if it has low density or *heavy* if it has high density; and it may be referred to as sweet if it contains relatively little sulfur or *sour* if it contains substantial amounts of sulfur.

Brent and Ninian crude come from the North Sea area.
Nemba and Cabinda light crude oils are produced in Angola.
Nigerian crude oil could be Bonny Light, Agbami (light, sweet),
Escravos or Pennington. Bachaquero crude oil is from Venezuela.

Annex KK

Clean-up Assessment Protocols

Characteristics of Response Strategies

Characteristics of Response Strategies:

A Guide for Spill Response Planning in Marine Environments

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Emergency Response Division

Revised 2010
Reprinted March 2013

Characteristics of Response Strategies:
A Guide for Spill Response Planning in Marine Environments

U.S. DEPARTMENT OF COMMERCE • National Oceanic and Atmospheric Administration •
National Ocean Service • Office of Response and Restoration • Emergency Response Division

Revised 2010
Reprinted March 2013
Seattle, Washington

Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments was originally a joint effort between NOAA and the USCG. The original document was based on information contained in *Environmental Considerations for Marine Oil Spill Response*, published by the American Petroleum Institute, National Oceanic and Atmospheric Administration, the U.S. Coast Guard, and the U.S. Environmental Protection Agency. The original printing was in 2001, NOAA revised the document in 2010.

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Introduction

Oil is a complex and variable natural substance. When released into the sea it can be transported long distances, undergo various physical and chemical changes, and adversely affect marine ecosystems. Oil's fate and effects depend on the type and quantity of oil spilled, properties of the oil as modified over time by physical and chemical processes, the organisms and habitats exposed, and the nature of the exposure. All of these factors should be considered when evaluating response methods. Interactions among these variables result in a large range of spill situations. Accordingly, spill responders must determine the combination of response methods that best suits the spill situation.

Response techniques have "windows of opportunity," specific timeframes when each response method works the best. These windows are defined by the type of product spilled, the initial spill conditions, product weathering and emulsion rates, and the very different environments and ecosystems that are, or will be, impacted. When the methods are used within these windows, they are more effective and less damaging to habitats and populations that survive the oil, reducing the time affected ecosystems need to recover.

In every oil spill, government and industry decision-makers are presented with a unique set of challenges requiring timely application of appropriate response methods. Two important questions that must be considered are:

- How does an on-scene coordinator or a responsible party sort through the myriad of options and select those methods that will effectively mitigate and clean up the oil?
- What is the rationale for selection?

Characteristics of Response Strategies addresses these questions by providing information to decision-makers relating to tradeoff decisions for specific habitats and response options. It focuses on maximizing response effectiveness while minimizing resource impacts.

Remember that the selection of a proper response method is highly dependent on incident-specific conditions, and that the strengths and weaknesses of a given response tool affect the suitability for its employment in a given habitat for a

specific spill. Accordingly, using multiple methods simultaneously throughout an incident can produce a more effective response and minimize environmental impacts.

Selecting response options, including natural recovery, involves considering tradeoffs among their potential environmental impact, appropriateness for habitat, and application timing.

The 2001 *Characteristics of Response Strategies* and its companion guide, *Characteristic Coastal Habitats: Choosing Spill Response Alternatives* (NOAA 2000), were based on information contained in *Environmental Considerations for Marine Oil Spill Response*, published by the American Petroleum Institute, National Oceanic and Atmospheric Administration, the U.S. Coast Guard, and the U.S. Environmental Protection Agency. The 2010 revisions incorporates new information learned from spill response and research since the original publication.

Characteristics of Response Strategies is a useful aid for informing people who will be participating in cleanup assessments as part of Operations and Planning Units within the Incident Command System.

How to Use this Document

This document summarizes the technical rational for selecting response methods. A companion guide to *Environmental Considerations for Marine Oil Spill Response*, *Characteristics of Response Strategies* can help you select appropriate response options to minimize adverse environmental impacts of a marine oil spill. The guide discusses developing incident-specific strategies and describes the characteristics of individual response methods. Response methods include natural recovery, mechanical, chemical, and biological treatments; and in-situ burning.

When choosing effective response options including natural recovery, you must consider trade-offs affecting the options' potential environmental impact, their appropriateness for the habitat, and the timing of the application. *Environmental Considerations for Marine Oil Spill Response* discusses these considerations in detail; consult it before using this guideline. Remember, the benefits and impacts of response options depend upon incident-specific conditions and affect the options' suitability for use in a habitat during any spill.

This guide includes information about response methods now used during oil spill responses in marine environment. It provides guidelines for developing response actions, evaluating incident-specific feasibility issues for both on-water and shoreline environments, and developing incident-specific strategies.

The final section of this guide includes detailed descriptions of the response methods now in use during oil spill responses in marine environments. These descriptions begin on page 38 with Natural Recovery.

Strategies for Selecting Response Methods

During emergency response operations, available information may be highly uncertain and fragmented at best, as will forecasts of environmental conditions or evaluations of response equipment needs. Nonetheless, the response community must sort out what is actually known about the spill, and select and deploy equipment as soon and as effectively as possible. What information is needed to help guide the response? What can be done to promote any gains in environmental protection?

Because the goal of oil spill response is to minimize the overall impacts on natural and economic resources, some resources will be of greater concern than others; and response options offering different degrees of resource protection will be selected accordingly. Decisions regarding cleanup method(s) must balance two factors: 1) the potential environmental impacts with the natural recovery alternative, and 2) the potential environmental impacts associated with a response method or group of methods.

Potential impacts can be determined before considering the need for, or type of, response strategies. For example, evaluating a gasoline spill in an exposed seawall environment might lead to the conclusion that, due to evaporation and low habitat use, minimal environmental effects will occur and further evaluation is unwarranted. On the other hand, assessing a spill of a middle-weight crude oil in a soft intertidal area would likely indicate a high potential for environmental effects; therefore, response methods would need to be evaluated.

The decisions to select response methods should consider the potential of each possible method for reducing the environmental consequences of the spill and the response (including a natural recovery alternative). The method, or combination of methods, that most reduces consequences effectively, should be the preferred response strategy. A method that increases impacts in the short term can be the preferred alternative if it speeds up recovery. (Recovery cannot be defined as pre-spill conditions since natural changes in biological communities will introduce variability to organisms affected by the spill.)

The environmental consequences of a spill and the response will depend on the specific spill conditions, such as the type and amount of oil, weather conditions, habitat where the spill occurred, and effectiveness of the response methods. It is imperative that planners and responders discuss and develop resource protection priorities during contingency planning so that valuable time is not lost during an actual response. Area Contingency Plans (ACPs) and Geographic Response Plans (GRPs) are essential to an effective response.

Guidelines for Developing Response Actions

This document provides information to help the reader understand the trade-offs that were considered in developing the *Environmental Considerations for Marine Oil Spill Response* (API et al., 2001) and the *Characteristics of Coastal Habitats* (NOAA, 2010). These companion documents reflect a consensus of extensive, technically appropriate, pre-spill decision processes regarding response:

- **Goals** (overall aims of the response, defined by government);
- **Objectives** (specified response outcomes, defined by response management and in support of the Goals);
- **Strategies** (plans used to carry out objectives, protect resources at risk);
- **Tactics** (specific actions taken to carry out a strategy); and
- **Windows of opportunity** (time-frame during which response actions are viable or most effective).

Goals

Generally, oil spill response goals, in order of priority, are:

1. Ensure safety of human life;
2. Stabilize the situation to preclude it from worsening (e.g., source control, on-water recovery); and
3. Minimize adverse environmental and socioeconomic impacts.

Objectives

Responders should develop incident-specific, and sometimes geographically specific, objectives and strategies to address all three goals simultaneously. While attaining the first two goals, responders must develop incident-specific response objectives that achieve the third goal to minimize further spill impacts and protect resources at risk. Objectives must be clearly articulated and be measurable and achievable (e.g., prevent oil from reaching a specific part of the shoreline from another area). Effectively planning and executing a response requires a framework within which limited response resources (people, equipment, time) can be allocated to protect multiple resources at risk. Not all of these can be protected; some will have higher priorities than others for protection.

Strategies

Strategies are the conceptual plans designed to achieve response objectives. For example, a combination of mechanical containment and recovery equipment, dispersants, and in-situ burning can prevent oil from affecting sensitive on-water and nearshore resources and from reaching the shoreline.

Initial spill conditions will play a large role in developing an effective strategy. Sufficient initial information must be gathered to determine:

- Type and amount of oil spilled;
- Spill location;
- Behavior of spilled oil;
- Spill trajectories and persistence;
- Locations and resources that may be impacted, and types of impacts; and
- Current and forecast weather.

As information is gathered, strategies can be developed (and revised as conditions change) to protect those resources at risk. Though response strategies will vary according to incident-specific conditions, strategies can often be established in spill response planning (such as Area Contingency Plans, Geographic Response Plans, Facility and Vessel Response Plans, and the like), consistent with response goals.

Tactics

Tactics are site-specific individual activities taken to implement strategies. They can also be established in spill response plans, consistent with response goals. Specific tactics are usually developed for 12- to 24-hour time periods, however they can be extended as the Operational Period changes.

Windows of Opportunity

Windows of opportunity (time-frames during which response actions are viable) are constrained or bound by certain influences or conditions, and are available or "open" for limited times.

Three primary windows exist following a marine oil spill. Within each window, certain spill control measures can be taken to minimize adverse environmental effects:

1. **Very early** - Oil is fresh and concentrated near the discharge source.
    - Window may be open for 1–2 days; and
    - Responders focus on source control, containment near the source, and removal (these offer the best opportunities to reduce adverse environmental impacts).
2. **Early** - Oil has spread, is no longer concentrated, and threatens sensitive resources and habitats.
    - Window may be open for several days to weeks;
    - Sensitive resources and habitats are threatened; and
    - Responders work to minimize the spread of oil, prevent it from contacting resources at risk, and protect resources and habitats most vulnerable to longer-term oil impacts.
3. **Later** - Oil has stranded.
    - Window may be open for days to months, or longer; and
    - Responders use habitat-appropriate shoreline cleanup options to minimize environmental effects and enhance natural recovery (in some cases, oil may be left to degrade naturally because physical removal would cause a greater negative impact than leaving it in place).

Options for reducing spill impacts during each of these windows are addressed later, but, because information regarding Window 2 will be site-specific (and is addressed in area contingency plans), the emphasis here is on Windows 1 and 3. Figure 1 depicts the range of response possibilities for a generic, large marine oil spill (generalized response phases and windows illustrate the relative timing constraints of various response options).

Incident start (window of opportunity) →	. . . hours . . . (very early) →	. . . hours/days/weeks . . . (early) →	. . . months . . . (later)
PHASE / STRATEGY	STABILIZE/SECURE SOURCE	ON-WATER CONTAIN/ RECOVER/PROTECT	SHORELINE TREATMENT/CLEANUP
MECHANICAL	Close valves Patch Pump/offload	Manual oil removal Boom, skimmers Sorbents Mechanical oil removal Vacuum Barriers	Sorbents Manual oil removal Mechanical oil removal
CHEMICAL		Shoreline cleaning agents Dispersants Emulsion treating agents Solidifiers Herding agents Elasticity modifiers	Shoreline cleaning agents Solidifiers
OTHER COUNTERMEASURES		In-situ Burning	Bioremediation
WASTE MANAGEMENT		On-site Storage Recycle Incineration	Stabilization Recycle Landfill Incineration Bioremediation

Figure 1. Types of response options within different windows of opportunity during a major oil spill (modified from Walker et al., 1993).

Incident-specific Feasibility Issues

After assessing the situation, defining goals, priorities, objectives, and identifying the possible response strategies, the next step is to consider the feasibility of field operations. Tables 1 and 2 summarize the issues (discussed in detail in the following section) to be considered in developing incident-specific, on-water and shoreline operations.

Table 1. Incident-specific **on-water** strategy issues.

Category	Issues
Nature and Amount of Oil	• Oil type spilled • Oil volume and area and shape of slick(s) and stranded oil • Variations in oil thickness and distribution • Emulsification
Proximity	• Source considerations • Water depths • Shoreline and resources at risk • Air and vessel traffic • Equipment staging and support locations • Special consideration areas
Timing	• Personnel and equipment availability • Logistics support for sustained operations • Time until impact • Weathering

Table 1. (cont.)

Category	Issues
Environment	• Weather (wind/rain, other precipitation) • Water depth • Wind and waves • Tides and currents • Visibility • Temperature • Ice and floating debris • Vulnerable species and habitats • Human use
Authorization	• Approval to burn and/or apply chemical countermeasures* • Approval to access restricted areas • Transport and disposal of recovered oil or waste • Permits

* Agents requiring approval can include dispersants, surface washing agents, surface collecting agents, bioremediation agents, burning agents, and miscellaneous oil spill control agents. In-situ burning also requires RRT approval or pre-approval.

Table 2. Incident-specific **shoreline** strategy issues.

Category	Issues
Safety	• Slip and fall hazards • Worker oil exposure hazards • Other hazards posed by the environment or location
Nature and Amount of Oil	• Oil type spilled • Stranded oil amount in terms of percent cover, thickness, width • Stranded oil distribution
Proximity	• Access from water and/or roads • Worker support services • Staging/deployment sites
Timing	• Timely strategy development • Rapid cleanup to prevent oil remobilization
Environment	• Waves • Tides • Currents • Weather (wind/rain, other precipitation) • Shoreline type • Water depth and sea bottom character

Table 2. (cont.)

Category	Issues
Environment	• Vulnerable and threatened/endangered species and habitats • Human use constraints • Cultural constraints
Authorization	• Approval to burn and/or apply chemical countermeasures* • Required consultations for protection species and cultural resources • Approval to access restricted areas • Transport and disposal of recovered oil or waste • Permits

* Agents requiring approval can include dispersants, surface washing agents, surface collecting agents, bioremediation agents, burning agents, and miscellaneous oil spill control agents. In-situ burning requires RRT approval or pre-approval.

On-Water Feasibility Issues

On-water response strategies must address a broad range of site-, spill-, and environment-specific issues, including:

- Safety risks;
- Environmental effects; and
- Timing, spatial, and environmental limits.

These must be carefully considered in establishing response option performance levels. Safety is always paramount. How other issues are prioritized can be different for each spill.

Nature and Amount of Oil

Oil Type

Identifying the type of oil spilled and being able to anticipate its changing physical and chemical character as it spreads and degrades will help responders:

- Conduct personnel safety assessments;
- Determine fire or explosion risks;
- Identify response option feasibility;
- Determine the resources at risk; and
- Determine windows of opportunity.

Oil Volume, Area, and Shape

Because on-water response equipment has predictable, limited areal coverage rates, a slick's volume, changing area, and shape as it is transported and spread by wind and currents will determine response option feasibility, effectiveness, and efficiency. Since mechanical recovery will remove only a fraction of the oil spilled:

- Spills on-water must be attacked early (a sudden release, even in a light surface current, can spread and be transported rapidly beyond any at-source containment; moderate- to large-volume spills on the order of 1,000 barrels or more can easily spread over 1–10 square miles [3–26 square kilometers] in a day or two); and
- Response methods should be combined wherever possible (large spills can quickly exceed the holding capacity of most containment barriers and skimming systems).

Variation in Oil Thickness and Distribution

Oil thickness can vary by orders of magnitude within different parts of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Figure 2 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches, tarballs, etc., must be considered, as they influence oil encounter rates, chemical dosages, and ignition potential. Each method has different thickness thresholds for effective response.

Emulsification

Weathering often involves water-in-oil emulsification, which can impair response operations by:

- Increasing overall oil volume and recovered fluid storage requirements;
- Decreasing oil's buoyancy (increasing its tendency to submerge);
- Increasing the oil's viscosity (or pumpability) and stickiness (complicating recovery operations);
- Decreasing the oil's affinity for surface tension modifiers (reducing its dispersibility);
- Decreasing the oils' ignitability (burning is difficult or impossible once the water content reaches greater than 25%); and
- Decreasing available surface area for biodegradation (less biodegradable).

All of the above are important for understanding and estimating on-water response effectiveness, since some options may only be appropriate for a few hours under adverse conditions, or for several days during ideal conditions.

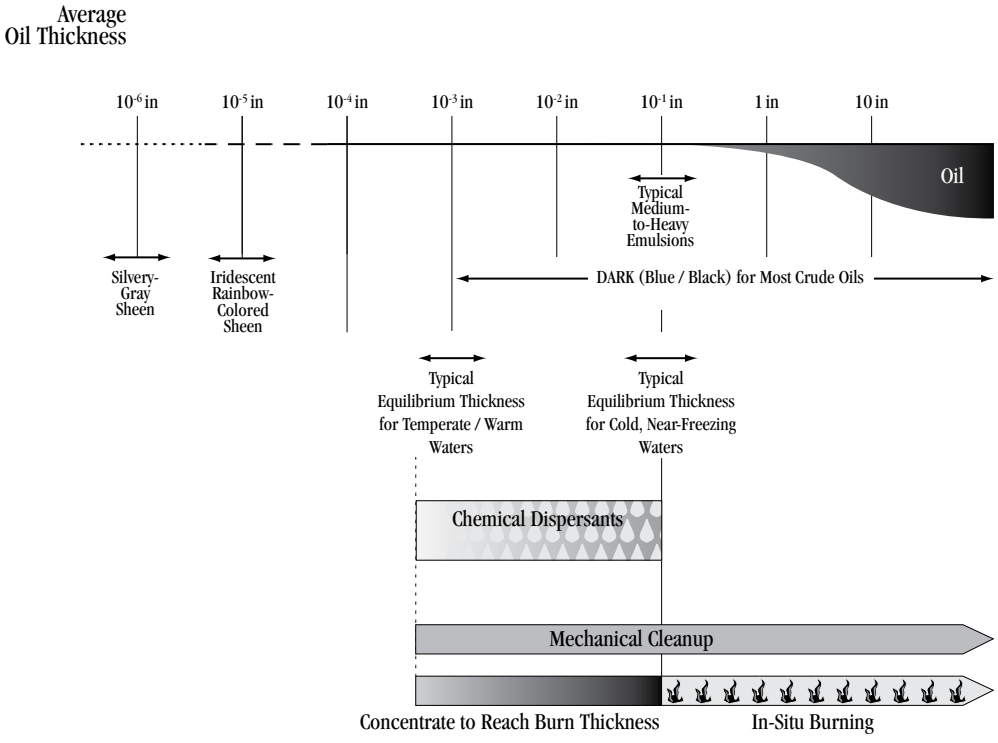

Figure 2. Oil thickness versus potential response options (modified from Allen and Dale, 1996).

Proximity

Source Considerations

Response operations must be conducted at safe distances from existing or potential spill sources, to reduce the risks of accidental ignition, exposure to harmful vapors, or changes in source characteristics that could endanger personnel or equipment.

Shoreline and Resources at Risk

Recovering or treating oil at sea can reduce the consequences to open-water and shoreline resources. Distance to shore is important because it will influence the type of vessels and equipment employed (size, draft, maneuverability, anchoring limitations) and the response countermeasures used. It is often more efficient and effective to recover or treat oil before it comes ashore.

Air and Vessel Traffic

On-water response and monitoring normally involve boats and/or aircraft, and activities of these vehicles must be carefully planned and controlled to prevent interference with other, ongoing (or planned) operations.

Equipment Staging and Support Locations

Response success will depend, in part, on the proximity of equipment and personnel staging locations to actual operations. Because response activities may interfere with each other (e.g., vessels transiting to and from staging areas) or with private or commercial activities, support operations will require careful planning.

Designated Special Consideration Areas

Designating certain areas as public, private, or government Special Consideration Areas may be necessary for conducting effective on-water operations. These areas may include national marine sanctuaries, national parks, archaeological sites, military operations areas, or may be pre-designated chemical dispersant operations or in-situ burning areas. Some Special Consideration Areas may have special activity or time requirements.

Timing

Personnel and Equipment Availability

The time required to bring resources to the scene will be a significant factor in establishing an effective response. Because response operations are critically influenced by oil spreading, transport, and weathering, realistic estimates of time to arrive on-scene must be established in response plans and re-evaluated as daily Incident Action Plans are developed.

Logistics Support for Sustained Operations

Effective, sustained response operations must be supported with:

- Trained, well-rested personnel for crew rotations (food, shelter);
- Spare parts and supplies (fuel, dispersants, personal protection equipment, boom, ignition systems, etc.) to keep equipment and personnel functioning;
- Secondary storage containers for recovered oil/water; and
- Sufficient, certified final disposal sites.

Time Until Shoreline Impact

Responders must determine realistic oil encounter and recovery rates to maximize the time available before oil impacts sensitive resources. If estimates show that on-water, mechanical response systems cannot handle a sufficient portion of a spill, the environmental impact trade-offs between containment and mechanical recovery, dispersant use, or in-situ burning must be carefully weighed against the impacts of that same oil reaching the shoreline. In some instances, it may be necessary to forego some on-water response in order to focus personnel and equipment resources on shoreline protection and cleanup.

Oil Weathering

During the first 24 to 48 hours of open water exposure, most oil spills become difficult to recover, burn, or chemically disperse, because:

- Evaporation accelerates as oil spreads and thins;
- Density and viscosity may increase;
- Tendency for emulsification can produce oily fluids of greater volume and viscosity than the original spill; and
- Slick thickness decreases quickly.

Environment

Water Depth

Shallow-water response requires careful use of response equipment, since:

- Vessel size and/or draft will limit speed, maneuverability, and operating areas;
- Vessel or boom anchors can disturb benthic communities;
- Shallow-water locations with strong currents create unique problems:
  - Booms with a draft greater than 1/4 the water depth will lose significant amounts of oil from entrainment.
  - Vessel squat (settling of the stern as speed increases) may limit operating areas or parameters.

Chemical dispersant use must not expose the biota to harmful concentrations of dispersed oil unnecessarily. There are usually minimum depth restrictions for their application offshore.

Water depth may be a consideration during in-situ burning deliberations because residues may sink, but heat transferred from a burning slick to the water is negligible and will not be a factor.

Wind and Waves

All weather will affect spill response activities. Rising wind and waves will:

- Increase oil spreading, transport, evaporation, and emulsification;
- Increase responder fatigue due to vessel and equipment handling difficulties; and
- Reduce all kinds of boom effectiveness.

While there are exceptions for certain types and conditions of oil, and specific types of equipment or dispersant, Figure 3 illustrates wind and wave influences on response operations feasibility over a broad range of average oil film thicknesses:

- **Mechanical Cleanup:** Effectiveness drops significantly because of entrainment and/or splash-over as short-period waves develop beyond 2–3 ft (0.6–0.9 m) in height. The ability to contain and recover oil decreases rapidly as the slick thickness becomes less than a thousandth of an inch (i.e., very low oil encounter rates). Waves and wind can also be limiting factors for the safe operation of vessels and aircraft.
- **Dispersants:** Effective dispersion requires a threshold amount of surface mixing energy (typically a few knots of wind and a light chop) to be effective. At higher wind and sea conditions, dispersant evaporation and wind-drift will limit chemical dispersion application effectiveness; and, there is a point (~25-kt winds, 10-ft [3 m] waves) where natural dispersion forces becomes greater, particularly for light oils. Because of droplet size versus slick thickness constraints and application dose-rate limitations, dispersants work best on slick thicknesses of a few thousandths to hundredths of an inch. Improved dispersants, higher dose rates, and multiple-pass techniques may extend the thickness limitation to 0.1 inch (0.25 cm) or more.
- **Burning:** Fire boom is affected by the same entrainment and splash-over problems as most conventional booms in 2–3 ft (0.6–0.9 m), short-period waves. Sustained burning is easiest during calm conditions and normally requires a minimum oil thickness of about 0.1 inch (0.25 cm); heavier and emulsified oils have to be thicker. It may be possible to contain and concentrate thinner slicks to minimum combustion thickness. It becomes very difficult to ignite oil on water when the winds approach 20 knots, but once ignited the burn can be sustained at much higher winds.

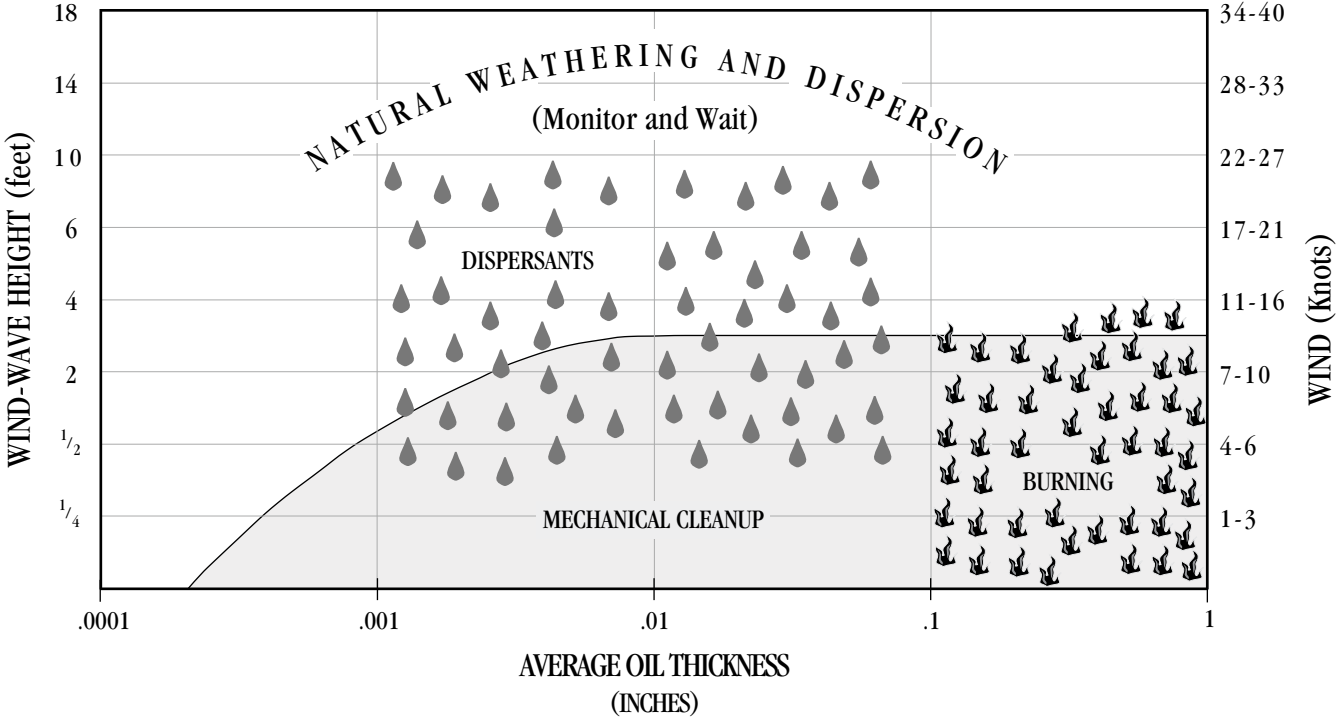

Figure 3. Primary spill response options under various wind/sea conditions and oil film thicknesses (modified from Allen, 1988).

Tides and Currents

Tides can:

- Change or reverse the direction and speed of water flow; and
- Change water depth.

Tides and currents can:

- Operate with wind to transport surface and subsurface oil over great distances.

Thus, tide and currents will dictate vessel size and power requirements; anchor size, type, and placement; towed boom drift distances; the time and location of possible sensitive resource impacts; and the amount of oil loss from entrainment (particularly with high-viscosity oils and oils of density near 1.0). Booming and skimming while drifting with the current will help minimize such losses.

Visibility

If response activities are conducted in low visibility, artificial light, or bright moonlight it will be difficult to find the heaviest oil concentrations or to monitor oil losses from booms and skimmers. Depending upon incident specifics, it may be feasible to conduct on-water operations in static or on-station modes during low visibility, allowing oil to come to recovery sites. Visibility is also important for dispersant application, for both the application and spotter aircraft.

Temperature

Low temperatures will generally increase oil viscosity (requiring viscous-oil recovery system use); inhibit spreading, evaporation, and emulsification; and may extend response windows of opportunity (but some oils may form stable emulsions in low temperatures). During extreme cold weather, ice may limit the spread of oil and improve the chances of recovery or burning. Extreme cold will also increase hypothermia potential, requiring responders to use special, cold-weather personal protection equipment, machinery, and procedures.

In high temperature and humidity situations, the above constraints will usually be reversed: oil will spread and evaporate faster, increasing fire and explosion potential for lighter oils, accelerating weathering processes, reducing response windows, and impacting equipment deployment times (equipment that works better on thicker oils that have retained their lighter ends must be deployed quickly). Extreme heat and humidity will also increase hyperthermia potential, requiring use of warm-weather personal protective equipment procedures and machinery.

Ice and Floating Debris

In some situations, ice or other floating debris may actually help contain oil and enhance in-situ burning, but heavy concentrations, particularly in strong currents, will clog, overload, or destroy most interception barriers. Debris will also tend to keep oil thick, dampen waves, and reduce dispersant effectiveness.

Frequent surveillance, and assigning resources to keep debris clear of recovery operations, will be necessary. If the debris is not too large, responders may be able to use barriers or screens with relatively narrow oil interception swaths.

Authorization

Approval to Burn and/or Apply Dispersants

In-situ burning or dispersant use requires government authorization (generally requested by the party responsible for the spill). Because safety, environmental impact, wildlife, and public concern issues are involved, most Regional Response Teams (RRTs) have established, as part of the regional response plan, zones and conditions under which use of in-situ burning and/or dipsersants can be authorized by the Federal On-Scene Coordinator (FOSC). In areas where use is "pre-approved," the FOSC can authorize use of in-situ burning or dispersants without further approvals; in areas where approval is "case-by-case," the FOSC must seek approval from the RRT. Specific conditions are usually applied regarding:

- Zone and boundary designations;
- Presence of sensitive on-water resources such as birds or marine mammals, especially threatened and endangered species;

- Distances from shore;
- Water depths;
- Weather; and
- Time (daylight, season).

Approval to Access Restricted Areas

Vessels and/or aircraft response operations may require special clearances or approvals, particularly near shore, where residential, commercial, industrial, recreational, or environmentally sensitive areas may be directly or indirectly impacted. Permission from government or owners/operators may be necessary before responders can enter or use these areas.

Transport and Disposal of Recovered Oil or Waste

Response planners must assess the time, cost, and effectiveness of storing, transporting, and disposing of recovered oil/oily wastes, including the effects that such operations will have on available resources (e.g., the length of time that response systems may be suspended due to lack of storage space). Disposal of recovered oil and oily wastes must comply with government regulations. Planners must also address:

- Temporary storage (onshore, offshore) of oil and oily debris, or sorbent materials;
- Decanting and discharging free water from recovered fluids;
- Transfer of waste from vessels/barges to onshore facilities;
- Handling waste from offshore equipment/vessel cleaning operations;
- Disposing of waste, burn residue, and debris at approved sites; and
- Product sampling and analyzing.

Shoreline Feasibility Issues

Shoreline response strategies may be constrained by safety, physical, or environmental considerations.

Safety

The dangers or risks inherent in land-based operations involving mechanized equipment are similar to those of on-water activities. Though less critical on land, weather-related hazards from high winds, waves, currents, and tides still exist near the shoreline.

Stranded oil, or nearshore oil, has usually weathered, and the threat of harmful exposures or accidental ignition is lower than at, or near, its source. However, some oils may still contain enough light ends to make exposure, inhalation, or ingestion risky (except for asphalt-type oils).

Nature and Amount of Oil

Understanding how a particular spill has weathered will help responders select appropriate treatment or cleanup options. Such information can be gathered by shoreline assessment surveys; these involve systematically collecting data to describe (using standard terms) the location, amount, distribution, and character of stranded or nearshore oil.

Proximity

Responders must consider shoreline proximity issues so that inshore, on-water operations can be safely conducted. Considerations may include distance(s) to:

- Safe or sheltered anchorage;
- Support services (e.g., medical, food, lodging, maintenance and repair, and communications);
- Suitable staging or deployment sites; and
- Shoal waters, uncharted, underwater obstacles, etc.

Timing

Shoreline assessments must be conducted as soon as possible so that planners can incorporate the information into response strategies and provide sufficient resources to remove the oil and prevent it from refloating and impacting other areas.

Environment

The operating environment for shoreline protection and cleanup involves a number of issues, including: waves and breakers, tides, currents, water depths, weather, shoreline features, ecological constraints, human use or cultural resource constraints, and public or government requirements or perceptions.

Waves

Small boats operating near shore, or responders working near the water's edge, are directly exposed to hazards from nearshore waves. Although these can usually be easily seen and activities adjusted to account for them, unexpected or unpredictable conditions can occur, since:

- Vessel wakes can travel several miles, and produce unexpected, steep, breaking waves 3–4 ft (0.9 or 1.2 m) high;
- Wave heights can vary unexpectedly (and rare, but dangerous, "rogue" waves can occur on open ocean coasts); and
- Dangerous wave backwash and rip currents are common along open ocean coasts.

Most shallow- or calm-water booms are ineffective in waves over 2 ft, because they cannot follow short, choppy waves. Although specifically designed for use at the water's edge, shoreline or intertidal booms can be easily rolled or twisted by wave action.

Tides

Though tides and currents are predictable, rapid changes in water level can isolate and strand unwary personnel, particularly in areas with a high tidal range, or on wide, flat intertidal areas. Tidal changes from storm surges or wind setups are not as readily predictable, but must also be considered.

Currents

Nearshore currents may be strong (particularly tidal inlet currents, longshore currents, or rip currents), and booms must be regularly redeployed or reconfigured to account for changing water flow.

Weather

Coastal weather can change rapidly and responders must consider the risks from:

- High wind – violent winds (wind shear/microbursts);
- Remote access – isolation of responders;
- Low visibility – fog, rain, snow, smoke, darkness, or extreme light intensity (e.g., glare);
- Ice formation – rafting, damming, or breakup, sea/river ice floes vessel, or equipment icing;
- Lightning – consider evacuation protocols when electrical storms are forecast or observed;
- Intense precipitation – flooding, ground destabilization (mudslides/sinkholes); and
- Extreme temperature/humidity – hypothermia/hyperthermia.

Shoreline Condition

Not all response methods are appropriate for every shoreline type; some may be impractical, unfeasible, environmentally intrusive, or damaging. Shoreline conditions to be evaluated, so responders can select proper response methods, should include:

- Rock falls or slides from backshore cliffs;
- Slippery rock surfaces;
- Presence of ice;
- Limited bearing capacity on mud flats, sand flats, beaches, backshore areas;
- Beach or backshore width and accessibility; and
- Surface mat stability in floating marshes (bogs).

Water Depths and Sea Bottom Character

Nearshore operational safety depends, in part, on responders' knowledge of bottom configuration and navigation conditions (e.g., bottom conditions will dictate which anchors or mooring systems will work; generally, rock bottoms provide poor anchorage). Keys to success include local knowledge, and the scale, accuracy, and availability of:

- Nautical charts; and
- Sailing directions and Notices to Mariners.

Environmental (Ecological) Constraints

Response strategies must allow responders to meet defined response objectives without causing more damage than the oil itself. If, after initially removing gross oil amounts, the level of intrusion necessary to remove any residual oil may cause unacceptable changes, damage, or become inefficient, response activities should be modified.

Certain animals, plants, or insects may be hazardous to shore-zone responders, and response managers must make full use of local knowledge to help reduce such risks (during the Exxon Valdez response, armed guards and training of field personnel were used to protect responders from Kodiak brown bears).

Human Use Constraints

Day-to-day human activities can affect responder safety afloat and/or ashore:

- Small boats, commercial traffic, ocean-going vessels, and/or ferries may transit areas where response activities are planned or underway–boat wakes can interfere with nearshore response operations;
- Vehicle traffic on piers, wharves, docks, or backshore roads may be dangerous; and
- Backshore residential, commercial, industrial, or recreational activities may conflict with response operations.

Cultural Constraints

Historically and culturally significant sites, or resources, are found on all coasts. Even if these sites are not directly affected by oil, shoreline activities may result in contact with these resources.

If such sites are present within response areas, special permission will normally be required from cognizant tribal, government, cultural, historic, or archaeological organizations prior to commencing clean-up activities.

Authorization

In addition to shoreline access, which may require permission from outside the response organization, government organizations:

- May restrict use of non-mechanical countermeasures; and
- Require specific authorization and permits to transport and dispose of recovered oily wastes, including temporary storage.

Process for Developing Incident-Specific Strategies

Spill response management follows a general sequence of steps for each spill, spill phase, and response location:

1. Gather information and assess the situation.
2. Define response goals and priorities.
3. Define response objective(s).
4. Develop strategies to meet the objectives, based on windows of opportunity.
5. Evaluate the feasibility of the options and strategies in view of the environmental conditions and spill specifics.
6. Select response options and tactical arrangements to implement identified strategies (begin process to obtain necessary approvals, permissions, permits).
7. Prepare an Incident Action Plan for carrying out the identified strategies.
8. Implement field response operations plans for each strategy.

While certain objectives, strategies, and tactics can be identified before an incident, and will usually be included in both owner/operator response plans and area contingency plans, responders must develop incident-specific response strategies (step 4, above) at the time of the incident. Steps 4, 5, and 6 are related to the incident response objectives, and are subject to a variety of incident-specific conditions, such as those discussed in detail in the remainder of this section. The remaining steps will be highly incident-specific so that discussing them further in this manual is not possible.

Integration of On-water Response Options

If a response objective is to minimize or prevent shoreline impact, using multiple, integrated on-water countermeasures offers the best chance of success. Thus, if "very early" window of opportunity options are to be used, decision-making, strategic plan development and approvals, and implementation must be rapid. Each response tool has advantages, disadvantages, and limitations in its effectiveness. Decision-makers must weigh various trade-offs when considering and

comparing response options. Since there is not one perfect response option, the best solution is to use all the "tools in the toolbox" in combined (integrated) operations to achieve response objectives. In general, these tools include:

- Monitor and wait. No active response to remove oil;
- Physical containment and mechanical recovery. Removes oil from the water with few environmental impacts but involves operational limitations associated with weather, visibility, physics, logistics, etc.;
- Dispersant application. Protects waterfowl and shoreline habitats but increases oil in the water column and exposure of water-column and benthic organisms to oil;
- In-situ burning. Protects sensitive shoreline habitats by removing floating, burnable oil; but heavy, black smoke is unsightly, alarming, and can be a respiratory hazard for humans and animals. Removal of burn residue may be technologically difficult, and unrecovered burn residue may further damage the environment; and
- Allow the oil to strand on shore. Shoreline cleanup will not disrupt water-column biota but allowing oil to reach shore means that intertidal and nearshore subtidal habitats and biological communities will be impacted.

Temporal Considerations

Mechanical recovery, dispersant application, and in-situ burning operations can be used singularly, or in combination, to improve efficiency and effectiveness.

- Mechanical recovery: oil that escapes containment or recovery will still be available for subsequent mechanical removal, treatment with dispersants, or for burning;
- Dispersants: some of the dispersant-treated slick may actually be missed and be available for additional dispersant operations, burning, or mechanical containment and recovery (except oleophilic skimmers for a few hours). Also, containing and burning a partially treated slick should remain viable, since dispersant application may decrease the slick's tendency to emulsify and prolong or reopen the window of opportunity for burning;

- Burning: most (>90%) of the oil burned will be converted to carbon dioxide, water vapor, and soot. Any oil that escapes the fire boom will be available downstream for re-collection and burning, mechanical recovery, or dispersant treatment; and
- The residues from a successful burn or partially-burned Categories III and IV oils, on the other hand, are not suitable for chemical dispersion. However, residues can be physically removed using viscous-oil recovery systems, or nets and hand tools. If partially burned oil/residue sinks, then the environmental consequences of leaving the submerged oil must be compared to the feasibility and consequences of removing the submerged material.

Spatial Considerations

Integrating response options also includes spatial considerations. For safety reasons, combined, simultaneous operations should be conducted only in designated safe operating zones that take into account spill and site specifics:

- Response vessels must always be far enough apart to preclude near-misses, collisions, or other disruptions of operations;
- Aircraft operations must be coordinated through a single air-traffic control system with specific directives for: allowable altitudes, air space, air and surface radio frequencies, emergency procedures, etc.;
- Mechanical cleanup and in-situ burning operations should be positioned in the thickest layers of oil, consistent with safety and environmental constraints;
- Burning should be positioned and conducted to: 1) avoid ignition of source; 2) avoid endangering personnel, facilities, vessels, or equipment downstream/downwind; 3) prevent accidental ignition of nearby contained or uncontained slicks or vapors; and
- Dispersants should be used on slicks that are sufficiently downstream/downwind from other operations that wind or current will not carry dispersant into those operating areas. Safe operating distances will be spill-specific.

Shoreline Strategies

Shoreline response strategies differ from on-water response strategies because:

- Stranded oil generally remains in place or is relatively slow-moving; and
- Land-based operations usually are less weather-dependent than water-based activities, and there are different safety and feasibility factors to consider.

Since shoreline response can be a long-term operation (days-weeks-months), integrating and combining multiple shoreline protection and cleanup options into strategies that are implemented simultaneously is common practice (nearshore containment and recovery often take place alongside various types of shoreline cleanup).

The following discussion includes all options operated from shore.

Shoreline Protection

The basic shoreline protection objective is to:

- Prevent or minimize contact between oil and the shore zone (or a resource at risk in the zone).

This can be done by combining activities, techniques, and equipment to:

- Remove shoreline debris before the oil is washed ashore;
- Contain and recover floating oil prior to shoreline impact;
- Deflect oil away from shore;
- Trap or contain and collect oil at the shoreline;
- Prevent stranded oil from refloating and affecting adjacent areas; and
- Prevent oil being washed over a beach into a lagoon or backshore area.

Shoreline Treatment and Cleanup

For an oiled shoreline, the main treatment objective is often to restore the oiled shore zone to a pre-spill "clean" condition. But defining a specific level of "clean" will be different for each spill (or even different for different phases of a single response) and, although promoting recovery usually includes removing some portion of the oil and allowing the rest of the oil or residue to degrade naturally, the best course of action may be to let all the oil degrade naturally. Final levels of allowable oil concentrations can, and should, be determined by consensus (considering overall environmental consequences) during contingency planning and sensitivity mapping before any spill. This process should balance conflicting environmental and socioeconomic concerns.

Reducing overall environmental consequences in an effective and efficient manner usually requires a combination of techniques, including:

- Natural recovery;
- Physical washing/flushing;
- Physical removal;
- Physical in-situ treatment (including burning); and
- Chemical or biological treatment.

Natural Recovery

Objective:	No attempt to remove any stranded oil either to minimize impacts to the environment or because there is no effective method for cleanup. Oil is left in place to degrade naturally.
Description:	No action is taken, although monitoring of contaminated areas may be required.
Applicable Habitat Types:	All habitat types.
When to Use:	When natural removal rates are fast (e.g., gasoline evaporation, high-energy coastlines), when the degree of oiling is light, or when cleanup actions will do more harm than natural recovery.
Biological Constraints:	This method may be inappropriate for areas used by high numbers of people, mobile animals (birds, marine mammals) or endangered species.
Environmental Effects:	Same as from the oil alone.
Waste Generation:	None.

Booming

Objective:	To prevent oil from contacting resources at risk, and to facilitate oil removal.
Description:	A boom specifically designed for pollution response is a floating, physical barrier, placed on the water to contain, divert, deflect, or exclude oil. Containment is deploying a boom to contain and concentrate the oil until it can be removed. Deflection is moving oil away from sensitive areas. Diversion is moving oil toward recovery sites that have slower flow, better access, etc. Exclusion is placing boom to prevent oil from reaching sensitive areas. Booms must be properly deployed, maintained) including removing accumulated debris), and re-adjusted to changing water flow directions, water levels, and wave conditions. Proper deployment involves use of mooring systems (e.g., anchors, land lines) and skilled teams. Tidal-seal boom is a special type of boom designed to be deployed in the intertidal zone.
Applicable Habitat Types:	Can be used on all water environments (weather permitting). Booms begin to fail by entrainment when the effective current or towing speed exceeds 0.7 knots perpendicular to the boom. Waves, wind, debris, and ice contribute to boom failure.
When to Use:	Most responses to spills on water involve deploying boom to help facilitate the removal of floating oil and prevent oil from contacting sensitive resources. Containment booming of gasoline spills is usually not attempted, because of fire, explosion, and inhalation hazards. However, when public health is at risk, gasoline can be boomed if foam is applied and extreme safety procedures are used.

Booming (cont.)

Biological Constraints:	Placing and maintaining boom and anchoring points should not cause excessive physical disruption to the environment, and both must be maintained so they do not fail or tangle and cause more damage. Vehicle and foot traffic to and from boom sites should not disturb wildlife unreasonably, and booms in very shallow water should be monitored so they do not trap wildlife (such as migrating turtles returning to sea or fish coming in at high tide).
Environmental Effects:	Minimal, if disturbance during deployment and maintenance is controlled.
Waste Generation:	Cleaning booms will generate contaminated wastewater that must be collected, treated, and disposed of appropriately. Discarded booms will need to be disposed of according to appropriate waste disposal regulations.

Skimming

Objective:	To recover floating oil from the water surface using mechanized equipment. This includes specifically designed pollution equipment called skimmers, and other mechanical equipment such as draglines and dredges.
Description:	There are numerous types of skimming devices, described in the annually published World Catalog of Oil Spill Response Products (SL Ross 2008): brush, disc, drum, paddle, belt, rope mop, sorbent belt, submersion plan, suction, and weir. They are placed at the oil/water interface to recover, or skim, oil from the water's surface and may be operated independently from shore, be mounted on vessels, or be completely self-propelled. Because large amounts of water are often simultaneously collected (incidental to skimmer operation) and treated, efficient operations require that floating oil be concentrated at the skimmer head, usually using booms. Adequate storage of recovered oil/water mixtures must be available, as must suitable transfer capability. Skimmers are often placed where oil naturally accumulates in pockets, pools, or eddies.
Applicable Habitat Types:	Can be used on all water environments (weather and visibility permitting). Waves, currents, debris, seaweed, kelp, ice, and viscous oils will reduce skimmer efficiency.
When to Use:	When sufficient amounts of floating oil can be accessed. Skimming spilled gasoline is usually not feasible because of fire, explosion, and inhalation hazards to responders. However, when public health is at risk, gasoline can be skimmed if foam is applied and extreme safety procedures used.

Skimming (cont.)

Biological Constraints:	Vehicle and foot traffic to and from skimming sites should not disturb wildlife unreasonably.
Environmental Effects:	Minimal if surface disturbance by cleanup work force traffic is controlled.
Waste Generation:	Free-floating oil can be recycled. Emulsions formed during the process must be treated (broken) before recycling. Oil-contaminated waste from the treatment phase should be treated as wastewater. Co-collected water must be properly treated prior to discharge.

Barriers/Berms

Objective:	To prevent entry of oil into a sensitive area or to divert oil to a collection area.
Description:	A physical barrier (other than a boom) is placed across an area to prevent oil from passing. Barriers can consist of earthen berms, trenching, or filter fences. When it is necessary for water to pass because of water volume, underflow or overflow dams are used.
Applicable Habitat Types:	At the mouths of creeks or streams to prevent oil from entering, or to prevent oil in the creek from being released into offshore waters. Also, on beaches where a berm can be built above the high-tide line to prevent oil from overwashing the beach and entering a sensitive back-beach habitat (e.g., lagoon).
When to Use:	When the oil threatens sensitive habitats and other barrier options are not feasible.
Biological Constraints:	Responders must minimize disturbance to bird nesting areas, beaver dams, or other sensitive areas. Placement of dams and filter fences could cause excessive physical disruptions, particularly in wetlands.
Environmental Effects:	May disrupt or contaminate sediments and adjacent vegetation. The natural beach (or shore) profile should be restored (may take weeks to months on gravel beaches). Trenching may enhance oil penetration and quantity of contaminated sediments. May require Army Corps of Engineers permit.
Waste Generation:	Sediment barriers will become contaminated on the oil side and filter fence materials will have to be disposed of as oily wastes.

Physical Herding

Objective:	To free any oil trapped in debris or vegetation on water; to direct floating oil towards containment and recovery devices; or to divert oil from sensitive areas.
Description:	Plunging water jets, water or air hoses, and propeller wash can be used to dislodge trapped oil and divert or herd it to containment and recovery areas. May emulsify the oil. Mostly conducted from small boats, although larger boats such as tugs can be used to generate stronger currents or influence larger areas (such as oil trapped deep under piers).
Applicable Habitat Types:	In nearshore areas where there are little or no currents, and in and around man-made structures such as wharves and piers.
When to Use:	In low-current or stagnant water bodies, to herd oil toward recovery devices. In high-current situations to divert floating oil away from sensitive areas.
Biological Constraints:	When used nearshore and in shallow water, must be careful not to disrupt bottom sediments or submerged aquatic vegetation.
Environmental Effects:	May generate high levels of suspended sediments and mix them with the oil, resulting in deposition of contaminated sediments in benthic habitats.
Waste Generation:	None.

Manual Oil Removal/Cleaning

Objective:	To remove oil with hand tools and manual labor.
Description:	Removal of surface oil using hands, rakes, shovels, buckets, scrapers, sorbents, pitchforks, etc., and placing in containers. No mechanized equipment is used except for transport of collected oil and debris. Includes underwater recovery of submerged oil by divers, for example, with hand tools.
Applicable Habitat Types:	Can be used on all habitat types.
When to Use:	Light to moderate oiling conditions for stranded oil, or heavy oils on water or submerged on the bottom that have formed semi-solid or solid masses and that can be picked up manually.
Biological Constraints:	Foot traffic over sensitive areas (marshes, tidal pools, etc.) should be restricted or prevented. There may be periods when shoreline access should be avoided, such as during bird nesting.
Environmental Effects:	Minimal, if surface disturbance by responders and waste generation is controlled.
Waste Generation:	May generate significant quantities of oil mixed with sediment and debris that must be properly disposed of or treated. Decontamination of hand tools may produce oily wastewater that must be treated properly. Worker personal protective gear is usually disposed of daily or decontaminated and the resulting oily wastewater treated properly.

Mechanical Oil Removal

Objective:	To remove oil from shorelines, and bottom sediments using mechanical equipment.
Description:	Oil and oiled sediments are collected and removed using mechanical equipment not specifically designed for pollution response, such as backhoes, graders, bulldozers, dredges, draglines, etc. Requires systems for temporary storage, transportation, and final treatment and disposal of collected material.
Applicable Habitat Types:	On land, possible wherever surface sediments are both amenable to, and accessible by, heavy equipment. For submerged oil, used in sheltered areas where oil accumulates. On water, used on viscous or solid contained oil.
When to Use:	When large amounts of oiled materials must be removed. Care should be taken to remove sediments only to the depth of oil penetration, which can be difficult with heavy equipment. Should be used carefully where excessive sediment removal may cause erosion of the beach or shore. Mechanical removal of buried oil consists of removing both clean overburden and oiled sediments (it is seldom feasible to remove the clean layer of sediments for later replacement). If large amounts of sediment are removed, it may be necessary to artificially re-nourish the beach. Care is also needed to minimize further oil penetration from uncontrolled vehicle traffic.
Biological Constraints:	Heavy equipment use may be restricted in sensitive habitats (e.g., marshes, soft substrates) or areas used by protected species. Special permission will be needed to use heavy equipment in areas with known cultural resources. Dredging in seagrass beds or coral reef habitats may be prohibited. Access and work areas may be restricted to prevent physical disturbance to adjacent, unoiled areas.

Mechanical Oil Removal (cont.)

Environmental Effects:	The equipment is heavy, with many support personnel required. May be detrimental if excessive sediments are removed without replacement. All organisms in the sediments will be affected, although the need to remove the oil may make this response method the best overall alternative. Resuspension of exposed oil and fine-grained, oily sediments can affect adjacent bodies of water.
Waste Generation:	Can generate significant quantities of contaminated sediment and debris that must be treated or landfilled. The amount of waste generated by this cleanup option should be given careful consideration by response planners when reviewing potential environmental impacts of the oily wastes, debris, and residues.

Sorbents

Objective:	To remove surface oil by using oleophilic (oil-attracting) material placed in water or at the waterline.
Description:	Organic, inorganic, and synthetic materials that remove oil through absorption (uptake into the sorbent material, like a sponge) or through adsorption (coating of the sorbent's surface). Sorbents are placed on the floating oil or water surface, allowing them to sorb oil, or are used to wipe or dab stranded oil. Forms include sausage boom, pads, rolls, sweeps, snares, and granules or particles that are loose or in pillows or socks. Efficacy depends on the capacity of the particular sorbent, wave or tidal energy available for lifting the oil off the substrate, and oil type and stickiness. All sorbent material must be recovered. Loose particulate sorbents must be contained in a mesh or other material.
Applicable Habitat Types:	Can be used on any habitat or environment type.
When to Use:	When oil is free-floating close to shore, or stranded on shore; the oil must be able to be released from the substrate and sorbed by the sorbent. Sorbents can be used as a secondary treatment method after gross oil removal in sensitive areas where access is restricted. Selection of sorbent varies by oil type: heavy oils only coat surfaces, requiring use of sorbents with high surface areas to be effective; lighter oils can penetrate sorbent material. Loose sorbent may be applied on vegetated areas where oil poses wildlife contact hazards or generates sheens. Products that sink, either initially or over time, should not be used in areas where they could be released to water.

Sorbents (cont.)

Biological Constraints:	Access for deploying and retrieving sorbents should not 1) adversely affect wildlife; 2) be through soft or sensitive habitats. Sorbents should not be used in a fashion that would endanger or trap wildlife. Sorbents left in place too long can break apart and present an ingestion hazard to wildlife or smother animals and plants.
Environmental Effects:	Physical disturbance of habitat during deployment and retrieval. Improperly deployed or tended sorbent material can crush or smother sensitive organisms.
Waste Generation:	In most cases, sorbents must eventually be collected for proper disposal so care should be taken to select and use sorbents properly, and prevent overuse and generation of large amounts of lightly oiled sorbents. Because large amounts of waste may be generated, recycling should be emphasized over disposal.

Vacuum

Objective:	To remove oil pooled on a shoreline substrate or subtidal sediments.
Description:	A vacuum unit is attached via a flexible hose to a suction head that recovers free oil. The equipment can range from small, portable units that fill individual 55-gallon drums to large supersuckers that are truck- or vessel-mounted and can generate enough suction to lift large rocks. Removal rates from substrates can be extremely slow.
Applicable Habitat Types:	Any accessible habitat type. May be mounted on vessels for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites.
When to Use:	When oil is stranded on the substrate, pooled against a shoreline, concentrated in trenches, or trapped in vegetation. Usually requires shoreline access points.
Biological Constraints:	Special restrictions should be established for areas where foot traffic and equipment operation may be damaging, such as soft substrates. Operations in vegetated areas must be very closely monitored, and a site-specific list of procedures and restrictions developed to prevent damage to vegetation.
Environmental Effects:	Minimal, if foot and vehicular traffic are controlled and minimal substrate is damaged or removed.
Waste Generation:	Collected oil and/or oil/water mix will need to be stored temporarily before recycling or disposal. Oil may be recyclable; if not, it will require disposal in accordance with local regulations. Large amounts of water are often recovered, requiring separation and treatment.

Debris Removal

Objective:	To remove debris in the path of a spill before oiling, and to remove contaminated debris from the shoreline and water surface.
Description:	Manual or mechanical removal of debris (driftwood, seaweed, trash, wreckage) from the shore or water surface. Can include cutting and removal of oiled logs.
Applicable Habitat Types:	Can be used on any habitat or environment type where access is safe.
When to Use:	When debris is heavily contaminated and provides a potential source of secondary oil release; an aesthetic problem; a source of contamination for other resources in the area is likely to clog skimmers; or likely to cause safety problems for responders. Used in areas of debris accumulation on beaches before oiling to minimize the amount of oiled debris to be handled.
Biological Constraints:	Foot traffic over sensitive areas (wetlands, spawning grounds) must be restricted. May be periods when entry should be denied (spawning periods, influx of large numbers of migratory waterbirds). Debris may also be a habitat and important source of prey, there should no wholesale removal of unoiled debris..
Environmental Effects:	Physical disruption of substrate, especially when mechanized equipment must be deployed to recover a large quantity of debris. Loss of habitat and prey, such as wrack removal, can affect the food supply for shorebirds.

Debris Removal (cont.)

Waste Generation: Will generate contaminated debris (volume depends on what, and how much, is collected, e.g. logs, brush). Unless there is an approved hazardous waste incinerator that will take oily debris, burning will seldom be allowed, especially on-site burning. However, this option should still be explored, especially for remote locations, with the appropriate state or Federal agencies that must give approvals for burning.

The advantage of pre-spill debris collections is that waste disposal requirements will likely be less restrictive than if the debris is oiled. Once oiled, the debris is likely to be handled as a hazardous waste.

Sediment Reworking/Tilling

Objective:	To break up oily sediments and surface oil deposits, increasing their surface area, and mixing deeper subsurface oil layers, thus enhancing the rate of degradation through aeration.
Description:	The oiled sediments are roto-tilled, disked, or otherwise mixed using mechanical equipment or manual tools. Along beaches, oiled sediments may also be pushed to the water's edge to enhance natural cleanup by wave activity (surf washing). On gravel beaches, the process may be aided with high-volume flushing.
Applicable Habitat Types:	On any sedimentary substrate that can support mechanical equipment or foot traffic and hand tilling.
When to Use:	On sand to gravel beaches with subsurface oil, where sediment removal is not feasible (due to erosion or disposal problems). On sand beaches where the sediment is stained or lightly oiled. Appropriate for sites where the oil is stranded above the normal high waterline.
Biological Constraints:	Avoid use on shores near sensitive wildlife habitats, such as fish-spawning areas or bird-nesting or concentration areas because of the potential for release of oil and oiled sediments into adjacent bodies of water. Should not be used in shellfish beds or vegetated habitats.
Environmental Effects:	Mixing of oil into sediments could further expose organisms that live below the original layer of oil. Repeated reworking could delay re-establishing of these organisms. Refloated oil from treated sites could contaminate adjacent waterbodies and shorelines. Resuspension of exposed oil and fine-grained, oily sediments can affect adjacent waterbodies.
Waste Generation:	None.

Vegetation Cutting/Removal

Objective:	To remove portions of oiled vegetation or to access oil trapped in vegetation to prevent oiling of wildlife or secondary oil releases.
Description:	Oiled vegetation is cut with weed trimmers, blades, etc., and picked or raked up and bagged for disposal.
Applicable Habitat Types:	Habitats composed of vegetation, such as salt marsh, sea grass beds, and kelp beds, which contain emergent, herbaceous vegetation or floating, aquatic vegetation.
When to Use:	When the risk of oiled vegetation contaminating wildlife is greater than the value of the vegetation that is to be cut, and there is no less-destructive method that removes or reduces the risk to acceptable levels.
Biological Constraints:	Operations must be strictly monitored to minimize the degree of root destruction and mixing of oil deeper into the sediments. Access in bird-nesting areas should be restricted during nesting seasons. Cutting only the oiled portions of the plants and leaving roots and as much of the stem as possible minimizes impacts to plants.
Environmental Effects:	Vegetation removal will destroy habitat for many animals. Cut areas will have reduced plant growth and, in some instances, plants may be killed. Cutting at the base of the plant stem may allow oil to penetrate the substrate, causing sub-surface contamination. Along exposed sections of shoreline, the vegetation may not recover, resulting in erosion and habitat loss. Trampled areas will recover much more slowly.
Waste Generation:	Cut portions of oiled plants must be collected and disposed.

Flooding

Objective:	To wash oil stranded on land to the water's edge for collection.
Description:	A perforated header pipe or hose is placed above the oiled shore or bank. Ambient-temperature water is pumped through the header pipe at low pressure and flows downslope to the water where any oil released is trapped by booms and recovered by skimmers or other suitable equipment. On porous sediments, water flows through the substrate, pushing loose oil ahead of it. On saturated, fine-grained sediments, the technique becomes more of a surface flushing.
Applicable Habitat Types:	All shoreline types where the equipment can be effectively deployed. Not effective in steep intertidal areas.
When to Use:	In heavily oiled areas when the oil is still fluid and adheres loosely to the substrate, and where oil has penetrated into gravel sediments. This method is frequently used with other washing techniques (low- or high-pressure, cold- to hot-water flushing).
Biological Constraints:	May need to restrict use so that the oil/water effluent does not drain across sensitive intertidal habitats. Not appropriate for muddy substrates.
Environmental Effects:	Habitat may be physically disturbed by foot traffic during operations and smothered by sediments washed down the slope. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Oiled sediment may be transported to nearshore areas, contaminating them and burying benthic organisms.
Waste Generation:	Depends on the effectiveness of the collection method.

Low-pressure, Ambient-Water Flushing

Objective:	To remove fluid oil that has adhered to the substrate or man-made structures, pooled on the surface, or become trapped in vegetation.
Description:	Ambient-temperature water is sprayed at low pressures (<10 psi), usually from hand-held hoses, to lift oil from the substrate and float it to the water's edge for recovery by skimmers, vacuum, or sorbents. Usually used with a flooding system to prevent released oil from re-adhering to the substrate downstream of the treatment area.
Applicable Habitat Types:	On substrates, riprap, and solid, man-made structures, where the oil is still fluid. In wetlands and along vegetated banks where oil is trapped in vegetation.
When to Use:	Where fluid oil is stranded onshore or floating in shallow intertidal areas.
Biological Constraints:	May need to restrict use so that the oil/water effluent does not drain across sensitive intertidal habitats, and so that mobilized sediments do not affect rich subtidal communities. Use from boats will reduce the need for foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.
Environmental Effects:	If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Some trampling of substrate and attached biota will occur.
Waste Generation:	Depends on the effectiveness of the collection method.

High-pressure, Ambient-Water Flushing

Objective:	To remove oil that has adhered to hard substrates or man-made structures.
Description:	Similar to low-pressure flushing, except that water pressure is 100–1,000 psi (720–7,200 kpa). High-pressure spray will more effectively remove sticky or viscous oils. If low water volumes are used, sorbents are placed directly below the treatment area to recover oil.
Applicable Habitat Types:	On bedrock, man-made structures, and gravel substrates.
When to Use:	When low-pressure flushing is not effective at removing adhered oil, which must be removed to prevent continued oil release or for aesthetic reasons. When a directed water jet can remove oil from hard-to-reach sites.
Biological Constraints:	May need to restrict flushing so that the oil does not drain across sensitive habitats. Flushed oil must be recovered to prevent further oiling of adjacent areas. Should not be used directly on attached algae nor rich, intertidal areas.
Environmental Effects:	All attached animals and plants in the direct spray zone will be removed, even when used properly. May drive oil deeper into the substrate or erode fine sediments from shorelines if water jet is improperly applied. If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas. Some trampling of substrate and attached biota will occur.
Waste Generation:	Depends on the effectiveness of the collection method.

Low-pressure, Hot-Water Flushing

Objective:	To remove non-liquid/non-fluid oil that has adhered to the substrate or man-made structures, or pooled on the surface.
Description:	Hot water (90°F [32°C] up to 171°F [77°C]) is sprayed with hoses at low pressures (<10 psi [<72 kpa]) to liquefy and lift oil from the substrate and float it to the water's edge for recovery by skimmers, vacuums, or sorbents. Used with flooding to prevent released oil from re-adhering to the substrate.
Applicable Habitat Types:	On bedrock, sand to gravel substrates, and man-made structures.
When to Use:	Where heavy, but relatively fresh, oil is stranded onshore. The oil must be heated above its pour point so it will flow. Less effective on sticky oils.
Biological Constraints:	Avoid vegetated areas or rich intertidal communities so that the hot oil/water effluent does not contact sensitive habitats. Operations from boats will help reduce foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas. Should not be used directly on attached algae or in rich, intertidal areas.
Environmental Effects:	Hot water contact can kill attached animals and plants. If containment methods are not sufficient, oil may be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow-rooted vegetation. Some trampling of substrate and biota will occur.
Waste Generation:	Depends on the effectiveness of the collection method.

High-pressure, Hot Water Flushing

Objective:	To mobilize weathered and viscous oil strongly adhered to surfaces.
Description:	Hot water (90°F [32°C] up to 171°F [77°C]) is sprayed with hand-held wands at pressures greater than 100 psi (720 kpa). If used without water flooding, this procedure requires immediate use of vacuum or sorbents to recover the oil/water runoff. When used with a flooding system, the oil is flushed to the water surface for collection by skimmers, vacuum, or sorbents.
Applicable Habitat Types:	Gravel substrates, bedrock, and man-made structures.
When to Use:	When oil has weathered to the point that warm water at low pressure no longer effectively removes oil. To remove viscous oil from man-made structures for aesthetic reasons.
Biological Constraints:	Use should be restricted so that the oil/water effluent does not drain across sensitive habitats (damage can result from exposure to oil, oiled sediments, and hot water). Should not be used directly on attached algae nor rich, intertidal areas. Released oil must be recovered to prevent further oiling of adjacent areas.
Environmental Effects:	All attached animals and plants in the direct spray zone will be removed or killed, even when used properly. Oiled sediment may be transported to shallow nearshore areas, contaminating them and burying benthic organisms.
Waste Generation:	Depends on the effectiveness of the collection method.

Steam Cleaning

Objective:	To remove heavy residual oil from solid substrates or man-made structures.
Description:	Steam or very hot water (171°F [77°C] to 212°F [100°C]) is sprayed with hand-held wands at high pressure (2,000+ psi [14,400 kpa]). Water volumes are very low compared to flushing methods.
Applicable Habitat Types:	Man-made structures such as seawalls and riprap.
When to Use:	When heavy oil residue must be removed for aesthetic reasons, when hot water flushing is not effective, and no living resources are present.
Biological Constraints:	Not to be used in areas of soft substrates, vegetation, nor high biological abundance directly on, nor below, the structure.
Environmental Effects:	Complete destruction of all organisms in the spray zone. Difficult to recover all released oil. If containment methods are not sufficient, oil may be flushed into nearshore areas.
Waste Generation:	Depends on the effectiveness of the collection method. Usually sorbents are used, generating significant waste volumes.

Sand Blasting

Objective:	To remove heavy residual oil from solid substrates or man-made structures.
Description:	Use of sandblasting equipment to remove oil from the substrate. May include recovery of used (oiled) sand.
Applicable Habitat Types:	On heavily oiled bedrock, artificial structures such as seawalls and riprap.
When to Use:	When heavy oil residue must be cleaned for aesthetic reasons, and even steam-cleaning is not effective.
Biological Constraints:	Not to be used in areas of soft substrates, vegetation, nor high biological abundance directly below, nor adjacent to, the structures.
Environmental Effects:	Complete destruction of all organisms in the blast zone. Possible smothering of organisms in adjacent areas. Unrecovered, used sand will introduce oiled sediments into the adjacent habitat. Oiled sediment may be transported to shallow nearshore areas, contaminating them and burying benthic organisms.
Waste Generation:	Will need to recover and dispose of oiled sand used in blasting.

Dispersants

Objective:	To reduce impact to sensitive shoreline habitats and animals that use the water surface by chemically dispersing oil into the water column.
Description:	Dispersants reduce the oil/water interfacial tension, making it easier for waves to break up oil into larger numbers of smaller particles. Also prevents dispersed particles from recoalescing and forming bigger, more buoyant droplets that float to the surface, re-creating sheens. Specially formulated products containing surface-active agents are sprayed (at concentrations of 1–5 percent by volume of the oil) from aircraft or boats onto the slicks. Some agitation is needed to achieve dispersion. Effectiveness diminishes as the oil spreads and weathers.
Applicable Habitat Types:	Water bodies with sufficient depth and volume for mixing and dilution.
When to Use:	When the impact of the floating oil has been determined to be greater than the impact of dispersed oil on the water-column and benthic community. Requires RRT approval for use.
Biological Constraints:	Use in shallow water could affect benthic resources. Consideration should be made to avoid directly spraying any wildlife, especially birds or fur-bearing marine mammals.
Environmental Effects:	Until sufficiently diluted, the dispersed oil can adversely impact organisms in the upper water column. Because dispersion may be only partially effective, some water-surface and shoreline impacts could occur.
Waste Generation:	None.

Emulsion-treating Agents

Objective:	To break or destabilize emulsified oil into separate oil and water phases. Also can be used to prevent emulsion formation, increasing oil recovery rates, extending the window for dispersant application, or making burning possible.
Description:	Emulsion-treating agents are surfactants that are applied to emulsified oil at low concentrations (0.1–2 percent). They can be injected into skimmer reservoirs to break the emulsion as it is skimmed from the water. They can be sprayed (similar to dispersants) directly onto slicks to break or prevent emulsions, although this type of application has been used only in field trials.
Applicable Habitat Types:	On all water environments.
When to Use:	To break emulsions in skimming systems, where storage capacities are very limited. To separate the recovered, emulsified oil and water so that the water can be treated and discharged. To break or prevent floating emulsions, where emulsified oil can reduce skimmer efficiency and dispersant effectiveness. Requires RRT approval for use.
Biological Constraints:	Very few products have toxicity data available, making it difficult to fully evaluate biological constraints. Use in shallow water could affect benthic resources. Responders should avoid directly spraying any wildlife, especially birds or fur-bearing marine mammals.

Emulsion-treating Agents (cont.)

Environmental Effects:	Because this is a new method, there is little data available to evaluate environmental effects. Effective dosages are one to two orders of magnitude lower than dispersants. Environmental concerns include the potential for increased oil content of separated water; whether the oil will be more readily dispersed; and how the treated oil will behave upon contact with skimming equipment, birds, mammals, and shorelines.
Waste Generation:	May enable recycling of oil/water mixtures by breaking down emulsions.

Elasticity Modifiers

Objective:	To impart visco-elastic properties to floating oil, thereby increasing skimming rates.
Description:	The liquid product is applied at a rate of 1:13 to 1:150 product:oil, depending on the oil type. Some mixing is required and is usually provided by the water spray during application. Treated oil is gelatinous, or semi-solid, but still fluid; there is no chemical change in the oil. The primary purpose is to increase skimmer efficiency removal rates while minimizing water recovery amounts. Increases the efficiency of some skimmers, but may clog other skimmers and pumps.
Applicable Habitat Types:	On all water environments where oil can be accessed for skimming. Not suitable for use near wetlands nor debris because of increased adhesive properties of the treated oil.
When to Use:	When skimmer efficiency is low. Must be used with booming or other physical containment. Ideal for thin slicks of No. 2 fuel oil or diesel that are very difficult to recover with mechanical equipment or sorbents. Requires RRT approval for use.
Biological Constraints:	Not suitable for vegetated shores nor where extensive debris is mixed in the oil. Should be avoided when birds or other wildlife cannot be kept away from the treated oil.
Environmental Effects:	May increase the smothering effect of oil on organisms; therefore, use should be considered only where recovery of the treated oil is likely.
Waste Generation:	If skimming efficiency is increased, will reduce the volume of water in oil/water collections. Effects on recycling of oil treated with elasticity modifiers is unknown.

Surface Collecting Agents

Objective:	To collect or herd oil into a smaller area and thicker slick in order to increase recovery. Can be used to herd oil away from sensitive areas or to help contain oil when it is necessary to move a boom.
Description:	These agents, which are insoluble surfactants and have a high spreading pressure, are applied in small quantities (1–2 gallons per lineal mile) to the clean water surrounding the edge of a fresh oil slick. They contain the oil, prevent spreading, but do not hold the spill in place. Hand-held or vessel-mounted systems can be used. Must be applied early in spill, when oil is still fluid.
Applicable Habitat Types:	On all still-water environments.
When to Use:	Potential use for collection and protection. For collection, used to push slicks out from under docks and piers where it has become trapped, or in harbors where the equipment is readily accessible for use early in the spill. For protection in low-current areas, used to push slicks away from sensitive resources such as wetlands. Not effective in fast currents, breaking waves, nor rainfall. Requires RRT approval for use.
Biological Constraints:	Not suitable for use in very shallow water nor fish-spawning areas.
Environmental Effects:	Direct acute toxicity to surface-layer organisms possible, though available products vary greatly in their aquatic toxicity.
Waste Generation:	Same as for manual oil recovery.

Solidifiers

Objective:	To change the physical state of spilled oil from a liquid to a solid.
Description:	Chemical agents (polymers) are applied to oil at rates of 10–50 percent or more, solidifying the oil in minutes to hours. Various broadcast systems, such as leaf blowers, water cannons, or fire suppression systems, can be modified to apply the loose granular product over large areas. Can be applied to both floating and stranded oil. Mixing is usually needed, and can be done with a strong water spray. Can be placed in booms, pads, pillows, and socks and used like sorbents.
Applicable Habitat Types:	All water environments, bedrock, sediments, and artificial structures.
When to Use:	To immobilize the oil or prevent refloating from a shoreline, penetration into the substrate, or further spreading. However, the oil may not fully solidify unless the product is well mixed with the oil, and may result in a mix of solid and untreated oil. Generally not used on heavy oil spills that are already viscous. Requires RRT approval for use.
Biological Constraints:	Must be able to recover all treated material.
Environmental Effects:	Products are insoluble and have very low aquatic toxicity. Unrecovered solidified oil may have longer impact because of slow weathering rates. Physical disturbance of habitat is likely during application and recovery on land.
Waste Generation:	If skimming efficiency is increased, solidifiers may reduce the volume of water collected during oil recovery. Oil treated with solidifiers is typically disposed of in landfills.

Surface Washing Agents

Objective:	To increase the efficiency of oil removal from contaminated substrates.
Description:	Special formulations are applied to the substrate, as a presoak and/or flushing solution, to soften or lift weathered or heavy oils from the substrate to enhance flushing methods. The intent is to lower the water temperature and pressure required to mobilize the oil from the substrate during flushing. Some agents will disperse the oil as it is washed off the beach, others will not.
Applicable Habitat Types:	On any habitat where water flooding and flushing procedures are applicable. Has been used to increase the removal of oil adhered to vegetation.
When to Use:	When the oil has weathered to the point where it cannot be removed using ambient water temperatures and low pressures. This approach may be most applicable where flushing effectiveness decreases as the oil weathers. Requires RRT approval for use.
Biological Constraints:	When the product does not disperse the oil into the water column, the released oil must be recovered from the water surface. Use should be restricted so that the oil/water effluent does not drain across sensitive habitats. Other concerns are where suspended sediment concentrations are high, near wetlands, and near sensitive nearshore resources.
Environmental Effects:	The toxicity and effects on dispersability of treated oil vary widely among products. Selection of a product should consider its toxicity.
Waste Generation:	Because treated oil must be recovered, waste generation is a function of recovery method, which often includes sorbents.

Nutrient Enrichment (Biostimulation)

Objective:	To accelerate the rate of hydrocarbon degradation due to natural microbial processes by exploiting ability of microorganisms to convert hydrocarbons to carbon dioxide, water, and innocuous by-products.
Description:	Liquid products are diluted in water and applied with spray or injection systems. Dry products may be applied by hand or powder spray systems. Oleophilic fertilizers are sprayed neat directly on the oiled surface. The frequency of nutrient addition is determined by monitoring porewater so that nitrate-N concentrations are in the range of ~2–10 mg/L. Regular tilling or other means of aeration may be needed to maintain minimum oxygen levels, break up the oil residues, and provide mixing of the nutrients with the oiled sediments.
Applicable Habitat Types:	Could be used on any shoreline habitat type where access is allowed and nutrients are deficient.
When to Use:	Only when nutrients are limiting the rates of natural biodegradation. On moderate- to heavily-oiled substrates, after other techniques have been used to remove free product; on lightly-oiled shorelines, where other techniques are destructive or ineffective; and where nutrients limit natural attenuation. Most effective on light to medium crude oils and fuel oils. Less effective where oil residues are thick. Not considered for gasoline spills, which evaporate rapidly. Biodegradation of hydrocarbons requires: oil-degrading microbes, nutrients (nitrogen and phosphorus), oxygen, moisture, and time, any one of which can be limiting. Requires RRT approval for use.

Nutrient Enrichment (Biostimulation) (cont.)

Biological Constraints:	Avoid using ammonium-based fertilizers adjacent to waterbodies because un-ionized ammonia is toxic to aquatic life at very low levels. Nitrate is just as good a nitrogen source without the ecotoxicity. If nutrients are applied properly with adequate monitoring, eutrophication should not be a problem. Only nutrient additives proven to be nontoxic and effective in either the laboratory or the field should be used in the environment. Check fertilizers for their metal content since some common fertilizers contain relatively high levels of metals. Contact toxicity of oleophilic nutrients may restrict their use, as other chemicals in the product could be more toxic to aquatic organisms in the presence of oil.
Environmental Effects:	Detrimental effects to shoreline from foot or vehicle traffic caused by workers applying nutrients (unless nutrients are sprayed from a vessel or aircraft).
Waste Generation:	None.

Natural Microbe Seeding (Bioaugmentation)

Objective: A form of bioremediation used to accelerate natural microbial degradation of oil by adding high numbers of oil-degrading microorganisms to accelerate the process.

Description: Formulations containing specific hydrocarbon-degrading microbes are added to the oiled area because there are few indigenous hydrocarbon degraders, or those that are present cannot degrade the oil effectively. Since microbes require nitrogen and phosphorus to convert hydrocarbons to biomass, formulations containing these oil degraders must also contain adequate nutrients. Bioaugmentation has not been demonstrated in the scientific literature to be effective on oil spills when applied in the field.

Bioaugmentation appears less effective than biostimulation because: 1) hydrocarbon degraders are ubiquitous in nature and, when an oil spill occurs, the influx of oil will cause an immediate increased response in the hydrocarbon-degrading populations; but, 2) if nutrients are in limited supply, the rate of oil biodegradation will be less than optimal; thus, 3) supplying nutrients will enhance the process initiated by the spill, but adding microorganisms will not, because they still lack the necessary nitrogen and phosphorus to support growth.

The maximum number of microbial organisms achievable will determine the maximum biodegradation rate. If nutrient supplementation is sufficient to maximize that rate, bioaugmentation will not further increase the biodegradation rate.

Natural Microbe Seeding (Bioaugmentation) (cont.)

Applicable Habitat Types:	There is insufficient information on impacts or effectiveness of this method to make a judgment on applicable habitat.
When to Use:	There is insufficient information on impacts or effectiveness of this method to make a judgment on when to use it. Requires RRT approval for use.
Biological Constraints:	Avoid using ammonium-based fertilizers adjacent to waterbodies because un-ionized ammonia is toxic to aquatic life at very low levels. Nitrate is just as good a nitrogen source without the ecotoxicity. If the product containing nutrients is applied properly with adequate monitoring, eutrophication should not be a problem, but toxicity tests should be evaluated carefully, as other chemicals in the product could be toxic to aquatic organisms.
Environmental Effects:	Detrimental physical effects to shoreline from foot or vehicle traffic caused by workers applying bioaugmentation products (unless nutrients are sprayed from a vessel or aircraft).
Waste Generation:	None.

In-situ Burning

Objective:	To remove oil from the water surface or habitat by burning the oil in place.
Description:	Oil floating on the water surface is collected into slicks at least 1–2 mm thick and ignited. The oil can be contained in fire-resistant booms, or by natural barriers such as ice or the shore. On land, oil can be burned when it is on a combustible substrate such as vegetation, logs, and other debris. Oil can be burned from non-flammable substrates using a burn promoter. On sedimentary substrates, it may be necessary to dig trenches for oil to accumulate in pools to a thickness that will sustain burning. Heavy oils are hard to ignite but can sustain a burn. Emulsified oils may not ignite nor sustain a burn when the water content is greater than 25 percent. For oils where sinking of the burn residue is of concern, it may be possible to collect the burn residues while they are still hot and buoyant by using nets deployed under the burn.
Applicable Habitat Types:	On most habitats, except dry, muddy substrates where heat may impact the biological productivity of the habitat. May increase oil penetration in permeable substrates. Not suitable for woody vegetation such as mangroves.
When to Use:	On floating slicks, early in the spill event when the oil can be kept thick enough to sustain the burn. On land, where there is heavy oil in sites neither amenable nor accessible to physical removal and the oil must be removed quickly. Removal rates of 50,000 gal/hour can be achieved for a burn area of 10,000 ft^2; under prime conditions, removal efficiencies can exceed 90%. In vegetated and mud habitats, a water layer will minimize impacts to sediments and roots. Many potential applications for spills in ice. There are many operational and public health limitations. Requires RRT approval for use.

In-situ Burning (cont.)

Biological Constraints:	All biota in the burn area will be impacted. The possible effects of large volumes of smoke on nesting birds and populated areas should be evaluated.
Environmental Effects:	Temperature and air quality effects are likely to be localized and short-lived. Toxicological impacts from burn residues have not been evaluated.
	On water, burn residues may sink. Recent studies have predicted that about half of international crude oils would tend to sink in seawater, but only after cooling. On land, removal of burn residues is often necessary for crude and heavy oils. Residue removal can physically disrupt sensitive habitats such as marshes. There are several studies on the relative effects of burning oiled marshes compared to other techniques or natural recovery. Laboratory and field studies indicate recovery of wetland vegetation will depend on season of burn, type of vegetation, and water level in the marsh at time of burn.
Waste Generation:	Any residues remaining after burning will need to be collected and landfilled but, with an efficient burn, will be a small fraction of the original oil volume

References

Allen, A. and D. Dale. 1996. Computerized Mission Planners: Useful tools for the planning and implementation of oil spill response operations. *Proceedings, "Prevention is the Key: A Symposium on Oil Spill Prevention and Readiness*," Valdez, AK, Oct. 8–11, 1996, 24 pp.

American Petroleum Institute (API), National Oceanic and Atmospheric Administration (NOAA), U.S. Coast Guard (USCG), and U.S. Environmental Protection Agency (EPA). 2001. Environmental Considerations for Marine Oil Spill Response. Washington, D.C: American Petroleum Institute.

National Oceanic and Atmospheric Administration (NOAA). 2010. Characteristic Coastal Habitats: A Guide for Spill Response Planning. Seattle: Emergency Response Division, NOAA. 85 pp.

S. L. Ross. 2008. *World Catalog of Oil Spill Response Products*. Baltimore: World Catalog Joint Venture.

Walker, A. H., J. Michel, G. Canevari, J. Kucklick, D. Scholz, C. A. Benson, E. Overton, and B. Shane. 1993. Chemical Oil Spill Treating Agents. Marine Spill Response Corporation Technical Report Series 93-015. Washington, D.C.: American Petroleum Institute. 328 pp.

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Oil spill response field manual

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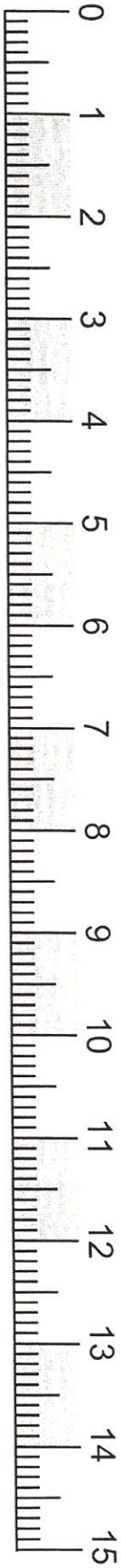

Metric Conversion Factors

Volume	Flow Rate
1 cm^3 = 1 ml = .001 L 1 L = 1 dm^3 = .001 m^3 1 L = 0.264 Gallon Liquid US 1 m^3 = 6.29 API bbl	1 L/min = 0.0167 L/sec = 60 L/hr = 1440 L/day 1 L/min = 0.06 m^3/hr 1 L/min = 0.265 gpm (US) 1 L/min = 9.05 API bbl/day
Length	**Velocity**
1 m = 10^{-3} km = 10^2 cm = 10^3 mm = $10^6 \mu$ 1 cm = 0.3937 in 1 m = 3.2808 ft = 39.37 in 1 m = 0.5468 fathom 1 km = 0.62 mile = 3273 ft 1 km = 0.54 nautical mile (NM)	1 cm/sec = 10^{-2} m/sec = 36 m/hr = 0.036 km/hr 1 m/sec = 1.94 knots (US) 1 km/hr = 0.54 knots (US) 1 km/hr = 0.621 mph (US)
Area	**Mass/Weight**
1 hectare = 10,000 m^2 = 0.01 km^2 1 m^2 = 10.76 ft^2 = 1.196 yd^2 1 hectare = 2.471 acres = 0.00386 sq mile	1g = 10^{-3} kg = 10^3 mg 1 metric tonne = 1000 kg 1 kg = 2.21 lbs = 0.0685 slug
Surface Tension	**Force**
1 kg-f/m = 9.807 N/m = 9807 dyne/cm 1 kg-f/m = 0.672 lbs/ft = 5.61 lb/in 1 N/m = 0.0685 lb/ft 1 N/mm = 5.64 lb/in	1 newton (N) = 10^5 dyne 1 newton = 0.102 kg-f 1 newton = 0.2248 lb 1 newton = 7.233 pdl
Pressure	**Application Rates**
1 N/m^2 = 0.102 kg-f/m^2 = 1 pascal (Pa) 1 bar = 10^6 dyne/cm^2 = 0.1MPa 1 mm Hg = 133 Pa 1 Pa = 1.450 x 10^{-4} psi 1 kg-f/m^2 = 0.0206 lb/ft^2 1 MPa = 9.869 atm	1 L/m^2 = thickness in mm 1 L/hectare = 0.1 m^3/km^2 1 L/hectare = 0.1068 gal/acre 1 tonne/hectare = 2.5 bbl/acre
Miscellaneous	
1 tonne of oil = 1000 L = 1 m^3 = 264.2 gal storage volume for boom, volume/length: ft^3/ft x 0.093 = m^3/m mg/L = parts per million (ppm) = % x 10^{-2} x 10^6 = ppm ice density = 0.8 g/cm^3 = 800 kg/m^3 viscosity in centipoise (cp) = viscosity in centistokes (cSt) x density temperature centigrade = (temperature Fahrenheit – 32) x 0.555	

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Oil Spill Response Field Manual

Revised 2014

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In grateful recognition of years of service to the petroleum industry through tireless efforts to improve response technology and minimize environmental impacts, this Edition of the *ExxonMobil Oil Spill Response Field Manual* is dedicated to all the ExxonMobil employees, consultants, and government officials, who have contributed to this document over the past 30 years.

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1 Introduction

1.1 Introduction

1

This field manual is intended for use by responders at an oil spill. It is a collection of "Rules of Thumb" and checklists that provide quick access to the information needed when formulating response strategies.

The manual is neither an all-inclusive textbook nor a substitute for training, qualified technical advice, or common sense. It addresses response to oil spills that could reach water and those that occur on land. Legal issues and environmental regulations are likewise outside the scope of this manual.

This manual is not a statement of ExxonMobil policy. However, all operations, including selection of response strategies, access to shorelines, implementation of cleaning methods, etc., planned or conducted on behalf of ExxonMobil are to be in full compliance with applicable laws and regulations. Exxon Mobil Corporation, its affiliates, subsidiaries, employees, officers, directors, and contractors shall not be held liable for injury, loss, or damage incurred as the result of use of this manual by others.

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1.2 Organization of Manual

This introductory section explains the organization of the manual and discusses some general oil spill response principles.

The remainder of the manual is organized according to the sequence of events encountered in a well-organized oil spill response. Table 1-1 contains a brief description of each section and Table 1-2 lists the steps to be taken in a spill response and the corresponding manual sections. Each step involves either a direct action or an issue that can be resolved by an action that is described in the manual.

It is important to realize that oil spill response should be considered in terms of the total package or system and that the individual components of the system should be considered collectively rather than independently.

Table 1-1 Description of the Manual Contents

Section	Description of Contents
2	Provides health and safety precautions for those involved in responding to a spill.
3	Provides guidance on dealing with logistics and communication requirements.
4	Provides information on the fate of oil spills on water and provides recommendations for surveillance and tracking of slicks.
5	Provides performance information for selecting a type and size of boom for specific applications.
6	Provides techniques for protecting shorelines which are threatened but not yet impacted by an oil spill.
7	Provides information on the proper selection and use of chemical dispersants.
8	Provides information on removing oil by in-situ burning.
9	Discusses selection and use of skimmers as a tool for mechanical cleanup and recovery.
10	Discusses the selection and use of sorbent materials in oil spill cleanup operations.
11	Discusses the selection and use of transfer equipment.
12	Provides guidance on shoreline cleanup programs including the evaluation of the impact of the cleanup procedure and determination of the support needed for each cleanup technique.
13	Discusses wildlife rescue and rehabilitation, including oiled birds and mammals.
14	Discusses waste management alternatives including storage and disposal of oily water, debris, sorbent materials, cleaning gear, etc.
15	Discusses issues relevant to response in cold regions.
16	Provides general guidance on support that aerial assets can provide.
Ref	Provides a list of selected references for more detailed information.

Table 1-2 Spill Response Activities

Step	Activities	Section
1	Activate response operations: • Act safely • Plan logistics and communications	 2, 15 3
2	Obtain and assess incident data: • Spill location • Oil type and volume • Weather and sea conditions	 4, 16
3	Monitor the spill – conduct surveillance and tracking	4, 16
4	Contain and remove the oil: • Mechanical containment and recovery • Chemical dispersion • In-situ burning	16 5, 9, 10, 11, 15 7, 15 8, 15
5	Protect threatened resources: • Shoreline • Wildlife	 6 13
6	Evaluate wildlife rehabilitation options	13
7	Conduct shoreline treatment	12, 15, 16
8	Finalize operations: • Dispose of wastes • Demobilize personnel and equipment	 14

1.3 Response Priorities

Response objectives, in general, are in the following order:

- Protecting the safety and health of responders and the public
- Reducing the impact to the environment
- Protecting property

Safety and health are the highest priorities.

The following factors should be considered:

- Fire and explosion potential of vapors at or near the spill site
- Potential adverse effects of the oil
- Safe handling of chemicals used in countermeasures
- Proper use of safety equipment
- Heat stress/stroke or hypothermia
- Small boat safety
- Helicopter and aircraft safety
- Management of volunteers

Speed is essential in recovery efforts.

- Oil spreads and drifts rapidly; containment and recovery will be more effective if carried out before oil spreads over wide areas.
- Evaporation rapidly increases oil viscosity.
- Chemical dispersants are more effective when oil is minimally weathered.
- Oil can be burned more readily when fresh.
- Sustained combustion requires at least 0.1 inch (2–3 mm) of slick thickness.

1.4 Three-Tiered Response Consideration

Although every spill is unique, the consideration of discharge volume, location, and possible impacts allows spill events to be categorized according to three tiers.

Table 1-3 Three-Tiered Response

Tier 1	Accidental discharges occurring at or near a vessel or facility as a result of disruption in routine operations. Impacts are low and in-house response capability is adequate.
Tier 2	Medium-size spills occurring within the vicinity of vessel or facility as a consequence of a non-routine event. Significant impacts are possible and external (regional) support for adequate spill response, e.g., assistance from a local spill cleanup co-operative, is required.
Tier 3	Large spills occurring either near or remote from a vessel or facility as a result of a non-routine event, requiring substantial resources and support from national or worldwide spill co-operatives to mitigate effects perceived to be wide-reaching, i.e., spills of national or international significance.

Examples of Tier 1 spills include:

- Overflow of sumps or oil-water separators
- Leakage or overflow of tanks
- Leakage from valves, pipelines or transfer hoses
- Accidental discharge of bilge water from vessels
- Tank truck/tank car rollover near water

Examples of Tier 2 and 3 spills include:

- Cargo loss due to tanker grounding, collision, or system failure
- Rupture of a sub-sea pipeline
- Spills due to fire or explosion at a terminal or on a tanker
- Spills due to sabotage, natural disaster, or blowout
- Tank collapse near water

The tiered response approach calls for the smallest spills to be handled using local resources and plans. Additional tiers are activated as the available operational capability is exceeded. A possible organizational structure for a Tier 2 response is shown in Figure 1-1. It should be noted that some countries follow a prescribed organizational structure such as the US Incident Command System (ICS). Figure 1-1, therefore, is presented as an example only.

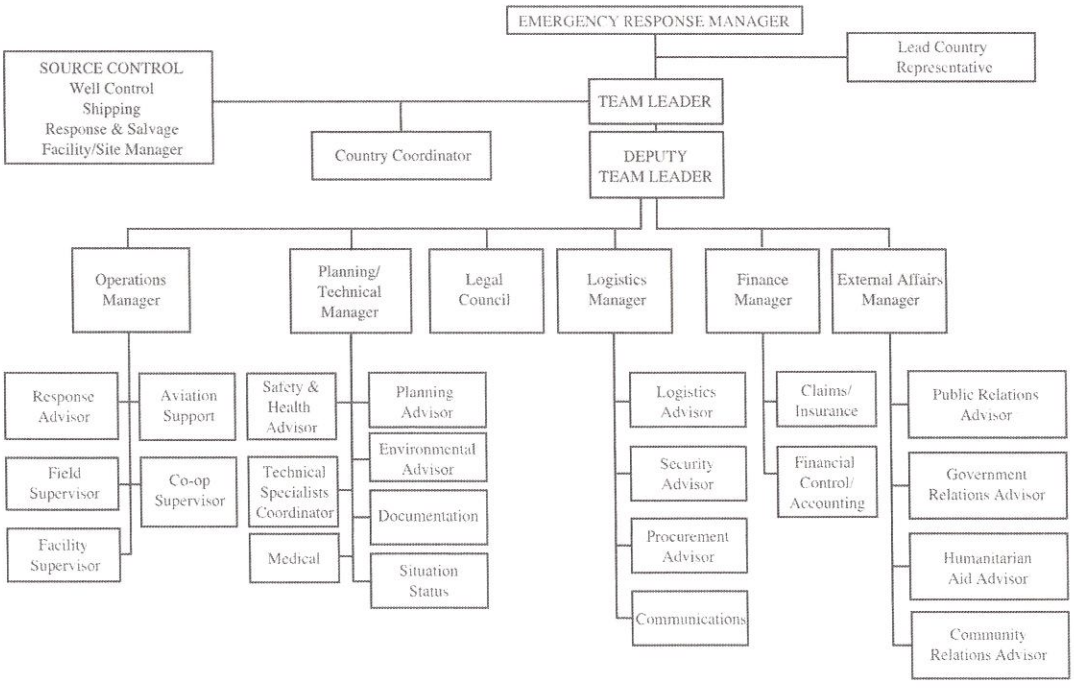


Figure 1-1 Example Organization Chart of a Spill Response Team

1.5 Personnel Requirements

The amount and type of oil-impacted shorelines are the prime factors that determine personnel requirements.

Useful rules of thumb for planning response operations are:

- Land-based operations (cleanup of shoreline) are much more labor intensive than sea-based operations (booming and skimming, in situ burning, or dispersant application)
- Peak personnel needs may occur several weeks into the spill response
- Optimal field operations supervision ratios are 1 supervisor: 10 foremen: 100 workers
- Supervisors must be in direct communication with the Operations Manager or a designated assistant

Figures 1-2 through 1-6 illustrate personnel requirements and time required for historical clean-up operations. Shoreline impact has a sizable impact on the workforce.

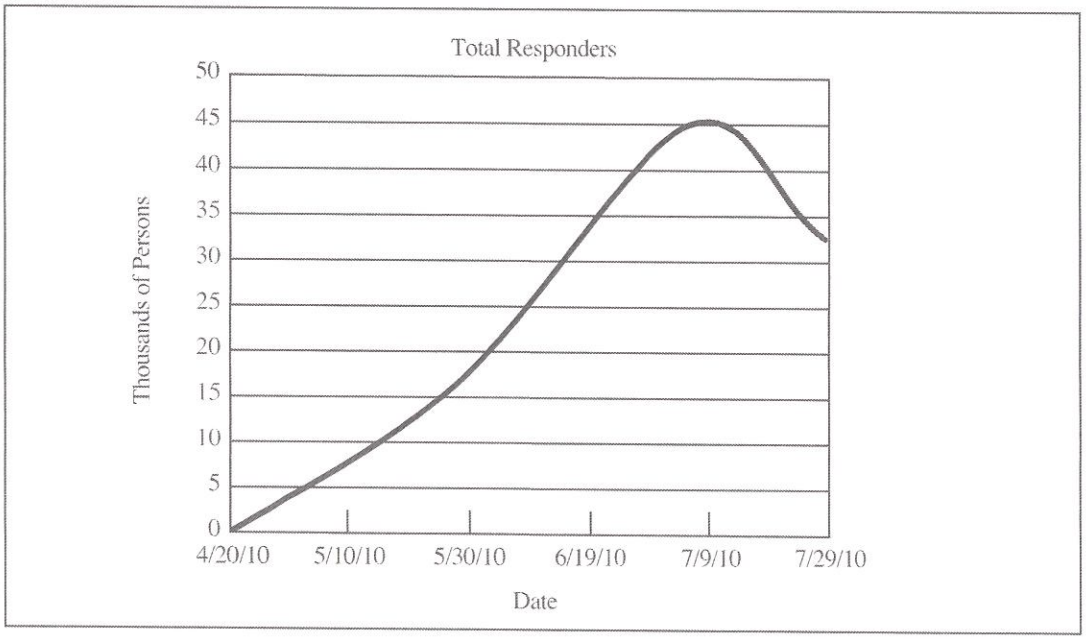


*Figure 1-2 Total Responders Involved in **BP Macondo** Incident through July 2010*

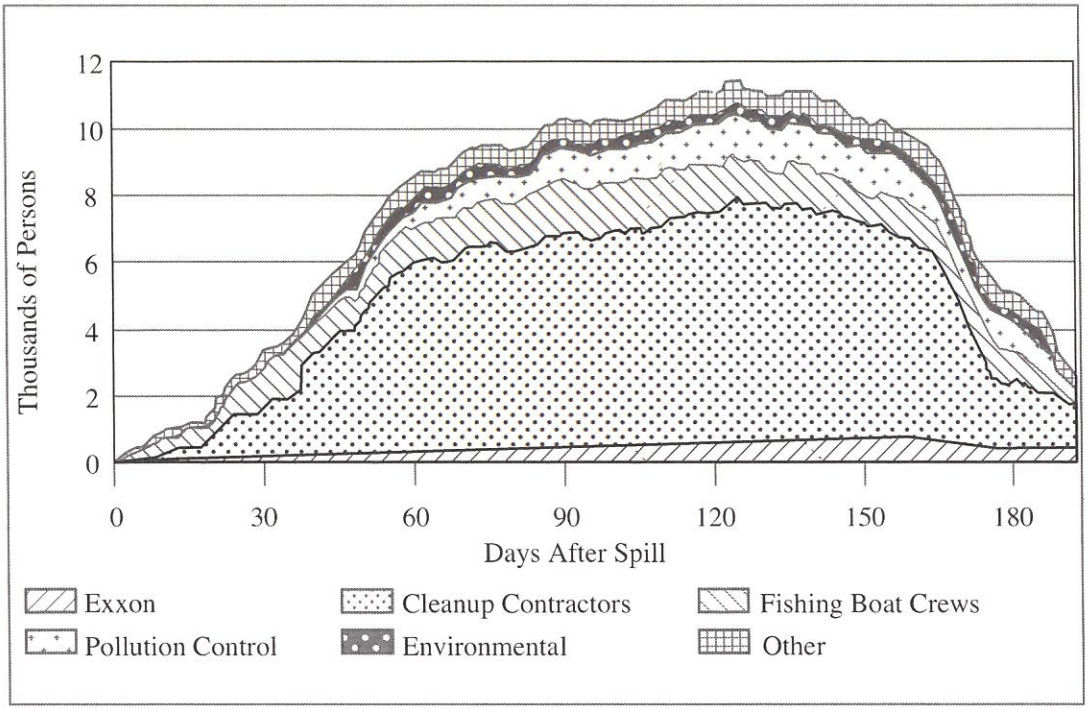


*Figure 1-3 Personnel Involved in the **Exxon Valdez** Spill*

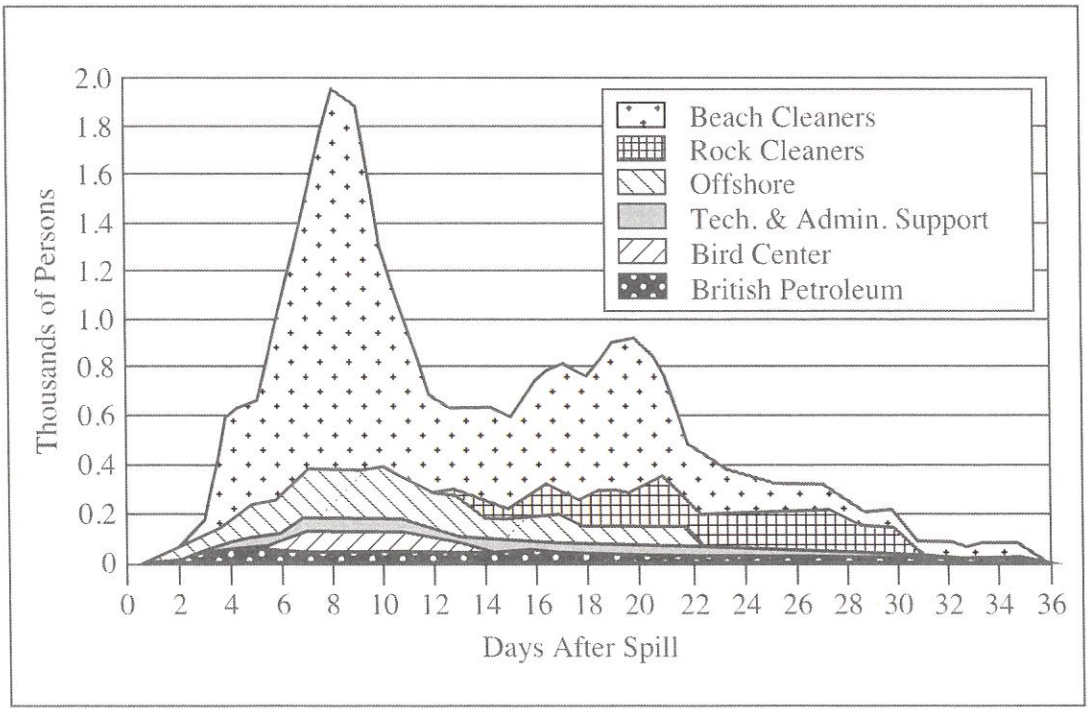


*Figure 1-4 Personnel Involved in the **American Trader** Spill*

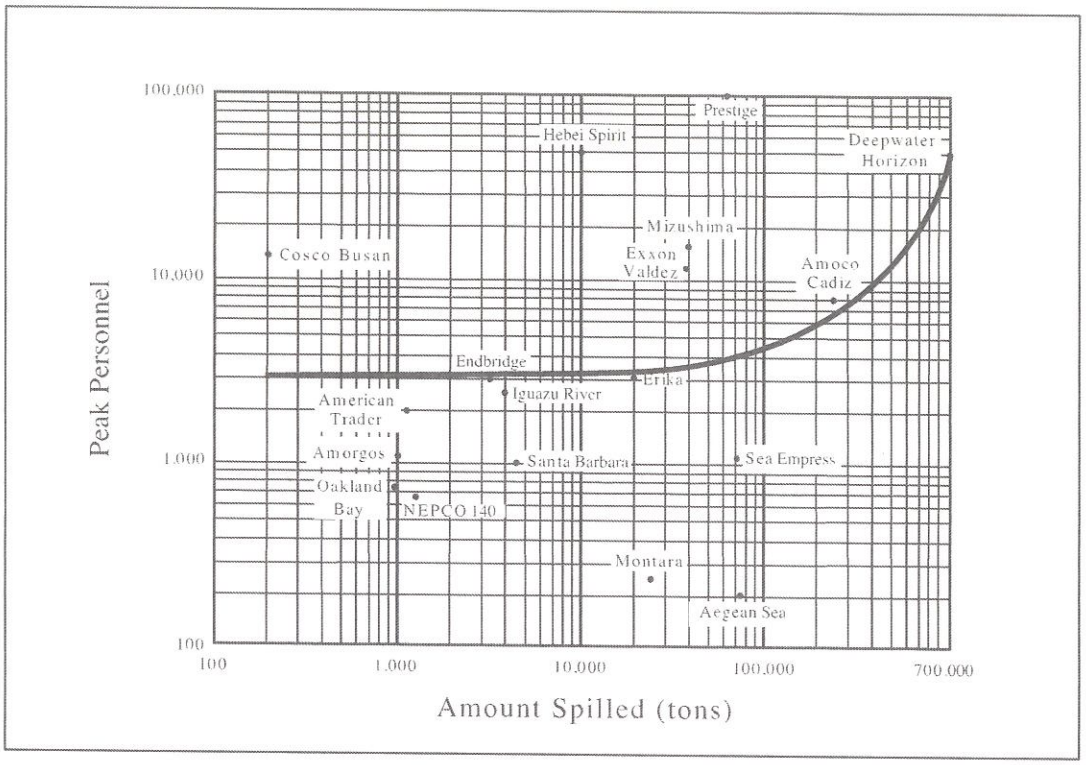


Figure 1-5 Peak Personnel Versus Amount Spilled

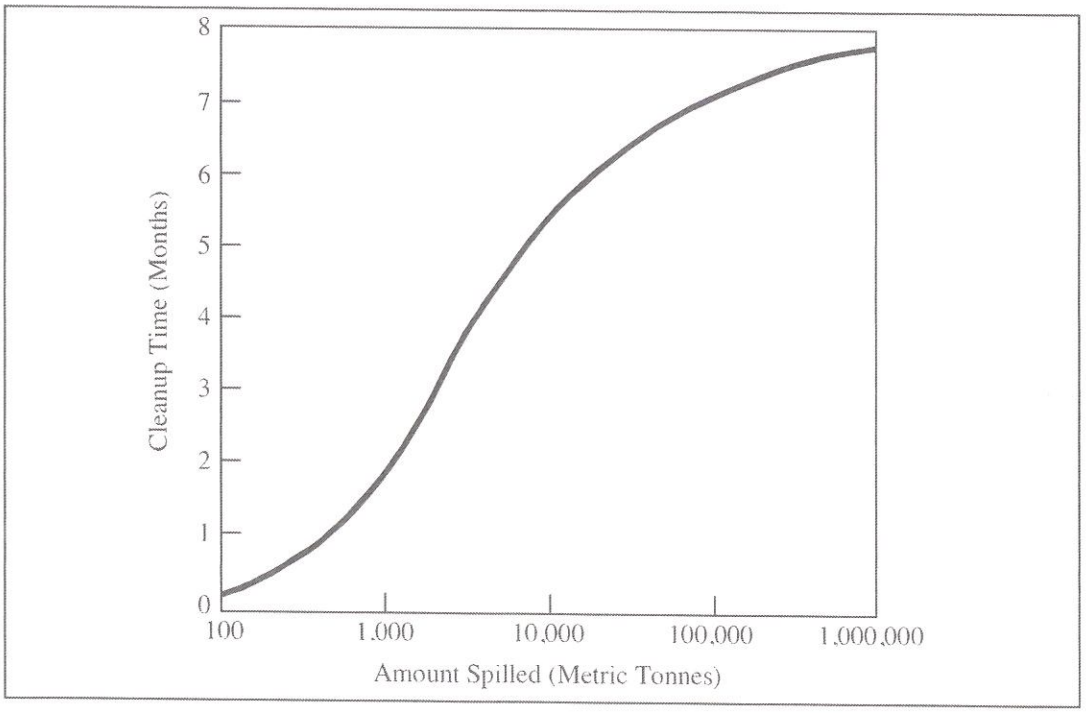


Figure 1-6 Spill Size Versus Duration of Cleanup

1.6 Critical Spill/Environmental Information

Once an oil spill has occurred, every attempt should be made to contain the spill immediately to prevent it from spreading. The most accurate information on the spill size, location, and environmental factors must be available to the on-scene management team.

The Oil Spill Data Log illustrated in Figure 1-7 is the primary source of information for predicting slick movement, behavior, and environmental impact.

The weather, oceanographic data, oil movement and impacts should be updated regularly.

- Report the logged information to the spill modeling team
- When specific information is not available, make a best estimate

OIL SPILL DATA LOG

Company: _____

Observer and Phone Number: _____

Date: _____ Time: _____

SPILL DATA

Crude or Product Type: _____

API Gravity: _____

Volume of Discharge: (est.) _____

Location of Initial Spill

- Latitude: _____ Longitude: _____

Direction of Slick Movement: _____

Size and Location of Slick(s): (Plot on Separate Sheets)

Apparent Source: _____

- Initial Time and Date: _____

Approximate Duration: _____

- Stationary _____ Moving _____
- Instantaneous _____ Continuous _____
- Estimated Flowrate If Continuous _____

Fire? Yes _____ No _____

Maximum Spill Potential: _____

METEOROLOGICAL DATA

Initial Wind: Speed _____ Direction From: _____

Air Temperature: _____ (°C or °F)

Precipitation: None _____ Rain _____ Snow _____

Visibility Estimate: Good _____ Fair _____ Poor _____

Forecast: _____

_____

Source: (name, phone, address) _____

_____

OCEANOGRAPHIC DATA

Water Current: Speed _____ Direction _____

Water Temperature: _____ (°C or °F)

Sea State: 1 _____ 2 _____ 3 _____ 4 _____ 5 _____

Tide Phase: Flood _____ High _____ Ebb _____

High Tide Time: _____

Source: _____

_____

ADDITIONAL INFORMATION

Probable Coastal Impact Site:

Habitat: _____

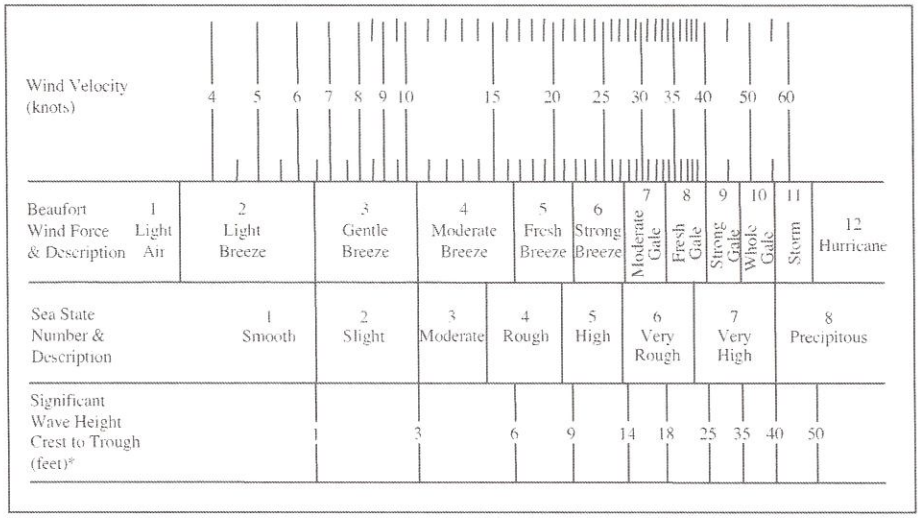
_____

Slick Thickness: Windrows _____ Patches _____

Other _____

Figure 1-7 Oil Spill Data Log

Figure 1-8 shows the relationship between wind and wave conditions in fully developed seas. Beaufort wind force scale and sea state are shown relative to wind speed and wave height.



* The average height of the highest 1/3 of the waves, assuming 1000 mile (1600 km) fetch, 25-hour duration, Bretschneider Spectrum

*The average height of the highest 1/3 of the waves, assuming 1000 mile (1600 km) fetch, 25 hour duration, Bretschneider Spectrum

Figure 1-8 Related Wind and Wave Conditions in Fully Developed Seas

Oil spreading is complicated by the variability and interdependence of factors such as:

- Initial composition
- Weathering (includes the effects of evaporation, natural dispersion, and emulsification)
- Environmental conditions

Several oil spill models are available to predict the spreading of an oil slick, but good input data are necessary.

One algorithm used in several computerized models to describe the spreading was developed by Mackay et al. in 1980 (see References). The algorithm assumes the slick consists of a "thin" slick (i.e., sheen) and a thick slick, with the thick slick comprising about 90% of the total slick area. The thick slick feeds the thin slick at a rate dependent on empirically based constants. An average thickness of the thick part of a slick over a two day timeframe is plotted in Figure 1-9 for a medium crude in calm seas and low winds.

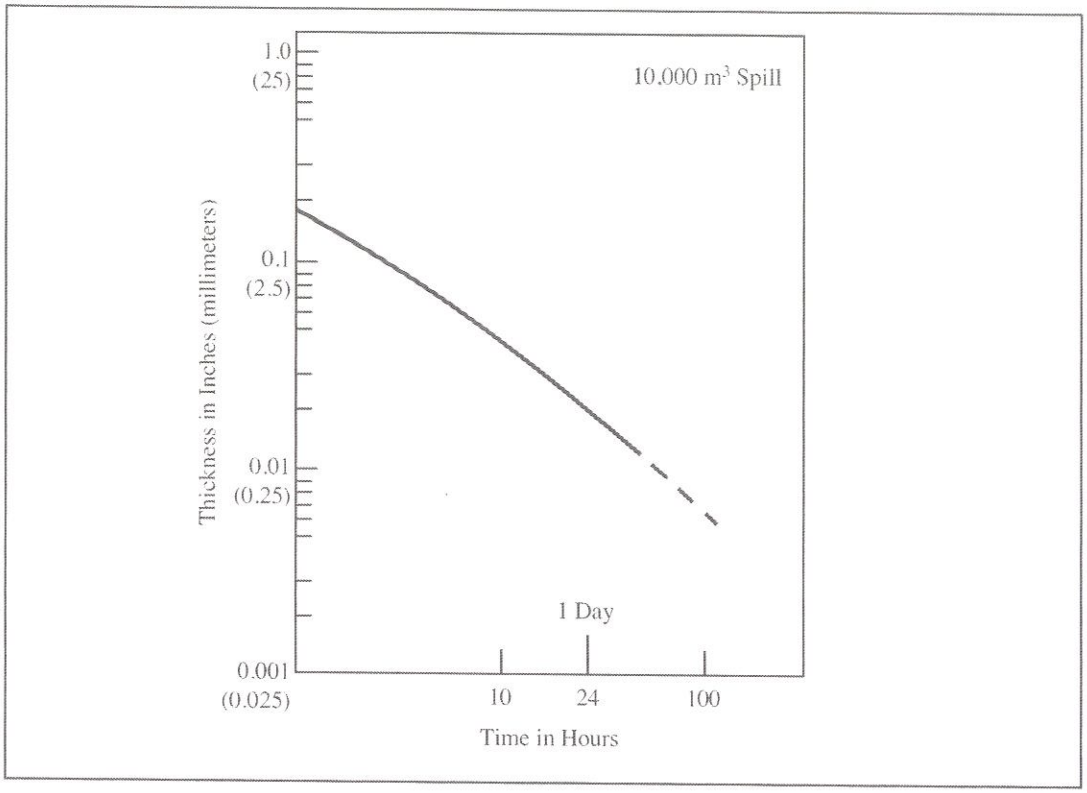


Figure 1-9 Behavior of the Thick Part of a Slick of Crude Oil on Water (Modified from Mackay et al., Oil Spill Processes and Models, University of Toronto. Figure 1-9 is based on the first 48 hours of concentric thick and thin slicks of medium crude under calm seas and low winds.)

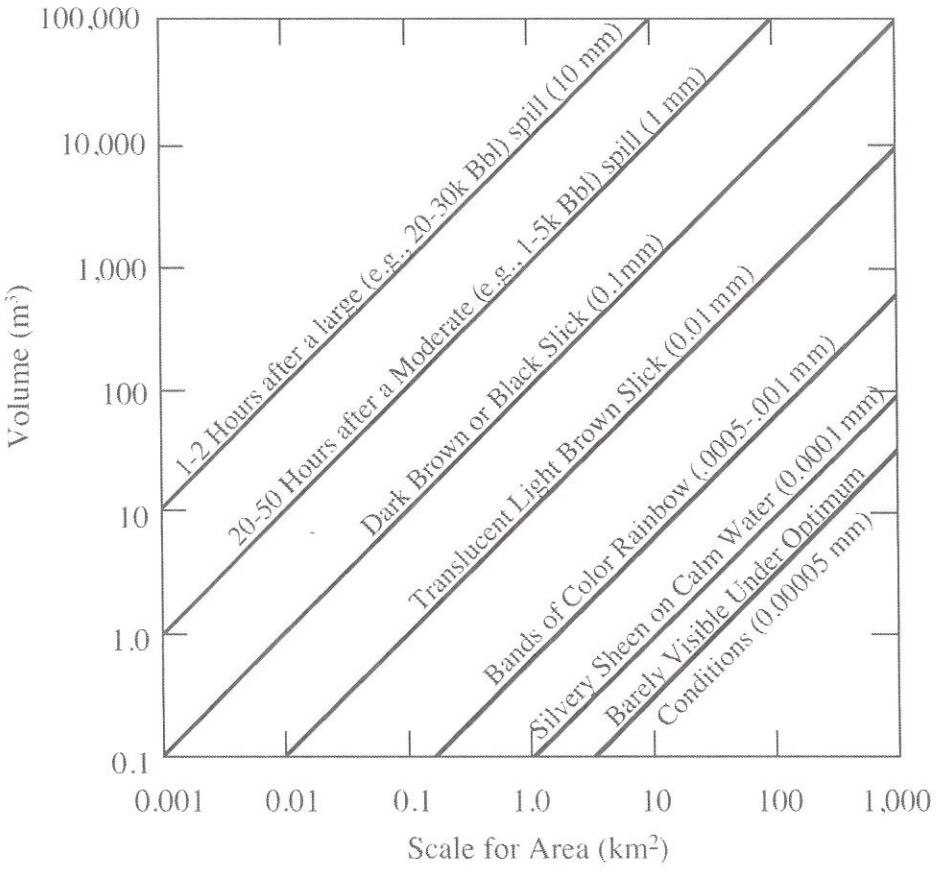
Figure 1-9 is intended to only show the predicted trend of thickness in a hypothetical spill with time. In general, spill thickness varies within a slick (even in the thick portion of the slick) and is dependent on the volume of oil spilled, wind/wave/current conditions, type of oil spilled, and water temperature. At present there is no means for measuring spill thickness over a large area. The most common means of assessing slick thickness is by visual color comparison as shown in Figure 1-10. The figure allows a gross estimate of spill volume to be made from color and area covered. The method has high error and caution should be used in using this tool for estimating how much oil was spilled. Table 1-4 is an alternative guide. Different crudes or weathering may lead to deviations from these average predictions.

In forecasting oil slick movement on water and probable coastal impact sites, note the following:

- Oil spill modeling is preferred to manual calculations
- In the absence of a computer model, slick movement may be predicted by vector addition of the components due to wind and current

- Currents dominate slick movement when winds are light
- The wind-driven velocity component of a slick is about 3–5% of wind speed and in the same direction as the wind
- The current-driven velocity component of a slick is co-directional with the current and at the same speed

• Never accept predictions blindly. Always verify by aerial reconnaissance and ground truthing



Conversion Factors
1 m^3 = 6.25 Bbl

Figure 1-10 Volume of a Slick of Crude Oil on Water

*Table 1-4 Determining Amount of Oil Remaining by Appearance**

	Appearance/Approximate Thickness					
	Barely Discernible	**Silvery Sheen**	**Rainbow Colors**	**Darkening Bands of Color**	**Dull Colors**	**Light Brown**
Approximate Thickness (Microns)	**0.05**	**0.1**	**0.5**	**1**	**3**	**10**
Area (m^2)	**Liters**					
100	<.01	.01	.05	.1	.3	1
1,000	.05	.1	.5	1	3	10
5,000	.25	.5	2.5	5	1.5	50
10,000 (1 hectare)	.5	1	5	10	30	100
100,000	5	10	50	100	300	1000
500,000	25	50	250	500	1500	5000
1,000,000 (1 km^2)	50	100	500	1000	3000	10000

* Based on numerous literature sources.
1000 microns = 1 millimeter; 1 micron thick is equivalent to 1 m^3 / km^2
Note: Area of a spill is arrived at by multiplying the estimated length of the spill by estimated width.
Examples: 1000 m x 1000 m = 1 km^2

1.7 Oil Spill Volume

Estimates of oil volume obtained from the color and size of a slick on water (see Figure 1-10 and Table 1-4) have large uncertainties associated with them due to:

- Variable oil properties
- The complexity of the slick geometry (spatial and temporal variability)
- Meteorological conditions
- Sea state
- Weathering
- Physical/chemical processes occurring within the slick

The thicknesses reported in Table 1-4 represent averages reported in the literature. For each of the appearance categories, a wide range of thicknesses has been reported, up to an order of magnitude different, as summarized in Table 1-5. The Bonn Agreement Oil Appearance Code, summarized in Table 1-5, is another way to estimate slick thickness and volume. A more detailed description of the Oil Appearance Code is provided in the 2009 Bonn Agreement Aerial Operations Handbook. These thicknesses should not be used for estimating the amount spilled except for very coarse estimates. This is especially true for spills that have been on water for some period of time and have lost volatile components, particularly if the oil is very light.

Table 1-5 Bonn Agreement Oil Appearance Code

Code	Description Appearance	Layer Thickness Interval (µm)	Liters per km^2
1	Sheen (silvery/grey)	0.04 to 0.30	40 to 300
2	Rainbow	0.03 to 5.0	300 to 5,000
3	Metallic	5.0 to 50	5,000 to 50,000
4	Discontinuous True Oil Color	50 to 200	50,000 to 200,000
5	Continuous True Oil Color	Greater than 200	Greater than 200,000

Observer experience will also have a marked effect on the accuracy of the estimate. The most accurate assessments of the quantity spilled can be made by accounting for losses from a vessel. If the type of oil is known as well as the time since spill, some computer programs can be very helpful in estimating the amount remaining. The volume of oil from an unlimited or unknown source may also be estimated from the areal extent and color of the slick.

- Slick thickness varies considerably, especially where it appears dark brown or black
- Most of the oil is located in areas where the slick appears brown or black
- Colored bands indicate an extremely thin slick of less than 1 micron or 0.001 mm

1.8 Oil Characteristics and Behavior

Table 1-6 summarizes the main physical/chemical properties, behavioral characteristics and adverse effects of various types of oil in seawater.

Table 1-6 Physical/Chemical Properties and Possible Adverse Effects of Common Oil Types During Spills

Oil Type	Physical/Chemical Properties	Adverse Effects on Environment
Light to volatile oils	• Spread rapidly • Tend to form unstable emulsions • High evaporation and solubility • May penetrate substrate • Removed from surfaces by agitation and low-pressure flushing	• Toxicity is related to the type and concentration of aromatic fractions: 1) naphthalene, 2) benzene • Toxicity of aromatic fractions depends on their biological half-lives in different species • Toxic to biota when fresh • Mangroves and marsh plants may be chronically affected due to penetration and persistence of aromatic compounds in sediments
Moderate to heavy oils	• Moderate to high viscosity • Tend to form stable emulsions under high energy marine environments • Penetration depends on substrate particle size • Weathered residue may sink and be absorbed by sediment • Immiscibility assists in separation from water • Weather to tar balls	• Adverse effects in marine organisms result from chemical toxicity and smothering • Toxicity depends on size of light fraction • Toxic effects reduced in tropical climates due to rapid evaporation and weathering • Low toxicity residue tends to smother plants or animals • Light fractions contaminate interstitial waters
Asphalt, #6 fuel-oil, Bunker C, waste oil	• Form tar balls at ambient temperatures • Resist spreading and may sink • May soften and flow when exposed to sunlight • Very difficult to recover from the water • Easy to remove manually from beach surface with conventional equipment	• Immediate and delayed adverse effects due to small aromatic fractions and smothering • Most toxic effects due to incorporation in sediment • Absorption of radiated heat places thermal stress on the environment • Lower toxicity to marine plants than mobile animals

The chemical and physical properties of the spilled oil and ambient conditions will determine how the oil will behave. The basic processes and their time frames are shown in Figure 1-11.

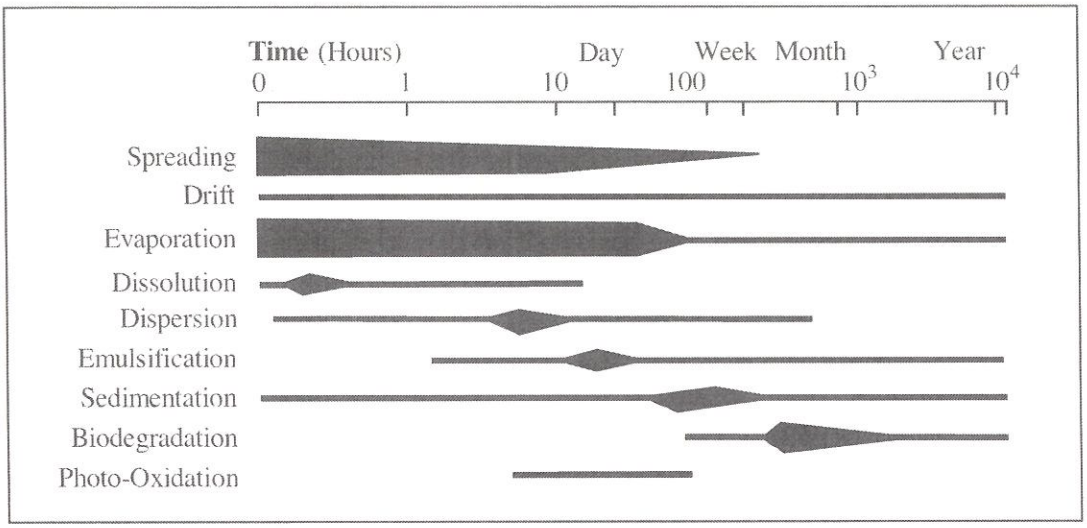


Figure 1-11 Processes Versus Time Elapsed Since the Spill

1.9 Limiting Access

A good contingency plan prepared for the area involved in a spill should identify the type of ecological or other constraints in the area addressed. Even if all of the types of constraints are identified, however, some of the actual restrictions may vary from year to year (e.g., nesting location of threatened species). Periods when transit through such areas or when cleanup can proceed will be apparent by noting other periods of high threat to resources. In defining constraints, data should be collected on:

- Resources affected
- The reason for restrictions on access (usage)
- The start and end dates for the restriction
- The activities that can continue during the restriction

Some restrictions may extend some distance away from the object or area to be protected. Maps may need to be prepared showing areas to be avoided while transporting survey teams or response workers to the spill site from remote bases.

1.10 Net Environmental Benefit Analysis

A process known as Net Environmental Benefit Analysis (NEBA) considers the advantages and disadvantages of oil spill response options in terms of their respective impacts on the environment. NEBA recognizes that cleanup responses have the potential to cause negative environmental impacts but may be justifiable because of overriding benefits and/or the avoidance of further impacts. An effective Net Environmental Benefit Analysis is a three-step process (Table 1-7).

Table 1-7 Net Environmental Benefit Analysis

Step	Activities
1	Identify and prioritize an area's ecological, socioeconomic, and cultural resources according to environmental sensitivity.
2	Evaluate feasible response options and compare them not only to each other but also to the option of natural recovery in order to define environmental benefits and drawbacks for all options.
3	Select the response option or combination of options that result in the greatest environmental benefit and/or least adverse effects on key resources.

The NEBA process can be applied to offshore, nearshore and inland spill response, and to shoreline cleanup. The following example considers offshore response:

Step 1 After identifying the resources in all possible directions that oil might reach, it is determined that slicks could strand in a productive mangrove.

Step 2 Options to prevent or reduce impacts to the mangrove include dispersants, mechanical cleanup and recovery, in-situ burning, and natural dispersion of the oil at sea.

Because the mangrove will be oiled with likely lethal effects if no action is taken, it is decided that natural dispersion/recovery is not an option.

Mechanical recovery, while it may be the least intrusive, is not efficient and likely to allow some oil to reach the mangroves. In-situ burning is also determined to be of limited efficiency. Dispersants, while they may have a short-duration negative effect on some marine organisms, are much more efficient at keeping oil from adhering to the mangroves, and will minimize the impacts to the mangroves, resulting in clear net environmental benefit.

Step 3 Dispersant application is selected as the preferred option.

Net environmental benefit should always be a key factor when making decisions on the optimum spill response options to implement.

2 Safety and Health

2.1 Introduction

2

Protection of human safety and health is a fundamental objective of any ExxonMobil operation. Safe work practices help to minimize safety and health risks to responders and the surrounding community. Limiting access to affected areas is important to protect the public from exposure to spilled oil or interaction with response equipment. In addition to being familiar with the basic safety and health procedures outlined in this section, workers should refer to the site safety and health plan as well as company safety manuals and regional response plans for additional information.

2.1.1 Basic Safety Rules

Training is a key element in maintaining worker health and safety. In some countries training, such as HAZWOPER in the US, is mandatory. All response workers should have basic oil spill response safety training including, but not limited to:

- Site-specific safety and health rules
- Emergency procedures

The following basic safety and health rules should be followed by all spill response workers:

- Consider the potential safety and health hazards of each spill situation.
- Respond in teams, i.e., use the "buddy system".
- Incorporate safety and health risk evaluations into all actions.
- Obtain health hazard data from the supporting industrial hygiene/safety/ and/or medical personnel.
- Refrain from working in environments that exceed your training and/or capability.
- Always inform someone of your intended destination and the estimated time of your return.
- Refrain from entering or traveling in spill areas unnecessarily.
- Avoid skin contact with spilled material and use gloves and the protective clothing provided.
- Do not rely on your senses (e.g., smell) to determine hazardous conditions. Use detection devices.

2.1.2 The Buddy System

To provide a flexible and safe approach for response workers, a "buddy system" should be used during all response efforts. The minimum response team should include two people who perform the activity within direct line of sight of a third person who has communication or personnel resources to effect a "rescue", if required.

The "buddy system" does not apply to equipment or process spills that can be controlled by one person using common equipment (e.g., valve leaks).

2.1.3 Hand or Whole Body Communication Signals

Verbal communication while wearing respirators is difficult because speech is muffled and distorted by the facemask. A set of hand or whole body communication signals known to all personnel is essential for working safely. Some of these emergency communication signals are listed in Table 2-1.

Table 2-1 Emergency Communication Signals

Signal	Meaning
Hand clutching throat	I am out of air!
Hands on top of head	I need assistance!
Thumbs up	Okay! I am all right. I understand.
Thumbs down	No! Negative!
Grip partner's wrist or place both hands around partner's waist.	Leave area immediately!

2.2 Risks

The potential safety and health risks associated with oil spill response efforts include:

- Fire and explosion
- Hazardous atmospheres/hazardous chemicals
- Slips, trips and falls
- Demanding physical activities under possibly adverse climatic and site conditions

2.2.1 Fire and Explosions

A major safety risk during crude oil or refined product spill response is from fire or explosions. This risk is site and substance specific and must be evaluated before response personnel enter a spill area or damaged vessel/equipment. Explosions present a physical risk from:

- Burns
- Flying debris
- Atmospheric over-pressure

Burning hydrocarbons result in a variety of combustion products. Therefore, only experienced personnel with proper safety, respiratory protection and hazard detection equipment should approach a burning vessel or spilled material. Remember:

- Always approach from the upwind, upstream, or uphill side, if possible.
- Retreat if heat intensity is severe or material is spreading.

When preparing to work in a potentially hazardous area, personnel should:

- Assess the need to enter the area.
- Determine the fire hazard potential of the material or mixture spilled.
- Be alert to possible oxygen deficiency.
- Obtain a combustible gas/oxygen meter that is calibrated and in good working order.
- Understand how the instrument will respond to the materials being measured.
- Test the atmosphere when approaching the spill (especially if in a vessel, tank manway, or low-lying area).
- Use equipment and tools that are intrinsically safe/explosion-proof.
- Observe confined space procedures if entering a confined space.

In potentially flammable atmospheres, restrict the use of instruments that are not intrinsically safe. These include:

- Open lights
- Flames
- Internal combustion engines
- Non-approved radio transmission devices
- Cellular phones

All hydrocarbons have a concentration range in which they are combustible. When either too little or too much hydrocarbon is present in air, the mixture will not burn. Also, in confined spaces, the oxygen level must be 10% or higher for combustion to occur. When evaluating the risk of fire or explosion, the key measurement is the lower explosive limit (LEL). The LEL is the lowest concentration of a vapor for a given material that will support combustion. Below this concentration, the mixture is too lean (dilute) and cannot support combustion. Detectors are used to determine whether or not a mixture is combustible. However, most combustible gas detectors (LEL meters) will not work properly in an area that has an oxygen concentration below 14–16%. Therefore, to test confined spaces or inerted containers for hydrocarbon level, the oxygen content must be measured first by properly protected personnel.

If LEL meter reading is:	Then:
0% (zero) to less than 10% of LEL	Hot work (i.e., with potential ignition sources) is allowed
Greater than 10% and less than 25% of LEL	Proceed with care, especially where there is poor air movement or circulation
Greater than 25% of LEL	Leave the area quickly and carefully

LEL meters do not detect toxic hazards. A reading of just one-tenth of a low LEL of 1.0% could still be toxic (1000 ppm of hydrocarbons can be dangerous to life and health)! Although flammability testing should be the first level of assessment, the decision to enter or work in an area should not be based solely on flammability.

2.2.2 *Hazardous Atmospheres/Hazardous Chemicals*

Crude oil contains substances that can cause acute as well as chronic health effects. Acute effects are more immediately evident and typically result from relatively short duration, high exposure conditions. Examples of acute effects include eye or skin irritation or even death under extreme exposure conditions. Most of the acutely toxic substances are highly volatile and are present in their highest concentrations soon after the spill. Chronic effects may develop some time after the initial exposure and are often associated with longer duration, lower concentration exposures. Chronic effects include certain diseases such as cancer.

Health advisors (e.g., Industrial Hygienists) are key in assessing whether or not an area is hazardous, especially early in a spill. Rely on them to determine proper protective measures for responders likely to be in the exposure zone. Such assessments should be based on the most likely level of exposure, taking into account the expected elevation of work activity, for example, boat deck level as opposed to water surface.

Health risk from inhalation of harmful vapors is lower for weathered crude than it is for fresh crude. In most cases, crude oil that has weathered for more than 6 hours is likely to have a much lower percentage of volatile compounds mainly due to evaporation. This could take longer in colder weather (see Section 15). Keep in mind that some tasks may agitate crude oil and increase the release of vapors.

The primary health risks associated with fresh crude are related to the inhalation of:

- Hydrogen sulfide (H_2S)
- Hydrocarbon vapors
- Benzene

Workers exposed to some of these substances through inhalation or skin contact may experience symptoms such as:

- Eye, nose, throat, or respiratory irritation
- Skin rashes or reddening
- Other adverse effects

Except for ingestion or aspiration of oil aerosols, the health concerns with weathered crude relate to skin exposure. Skin contact with hydrocarbons, as well as other potentially toxic substances, should be avoided through the use of proper protective equipment. Prolonged or repeated skin contact may result in dermatitis as well as increased body uptake of some crude oil components. Increased sensitivity to oils can also occur as a result of repeated exposures.

The nature of the hazards from refined products depends on their chemical composition. Typically, two categories of products are distinguished:

- Light-end refined products do not have significant H_2S concentrations, but contain a higher percentage of volatile aromatic (e.g., benzene) and oxygenated compounds.
- Heavy-end products and intermediates may contain H_2S, less volatile compounds, and a higher percentage of low-volatility polycyclic (or polynuclear) aromatic hydrocarbons (PAHs).

Health hazard assessment information should be obtained from the supporting industrial hygiene/safety and/or medical personnel. These individuals have been trained in the use of the specialized testing equipment necessary to conduct exposure assessments.

Typical health hazards for workers involved in crude oil or refined hydrocarbon spill response and First Responder Guidance are summarized in Tables 2-3 and 2-4. Selected items, including potential health issues seen after the initial response, are discussed in more detail following the tables (sections 2.2.2.1 through 2.2.2.8).

Exposure criteria are American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs). These limit values are current as of 2014. Where local laws or company limit values are more stringent, those limits should be observed. In addition, ExxonMobil has established its own Occupational Exposure Limits for benzene, hydrogen sulfide, and gasoline (Table 2-2).

Table 2-2 ExxonMobil's Occupational Exposure Limits for Benzene, Hydrogen Sulfide, and Gasoline

Substance of Concern	8-hr Exposure Criteria (ppm)	15-minute Exposure Criteria (ppm)
Benzene	0.5	1
Hydrogen Sulfide (H2S)	5	10
Gasoline	100	200

Table 2-3 Health and Safety Information for Selected Substances[1]

Substance of Concern	8-Hour Exposure Criteria	15-Minute Exposure Criteria	Odor Threshold	Air-Purifying 1/2 Facepiece Respirator Criteria	Cartridge or Filter Required	Air-Purifying Full Facepiece Respirator Criteria	Supplied-Air Respirator Criteria Positive Pressure Mode	Protective Clothing Selection	Flammability Range (% by volume)
Hydrogen sulfide	1 ppm	5 ppm	0.005 – 0.013 ppm (2)	Not suitable	N/A	Not suitable	≥5 ppm for more than 15 minutes	— —	4.3 – 44.0
Hydrocarbon vapors (crude oil) (3)	100 ppm	200 ppm	0.11 ppm (4)	≥100 ppm <1,000 ppm	Organic vapor	≥1,000 ppm <5,000 ppm	≥5,000 ppm	Nitrile, Viton, Barricade™ Responder™ Eye goggles if irritation	Varies depending on oil
Gasoline	300 ppm	500 ppm	0.3 ppm	≥100 ppm <1,000 ppm	Organic vapor	≥1,000 ppm <5,000 ppm	≥5,000 ppm	Nitrile, Viton, Barricade™ Responder™ Eye goggles if irritation	1.3 – 7.1
Middle distillates	200 mg/m^3	<1,000 mg/m^3	N/A	200 – 2,000 mg/m^3	Organic vapor	≥2,000 mg/m^3 <10,000 mg/m^3	≥10,000 mg/m^3	Nitrile, Viton, Barricade™ Responder™ Eye goggles if irritation	0.6 –6.5
Benzene	0.5 ppm	2.5 ppm	2.0–5.0 ppm (5)	≥0.5 ppm <5 ppm	Organic vapor	≥5 ppm <25 ppm	≥25 ppm	Viton CPF™, Responder™ Tychem 10,000™	1.3–7.9
Oxygen-deficient atmospheres (confined spaces)	Acceptable concentrations are from 19.5% to 23%		N/A	Not suitable below 19.5%	Not suitable below 19.5%	Not suitable below 19.5%	<19.5%	N/A	N/A

(1) Some companies choose to adopt lower exposure levels consistent with their interpretation of the toxicological data. Always use what your company has adopted as an exposure limit unless local regulations are more stringent.

(2) The "rotten egg" odor of H_2S should not be relied on to determine its presence or absence because elevated concentrations of H_2S can numb the olfactory nerves.

(3) The vapors are hydrocarbons in the gasoline/napththa range. The initial components that evaporate from crude oil are roughly equivalent to gasoline vapors. This number is based on the ExxonMobil Occupational Exposure Limit for gasoline, which is 100 ppm TWA and 200 ppm STEL. For spills of heavy hyrdocarbons or middle distillate products, the guidance values are more severe (see sections 2.2.2.5 and 2.2.2.7 respectively

(4) May vary significantly between crude types and ambient conditions.

(5) Reported threshold of sensory irritation to upper respiratory system.

Table 2-4 provides a step-by-step approach for establishing the overall safety of a work area.

Table 2-4 Health Monitoring Guidance for First Responders (Use with Table 2-3)

Step	Action
1. Establish LEL Level (a,b) • <10% LEL • 10–25% LEL • >25% LEL	 • Go to Step 2 • Go to Step 2 but carry out operations with care • Do not proceed to Step 2 until <25% LEL
2. Establish H_2S Level (c,d) • <1 ppm • >1 ppm	 • Go to Step 3 • See Table 2-3 for proper protection then proceed to Step 3
3. Establish Hydrocarbon Vapor Level (e,f) • <100 ppm (<27 ppm for jet fuel or kerosene and <11 ppm for diesel) • >100 ppm (>27 ppm for jet fuel or kerosene and >11 ppm for diesel)	 • Go to Step 4 • See Table 2-3 for proper respiratory and protective clothing protection and then proceed to Step 4
4. **Establish Benzene Level (g,h)** • <0.5 ppm • >0.5 ppm	 • Proceed with operations • See Table 2-3 for proper respiratory and protective clothing protection and then allow workers into the area

a) Monitor in the worst-case spark zone (i.e., at the elevation with the highest potential exposure) with a calibrated instrument. Continue to monitor as conditions change, such as a drop in wind velocity.

Note: If monitoring in a confined space, monitor for oxygen first (see section 2.2.1)

b) Numerous LEL monitoring devices are available and most refineries have them. Some of the devices also measure oxygen and hydrocarbon level. They all require calibration prior to use.

c) Monitor in the worst-case breathing zone using a calibrated instrument. Continue to monitor as conditions or work tasks change. Contact the Industrial Hygiene rep to determine safe levels.

d) A wide range of H_2S monitors are available. Colorimetric tubes also work.

e) Exxon/Mobil OEL for gasoline is 100 ppm TWA, 200 ppm STEL. The TLV for gasoline is less stringent (300 ppm TWA, 500 ppm STEL.) Refer to Table 2-2.

f) Photo-ionization detectors (PIDs) are commonly used to measure Total Hydrocarbons. Calibrate with 100 ppm isobutylene standard gas.

g) Only a limited number of direct reading techniques can selectively measure <0.5 ppm of benzene in air. Two techniques that have been used are (1) compound specific PIDs (see above) and, (2) colorimetric samplers. Benzene PIDs PIDs with scrubber tube measure the current associated with ionization of benzene. Colorimetric samplers chemically react the benzene to form a color whose intensity can be correlated to concentration.

h) Since benzene is a chronic hazard, the 8-hour criterion of 0.5 ppm can be met with limited exposure times at higher concentrations as long as the 15-minute criterion of 2.5 ppm is not exceeded.

2.2.2.1 Benzene

Benzene is a volatile component of crude oil that is a human carcinogen. Therefore, exposure to benzene should be kept within applicable exposure limits, as defined in Tables 2-2, 2-3, and 2-4.

2.2.2.2 2-Butoxyethanol

Some dispersants and remediation chemicals contain hydrocarbons such as 2-butoxyethanol (2BE) which can enter the body through the skin as well as through inhalation. This can result in temporary effects on internal organs, such as kidneys. Care should be exercised in handling these products.

Follow the handling guidelines provided on the MSDS, especially:

- Avoid skin contact when using products containing 2BE. If contact occurs, wash with water immediately.
- Avoid spraying these products in a manner that will produce large amounts of overspray or vapor exposure to workers.
- Wear proper protective equipment:
  - Respirators (Monitor using charcoal tubes or charcoal badges)
    - 20–200 ppm — Half facepiece respirator with organic vapor cartridges
    - 200–2000 ppm — Full facepiece respirator with organic vapor cartridges
    - >2000 ppm — SCBA: Self-Contained Breathing Apparatus
  - Gloves and Clothing
    - Butyl, Neoprene, nitrile, Viton®, Saranex™

2.2.2.3 Carbon Monoxide

Burning crude oils or refined products produces carbon monoxide and other combustion products that must be assessed on a case-by-case basis. Do not place combustion equipment (generators, vehicles, direct-fire space heaters, etc.) that can generate carbon monoxide (CO) next to living areas and offices. Contact on-site industrial health and safety personnel for guidance.

The TLV for CO is 25 ppm as an 8-hour time weighted average. Since it has poor warning properties, SCBAs are required above this concentration.

Warning signs of carbon monoxide exposure are headache, dizziness and nausea. Higher levels of exposure cause reddening of the skin, weakness, mental confusion, and hallucinations.

2.2.2.4 *Gasoline*

Most of the vapors given off by gasoline are aliphatic and low molecular weight in nature. Volatilization is very rapid so dissipation will occur very quickly. Gasoline and other fuels with a low flash point present added safety concerns when spilled. Containment and skimming are **not recommended** due to potential fire or explosion hazard. Follow control recommendations listed in Tables 2-2, 2-3, and 2-4.

2.2.2.5 *Heavy Hydrocarbon Products*

Heavy hydrocarbon products are higher viscosity products such as heavy crude oils, bunker fuels, residual fuels, numbers 4–6 fuel oils, and gas oil. These materials can contain PAHs. PAHs are low volatility, high molecular weight hydrocarbons that with repeated contact can potentially cause skin and lung cancer. The TLV used by industry for these compounds is 0.2 mg/m^3 (as benzene soluble aerosol) and is listed under Coal Tar Pitch Volatiles. Primary protection against these materials is prevention of skin contact through the use of Personal Protective Equipment (PPE). Although risk from inhalation of volatiles is minimal (due to low vapor pressure), inhalation of aerosol mists (e.g., from steam or high pressure water clean-up techniques) should be avoided.

Primary protection against PAHs is the prevention of skin contact. Protective clothing should be worn to prevent any incidental skin contact. Materials that will adequately protect against PAHs include nitrile, Viton®, Barricade™, Teflon™, 4H™, CPF3™, Responder™, and Tychem 10.000™. If contact occurs, remove any contaminated clothing and wash thoroughly with soap and water.

The sensory threshold for these materials is about 1 mg/m^3 based on upper respiratory tract irritation. (The mg/m^3 designation is used here, not ppm, because PAHs are solid particulates, not volatile gases.) Half facepiece respirators with high efficiency filter and organic vapor cartridge should be worn in the 0.2–2.0 mg/m^3 concentration range. Full facepiece respirators with high efficiency filter and organic vapor cartridge should be worn in the 2.0–10.0 mg/m^3 concentration range, and SCBAs would be needed when there is greater than 10 mg/m^3. Some companies believe that a more stringent value is necessary for proper protection (e.g., 0.1 mg/m^3). A 0.1 mg/m^3 guide would lower the above thresholds by a factor of 2.

2.2.2.6 Hydrogen Sulfide (H_2S)

Hydrogen sulfide, a byproduct of decomposing organic material, is a compound contained in some crude oils and refined intermediate products. Exposure to elevated concentrations of H_2S can be fatal. The primary exposure route is inhalation. Measurement of ambient H_2S concentrations should be performed when approaching a spill area. Remember these guidelines:

- H_2S is heavier than air and may accumulate in low storage areas, pump rooms, or confined spaces.
- H_2S has the distinct odor of rotten eggs that can be detected at concentrations as low as 0.006 ppm; however, the sense of smell should not be used in place of a detection device because H_2S can deaden the sense of smell at high concentrations.
- At low concentrations (1 ppm to 150 ppm), H_2S is irritating to the eyes, nose and respiratory system.
- At elevated concentrations (above 500 ppm), rapid paralysis of the respiratory system can occur.

Follow control recommendations in Tables 2-2, 2-3, and 2-4.

If H_2S is detected above 1 ppm, evacuate the area immediately until expert help and specialized equipment are available.

2.2.2.7 Middle Distillate Products

Petroleum materials boiling between 145 and 450 degrees C are called middle distillates. They include kerosenes, diesel fuels, jet fuels, and heating oil. These products are of greater concern in the aerosol form than in the vapor state so the TLV levels are considerably lower than for crude and gasoline. Repeated or intermittent dermal exposure to these materials can lead to dermal irritation and may be associated with an increased risk of skin cancer.

Primary protection against these materials is through the proper use of PPE. Protective clothing selection would be similar to that recommended in Table 2-3. If contact occurs, remove any contaminated clothing and wash thoroughly with soap and water.

The current TLV for kerosene is 200 mg/m^3 (about 27 ppm) and for diesel is 100 mg/m^3 (about 11 ppm). For kerosene, half facepiece respirators with organic vapor cartridges should be worn in the 27–270 ppm concentration range. Full facepiece respirators with organic vapor cartridges should be worn in the 270–1350 ppm concentration range, and SCBAs would be needed when there is more than 1350 ppm.

For diesel, half facepiece respirators with organic vapor cartridges should be worn in the 11–110 ppm concentration range. Full facepiece respirators with organic vapor cartridges should be worn in the 110–550 ppm concentration range, and SCBAs would be needed at over 550 ppm.

2.2.2.8 Oxygen

Oxygen concentrations below 19.5% (at sea level) are viewed as **Immediately Dangerous to Life and Health (IDLH)** environments. Low oxygen atmospheres are possible in enclosed spaces. Therefore, strict entry controls and permits as well as proper air supply respiratory protection are required. SCBAs are required in oxygen atmospheres less than 19.5%.

Effects of oxygen abnormalities are listed below:

Oxygen Levels	Effects
Approximately 6%	Difficult breathing with death in minutes
Approximately 17%	Impaired judgment and headaches
Greater than 23%	Raises the danger of combustibility

A health professional should be consulted for work performed at higher elevations to assess any potential health effects due to the reduced concentration of oxygen.

2.2.2.9 Overall Guidance

It is essential that responders understand the potential atmospheric hazards existing in the environment that they are expected to work in. Generally, health and safety experts will be onsite to characterize the quality of the ambient air prior to allowing response workers into a suspect area. However, in the event that testing is delayed, the following general guidelines may be useful:

- Responders at a spill where oil is still fresh should wait for testing before proceeding or wear respiratory protection.
- Responders arriving 6 hours or more after a spill in open water with good air circulation (which is usually the case) can probably proceed without concern for the issues discussed above unless the spill is quite large (over 10,000 bbls). For contained spills or spills on land, the issues are more relevant.
- Always avoid prolonged skin contact with hydrocarbons.
- Always approach the spill from the upwind direction.

2.2.3 Heat and Cold

Climatic conditions pose additional risks to cleanup workers. One of the primary responsibilities of each person is to monitor his/her "buddy" for symptoms of heat or cold stress. All workers should be trained to recognize and guard against the symptoms and provide the appropriate first aid. Both conditions are described on the following pages.

2.2.3.1 Heat Stress (Hyperthermia)

Heat stress is caused by the inability of the body to dissipate excess heat generated from physical exertion, temperature and humidity, or the wearing of protective clothing and equipment. Responding to spill emergencies increases the risk for heat stress. The use of protective equipment (especially in tropical areas) compounds the problem by increasing the heat load, preventing adequate heat dissipation and decreasing evaporative cooling. It is important to prevent heat-induced illnesses and injuries and recognize early symptoms of heat stress.

More serious heat-induced illnesses or injuries are often caused by ignoring early symptoms.

The four "stages" of heat stress and their relevant first aid recommendations are presented in Table 2-5.

2.2.3.2 Cold Stress (Hypothermia)

Cold stress is caused by a rapid loss of heat from the body that can cause localized minor to severe injuries, as well as system dysfunction. The most prevalent cold stress injuries involve the extremities: typically the hands, ears, nose and/or feet.

All workers in cold climates must be trained to recognize and guard against the symptoms of cold stress and provide proper first aid. The stages of cold stress and their relevant first aid recommendations are outlined in Table 2-6.

Some form of immersion protection must be worn by personnel at risk of falling in water at temperatures below 68°F (20°C). Speed is essential when rescuing a person who has fallen overboard.

Table 2-5 Heat Stress Stages and Appropriate First Aid

Heat Stress Stage	Symptoms	Typical Causes	First Aid Recommendation
Heat Rash (prickly heat)	• Rash on the skin.	• Humid environment or wearing protective equipment that holds moisture next to the skin.	• Provide place for worker to thoroughly wash skin. • Offer rest periods in cool location. • Apply medicated powder.
Heat Cramps	• Muscle spasms in hands, feet, abdomen. • May also be accompanied by nausea/vomiting. • Person becomes quiet/stops work.	• Large electrolyte loss due to sweating which disrupts the electrolyte balance in the body.	• Offer fluids with proper balance of electrolytes, such as commercially available sports drinks. • Offer rest periods for routine fluid intake.
Heat Exhaustion	• Pale, clammy, moist skin. • Nausea/headache, dullness of response/work pace. • Person may become quiet, sit down, or faint.	• Excessive water loss, inadequate replacement. • Worker may not be acclimatized to work, equipment and/or climate.	• Relocate worker to cool place (shade). • Remove protective equipment (if appropriate). • Offer plenty of liquids with electrolytes. • Seek medical care/advice.
Heat Stroke	• Skin may be dry, reddish, and hot. • Person may faint or become disoriented. • Convulsions may occur with vomiting and rapid pulse rates.	• Temperature regulatory control has failed. • Body can no longer rid itself of excess heat.	• **Seek medical care immediately!** • Remove protective clothing. • Wet with cool water, cold beverage bottles. • If person is conscious, provide small but continuous amount of cool water/electrolytes. • Do not leave person unattended.

Table 2-6 Cold Stress Stages and Appropriate First Aid

Cold Stress Stage	Symptoms	First Aid Recommendation
Frost Nip	• Sudden whitening of the skin. • Skin is still flexible but firmer than normal. • Pain is typically experienced.	• Warm worker's affected body part slowly. • Keep worker warm until color and sensation of touch return to normal.
Superficial Frostbite	• Skin has "waxy" or white appearance. • Skin is not flexible on the surface. • Beneath the surface, tissue is still flexible. • Painful.	• Warm worker's affected body part slowly. • Provide warm shelter and offer warm fluids. • Seek medical follow-up.
Deep Frostbite	• Bodily tissue is cold, pale and solid.	• **Seek immediate medical care.** • Cover worker but **do not** try to bend or flex body part prior to medical care.
Hypothermia in Air (gradual loss of core temperature)	• Shivering. • Personality change. • Slow movement. • Person may become gradually quiet over several minutes. • Shivering may stop and person may be conscious but not coherent.	• **Seek immediate medical care.** • Perform CPR if necessary. • Gently remove wet clothing, cover with dry blankets or a sleeping bag (get in with victim to provide extra warmth). • If conscious, give "sips" of warm water or milk. • **Do not give alcohol.** • Never leave the victim alone.
Hypothermia Due to Immersion (rapid loss of core temperature)	• Even a short immersion unprotected in cold water can cause rapid hypothermia. • Death could occur in less than 30 minutes. • Above symptoms occur rapidly.	

2.2.4 Site Conditions

Historically, most injuries during a spill response have been from slips, trips, and falls. These can be minimized through the concept of **Present Moment Thinking:**

- Be aware at all times.
- Think of what you are doing, not what you are going to do next.
- Guard against daydreaming.

2.2.5 Miscellaneous Hazards

2.2.5.1 Noise

If you need to shout to communicate within 2–3 feet (0.6–1 meters) of each other, sound pressure levels (noise) are assumed to be above the threshold for wearing hearing protection (85 decibels). Wear hearing protection when continuously exposed to noise levels above 85 decibels.

2.2.5.2 Other Hazards

Also be aware of hazards from:

- Solar radiation
- Large mammals (e.g., bears)
- Venomous snakes
- Other domestic or wild animals
- Poisonous plants (e.g., poison ivy)
- Insect bites and stings
- Off-road vehicle accidents (e.g., roll-over)
- Uneven terrain
- Dangerous weather (lightning, hail, strong winds)
- Blood or other body fluids (use a mask or barrier device for CPR)

2.3 Protective Equipment

Protective equipment suitable for the exposures and risks should be used by all spill response personnel. Protective equipment will typically consist of:

- Hard hats
- Gloves
- Coveralls
- Boots
- Safety glasses
- Eye goggles
- Respirators
- Hearing protection
- Insect repellants and mosquito netting in tropical areas

The type of protective equipment selected is determined by the material that has been spilled, the tasks to be performed, and environmental factors.

It is important to have established policies on the protective equipment to be used and to ensure that these policies are followed, especially in a large operation.

2.3.1 Protective Clothing

The materials for protective clothing should be selected for oil and refined product spills based on the following factors:

2.3.1.1 Splash Potential Only

Workers exposed only to occasional splash, vapor or mist

Rain suits along with industrial rubber boots typically give adequate body protection against splashes. Gloves selected for a specific hazardous material may also be required depending on the work being performed.

2.3.1.2 Hydrocarbon Immersion Potential

Worker has potential for repeated immersion of hands, feet, or body parts

Workers who will have body parts potentially exposed to hydrocarbon contamination should use permeation-resistant protective equipment that affords the best level of protection for the specific hazardous material and/or mixture.

All materials are eventually permeable to a contaminant. Therefore, always limit direct contaminant contact. Workers must be trained to properly don, seal, and remove equipment, and to guard against heat or cold stress while working in this equipment.

Hard hats and safety shoes should be used for all field work. Non-slip soles should be provided for marine and wet work areas.

2.3.2 Respiratory Protection

The risk of inhaling oil vapors or other hazardous compounds is typically highest immediately after the spill but can continue throughout the cleanup. Additional inhalation exposures could occur during in-situ burning and during the use of chemical countermeasures used to combat the spill such as dispersants, beach cleaners, or chemicals used to promote microbial degradation of oil. Respiratory protection can be provided by an air-purifying respirator or a self-contained breathing apparatus (SCBA)/air-line system. Responders carrying out typical daily tasks would not normally be expected to wear SCBA gear. The following points should be considered when selecting air-purifying respirators:

- Consult the responsible safety or industrial hygiene personnel before issuing or using respirators.
- Employees with facial hair will not be assigned work requiring respiratory protection. **Respirator users must be clean-shaven.**
- All workers must have training and fit testing before using respirators.
- Only certified respirators will be used.
- Air-purifying respirators do not protect against H_2S, carbon monoxide, or any other material for which they are not designed.
- Filters or cartridges remove contaminants from the air and must be properly selected for the anticipated hazard. They will not protect in oxygen-deficient environments.
- Cartridges (organic vapor/acid) have a limited service life. When odor is detected, replace the cartridge.
- Cartridges and filters can be combined to afford protection against a variety of vapors, particulates, and gases.
- Cartridges from one brand cannot be safely used with another brand of respirator.
- Depending on the concentration and potential for irritation, either half face piece or full facepiece respirators can be worn (see Table 2-3).

- Workers wearing glasses should use a spectacle kit for full-face piece respirators. Lenses can be ground locally to fit in a frame provided by the respirator manufacturer. Regular eyeglasses cannot be worn in respirators. Contact lenses should never be worn in areas where irritating vapors could be present.

Supplied-air respirators are used when air-purifying devices do not provide enough protection. They are required for confined space entry (see below), environments that are **Immediately Dangerous to Life and Health (IDLH)** and other high exposure risk areas. Environments that are greater than 3000 ppm TPH or less than 19.5 % oxygen (at sea level) are IDLH.

Workers must have hands-on training before using supplied-air respirators in the field. There are two types of supplied-air respirators:

- **Self-contained**: Good for short period (1-hour duration or less) emergency/rescue only. These should have a full facepiece and a pressure demand regulator.
- **Air-line**: Good for long-duration work. Should have emergency bottles to allow enough time for safe exit if air supply is lost. (NOTE: 300 feet or 100 meters of air line is the maximum allowable length from the air source.)

All respirators must be cleaned, decontaminated, disinfected, and air-dried after use. They should be inspected and repaired before they are put back into service. Qualified personnel must perform servicing.

2.3.3 Confined Space Entry

Spill response efforts sometimes require workers to enter confined spaces such as tanks and cargo holds that have limited access and poor ventilation. On-site industrial hygiene and safety professionals should establish the exact confined space entry procedures and the required protective equipment. Conditions within these confined spaces can change quickly. Therefore, the atmosphere must be tested (O_2 → LEL → H_2S → TPH → Benzene) before entry and tested continuously throughout the work. Portable equipment with preset audible and visual alarms should be used.

2.4 Personal Health

Workers have the responsibility to maintain their personal health

- Complete periodic medical evaluation.
- Keep an ample supply of personal medications and be sure to pack them.

- Carry a spare set of corrective lenses.
- Keep immunizations up-to-date.
- Keep anti-malaria medication on hand (as applicable) for up to ten days of protection.
- Notify your management if there is any change in health status that would preclude working in areas with substandard medical care.

2.5 Transportation Safety

2.5.1 Small Boat Safety Rules

Small boats are used extensively during crude oil or refined product spills on large bodies of open water. Some basic safety rules are as follows:

- Select boats that are appropriate for the conditions at hand, i.e., do not use calm water, shallow draft boats offshore.
- There should be sufficient personal flotation devices for all persons aboard and these must be properly worn at all times when persons engage in the following activities:
  - Working near the deck edge.
  - Boarding and disembarking.

Personal flotation devices are only effective when they are secured.

- Decks are slippery: **Be careful**!
- Do not overload the vessel.
- When traveling in a boat:
  - Obey speed limits at all times especially in and out of inlets and ports.
  - Yield right of way as required by navigation rules.
  - Have a proper first aid kit, emergency signal kit, and communications equipment, navigation equipment, running lights, and warning horns on board.
  - Avoid setting out in bad weather or rough seas unless absolutely necessary and deemed safe to do so.
  - Always inform someone of your trip destination, course, radio frequency, planned activities, and estimated time of arrival/return.
  - No smoking or alcohol use.
- Dress warmly; in winter, temperatures away from the coastline usually decrease and the wind chill can be significant.

- Stay out of the water unless absolutely necessary; remember, hypothermia can occur in minutes.

2.5.2 Aircraft Safety Rules

Prior to flying, the pilot will give passengers a pre-flight safety briefing (see Chapter 16 for more details). However, some basic safety rules are as follows:

- The pilot is in charge of the aircraft and passengers during all phases of flight and in emergency situations.
- When approaching or leaving the aircraft:
  - Approach after the pilot has signaled.
  - Always approach or leave at a 90° angle to the aircraft nose and in view of the pilot.
  - Never walk near or under the tail rotor of a helicopter or near the propeller of an airplane.
  - Always approach or leave a helicopter in a crouched position unless it fully stopped.
  - Do not disembark any aircraft until instructed by the pilot.
- Passengers and pilots must wear:
  - Seat belts at all times — from takeoff until after the aircraft has landed.
  - Hearing protection on all helicopter flights.
  - Inflatable life jackets during over-water helicopter flights.
- Smoking by passengers and pilot is prohibited on or near the aircraft.
- Persons under the influence of drugs or alcohol must not be allowed to board.
- Learn the location of and know how to operate emergency exits and emergency equipment such as life rafts, emergency equipment kits, and fire extinguishers.
- Do not inflate the life jacket or the life raft inside any aircraft.

2.6 Decontamination

Personnel involved in any oil spill cleanup operation can get very dirty. It is important to keep oily gear and dirty personnel out of living quarters in order to maintain satisfactory conditions. One way to do this is to set up personnel decontamination facilities for workers coming off the job. This includes facilities for cleaning and storing soiled personal protective equipment followed by washing, showers, and lockers, as appropriate. A typical design of a decontamination facility can be set up as follows in a serial arrangement:

entrance → dirty side → showers → clean side → exit

3 Logistics and Communications

3

3.1 Introduction

This section discusses the logistics required to support workers who participate in response operations. It also includes some of the communications needs to effectively manage a response as the conditions of an oil spill change. The mobilization of personnel, supplies, and cleanup equipment into the spill area is not discussed.

3

3.2 Logistics

A rapid response is essential for effective spill cleanup. Effective logistics ensure the expedient and efficient mobilization of resources and sustained resource availability throughout the response effort. Some key logistics elements are described below:

Logistics planning usually includes the following key points:

Table 3-1 Key Logistics Elements

Resources	Support	Services
• Contracts for goods and services • Procurement • Shipping/receiving • Warehouse/staging • Inventory management • Equipment tracking	• Transportation • Provisioning • Permits • Waste management • Assembly, fabrication and maintenance • Demobilization	• Decontamination • Security • Facilities • Administrative services

- Prioritize objectives and allocate resources accordingly.
- Allocate equipment appropriate to the job:
  - Use fixed-wing aircraft for heavy loads and extended flights.
  - Use locally available aircraft when possible.
  - Locate fuel depots near work areas.
- Acquire marine charts, tide tables, maps, weather forecasts, aviation charts (especially near controlled airspace).
- Obtain procurement documents: purchase orders, contracts, and rental agreements.
- Acquire necessary permits if required:
  - Hazardous goods transport
  - Industrial waste disposal
  - In-situ burning

- Chemical applications (e.g., dispersants, shoreline cleaners, etc.)
- Vessel docking
- Aircraft
- Land or property access
- Approvals for various activities (e.g., washing booms in place)

- Implement financial controls:
  - Do not make long-term agreements.
  - Document all transactions and agreements.
  - Appoint expenditure officers; limit signing authority.
  - Control inventory of equipment and supplies.
  - Track purchase orders, invoices, contracts, and labor charges.

3.2.1 Resources

Various response team sections should work together to identify the resources, support and services required for a response operation. A detailed Material Take Off (MTO) list can then be compiled to summarize the findings. Sample MTO lists specific to each area of spill response are provided in:

- Section 4 (Tracking and Surveillance)
- Section 5 (Boom)
- Section 6 (Shoreline Protection)
- Section 7 (Dispersants)
- Section 8 (In-Situ Burning)
- Section 9 (Skimmers)
- Section 11 (Transfer Systems)
- Section 12 (Shoreline Treatment)
- Section 13 (Oiled Wildlife Response)
- Section 14 (Waste Management)

These MTO lists are not intended to be all-inclusive but instead provide an idea of the scope and equipment typically required for each type of spill response operation.

Planning all spill cleanup phases from start to finish not only saves time and effort but also can allow operations to continue without major interruptions.

3.2.1.1 Contracts

Contractual arrangements should be made as soon as possible for outside goods and services identified on the MTO.

3.2.1.2 Procurement

Procuring goods and services identified on the MTO should begin as soon as possible. All goods and services ordered should have an end-use designation based on field requirements. This will minimize over- or under-ordering.

3.2.1.3 Shipping/Receiving

In the early stages of a response, a functional system for the receipt of equipment and supplies is essential. Incoming freight must be efficiently managed to ensure timely delivery to the appropriate field destination. The receiving area should be the point at which inventory control and material accounting are initiated. Shipping procedures also need to be established. Examples of items that may be shipped from a spill location include samples collected for laboratory analysis, equipment needing repair, and materials that need to be returned.

Customs clearance procedures specific to the country should be established prior to receiving equipment and supplies or shipping materials out of the region. ***Customs clearance can be a potential issue if not addressed early in the response.***

3.2.1.4 Warehouse/Staging

Staging areas should be identified as early as possible in the response so that when equipment is received, it can be sent to the appropriate location. Staging areas are temporary. They are located for the convenience of the response and moved or decommissioned as appropriate. Warehouses may also need to be established to securely store reserve supplies, spare parts, and equipment, plus function as a shipping and receiving facility.

3.2.1.5 Inventory Management

An inventory management system needs to be established as soon as possible. The system should include all aspects of inventory control such as procurement, receipt, issue, use, and final disposition.

3.2.1.6 Equipment Tracking

The status of all resources assigned to response should be tracked and reported daily to the Operations Manager or his/her designee. The status should include in-transit, standby, and activated or deployed resources from every source, including those from emergency response organizations and agencies.

3.2.2 Support

3.2.2.1 Transportation

Transportation involves the movement of personnel and material to and throughout the field. It includes marine, land, and air operations. Providing adequate transportation is a priority, especially during the early stages of response.

- *Marine Transportation*
  - Vessels of opportunity (e.g., tugs, barges, workboats, fishing boats) for boom tending, shuttle service, security, supplies delivery, storage, and waste/debris collection
  - Landing craft and skiffs for shoreline treatment and cleanup
  - Barges and ships for worker accommodations/berthing
  - Dedicated spill response vessels and barges

In U.S. waters, waivers may be available from the U.S. Coast Guard for the short-term emergency use of vessels that do not have a Certificate of Inspection.

Check local regulations and certification requirements when operating outside U.S. waters.

- *Land Transportation*
  - Buses, cars, light trucks, and all-terrain vehicles
  - Heavy-haul vehicles (e.g., dump trucks, flatbeds, and tractor trailers)
- *Air Transportation*
  - Fixed-wing aircraft, including float planes, for heavy cargo and extended flights; also for surveillance and passenger transport
  - Helicopters, both single and double rotor

3.2.2.2 Provisioning

Provisioning can be divided into two categories: Field (offshore) Provisioning and Onshore Provisioning.

- *Field (Offshore) Provisioning*
  - Personnel assigned to the field will require various levels of provisioning, including fuel, food, housing, water, supplies, and sanitation facilities.
- *Onshore Provisioning*
  - Response personnel stationed onshore will require food, shelter, supplies, and sanitation facilities. Local commercial establishments

may be available for some workers, but depending on the size of the response effort, temporary housing and canteen facilities may need to be brought into the area.

- To facilitate planning, provisioning requirements should be determined from Operations Section (Figure 1-1) before personnel are dispatched to field locations.

3.2.2.3 Permits

Various permits may be required, including for the following activities:

- Hazardous goods transport
- Industrial waste disposal
- In-situ burning
- Chemical applications (e.g., dispersants, shoreline cleaners, etc.)
- Decanting of separated water
- Vessel docking
- Aircraft landing
- Land or property access
- Activities involving oiled equipment or oily waste management (e.g., washing booms in place, oily waste decanting)

3.2.2.4 Waste Management

Both short- and long-term waste management plans should be developed during the early stages of a spill response operation. The plans should consider mechanisms for waste collection, containerization, storage, transportation, disposal, and tracking.

3.2.2.5 Assembly, Fabrication, and Maintenance

Most equipment will require some level of assembly and testing to ensure its readiness for the field. These activities may include attaching hoses and fittings, installing batteries, or matching power supplies/packs to equipment (e.g., skimmers). Other equipment and/or facilities may need to be fabricated on site. This may require the expertise of mechanics, technicians, and various craftsmen. Systems should be in place for both preventative and remedial maintenance of response equipment. Maintenance activities may be carried out at the work location or at a pre-established central maintenance area. Fuel, lubricating oil, hydraulic oil, and other fluids will be required to keep vessels, aircraft, and vehicles operational.

3.2.2.6 Demobilization

Demobilization can occur very early in the response, and continue throughout as operational requirements change. Demobilization plans should be prepared for vessels, equipment, personnel, contractors, and facilities.

3.2.2.7 Decontamination

Decontamination capability must be provided in all responses. Plans should be prepared early in the response to address personnel, vessels, and equipment. Only approved cleaning chemicals should be used.

- *Personnel Decontamination*
  - Personnel decontamination will be required throughout the response effort. Personnel decontamination units can be fabricated on site or commercial modular units may be leased or purchased.
- *Vessel Decontamination*
  - Boats will accumulate oil on their hulls at and near the waterline. Soiled boats should not be brought into uncontaminated harbors without first being cleaned.
  - Boat hulls may be manually washed from a low-freeboard pontoon float in a temporary slip constructed inside a protected, boomed-off area.
  - Small skimmers may be pressure-washed while being suspended over a wash pit.

If the location of the cleaning station does not have direct access to shore facilities, a barge may be needed to provide supplies, communications, shelter, and sanitary facilities.

- *Equipment Decontamination*
  - Equipment decontamination will be necessary before equipment is moved through or to uncontaminated areas. This is especially evident as contaminated boom is moved from containment to protection or storage, or when cleanup equipment is moved from one area to another. See Section 5.12 of this manual for more details on boom washing.

3.2.3 Services

3.2.3.1 Security

Security should be established early in the response to control access to restricted areas such as the Command Center, docks, offices, warehouses, and lay down yards. The security function should also control access to the spill site. It may be necessary to interface with local agencies and police departments to assist with access control and/or to coordinate on possible terrorist activity. The security function can also provide surveillance for wild animals and assist with accounting for personnel en route to and from the spill site.

3.2.3.2 Facilities

Facilities must be located and established to accommodate various needs for the spill response. Facilities include the Command Center, briefing rooms, lay down yards, storage facilities, housing, and offices. Facility maintenance such as trash collection, sanitation, parking, shuttle service, and catering must be considered.

3.2.3.3 Administration

Administrative services support the response by ensuring the availability and reliability of administrative equipment and services. Examples include office machines, computers, fax machines, copy machines, forms, mail, courier service, clerical support, record keeping, local transportation, parking, and media equipment.

A sign-in and sign-out procedure will help ensure that the whereabouts of all participants who are actively involved at a spill cleanup site are known. Similarly, spill response equipment and materials used for cleanup duty from warehouses, trailers, and other facilities also should be tracked.

3.3 Communications

Effective communication is critical to command and control. One of the first priorities of the Emergency Response Manager is to establish a communications network that will cover the geographical area and provide for communications among all parties involved in the response. The Communications Unit in the Logistics Section of an ICS structure is responsible for providing these services.

There is a need for voice, text, data network, and field radio communication capabilities during an incident. It may be necessary to acquire dedicated telephone lines and internet services, plus equipment from a local phone company or internet service provider to provide communications and connectivity for response teams. For spill response crews or vessel or aircraft crews, radio communications must also be established to coordinate operations.

Key considerations for establishing telephone and computer network access include:

- There can be a lead time before obtaining services for a field command center from telephone and network providers (e.g., DSL service).
- Mobile WiFi hotspots are effective devices for interim communications via laptop computers using remote VPN access.
- Hotels or similar facilities may have internet and telephone services and could serve as field command centers.
- Local service providers and radio shops can be sources of rental communications equipment.

Communications systems and their applications are summarized in Table 3-2. Ranges of UHF and VHF radio transmissions are summarized in Table 3-3.

Table 3-2 Telephone, Radio, Satellite, and Internet Communications Applications

Type	Use			Range
	Description	Voice	Data	
Cellular telephones	Mobile communications (Use where network is available. Some cell phones are capable of push-to-talk, Walkie-Talkie functionality. Texting may succeed when regular calling does not.)	✓	✓ (if network is suitable)	Within area served/many worldwide
VHF-FM marine (156-158 MHz)	Inter-vessel communications (Use marine channels 9, 10 and 16 in US waters; channels may vary elsewhere)	✓		Line of sight
VHF-AM aircraft (118-136 MHz)	Ground-to-air communications (Use 123.050 or 122.850.)	✓		Line of sight
UHF oil spill (454/459.000 MHz) (US only)	Company frequencies for field coordination (Use intrinsically safe radio in hazardous locations.)	✓		Line of sight
High frequency (HF) radio (2-20 MHz)	Single sideband (SSB) (Use offshore.)	✓		30+ miles (48+ km)
General Mobile Radio Services (GMRS) (462 and 467 MHz range	Ground– to –ground communications using small hand-held walkie-talkies. (Requires an FCC license in the US)	✓		2-3 miles
Inmarsat Satellite	Voice and facsimile (Use offshore or in remote locations where approved.)	✓	✓	Worldwide
Low Earth Orbit (LEO)	Good for communication in remote areas (e.g., Iridium, Globalstar)	✓	✓	Worldwide

Table 3-2 Telephone, Radio, Satellite, and Internet Communications Applications (continued)

Type	Use			Range
	Description	Voice	Data	
Geostationary satellite	Good for communication in remote areas (e.g., Inmarsat)	✓	✓	Worldwide; yet not guaranteed at high latitudes (e.g., >80°N)
Push-to-Talk	Cellular-based offering, which allows Walkie-Talkie type functionality on some cell phones	✓		Vendor-specific offerings limits availability
Voice Over Internet Protocol (VoIP)	Can make and receive calls using telephone numbers via a broadband internet connection	✓		Worldwide
Telephone, facsimile, and modem	Voice, computerized data, and facsimile (Transmission systems require time to implement.)	✓	✓	Not mobile

Key considerations in implementing a communications network include:

- Obtain appropriate government communications licenses.
- Ensure that communications specialists are accessible.
- Ensure that marine weather forecasts are accessible.
- Ensure that individuals and groups have access to frequencies of common interest and follow a frequency allocation plan established by the Communications Section (Figure 1-1).
- Use intrinsically-safe/explosion-proof radios in hazardous environments.
- Allocate a dedicated safety / calling channel
- Individual work crews should use separate frequencies if available.
- Place UHF repeater stations as high as possible.
- Repeaters should be visible from all points in the coverage area:
  - Maximum range using repeater stations is about 60 miles (100 km).
  - Higher frequency signals (UHF) are more attenuated by vegetation than are VHF signals; use VHF in wooded areas.

- The number of radio channels will increase over time during a major spill.
  - Consider communication security needs: VHF and UHF are open channels
  - Consider integrating an incident communications network with any Common Operating Picture which may contain pre-populated, in-field infrastructure information

Table 3-3 Range of UHF and VHF Radio Transmission Versus Antenna Altitude

Altitude		**Range**	
Feet	Meters	Miles	Kilometers
0	0	Up to 5	Up to 8
60	20	Up to 20	Up to 30

3.3.1 Common Operating Picture (COP)

More widespread use of Geographic Information Systems (GIS) and electronics by responders to share information has led to the development of a computer-based tool, a Common Operating Picture (COP). COPs use GIS architecture to store and display a variety of geospatial data that can include hundreds of data layers from different data sources (e.g., Responsible Party, agencies, states, institutes). A COP is typically operated from within an incident command post and provides access to real time information on response operational status. Core data themes include weather, infrastructure (e.g., hospitals), personnel tracking, assets (e.g., boom location), trajectories, imagery (e.g., overflight), and facility information. Data management, information acquisition, and vetting duties must be addressed to maintain and operate a COP.

There is a strong and growing interest in the development of COPs because they provide (1) near real time situational awareness, (2) access to the same information by various groups in a response, (3) aid for decision making, and (4) a communications tool for internal and external use. The benefits of COPs are most obvious for complex incidents and will require greater personnel support.

4 Surveillance and Tracking

4

4.1 Introduction

Surveillance and tracking operations are critical in planning spill countermeasure options. Surveillance and tracking approaches consider observed slick size, location, and predictions of slick behavior, which are based on understanding of the processes that control oil movement and removal from the water surface.

Oil spilled into the aquatic environment is subject to various physical and chemical processes that cause the oil to change (weather) and migrate. Some processes cause oil to be removed from the water surface, while others change its form on the surface. Important factors that influence the behavior and fate of spilled oil include:

- Physical and chemical characteristics, such as viscosity, specific gravity, volatility, and maximum water content
- The quantity of oil spilled
- The prevailing weather and sea state conditions

Figure 4-1 depicts these processes, which are further described in Table 4-1.

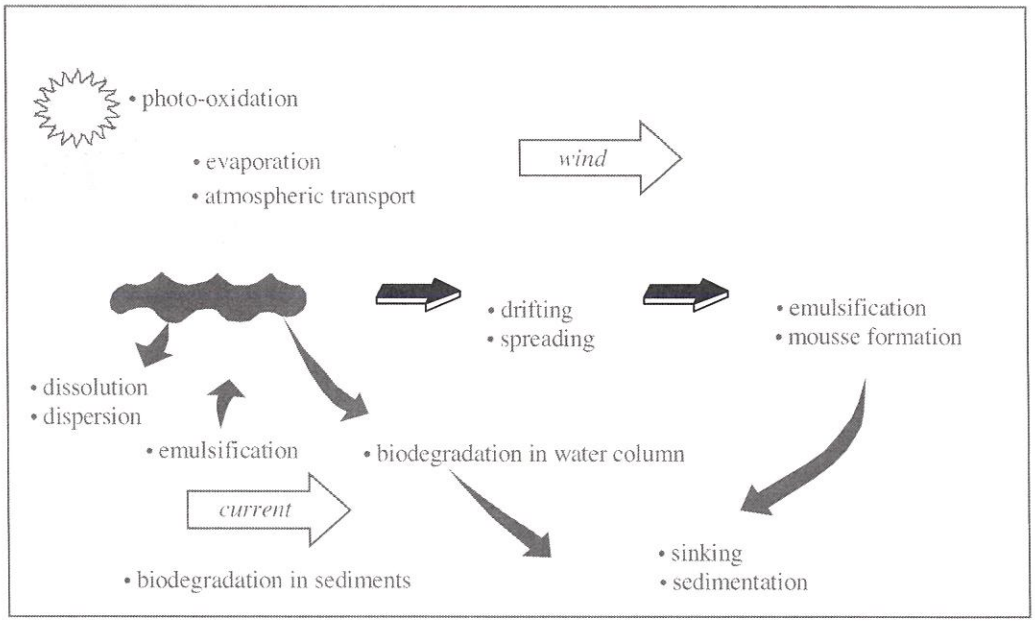


Figure 4-1 Processes Acting on Spilled Oil

Table 4-1 Processes Acting on Spilled Oil on Water

Process	Definition	Effects on Oil Spill Response
Drifting	Physical movement of surface oil from one location to another due to the combined effects of winds, and tides	Moves the location of oil slicks, which may affect response strategies
Spreading	Expansion of oil on the water surface due to gravity and advective spreading	Expands the areal extent of oil slicks as thickness diminishes
Evaporation	Physical-chemical process resulting in transfer of hydrocarbons from the water surface to the atmosphere	May result in the loss of 1/4 to 2/3 of the oil mass within a few hours or days and generally increases the viscosity of remaining spilled oil. Viscosity changes affect the selection of response options.
Emulsification and Mousse Formation	Formation of water in oil emulsions; can contain as much as 75–80% water	Increases density, viscosity, volume, and flash point of spilled oil; may affect selection of cleanup options
Dispersion	Transport of oil from the water surface into the water column due to wave action	Decreases volume of surface oil
Dissolution	Physical-chemical process resulting in dissolution of hydrocarbons in the water column	Small percentage of total amount; important because of potential toxicity
Sinking/ Sedimentation	Increase in density of oil due to weathering and interaction with suspended sediments or material of biological origin; deposition of material to the bed of the water body	Tracking and recovery of oil can be difficult and laborious, if not impossible; exposes organisms in water and possibly bed of the water body to oil
Atmospheric Transport	Transport of evaporated hydrocarbons in the atmosphere	May affect response decisions due to the concentration of hydrocarbons in the atmosphere; safety of personnel is the key issue
Biodegradation	Biological process altering or transforming petroleum hydrocarbons through microbial action	Slow process relative to other weathering mechanisms. Has limited effect on near-term oil fate or spill response
Photo-oxidation	Transformation of petroleum hydrocarbons through interaction with sunlight	Effects are negligible relative to other weathering mechanisms

4.2 Oil Properties and Fate

Regardless of their physical and chemical properties, all oils will weather once spilled. The rate of weathering depends on the conditions at the time of the spill and the nature of the spilled oil.

The following parameters are used to characterize oil properties:

4.2.1 API Gravity

A lower API Gravity indicates a higher specific gravity, and generally a higher viscosity. Physical removal methods are commonly used to recover very low API Gravity oils. High API Gravity usually implies low viscosity and a higher percentage of light ends. Oils with very high API Gravity are usually non-persistent and are more likely to evaporate or to be dispersed either naturally or using dispersants. High API Gravity oils may also be more readily burned, if circumstances allow. API Gravity can be calculated as follows:

$$\text{API Gravity} = (141.5/\text{Specific Gravity}) - 131.5$$

4.2.2 Flash Point

The flash point is the lowest temperature at which vapors above a volatile combustible substance ignite in air when exposed to a flame or spark. Fuels with a low flash point, such as gasoline, present additional safety concerns when spilled. Containment and skimming of low flash point oils are **not usually recommended** due to the fire or explosion hazard. Most response options can be considered for removing petroleum products with higher flash points, such as diesel, from the water surface. However, light oils, such as aviation gasoline, condensates, or Jet B, will naturally disperse and evaporate, quickly eliminating the need for response in non-sensitive areas.

4.2.3 Lower Explosion Limit

The lower explosion limit or LEL is the lowest concentration of a material's vapor in air that will support combustion. For a spill of a petroleum product with a low flash point, flammability (explosion) limits must be measured at the accident site to determine if there is a fire or explosion hazard. Many gas monitors also measure oxygen levels. Response operations can only proceed once safe working conditions are assured.

4.2.4 Viscosity

High viscosity (e.g., weathered, low API Gravity crude oil) limits response options. While mechanical recovery may be possible, dispersion and in-situ burning are usually less effective. If dispersant application is to be attempted on viscous oils, trials should be carried out prior to full application and only dispersants formulated for use on heavier oils should be considered.

4.2.5 Wax Content

High wax content in crude oils can limit the selection of appropriate countermeasure equipment as waxes will tend to crystallize at low temperature, increasing viscosity (see Pour Point).

4.2.6 Pour Point

The viscosity of some high wax/asphaltene content oils and many weathered crude oils can reach such high levels that they no longer flow at ambient temperatures. The temperature at which this begins to occur is called the pour point. Solidification of the spilled oil rules out most response options except for solids-handling equipment and certain special pumps.

4.2.7 Solubility

Most petroleum hydrocarbons have low water solubility. Other products, such ethanol, are soluble as well as volatile and flammable and often cannot be recovered once spilled on water.

4.2.8 Specific Gravity (Liquid)

Petroleum hydrocarbons generally have a specific gravity less than that of water and will therefore float. However, some hydrocarbons, such as bitumen and asphalt, are normally heavier than water. Weathered Bunker C, some crude oils, and other heavy fuel oils can also sink over time after being spilled rendering conventional response options inapplicable.

4.2.9 Specific Gravity (Vapor)

The vapors of most hydrocarbon fuels are heavier than air. This affects response activities when vapors accumulate as the result of booming operations, confined spaces, or other vapor-concentrating factors. The health and safety of response personnel must then be considered in flammable or low-oxygen atmospheres.

4.3 Forecasting Slick Drift

Oil slicks drift under the effect of wind and surface currents. The combined effects of currents and approximately 3–5% of the wind velocity are vectorially additive (Figure 4-2). Oil spill trajectory models can be useful in forecasting slick movement. Generally, the wind component plays a greater role in oil coming ashore than the current. A key source of information during spill response is local knowledge. Mariners, fishermen and nearby residents can be asked to assist in determining the expected direction of movement of slicks.

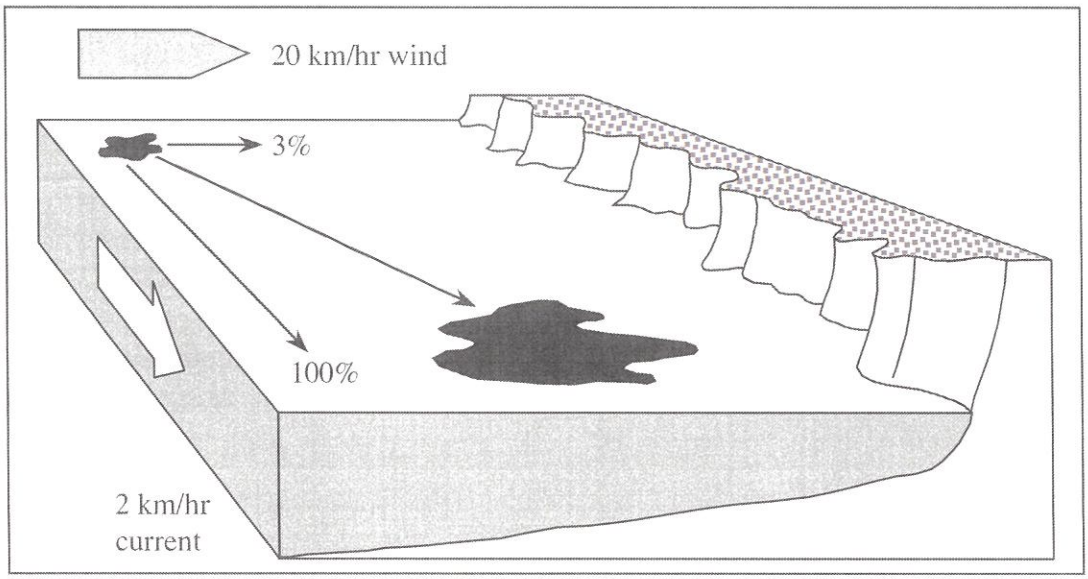


Figure 4-2 Movement of Oil on Water

In the above example, the tidal and wind-driven current vectors must be added to estimate when a slick might reach a shoreline. The direction "to" for current and "from" for wind should be noted (e.g., current *to* the east and wind *from* the north).

Oil spill models have been applied to predict or forecast the movement of surface slicks and identify areas, amenities, and biological resources that have a higher probability of spill impacts. The priority areas that might be affected by spilled oil will require the application of various countermeasure options for protection. Because oil spill trajectory models are complex and selection of appropriate input data (e.g., oil property and environmental information) is important, modeling slick trajectory and behavior should be conducted by experts. The participation of persons with local knowledge is critical in this process if accurate depictions are to be made of tidal fluctuations and patterns, shore types, and resources at risk (including seasonal aspects).

4.4 Estimating Slick Volumes

The volume of oil spilled should be estimated using as many methods as possible. Methods for estimating spilled volume include:

- The rate of flow through a pipeline and the duration of spill before shutoff
- The size and number of cargo tanks breached on a grounded vessel
- The color and size of slick areas

Estimating oil volume based on the color and size of slicks is complicated due to the complexity of slicks, their geometry and other factors. Observer experience will have a marked effect on the accuracy of estimates. The following rules should be considered when estimating slick volumes:

- Slick thickness can vary considerably even in a single slick. If there are dark brown or black patches, most of the oil is located in these darker areas.
- Colored or silvery bands indicate extremely thin slicks; these colors can often be seen at the borders or outer areas of thicker slicks.

Table 1-4 can be used to estimate slick volumes based on their estimated area and appearance. As discussed in Section 1.7, there is high variability in these reported thicknesses and they should only be used for estimating order of magnitude amounts of oil. Using them to estimate amount of oil spilled can be very inaccurate.

4.5 Visual Observation and Photography

Visual observation and aerial photography have been used effectively in open water for identifying and tracking oil spills. The volume and properties of spilled oil can be estimated using color and area measurements from an aerial photograph. Aircraft used for aerial observation must allow good all-around vision and carry suitable navigational aids. Fixed wing aircraft should be used for long range observation. Helicopters are best for near-shore waters and coastlines. For best coordination, observers should sit on the same side of the aircraft as the pilot. The direction of the sun may dictate the best direction to fly a search pattern. The search altitude is generally determined by the visibility. In clear weather, 500 meters (1640 feet) is optimal for maximizing the scanning area without losing detail. Visual observations and the use of conventional cameras can be hindered by lack of visibility due to weather conditions, including rain, fog, and darkness. Oil can be difficult to visually detect in water with algal blooms or high levels of sediment as well as over kelp and seagrass beds. Additional information on aerial observation can be found in Chapter 16.

Ground-truthing (i.e., verifying data at the water surface) is usually used to confirm visual sightings of slicks. In general, silvery and rainbow-colored sheens are not amenable to removal by skimmers, chemical dispersion, or in-situ burning, because of their thinness. Response options should be focused on slicks that are brown to black in color.

There is a wide range of cameras available that are mainly used for mapping purposes but that also can be applied to oil spills. To give contrast to visible imagery so that the darker–color thick slicks can be distinguished from iridescent sheens, cameras can be equipped with a horizontally-aligned polarizing filter and set at 53° from the vertical (the "Brewster angle"). In this way, light reflected from surface oil is photographed. Television cameras can be similarly used for spill work. Scanners in the visible spectrum are also used as oil sensors. In the past, the advantage of such scanners was their ability to produce digitized signals. However, digital cameras and recorders are now readily available that offer similar capabilities.

4.6 Tracking Buoys

Tracking buoys can be used to study current patterns. This information can be useful in predicting the trajectory of an oil spill. Several tracking buoy designs have been developed including radio- and satellite-tracked units.

4.7 Remote Sensing

There are a number of airborne sensors available to assist in the detection and mapping of spills. Operation of airborne sensors and interpretation of results requires highly trained personnel. The most commonly employed and most practical sensors are infra-red (IR) , ultra-violet (UV), and side-looking airborne radar (SLAR). A combination may be used to overcome the limitations of individual sensor types.

4.7.1 Infrared Sensors

Oil absorbs solar radiation and re-emits infrared (IR) radiation at a wavelength different than that of the surrounding water; therefore, oil spills in open water can be detected using infrared cameras. Such cameras are commercially available and comparatively easy to use. New systems are sold that can allow data logging, position determination and data transmission. Infrared video, in addition to true color video and photography, has been found to be a useful tool for determining and documenting the location of oil spills.

The application of IR sensors is limited by low cloud cover (or "ceiling"). However, they can be used at night in clear skies. Also, many other sources of sea surface temperature variation (e.g., tidal currents, river outflows, industrial cooling water effluent, sewage outfalls, etc.) interfere with this remote-sensing technique. Still, the merits can often outweigh the disadvantages, and IR can be useful in tracking large, coastal oil spills.

4.7.2 Ultraviolet Sensors

Oil slicks reflect ultraviolet (UV) radiation, even in thin layers, making it possible to map oil slicks using ultraviolet sensors. Due to light interference from sun reflection, waves and biological material, ultraviolet images are best used in combination with infrared images to provide a more positive indication of the presence of oil. UV techniques are applicable only to daytime operations.

4.7.3 Laser Fluorosensors

Laser fluorosensors work on the principle that many compounds, such as oil, absorb ultraviolet light and re-emit some of this energy in a distinctive visible wavelength. Airborne systems are capable of classifying oil and other marine pollutants in day- light as well as at night on water, in broken ice conditions or on solid ice. More recent developments in this technology allow the production of detailed map-based oil contamination information by overlaying color-coded markers of oil contamination on video images. A dedicated aircraft is often needed for fluorosensor instrumentation.

4.7.4 Radar

Radar can be used to detect oil slicks due to reflective differences in the radio signal sent to and received by an oil-free water surface and a surface that is wave-dampened by oil. Interferences, however, include certain current patterns, ice, slicks associated with freshwater or biological activity, wind-calmed or wavy water, vegetation, and various effluents

Side-looking airborne radar (SLAR) and synthetic aperture radar (SAR) are two types of systems that have application to oil spills. Both can be used for quick coverage of large areas and may be useful in detecting oil slicks in open water. They work in darkness, and through fog and clouds. SAR is capable of much greater range and resolution than older SLAR technology.

4.7.5 Satellite Remote Sensing

Satellite sensors have application to oil spills and have been applied to many situations. Systems such as LANDSAT and SPOT have been tried. Two factors, however, combine to lower the probability of detecting a spill by satellite. These are the frequency with which the satellite passes over the spill site and the reliance on clear skies to "see" the spill.

Satellites with SAR (e.g., RADARSAT) provide an indication of possible pollution and its location and dimensions. SAR is not limited by the presence of clouds. It requires considerable time to collect and transmit satellite data, which may affect its usefulness in response operations. Additionally, it takes time to interpret the results to ensure that slicks are identified as being distinct from other elements of the imagery.

4.7.6 Surveillance and Tracking of Subsea Oil

Oil spills may require surveillance and tracking of oil that does not reach the water surface, but instead may be entrained at depth. There are two mechanisms that would cause this to happen:

- the oil that is released has a greater API gravity than the water and/or
- oil droplets are small enough (<70 μm) to prevent any appreciable rise through the water in the event of subsea dispersant use.

Heavier oils are more likely to sink and be found at the bottom than lighter oil. Oils at the bottom may become covered by sediment. If this occurs, surveillance methods could include sampling by ponar sediment grabs, sediment cores, and scuba diver 'spot' checks. For plumes in the water column, surveillance methods depend on the expected size and concentration of the plume. Methods can include side scan or multibeam sonar or a laser light scattering (e.g., LISST). The use of ROV, AUV and glider platforms is becoming increasingly frequent for oceanographic surveys in the water column. These platforms can be fitted with a variety of sensors and cameras.

4.7.7 Surveillance and Tracking of Oil under Ice and Snow

The current practice is to drill numerous boreholes into ice over water and then conduct extensive sampling to map the oil's location. Oil may rise up boreholes for visual detection. Slick mapping can be aided by using information gathered as to quantity of oil observed in boreholes plus the number of boreholes where oil is observed.

There are two remote sensing techniques that hold promise in the near future: high-frequency ground penetrating radar (GPR) and nuclear magnetic resonance (NMR). Both may allow a faster rate of sampling, and subsequently greater spatial coverage.

In either manual or remote sensing, the use of markers to track the location of the spill as ice moves is recommended. Markers also can be used to delineate the perimeter of oil spilled to land under snow and ice conditions.

Tracking oil beneath floating ice may become a priority when active response measures are not possible. Place radio and/or satellite position buoys strategically in the oil deposition zone to monitor ice movements. Place pylons with light strobes on ice floes in the oil slick to assist aerial tracking. Conduct aerial reconnaissance using visual observations and remote sensing devices (e.g., airborne FLIR: forward-looking infrared).

4.8 Material Take Off (MTO) List

Table 4-3 Material Take Off (MTO) List for Tracking and Surveillance

Equipment	Use
Still image and true color video cameras	Photographing spill
Tracking buoys	Tracking slick
Remote sensing equipment	Detecting slick on water surface, in the water column, and beneath snow and ice
Trajectory and fate oil spill models	Predicting slick movement and weathering
Computers	Running oil spill models, collecting photographic images, performing calculations, and communications
Aircraft	Slick spotting
Radios	Communication among vessels/aircraft
GPS	Identifying slick position

5 Boom

5

5.1 Introduction

A boom is a floating physical barrier used to control the movement of oil. Boom is typically the first mechanical response equipment taken to a spill site. It is used to 1) contain slicks for removal by skimmers or burning, 2) deflect or divert slicks towards a collection area or away from sensitive resources, 3) exclude slicks from selected areas and protect sensitive shorelines and amenities, and 4) ensnare oil by the addition of sorbent material. Boom is manufactured in a wide variety of designs, sizes, and materials for different applications. Personnel responsible for selection and use of boom should:

- Understand the function of basic components and ancillary fittings common to most boom.
- Identify the boom in terms of its expected location of use, water conditions, and spill response operation.
- Consider the listed design factors that affect a boom's performance including its durability, storage, deployment, and oil containment potential. Manpower requirements also need to be evaluated.
- Select an appropriate size of boom according to environmental conditions and expected performance.
- Consider which boom types can be most effectively used on a spill. Refer to data for each boom type, which includes a description, recommended uses, and operational considerations.
- Consult the manufacturer-supplied data to obtain technical specifications for specific boom models.
- Consult ASTM Standards for information on boom connectors and other standardized information.

5.2 Boom Components and Fittings

Boom has four basic components (Figure 5-1): flotation, skirt, tension member(s), and ballast. Freeboard and draft are the portions of a boom's flotation and skirt above and below the waterline, respectively.

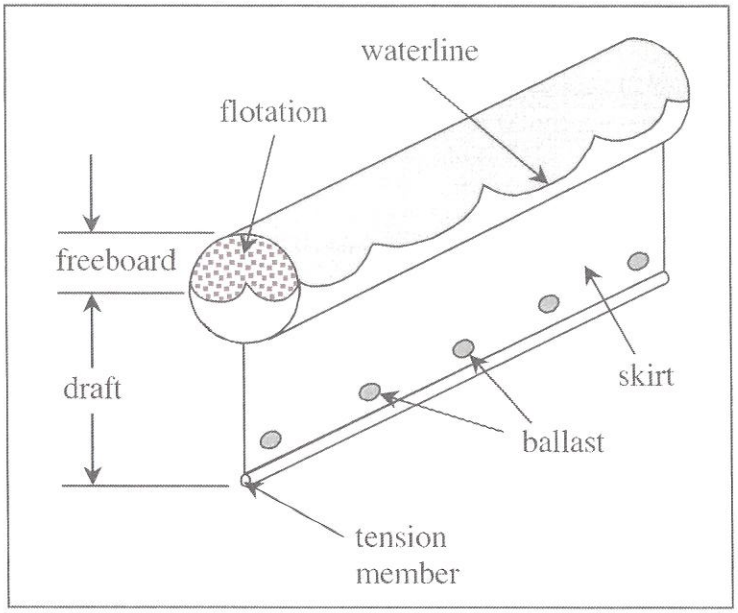


Figure 5-1 Boom Design

Flotation

- Flotation positions the boom at the water surface.
- Buoyancy chambers usually contain foam or air.
- Heavier boom used in rough, offshore conditions requires more flotation than lighter boom used in calm, nearshore or inland waters.

Skirt

- The skirt is intended to prevent oil from escaping below the boom.
- Forces from currents acting on a boom increase with skirt depth and can cause skirt failure (i.e., entrainment), allowing oil to escape.

Tension Member

- Tension members bear the load imposed by towing, winds, waves, and currents.
- Chains, cables, or webbing that run the length of a skirt or flotation are used.

Ballast

- Ballast (weighting material) helps keep a skirt vertical in water.
- Ballast often consists of a chain, wire cable, or weights located along a skirt bottom. The chain or cable could also serve as a tension member.

Freeboard

- Boom freeboard prevents splashover of oil.
- Wind forces on a boom increase with freeboard surface area. If freeboard exceeds 4–8 in (10–20 cm), boom performance can be adversely affected by high winds (typically 20 knots (kts) or 37 km/hr).

5

Draft

- Boom draft prevents oil from escaping under a boom in low current conditions.
- Shallow draft skirts reduce tension on a boom.

An understanding of the function of not only basic components of a boom, but also its auxiliary fittings or features, is required so that specific operational needs can be met:

Anchor Points	Eye bolts on end connectors along a lower tension member used to secure anchor or mooring lines.
End Connectors	Connectors join sections of boom to one another, to accessory devices, or to skimmers. ASTM F962 standard connectors are recommended to insure uniform inter-connection with other booms.
Lifting Points	Attachments to an upper tension member of a boom are used to lift it by helicopter, crane, or davit.
Stiffeners	Vertical members in flexible gaps between flotation elements add stability to some boom, particularly flat, internal flotation boom.
Handholds	Handholds facilitate manual deployment, retrieval, and storage.
Towing Devices	Wire towing bridles and paravanes (floating tow connectors) prevent a boom from being twisted and damaged when it is towed.

5.3 Operational Factors

Various other performance and design factors should be evaluated to determine which boom types work best for a particular application.

5.3.1 Roll Stiffness

Roll stiffness is the resistance of a boom to turnover in high currents and winds. Roll stiffness can be increased by adding ballast to the bottom of a boom skirt or by providing a flotation member above the vertical center of gravity of a boom. Pressure-inflatable boom exhibits high roll stiffness.

5.3.2 Heave Response

Heave response (boom conformance) is the ability of a boom to conform to waves and minimize oil losses due to splashover and underflow (bridging of waves). Self-inflating and pressure-inflatable boom have good heave response as does internal foam flotation boom with relatively short flotation members. Boom with rigid flotation or rigid skirts generally do not exhibit good heave response.

5.3.3 Freeboard and Skirt

Freeboard height and skirt depth should be optimized when selecting boom. Increased freeboard will generally decrease the probability of boom failure due to splashover; however, it will tend to lower the roll stiffness of a boom in high winds. Similarly, an increased skirt depth will decrease the probability of oil escaping under a boom in slow currents while oil will tend to break away and escape under a boom in fast currents due to entrainment, regardless of skirt depth. Increased skirt depth will increase the loading on a boom and will result in decreased heave response.

If deployment in unprotected water is anticipated, a boom that has high reserve buoyancy (weight of water displaced by a boom minus boom weight) should be used. Reserve buoyancy is also commonly expressed as buoyancy:weight ratio (boom buoyancy divided by boom weight).

5.3.4 Tensile Strength and Puncture Resistance

Tensile strength and puncture resistance are important factors to consider when open water deployment is anticipated, or when extended lengths of boom will be towed over long distances. Deployment in areas with debris requires high tensile strength and good puncture resistance of the boom fabric. Fence boom with conveyor belt skirts and durable floats perform well in these conditions. Generally, the fabric and the boom tension members combine to bear the forces acting on the boom.

5.3.5 Ease of Storage and Deployment

Ease of storage, deployment, and retrieval must be considered when choosing boom. Flat and inflatable boom can be stored compactly on a reel, on the deck of a vessel, or in a container; however, an air blower must be used to deploy most pressure-inflatable models. The deployment and retrieval of any boom require examining the potential location of its use and corresponding needs for personnel, vessels, and ancillary equipment.

5.3.6 Other Features

Important aspects that relate to operational considerations when selecting boom include the following:

- The volume occupied per unit length of a boom so that storage requirements can be planned for a designated space or reel.
- The number, type and quality of auxiliary components such as connectors, anchor points, and lifting points.
- High visibility boom material (e.g., yellow and international orange) as well as use of reflective tape and warning lights, particularly if a boom is to remain deployed at night.
- Smooth surfaces to prevent oil losses through vortices and to facilitate cleaning.
- Design of flotation, seams, bridles, stiffeners, and tension members for ease of use and cleaning, and to deflect debris.
- The durability of boom material (including the use of UV protection and marine growth inhibitors).

5.4 Boom Failure

There are five basic types of operational boom failure:

- Entrainment
- Drainage
- Splashover
- Submergence
- Planing

Each type of failure is discussed below.

5.4.1 Entrainment Failure

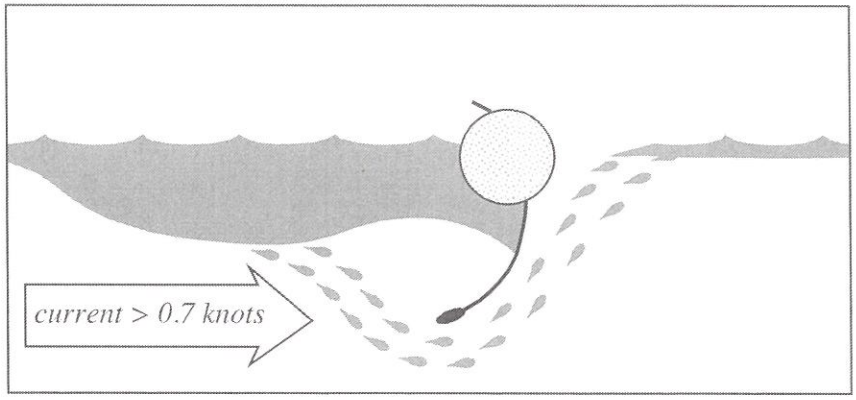


Figure 5-2 Entrainment Failure

Entrainment failure generally occurs at current velocities between 0.7 and 1.0 kts (0.4–0.5 m/s). A headwave forms upstream of a boom and turbulence occurs on the downstream side of a headwave. This turbulence causes oil droplets to escape under a boom. The amount of oil lost during entrainment failure depends on the thickness of oil in a headwave. The velocity at which a headwave becomes unstable and oil droplets flow under a boom is called the critical velocity. Critical velocity is a function of current velocity and waves and is the component of water speed perpendicular to the boom. Entrainment failure may be prevented by deploying boom at an angle less than 90° to the direction of flow or by using multiple porous boom designed to operate in fast currents.

Boom deployment angle as a function of current velocity is approximately:

1 knot: 45-90° **2 knots: 20-30°** **3 knots: 15-20°** **4 knots: 10-15°**

5.4.2 Drainage Failure

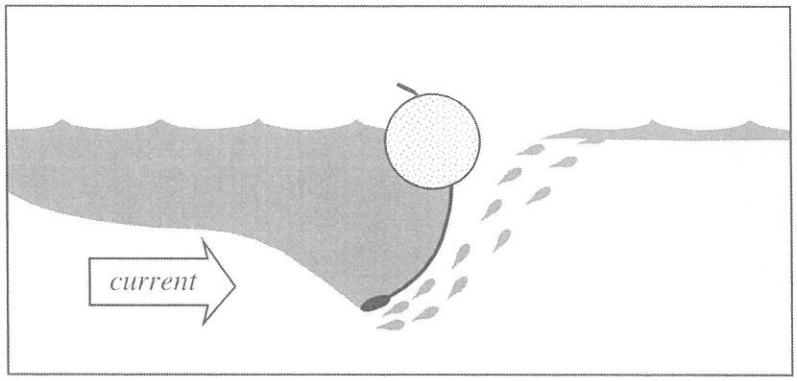


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Figure 5-3 Drainage Failure

Drainage failure rarely occurs. It can happen when a skirt boom is used to hold so much oil that oil flows down the face of the boom skirt, escaping to the other side. Increasing skirt depth is not usually a solution since it increases the potential for planing failure (Section 5.4.5).

5.4.3 Splashover Failure

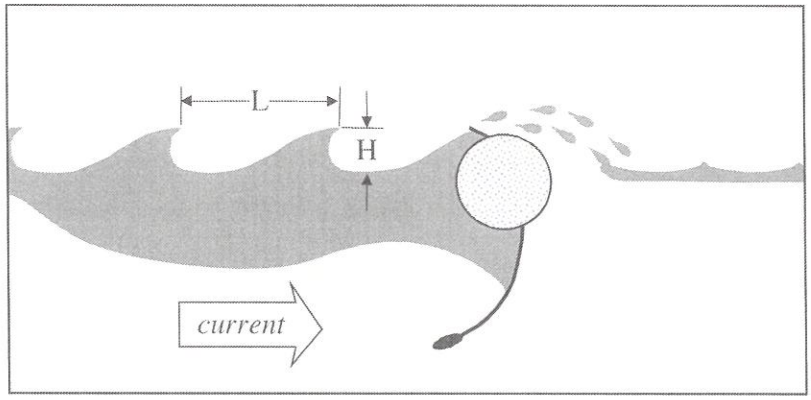


Figure 5-4 Splashover Failure

Splashover failure may occur in choppy water when wave height (H) is greater than boom freeboard and the wave length:height (L/H) ratio is less than 10:1. Most booms, however, perform well in gentle, rolling swells, even when the wave height is much larger than the freeboard.

5.4.4 Submergence Failure

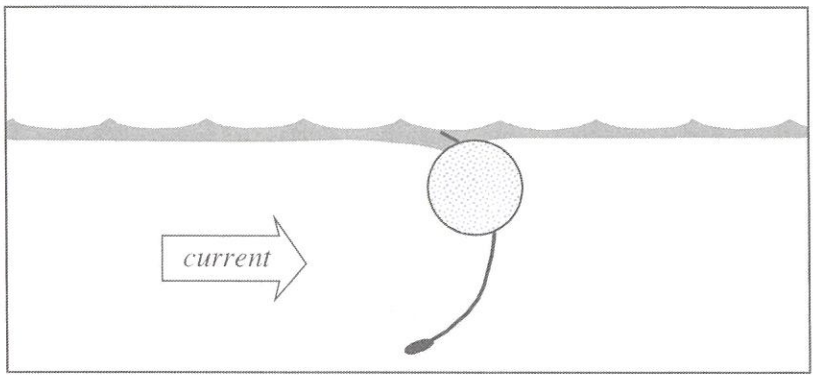


Figure 5-5 Submergence Failure

Submergence failure may occur when a boom is deployed or anchored in a fast current or is being towed too fast. The tendency for boom to submerge at a given speed is determined by the boom's reserve buoyancy (the buoyancy in excess of that required to keep a boom afloat in still water). Higher reserve buoyancy reduces the tendency to submerge. Submergence failure is not common because entrainment failure usually occurs at a much lower speed.

5.4.5 Planing Failure

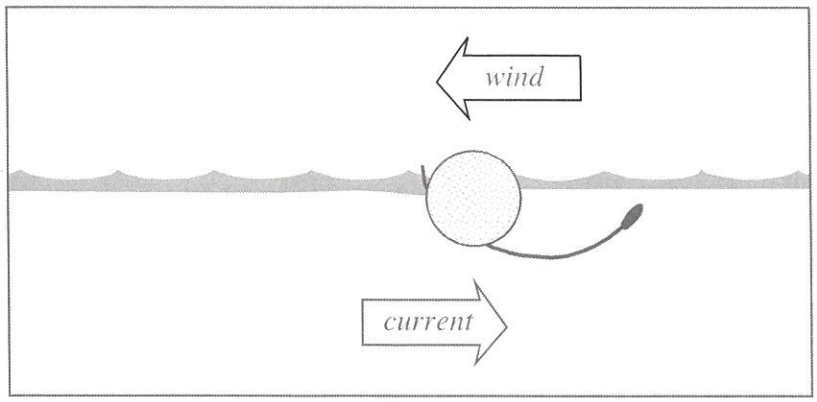


Figure 5-6 Planing Failure

A strong wind and strong current moving in opposite directions may cause a boom to heel flat on the water surface. The resulting loss of oil is called planing failure. This failure is most likely to occur when a boom has inadequate ballast or when an internal tension member is near or above the waterline.

5.5 Boom Application

Boom that incorporates the previously described features is sold in a wide variety of models for use in harbors, coastal waters, offshore areas, lakes, and rivers. Their performance ranges from excellent in calm, low current waters to poor in high wave, wind, and current conditions (see Table 5-1).

Table 5-1 Boom Performance Versus Conditions

Wind	Waves	Current	Boom Performance
0–10 kts (0-20 km/hr)	Calm, swells	0–0.5 kts (0.25 m/s)	Good
> 20 kts (>40 km/hr)	< 3–4 ft (<1 m)	> 1 kt (>0.5 m/s)	Poor

Boom is available for deployment from shorelines, docks, vessels, reels, containers and platforms. Boom selection involves anticipating the following application factors:

- Mode of deployment and time likely required for launching
- Probable location(s) of application
- Deployment vessels to be used
- Possible sea and debris conditions
- Approximate duration of the operation

Boom can be classified for use in three different sea states: **calm**, **protected** and **open water**. The sea condition most directly determines the appropriate size of boom to be used. Table 5-2 shows the ranges of freeboard and draft corresponding to maximum wave heights that a boom can adequately withstand.

Table 5-2 Boom Size Versus Sea State

Sea State	Wave Height		Boom Size			
			Freeboard		Draft	
	ft	m	in	cm	in	cm
Calm	<1	<0.3	4–10	10–25	6–12	15–30
Protected	1–3	0.3–1	10–18	25–45	12–25	30–60
Open water	>3	>1	>18	>45	>25	>60

Booms are used for three primary applications:

Containment Boom is used in little or no current to isolate a spill, to control spreading, to concentrate the oil, and to facilitate its recovery by skimmers.

Deflection Boom is deployed at an angle to a drifting slick to divert oil away from sensitive areas or to a collection point. One or more booms can be used to direct a slick to an advancing skimmer for recovery.

Protection Booming is used to exclude slicks from sensitive shorelines and/or amenities. With the addition of sorbent material, booms can also be used to collect oil.

The selection of boom depends on how quickly it is needed, how easily it can be deployed and how rugged or durable it is. The speed and ease of deployment usually depend on the equipment and number of people required. For example, self-inflating boom can be deployed very rapidly either from reels or bundles; however, if extended deployment is required, a more rugged boom that is slower to deploy (e.g., pressure-inflatable) will perform better. Generally, ease and speed of deployment are tradeoffs with ruggedness and durability.

5.6 Boom Selection

Most commercially available boom can be categorized into one of four basic design types:

- Internal foam flotation
- Self-inflating
- Pressure-inflatable
- Fence

Specialty boom is available including those manufactured with sorbent and fire-resistant materials (Section 8.3), shore-sealing barriers (Sections 5.10.1 and 6.5.4), and netting to trap high viscosity or solidified oil (Section 5.10.2).

Table 5-3 rates the four generic boom types according to environmental conditions in which they will be deployed, performance characteristics, and convenience.

Table 5-3 Boom Selection Matrix

		Type of Boom			
		Internal Foam Flotation	Self Inflating	Pressure-Inflatable	Fence
Environmental Conditions	Open Water	◑	◑	○	●
	Protected Water	○	○	○	◑
	Calm Water	○	○	○	○
	High Current (>1 kt)	◑	●	◑	●
	Shallow Water (<1 ft)	○	◑	◑	●
Performance Characteristics	Operation in Debris	○	●	◑	◑
	Excess Buoyancy	◑	○	○	●
	Wave Response	◑	◑	○	●
	Strength	◑	●	○	○
Convenience Features	Ease of Handling	◑	○	◑	◑
	Ease of Cleaning	○	○	○	○
	Compactibility	●	○	○	●

Legend ○ Good ◑ Fair ● Poor

Open Water	Wave height >3 ft	Current velocity <1 kt
Protected Water	Wave height 1–3 ft	Current velocity <1 kt
Calm Water	Wave height <1 ft	Current velocity <0.5 kt

Not all boom of a particular type have the rating shown.

1 foot = 0.3048 m
1 kt = 0.5144 m/s

To derive the most benefit from the boom selection matrix (Table 5-3), follow these steps:

- Identify the most likely environmental conditions in which boom will be used. Note the boom types that have an acceptable rating (good or fair).
- Identify the performance characteristics most needed for the intended application. From the boom type chosen above, select those with an acceptable rating (good or fair) for the most important performance characteristics.
- Identify the most desirable convenience features. For the boom type chosen from steps 1 and 2 above, select the boom with the best rating in the convenience features of interest (good or fair).

When selecting a specific boom type there may be a choice of fabrics (e.g., polyester, nylon, or aramid). Several protective coatings may be available. Table 5-4 outlines the advantages and disadvantages of four common coating materials.

Table 5-4 Boom Coating Materials

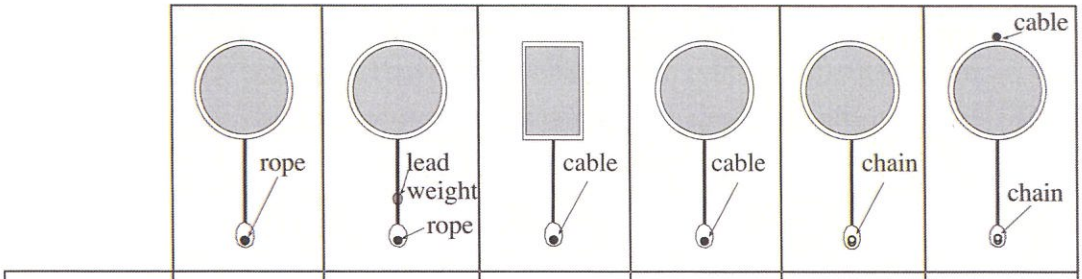
Coating	Advantages	Disadvantages
PVC	• Excellent flexibility	• Limited long-term resistance to sunlight, heat, hydrocarbons, and organics
Inhibited PVC	• Resistant to sunlight, heat, hydrocarbons and organics	• Not as resistant to organics as urethanes
Polyether urethane	• Best weather and water resistance	• Not as resistant to organics as polyester urethane
Polyester urethane	• Best resistance to organics	• Not as weather-resistant as polyether urethane

Once installed, boom requires continuous tending, particularly in locations of reversing tidal currents. Operational planning should factor in time for boom tending activities.

5.7 Types of Boom

Sections 5.7.1 through 5.7.4 compare variations of the 4 major types of boom. Wave following, ease of deployment, and oil retention are three characteristics used in the comparison. Advantages and disadvantages as well as recommended uses and operational considerations are also discussed. For overall performance of each of the 4 types of boom, refer to Table 5-3.

5.7.1 Internal Foam Flotation Boom



Boom Number	1	2	3	4	5	6
Wave Following	○	○	●	○	○	○
Ease of Deployment	○	○	○	○	○	○
Oil Retention (0–6 ft waves) (0–2 m waves)	◑	◑	◑	○	○	○

Legend ○ Good ◑ Fair ● Poor

Figure 5-7 Internal Foam Flotation Boom

The advantages and disadvantages of this boom type, as numbered above, are shown below.

Boom Number	Advantages	Disadvantages
1	• Lightweight when no ballast used	• More likely to fail without additional strength members (bottom rope is a strength member)
2	• Lead weights less likely to corrode during long immersions • Better roll response with lead ballast	• Holes in fabric where lead weights are attached may be failure points
3	• Rectangular float can be bent on a small reel	• Poor wave following
4	• Strong due to cable for strength and ballast • Better roll and heave response than rectangular flotation	
5	• Chain gives strongest tension member and heaviest ballast	
6	• Top cable gives more stability and added strength in currents	

5.7.1.1 General Comments

- Internal foam flotation boom is generally the most widely used and available boom.
- PVC or polyurethane-coated fabric encloses flexible foam flotation.
- Ballast and tension members may be enclosed within the fabric.
- Durability varies depending on the material and strength of the fabrics.

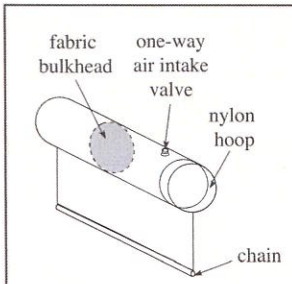
5.7.1.2 Recommended Use

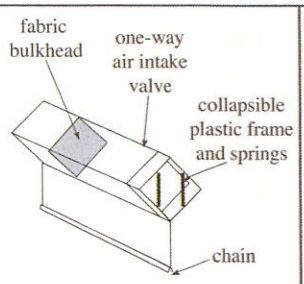
- Use for containment of oil or deflection of slicks in low currents (<1 kt or 0.5 m/s).
- Select for use where adequate boom storage facilities are available. Most models are normally stored in containers or on the deck of boom deployment vessels although, in some cases, larger diameter reels are also used.
- Generally, terminal facilities and marinas can be protected using this type of boom.
- Extended deployment (several weeks) in waves up to 3 ft (1 m) is feasible.

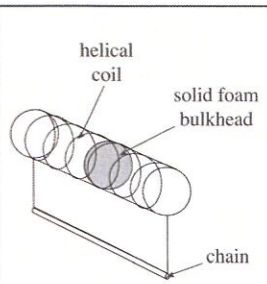
5.7.1.3 Operational Considerations

- In areas where currents are more than 0.5 kts (0.25 m/s), select round flotation booms with top and bottom tension members for deflecting and containing slicks.
- In slower currents (<0.5 kts or 0.25 m/s), round flotation booms with only a bottom tension member can be used for deflection/containment.
- In quiet, shallow water, it is reasonable to expect that booms with square or rectangular internal flotation can be successfully used.
- Long lengths of boom (several hundred feet) can be deployed, which can sustain loads usually encountered during most nearshore operations.
- The bottom chain pocket could abrade if deployment is conducted from concrete boat ramps, dock surfaces and roadways.
- High durability fabrics such as polyester, nylon or aramid should be selected for permanent booming applications.
- Straight-line towing (streaming) is possible at low speeds (up to 0.5 kts or 0.25 m/s) to the location of use.

5.7.2 *Self-Inflating Boom*







Boom Number	1	2	3
Wave Following	○	○	○
Ease of Deployment	○	○	○
Oil Retention (0–4 ft waves) (0–1.2 m waves)	○	○	○

Legend ○ Good ◑ Fair ● Poor

Figure 5-8 Self-Inflating Boom

The advantages and disadvantages of this boom type, as numbered above, are shown below.

Boom Number	Advantages	Disadvantages
1	• Sealed compartments • Can be compacted on racks or pallets	• Cannot be reeled • Splashover due to round freeboard without fin • Oil in the air valve could prevent it from functioning • If a valve malfunctions, that section can lose buoyancy
2	• Can be reeled and packed on pallets • Most compactible of all three types • Sealed compartments	• Loses freeboard due to water and wind forces turning the square freeboard on its side • Internal springs present maintenance problem • Oil in the air valve could stop it from functioning • Repacking is difficult due to need to extend springs
3	• Stores on reel • Simple to use • No valves, only air ports	• Water can pass from one compartment to the next over the air slot in the bulkhead

5.7.2.1 General Comments

- Self-inflating boom is excellent for handling and storage, and it is quickest to deploy.
- PVC or polyurethane-coated fabric contains flotation chambers that compress during storage and inflate with air through intake valves upon deployment.
- Built-in frames, springs, or helical metal coils can assist self-inflation.
- Fabrics have relatively high tensile strength, but can be punctured by debris or other sharp objects, thereby resulting in loss of buoyancy.
- Fabric tearing during deployment can also result in loss of buoyancy.
- Long-term problems, such as corrosion and collapse, have occurred with various internal expansion mechanisms.
- This boom is well-suited for air transportation to remote locations.
- This boom conforms well to waves.

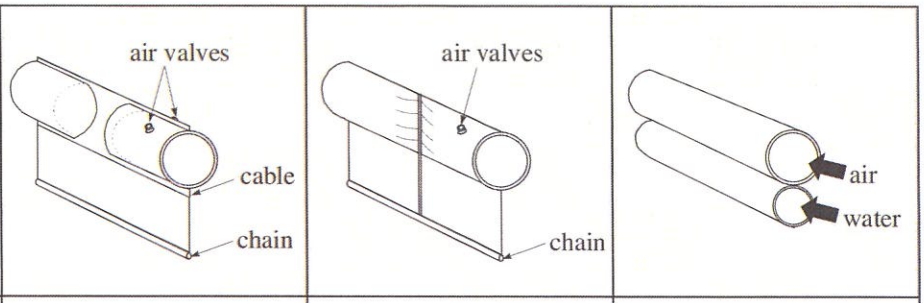
5.7.2.2 Recommended Use

- This type of boom is designed for rapid deployment situations.
- This boom type has been used for stationary containment or deflection of slicks in calm, low currents and nearshore waters, i.e., in harbors and at other sites with wave heights of up to 3–4 ft (1–1.2 m) and currents up to 0.5 kts (0.25 m/s).
- Self-inflating boom may be suitable for use at facilities or on vessels with limited storage space and on compact reels (some boom models only).

5.7.2.3 Operational Considerations

- When deployed, each section must be fully extended so that the boom has sufficient flotation towards connectors to keep them at full freeboard.
- Limit single deployment to lengths of 500–1,000 ft (150–300 m).
- Plan to monitor and tend frequently once deployed to ensure that flotation is maintained.

5.7.3 *Pressure-Inflatable Boom*



Boom Number	1	2	3
Wave Following	○	○	○
Ease of Deployment	◑	◑	○
Oil Retention (0–6 ft waves) (0–2 m waves)	◑	○	◑

Legend ○ Good ◑ Fair ● Poor

Figure 5-9 Pressure-Inflatable Boom

The advantages and disadvantages of this boom type, as numbered above, are shown below.

Boom Number	Advantages	Disadvantages
1	• Divided air cylinders result in only partial loss of freeboard if the boom is punctured • Can be deployed manually • Can be reeled	• Slow to deploy due to each half cylinder having to be inflated separately
2	• A single large air cylinder decreases inflation time • Can be reeled	• Puncture causes total loss of freeboard in section of boom • Heavy to deploy, recovery requires winch
3	• A reel deployment and recovery system makes this boom easy to deploy and recover • Some versions have an air manifold on top of flotation and check valves in segments so continuous air compressor is not required • Excellent shore seal	• No bottom tension member • Requires powered reels to recover boom • Needs continuous power for air compressor and water pump while deployed • Puncture causes total loss of boom • Very difficult to re-position once lower boom has been filled with water

5.7.3.1 General Comments

- Pressure-inflatable boom allows for compact storage and high buoyancy to weight ratio.
- Well suited for air transportation to remote locations.
- Fabric is PVC, neoprene, nitrile rubber-nylon, or polyurethane-coated material.
- Up to several hours might be required to inflate sections of some open water models. Other protected water models inflate much more quickly.
- Durable fabrics are now generally used in this boom type versus earlier models.

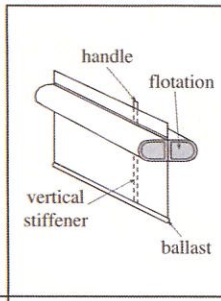
5.7.3.2 Recommended Use

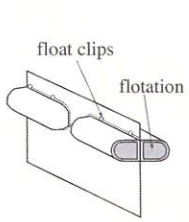
- For coastal and offshore operations for both stationary and towed boom configurations.
- For use where storage space is limited. Compact reel storage is possible.
- For use when fast deployment and retrieval are not priorities.
- For situations where wave heights can reach 6 ft (2 m).
- For use where wave conformance is a priority.
- Pressure-inflatable boom is generally not suitable for deployments longer than 1 week due to the potential loss of air; more durable models are exceptions.

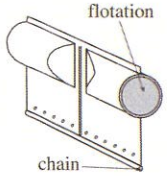
5.7.3.3 Operational Considerations

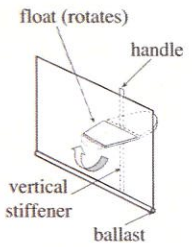
- On-site air blower and power supply are required for inflation.
- Plan on sufficient working platform that can accommodate boom, auxiliary equipment, and adequate personnel.
- Monitor and tend frequently once deployed to ensure that flotation remains intact.
- Large models require a mechanized handling system and an adequate number of personnel for deployment and recovery.
- Some manufacturers offer a non-standard piano hinge connector that may cause problems when (1) the hinge is bent or (2) the boom must be connected to other booms.

5.7.4 Fence Boom









Boom Number	1	2	3	4
Wave Following	●	●	●	●
Ease of Deployment	○	○	●	○
Oil Retention (0–2 ft waves) (0–0.6 m waves)	○	○	○	○

Legend ○ Good ◑ Fair ● Poor

Figure 5-10 Fence Boom

The advantages and disadvantages of this boom type, as numbered above, are shown below.

Boom Number	Advantages	Disadvantages
1	• Heavy materials all molded • Good roll response	• Low buoyancy to weight ratio • Poor wave (heave) response • Difficult to deploy and recover
2	• Replaceable floats • Good roll response	• Poor wave (heave) response • Difficult to deploy and recover • Not good in debris since floats may be dislodged
3	• Lightest of fence type boom • Replaceable floats • Fairly easy to deploy	• Poor wave (heave) response • Only fair roll response
4	• Wide floats give good resistance to roll in models 3 ft (1m) in total height or less • Boom can be inverted in water to remove marine growth	• More subject to float damage and hanging up on piers, boats, etc. • Poor wave (heave) response • Difficult to deploy • Floats may retain debris

5.7.4.1 General Comments

- Fence boom with rigid or semi-rigid fabric provides a vertically stiff and horizontally flexible "fence".
- Flotation is provided by integrated-foam flotation blocks, bolted-on blocks, or outrigger floats.
- Fabric durability ranges from low to high tensile strength options, depending on intended application.
- Fence boom provides effective, long-term, low maintenance protection and/or containment.
- Some models are suitable for long-term/permanent deployment in harbors to surround vessels transferring petroleum products.
- External floats on some models may create additional water surface disturbance resulting in increased oil entrainment or splashover.

5.7.4.2 Recommended Use

- For routine or permanent deployment situations.
- Fence boom is applicable to stationary containment of oil in quiet waters or deflection of slicks in low currents of 0.5 kts (0.25 m/s). It is only suitable for low wave height.
- Use at facilities or on vessels with sufficient boom storage space.
- Fence boom is generally suitable for the protection of terminal facilities and marinas. It is sometimes used for the nearshore containment and concentration of slicks for recovery.
- Use where debris resistance is required.
- Use during extended deployment periods of several weeks or more.

5.7.4.3 Operational Considerations

- Fence boom can be towed at low speeds (up to 5 kts or 2.6 m/s) to location of use.
- Long lengths of boom (600 to 800 ft or several hundred meters) can be deployed which can sustain loads usually encountered during nearshore operations.

5.8 Boom Deployment

Before boom is deployed, the approximate length of boom required should be assembled as completely as possible either on land or on the deck of a boat. Suggested lengths of booms for various applications are presented in Table 5-5.

Table 5-5 Suggested Boom Lengths

Application	Type of Boom	Quantity
Circle a stricken vessel	Offshore or harbor, depending on sea conditions	3 x ship's length
Contain leakage from terminal operations	Calm water or harbor, depending on sea conditions	1.5 x ship's length
Use with an ocean skimmer	Offshore	500-1,500 ft (460-610 m) per skimmer
Protect entrance to estuary, stream, river, etc.	Calm water	3 to 4 x width of a water body
Bays, harbors, marshland	Calm water or harbor, depending on sea conditions	(1.5 + current in kts) x width of a water body

It is important to ensure that all boom connectors are compatible, especially when booms from multiple manufacturers are used. When ordering booms, always ensure that connectors meeting ASTM standard specification F962 are used. This will ensure that all booms can be connected to each other even if they are from different manufacturers. Check local contractors or Oil Spill Response Cooperatives to determine what type of connector is used.

Once the boom is ready, it can be launched and towed into position by boat. To ease the problems for a towing boat, a long boom can be doubled back on itself and towed out from the center point. Once that is anchored, the ends can then be towed into place and anchored. Final configuration can be arranged by setting suitable anchors or securing to permanent anchor points.

Where a boom is being used to collect oil at a shore location or protect a sensitive area, care should be taken to seal the shore end of a boom so that no oil can escape. This is particularly difficult in tidal waters and at sites where the shore is rocky or strewn with boulders and crevices.

Boom length may have to be modified after the boom has been deployed. This can be difficult to do from a vessel particularly in strong currents, high winds, or low temperatures as loose shackles, bolts, and tools can be lost over the side. Often, boom length cannot be changed once the boom is in the water, and the boom must be retrieved, reconfigured, and re-deployed.

5.8.1 BoomVane™

A BoomVane™ (Figure 5-11) is a device for deploying containment boom or dispersant spray arms into bodies of water by harnessing the power of currents in the waterway. The device can be launched from a boat or from land. When deployed from a boat, the BoomVane™ allows for a single vessel sweep system without the need for an outrigger arm. Using a series of lines, the device can be launched and retrieved which allows for quicker repositioning when needed due to debris, vessel traffic, or changing tides.

Available in four different sizes, ranging from the 0.5m Shallow, 1.0m Standard, 1.5m BoomVane™, to the largest–2.0m Ocean.

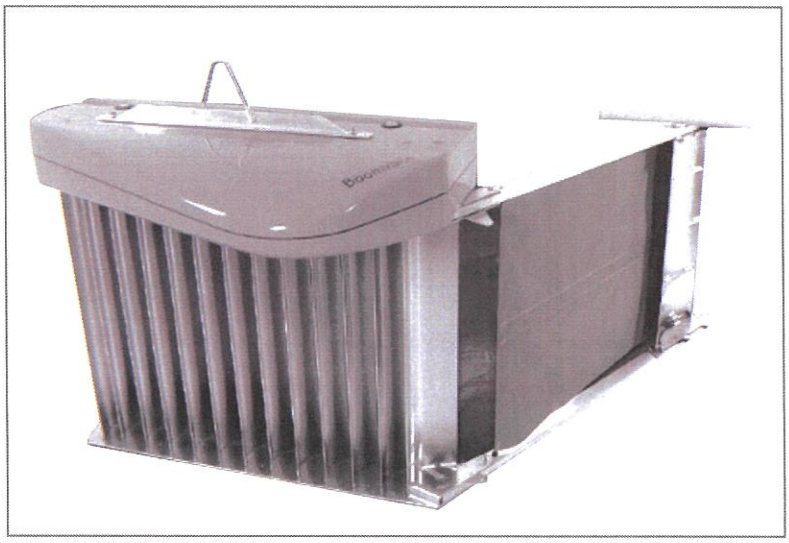


Figure 5-11 BoomVane™

5.9 Guidelines for Towing Boom

Boom is pulled by towboats in various configurations to contain and recover slicks. Boat speed is typically less than 1 knot (0.5 m/sec).

5.9.1 U-booming

Two vessels can tow a boom in a U-configuration by drifting downstream, holding in a stationary position, or by moving upstream toward the spill source.

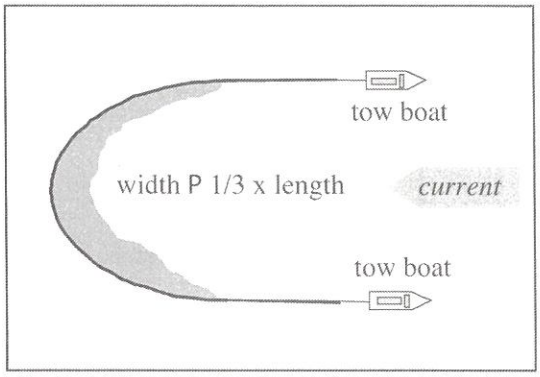


Figure 5-12 U-Booming

5.9.2 V-booming

Boom can be deployed in a V-configuration using three vessels and a skimmer. A tie-in is usually needed to maintain the V shape.

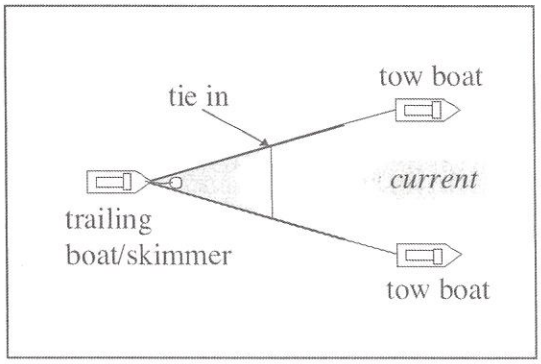


Figure 5-13 V-Booming

5.9.3 J-Booming

Boom can be towed in a J-configuration that will divert oil to a skimmer to allow simultaneous containment and recovery.

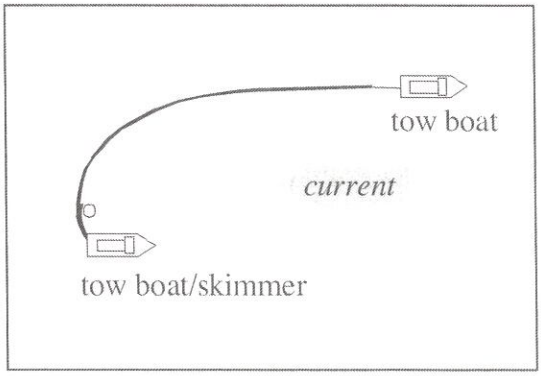


Figure 5-14 J-Booming

Table 5-6 shows the applicability of boom towing configurations for the four basic boom types in calm, protected, and open water.

Table 5-6 Boom Towing Configuration

Boom Use		Internal flotation	Pressure-Inflatable	Self-inflating	Fence
Calm Water	U/V	◑	○	◑	●
	J	○	○	●	◑
Protected Water	U/V	○	○	◑	●
	J	○	○	●	◑
Open Water	U/V	◑	○	●	●
	J	○	○	●	●

Legend ○ Good ◑ Fair ● Poor

Boom lengths of 500 to 1500 ft (150 to 460 m) are typically used when towing boom in a U, V, or J configuration to maximize the oil encounter rate. Lengths as high as 2000 ft (600 m) have been used but maneuverability is improved with shorter boom lengths.

The use of proper towing bridles or paravanes will minimize damage during towing by efficiently transferring the point load tension from the line to the connector. Towing devices prevent a boom from twisting when being towed at high speeds. Lines between boom ends and vessels should be of sufficient length to avoid sharp stress or snatching on a towed boom. Approximately 200 ft (60 m) for a 1,500 ft (460 m) length of boom is typical. When feasible, an odd number of boom sections should be used to avoid having a connector at an apex from which oil more readily escapes.

Oil concentration by towed booms can be slow in thin slicks. Boom performance can be judged visually at the apex of the U or J. Oil lost under a boom will appear as globules or droplets rising from behind a boom. Eddies behind a boom are also an indication that towing is too fast; however, sheens are usually present behind a boom even when a boom is functioning well.

Note that the apex of a boom often cannot be seen from the wheel-houses on towing vessels. Aircraft equipped with suitable air-to-sea communications can assist in directing movements and activities of vessels to ensure that they are operating in the heaviest concentrations of floating oil. Oil slicks can be more easily located from the air than from the water surface. The thickness and volume of a slick can also be estimated from an aircraft.

Maintaining proper station of the two towing vessels relative to one another requires good communication and is improved with practice. Towing in a J configuration is difficult with untrained crews. For maximum maneuverability at low speeds, the ideal towing point aboard the vessel must be determined by trial and error and may need to be altered according to wind and course direction. A towing point well forward of the stern is best.

5.10 Special Application Boom

5.10.1 Shore-Sealing Boom

In intertidal areas, or along river banks, where water levels fluctuate, shore-sealing booms can be deployed to ensure that a seal is maintained at the waterline. They can be used on mud or sand flats, but do not form an effective seal on either rough or rocky shorelines.

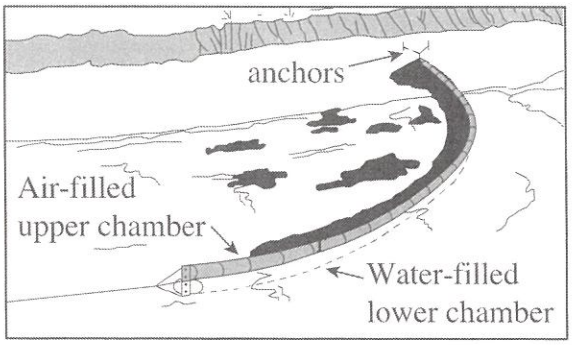


Figure 5-15 Shore-Sealing Boom

5.10.2 Netting Boom

Subsurface barriers are used to intercept, contain, and/or recover oil that is below the water surface. They are generally used to recover heavy oils, such as weathered or emulsified crude, tar balls, or tacky burn residue. They will not recover light, low viscosity oils that can flow through the boom's mesh.

Netting boom can usually be towed at higher speeds than conventional boom, which may allow higher recovery rates, better steering control and continuous operation of the tow vessel (i.e., the vessel can maintain its speed without stopping and starting).

Netting boom is suitable for collecting oil along beaches and shorelines with significant wave action. This type of boom may be set just below the high tide line to catch any weathered oil or emulsion that floats ashore, preventing the oil from penetrating into the soil below. The netting can be retrieved, cleaned, and reapplied before the next tidal cycle, or it can be incinerated. Note that retrieval and cleaning of oiled netting is a messy task that often requires subsequent cleaning of vessels and crew. Incineration may require government approval and/or use of an approved incinerator.

5.10.3 Current Buster® Technology

Conventional containment boom tow speed is limited due to entrainment failure that generally occurs at current speeds between 0.7 and 1.0 knots (0.4-0.5 m/s) as described in Section 5.4 Boom Failure. Current Buster® technology is able to increase the speed at which oil can be corralled to up to 5 knots towing speed with minimal oil loss. The system consists of two boom lengths extending outward to create a pocket (i.e., swath width), a debris collection area, and then a set of wave dampeners directly ahead of a pocket for oil collection, thickening, and pumping. This technology is available in multiple sizes which are constructed for specific areas of operation (i.e., nearshore, offshore and open water).

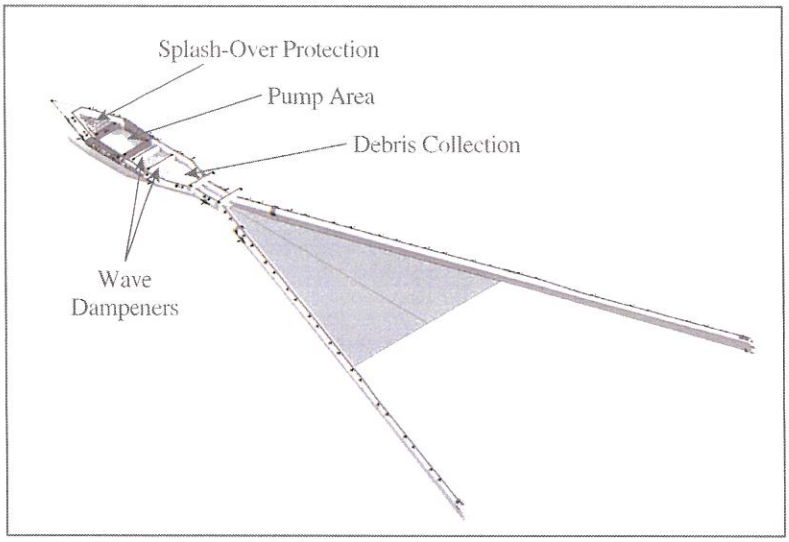


Figure 5-16 General Current Buster® Configuration

5.11 Boom Anchoring

Anchoring boom requires specific knowledge of the equipment, accessories, and techniques involved. Tide tables, local knowledge and weather forecasts should be consulted before boom is deployed, especially when it must remain overnight.

- Anchoring boom can require anchors (e.g., Danforth, Fisherman's), release lines, chains, floats, bridles, lights, and other accessories (see Figure 5-16).
- If feasible, permanent anchors can be placed at strategic sites in advance of a spill.
- Table 5-7 can be used to approximate anchor size. Local mariners can also provide guidance.
- Practice drills can help determine the type and weight of anchors most effective at specific sites.

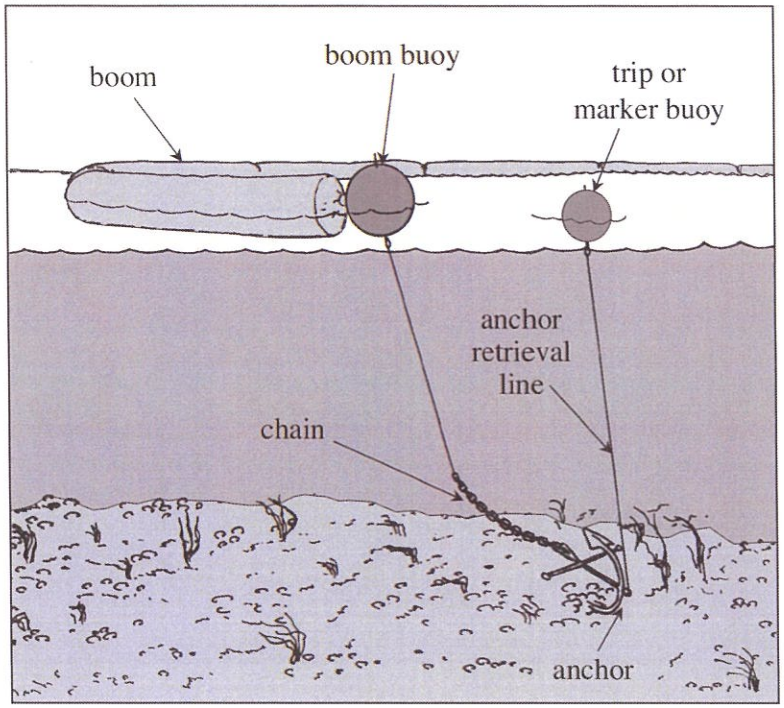


Figure 5-17 Boom Anchoring Assembly

Table 5-7 Holding Strength of Danforth Anchors

Anchor Weight lbs (kg)		Holding Strength lbs (kg)					
		Mud		Sand		Clay	
30	(15)	440	(200)	550	(250)	660	(300)
60	(25)	770	(350)	880	(400)	1,100	(500)
80	(35)	1,320	(600)	1,540	(700)	1,540	(700)

5.11.1 Anchoring in Marine Waters

The following guidelines should assist in preventing the loss or damage of boom anchors in coastal waters:

- For large boom and many containment operations in currents, it is essential to set anchors first, and then deploy and attach boom to ensure correct positioning. Smaller boom (<18 in or < 46 cm) can be easily deployed in calm water by anchoring either first or last.
- Anchor lines can be fastened directly to towing ends. If anchor buoys are used, they should be securely fastened to anchor lines.
- When booms without anchoring points are deployed, floats provide an effective means of attachment so that the boom is not pulled down with tide changes.
- When anchor points are located below the water surface, a floating line should be attached to allow ready access.
- To assist in retrieving an anchor, a trip (or marker) line can be attached to the crown of an anchor that is secured at its other end to a float of a different color than the anchor line buoy.
- Consistent color and size, e.g., 8 in (20 cm) blue top line buoys and 12 in (30 cm) red anchor line buoys, facilitate the deployment and retrieval of boom.

In non-flowing waters, boom should be anchored every 200 ft (60 m), noting the following:

- Tides and boom configuration might dictate more frequent anchoring intervals.
- The length of anchor lines (L) can be estimated using the following formulas:
  - calm water: L = 3 x water depth
  - choppy water: L = 5 x water depth
  - rough water: L = 7 x water depth

- In waves along exposed coasts, anchor lines should be at least 5 x the water depth to prevent them from snatching (i.e., being quickly pulled under the water surface when placed under tension).
- Generally, the length of line used should include sufficient slack to allow for tides, currents, and waves. This length is assessed on a case-by-case basis.
- Chain can be attached to an anchor line at its end to help set the anchor and to increase its holding capacity.

5.11.2 Anchors of Opportunity

The number of anchors available during a large spill incident is often limited. As a result many anchors of opportunity are used. Examples of anchors of opportunity include concrete blocks, metal weights and a shore sealing (air/water tube) boom.

- Lines should be firmly attached to such anchors and safe deployment procedures carefully followed so that mishaps do not occur.
- Lifting gear for concrete blocks and other large weights should be used properly, in a manner that does not compromise the stability of a small vessel, e.g., tugboat.

5.11.3 Anchoring in Currents

Deploying boom in currents of 0.5 kts (0.25 m/s) or more requires special anchoring techniques:

- Lines can be secured to shore every 30 ft (10 m) to allow the boom to be angled 30° to 45° to the current and to reduce the effective current velocity acting on the boom. Oil can then be deflected or recovered.
- Cables or ropes can be used to link boom to various anchors located on a riverbank or foreshore area.
- Trees, bridge supports, and other items can be used to anchor boom, often at pre-selected spill control points, as long as they don't represent unsafe tripping hazards. Cables or rope can be covered by rubber or run through small floats so that neither the line nor the item used as an anchor is damaged.
- At some river terminals, a boom can be permanently anchored at one end and left to float freely in the water. When needed, usually to surround a vessel transferring oil, the free end of a boom can then be readily towed into position.

5.12 Boom Washing

There is little need to wash booms used to trap oil repeatedly. However, it is necessary to clean boom under certain circumstances:

- Where boom is to be used for the protection of un-oiled areas;
- After boom has been used to contain oil freed during shoreline cleanup operations; and
- When boom is taken out of service and returned to storage.

Use of dirty boom is usually unacceptable because of the sheen it leaves behind. Cleaning small amounts of boom can be done manually in a contained area using a pressure washer wand, long handled-scrub brushes, detergent, and warm water. A containment area is necessary where the wash water is collected. After washing, booms can be wiped by hand with sorbent pads. On a good day, 6 to 12 workers can clean up to 3,000 ft (900 m) of boom.

In the event of imminent bad weather, more rapid cleanup techniques such as dispersants or shoreline cleaners may be useful options, if there is government support.

5.13 Material Take Off (MTO) List

Typical equipment needed is shown in the following MTO list.

Table 5-8 Material Take Off List for Boom

Equipment	Use
Boom	Containing oil for recovery
Anchors	Anchoring boom
Floats	Marker and trip-line buoys
Rope	Towing, anchoring
Paravanes	High-speed towing
Chain	Anchoring
Cable	Towing, positioning boom
Lights	Night-time illumination of boom
Fittings	Connecting boom, lights, anchor lines
Power supply/generator	Provide power for air blowers, pumps, etc.
Air blowers	Filling air chambers on inflatable boom
Pumps	Filling water chambers on shore-sealing boom
Vessels	Deploying, towing, and tendering boom
Aircraft	Slick spotting, positioning of vessels
Radios	Communication among vessels/aircraft
GPS	Positioning boom, documenting activities
BoomVanes™	Deploying and retrieving containment boom
Current Busters®	Increases tow speed of boom while maintaining containment characteristics

6 Shoreline Protection

6

6.1 Introduction

Every reasonable effort should be made to prevent oil from reaching the shore in order to reduce:

- Environmental impacts
- Duration of cleanup operations
- Generated wastes

If attempts to do so fail, methods to divert slicks from a more sensitive area to a less sensitive area should be employed. This section discusses various ways of keeping oil away from sensitive areas and identifies shoreline protection measures.

If oil has reached the shore, the treatment techniques outlined in Section 12 should be considered.

6

6.2 Shoreline Types

Response strategies have been developed for the various shoreline types based on their specific characteristics. The sensitivity of each shoreline type to spilled oil is indicated in Table 6-1. The shoreline types are arranged from lower sensitivity (e.g., exposed rocky headland) to higher sensitivity (e.g., salt marshes and mangroves). Near-shore habitats, such as kelp and seagrass beds, coral reefs and lagoons are included in Table 6-1 because these areas warrant special consideration in deploying protective measures.

Table 6-1 Response Considerations for Various Shoreline Types and Nearshore Habitats

Intertidal Shoreline	Response Considerations
Exposed Rocky Headlands and Wave-cut Platforms	• Wave reflections can help to keep oil offshore • Cleanup may not be required
Man-made Solid Structures and Boulder Beaches	• Wave swept, usually erosional • Natural processes will remove oil within weeks • Cleanup may not be required
Fine- to Medium-Grained Sand Beaches	• Low density of biological populations • Oil does not penetrate into the beach • Mechanical removal of oiled sand is effective

Table 6-1 Response Considerations for Various Shoreline Types and Nearshore Habitats (continued)

Intertidal Shoreline	Response Considerations
Coarse Grained Sand Beaches	• Low density of biological populations • Oil may penetrate/be buried rapidly up to 30 cm, making cleanup difficult • Mechanical removal is effective
Tundra Cliffs	• Vegetation overlies peat and permafrost • Remove oil by sorbing with peat or by other manual methods
Gravel and Cobble Beaches	• Oil may penetrate rapidly, making cleanup difficult • Cleanup should concentrate on high tide area • Oiled debris should be removed (ideally, debris should be removed prior to oil impact) • Shoreline cleaners used in some countries to speed oil removal
Riprap	• Mainly breakwaters and jetties • High pressure flushing may be effective • Any released oil must be recovered
Exposed Tidal Flats	• Low to moderate biomass • Mobile sediments, and most oil will not penetrate sediments • Natural processes will remove most oil in about one year
Exposed Vegetated Tidal Flats	• Moderate biomass • Sediments less mobile, and most oil will not penetrate sediments • Oil may persist about one year
Sheltered Rocky Shores and Clay Scarps	• Moderate to high biomass may be affected • Clay scarps may have numerous burrows and tunnels • High priority protection zones • Removal of heavy oil concentrations may be beneficial; use only low-pressure flushing
Peat Shorelines	• Often found in Arctic regions • Natural recovery is the most preferred response option
Inundated Lowland Tundra	• These are Arctic subsidence areas flooded by the sea • Cleanup can cause extensive damage • Natural recovery is least damaging and preferred

Table 6-1 Response Considerations for Various Shoreline Types and Nearshore Habitats (continued)

Intertidal Shoreline	Response Considerations
Sheltered Tidal Flats	• Large populations of animals and plants • Area should receive top priority protection from oil contact • Low wave action • Removal of heavy oil accumulation may be beneficial; otherwise, cleanup is not recommended • Oil may persist for long periods
Salt Marshes	• Most productive of aquatic environments • Very low wave energy, and high sedimentation rate incorporates oil into sediment • Oil may persist for years • Cleanup may do more damage than natural degradation processes
Mangroves	• One of the most important marine habitats • Highest priority protection area • Mangroves should not be altered by response activities • Dispersants or cleaners can be more beneficial than mechanical cleaning
Shallow Subtidal	**Response Considerations**
Coral Reefs and Lagoons	• Areas should receive high protection priority • Oil will float over reefs with minimum impact • Dispersants may be used near but not above coral reefs
Seagrass Beds	• Highly productive aquatic environment • Low wave action • Oil will float over • Cleanup may do more damage than leaving the oil to natural degradation processes
Kelp	• Highly productive aquatic environment • Will not be impacted by floating oil • Dispersants should not be applied directly above

Reference: *ASTM F-2464-12, Standard Guide for Cleaning of Various Oiled Shorelines and Sub-Tidal Habitats*, ASTM International, West Conshohocken, PA, USA, 2012.

6.3 Selection of Shoreline Protection Techniques

Selection of an appropriate protection technique for a shoreline depends not only on the type of shoreline and its sensitivity, but also on several other factors as summarized in Table 6-2.

Table 6-2 Factors Affecting Shoreline Protection

Nature of the Spill	• Amount and type of oil spilled • Time until oil contacts shore
Weather	• Present conditions • Weather forecasts
Type of Water Body	• Lake, river, canal, swamp, lagoon, estuary, ocean, fjord, bay, strait, etc.
Ecological, Economic, and Cultural Resources	• Immediate risk to resources • Seasonal considerations (nesting, spawning, ice, snow) • Fishing, tourism
Water Movement	• Erosional or depositional (high or low flow) in nature • Current speed and direction, rip tide • Tidal action: differential, frequency, tidal bore • Wave action: breaking, non-breaking
Shoreline Contour	• Water depth • Smooth, rocky, reef, island • Precipice, shelf, harbor, • Gradient, stability of sediment
Accessibility	• Land access (roads rated for passage of heavy equipment) • Water access (depth greater than boat draft and ability to operate in slick) • Air access (flat ground with <10° slope for helicopter pad)

6.4 Shoreline Protection Decision Guides

Decision guides are presented in this section to facilitate the selection of shoreline protection techniques for particular spill conditions and the waterway or shoreline type and contour involved.

The decision guides in this section are divided into two categories:

- Inland waterways (Table 6-3)
- Coastal waters and large lakes (Table 6-4)

Information on response techniques applicable to a particular type of waterway are summarized below.

Table 6-3 Decision Guide for Protecting Inland Waterway Shorelines

Lake or Pond	Minor sheen • Use sorbent boom Moderate to major visible slick • Use containment boom
Rivers or Large Streams >1.6 ft (0.5 m) deep	Currents <1 kt (0.5 m/s) • Use containment or exclusion boom Currents 1–2 kts (0.5–1.0 m/s) • Use single diversion boom Currents >2 kts (1.0 m/s) • Use cascading or fast current boom
Small Streams <33 ft (10 m) wide and 1.6 ft (0.5 m) deep	Currents <1 kt (0.5 m/s) • Use sorbent or containment boom or berms or dams Currents 1–2 kts (0.5–1.0 m/s) • Use single diversion boom or berms or dams Currents >2 kts (1.0 m/s) • Use cascading boom, fast current boom or berms or dams
Shallow Rivers or Streams <1.6 ft (0.5 m) deep	Currents 0–2 kts (0–1.0 m/s) • Use berms or dams

Table 6-4 Decision Guide for Protecting Coastal Shorelines

Straight Coastline with Sensitive Areas	Breaking waves >1.5 ft (0.5 m) • Use beach berm or containment boom outside of surf zone if feasible Breaking waves <1.5 ft (0.5 m) • Use diversion boom upstream of sensitive areas
Entrance to Bays, Harbors, Lagoons	Breaking waves <1.5 ft (0.5 m) *and* current <1 kt (0.5 m/s) • Use exclusion boom across entrance Breaking waves <1.5 ft (0.5 m) *and* current >1 kt (0.5 m/s) • Use angled diversion boom at or inside entrance where currents are reduced Breaking waves >1.5 ft (0.5 m) • Use containment boom outside of entrance
Narrow Tidal Channel	Current <1 kt (0.5 m/s) • Use sorbent barriers or exclusion boom across entrance Current >1 kt (0.5 m/s) • Use diversion boom across channel

Note: When wave amplitude exceeds 1.5 ft (0.5 m) or currents exceed 3 knots (1.5 m/s), protective booms should be moved to calmer waters if available. It will be very difficult for a single boom to contain oil.

6.5 Specific Protection Measures

Physical protection techniques that can be used to control or contain floating oil slicks are described in the sections below. Four booming techniques, two earthen barrier types, and use of a passive, sorbent boom are presented below.

6.5.1 Exclusion Booming

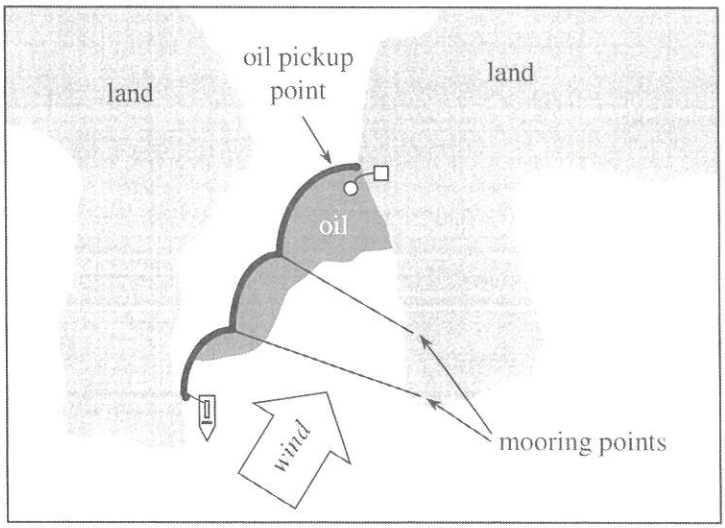


Figure 6-1 Exclusion Booming

Description	Boom is deployed across or around sensitive areas and anchored in place. Approaching oil is deflected or contained by boom.
Primary Uses	Across small bays, harbor entrances, inlets, river, and creek mouths with: • Currents <1 kt (0.5 m/s) • Breaking waves <1.5 ft (0.5 m) high
Environmental Effects	Minor disturbance to substrate at shoreline anchor points
Logistics	For calm weather, light boom: • Workboat plus crew • 6 anchors plus anchor line and buoys • 1 recovery unit (including skimmers, transfer and storage) For rough weather, heavy boom: • Workboat plus crew • 12 anchors plus anchor line and buoys (recovery not possible)

6.5.2 Diversion Booming

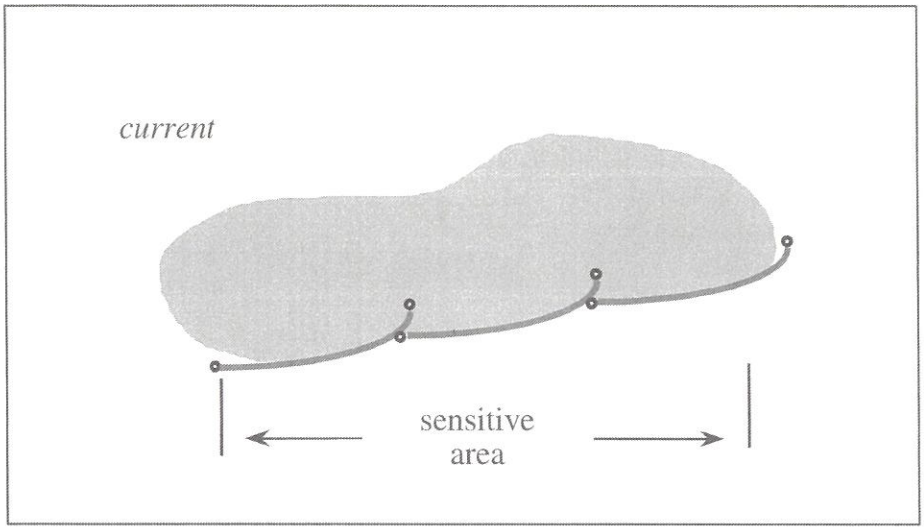


Figure 6-2 Diversion Booming

Description	Boom is deployed at an angle (see 5.4.1) to the approaching slick. Oil is diverted away from the sensitive area to a less sensitive location for recovery.
Primary Uses	• Inland streams with currents >1 kt (0.5 m/s) • Across small bays, harbor entrances, inlets, river and creek mouths with currents >1 kt (0.5 m/s) and breaking waves <1.5 ft (0.5 m) • On straight coastline areas to protect specific sites, where breaking waves <1.5 ft (0.5 m)
Environmental Effects	• Minor disturbance to substrate at shoreline anchor points • Diverted oil may cause heavy shoreline oil contamination downwind and down current.
Logistics	For single boom: • Workboat plus crew • 1 anchor plus anchor line For cascading boom: • Workboat plus crew • 6–9 anchors plus anchor line and buoys

6.5.3 River Booming

Various commercially available booms have been specially designed for operation in rivers. River booms include both top and bottom tension members that provide vertical stability and improved oil deflection capability in relatively high current, i.e., up to approximately 2–3 kts (1–1.5 m/s). Such booms can be effective in a river where there is uni-directional flow. In a large coastal river with reversing tides, repositioning a boom can be difficult and time-consuming.

When current speeds exceed 0.75 kt (0.4 m/s), it is necessary to angle the boom (including river booms) to reduce the current relative to the boom. Angling the boom also allows oil to be diverted to shore where it can be collected. (See also Section 5.4.1)

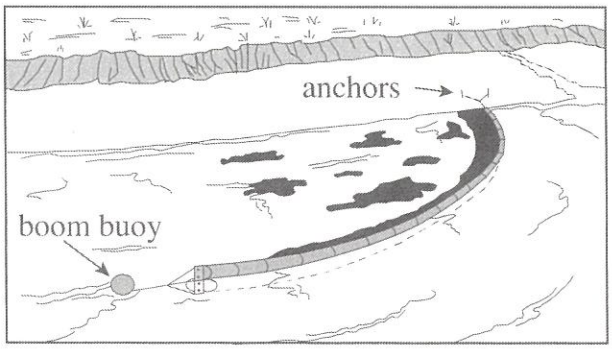


Figure 6-3 River Booming

6.5.4 Shore-Sealing Boom

Shore-sealing boom has water-filled lower and air-filled upper chambers that automatically adjust to changing water levels (Figure 6-4). The shore-end (stranded end) of the shore-sealing boom is fixed while the water-end (floating end) floats and is usually connected to a conventional boom.

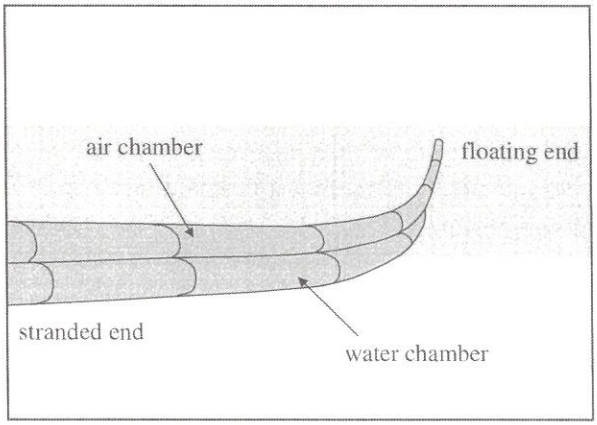


Figure 6-4 Shore-Sealing Boom

When deploying shore-sealing boom, the final position should be known before the boom is placed and anchored since redeployment is difficult, if not impossible, once the heavy water-filled chambers have settled on the shore. The water chambers of the boom must be fully filled or water will collect in the lower sections leaving the more highly elevated sections (toward the shore) only partially full or empty. However, on beaches with severe slope towards the water, shore-sealing booms can be damaged from stress on the waterside end connector if too much water is used.

Sites with boulders, sharp protrusions, riprap, or other features that will result in oil leaking under the boom when the tide changes should be avoided. Once deployed, shore-sealing booms require regular monitoring since currents, wind, and waves can move and/or twist them. Damage to fabric can result as a boom grounds and chafes in an intertidal zone.

6.5.5 Beach Berms

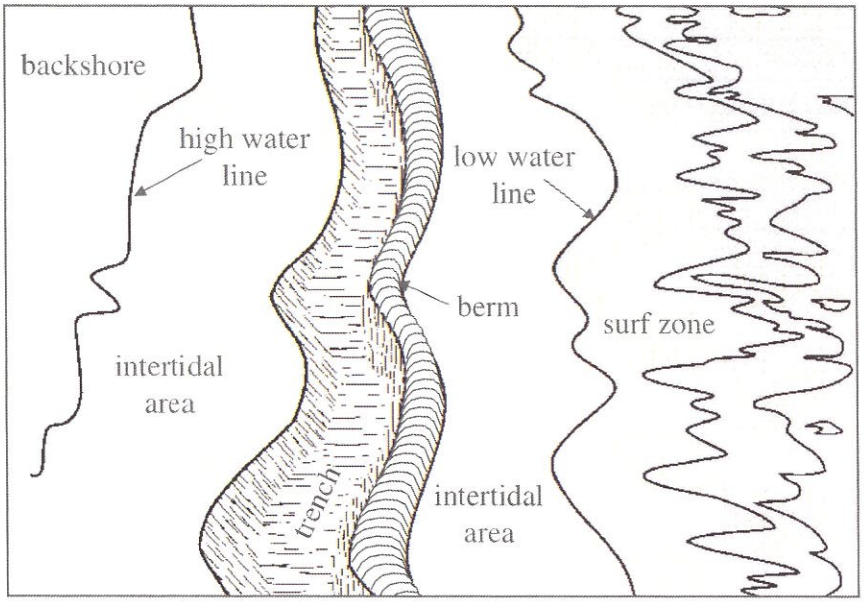


Figure 6-5 Beach Berm

Description	A dike or berm is constructed along the upper intertidal zone to prevent incoming tides from depositing oil onto back-shore areas.
Primary Uses	• Sandy or gravel beaches • Protects the upper intertidal and back-shore areas from contamination
Environmental Effects	Disturbs upper 2 ft (0.6 m) of beach sediments
Logistics	Beach can sustain motor traffic well • 1 motor grader Beach cannot sustain motor traffic well • 1–2 front-end loaders or bulldozers

6.5.6 *Berms, Dams, and Inverted Weir on Streams*

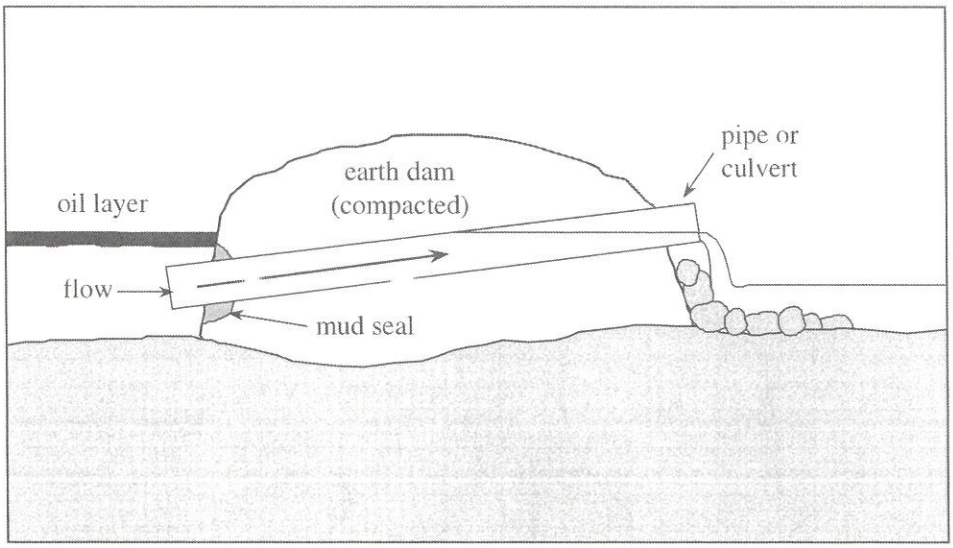


Figure 6-6 Inverted Weir

Description	Dams are constructed to either block flow completely or to block flow with a provision for underflow. Berms are constructed to control flow by diversion or underflow.
Primary Uses	Shallow streams or rivers where: • Booms are not available or cannot be deployed • Dams are part of the hydrological control system
Environmental Effects	• Local effects due to front-end loader • Blockage of fish movement
Logistics	For diversion berm or underflow dam: • Front-end loader or bulldozer • 3–6 short sections or 1 long section of boom • 1 skimmer, pump and tank For inverted weir: • Front-end loader or bulldozer • Discharge tube with or without valve • 1 skimmer, pump and tank

Traditionally, building an underflow dam or inverted weir would require larger mechanical equipment such as a front-end loader or bulldozer. An alternative would be to use a portable underflow device which replaces the dirt that would normally be required for narrow/small waterways to hold back the water and oil. Each device has numerous valves that can be opened and closed to regulate the amount of water passing underneath the dam. This device can be carried by two people which allows for greater flexibility in its use especially in areas that do not have sufficient access for large equipment.

6.5.7 Passive Sorbents

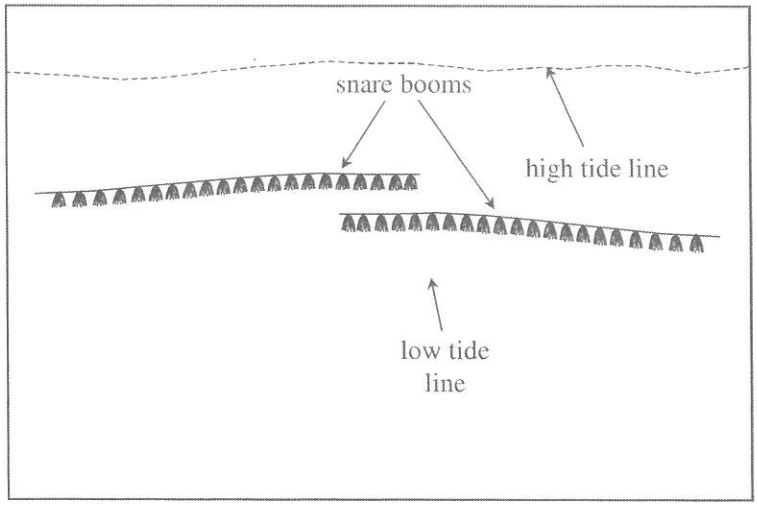


Figure 6-7 Passive Sorbents

Description	Snare booms (pom-poms on a rope) are positioned in the intertidal zone using stakes. See Section 10 for information on sorbents.
Primary Uses	Sand and gravel beaches and tidal flats
Environmental Effects	Minor disturbance to substrate
Logistics	For snare booms: • 2–5 snare booms • Wooden stakes • Disposal drums or large plastic bags

6.6 Material Take Off (MTO) List

There are a number of types of equipment required to successfully conduct shoreline protection.

Table 6-5 Material Take Off List for Shoreline Protection

Equipment	Use
Boom	Containing and deflecting oil
Portable Dam	Portable device to create underflow weir
Anchors	Anchoring boom
Rope	Towing, anchoring
Chain	Anchoring
Lights	Night-time illumination of boom
Sorbents	Beach protection, protection in ponds, streams
Vessels	Boom deployment, boom tendering
Motor grader	Constructing beach berms
Bulldozer and front end loader	Inverted weir construction
Skimmers	Oil collection
Containers, drums	Disposal of used sorbents, oiled debris
Pumps	Pumping oil

7 Dispersants

7

7.1 Introduction

Many international agencies and regulatory bodies around the world view dispersants as the most practical spill response option for offshore. In many cases, dispersing oil into the marine environment can result in the lowest environmental impact for offshore spill response. To assist in decision-making process on whether to use dispersants, a net environmental benefit analysis (NEBA) is performed. An advantage of dispersants is that they enhance the natural biodegradation process to speed removal of oil from the water, thereby reducing the potential of oil impacting shorelines, sensitive habitats, and wildlife found on or near the sea surface. This is the case for both surface application and sub-sea injection of dispersants.

Key aspects of dispersant use are listed below.

- The decision on whether or not to use dispersants should be made after considering the potential effects of dispersed oil versus undispersed slicks. This is because for large offshore spills, mechanical recovery may only encounter a small fraction of the oil leaving the majority of it untreated. The objective should be to minimize overall ecological impacts thereby maximizing net environmental benefit, i.e, through the use of NEBA.
    - Use of dispersants requires logistics planning including aircraft and/or vessels, application gear, re-supply of dispersants, refueling, sufficient personnel, protective equipment, and equipment calibration.
    - Many governments strictly regulate the use of dispersants. For example, in the United States, dispersants must be listed on the Environmental Protection Agency's (EPA) National Contingency Plan Product Schedule (the NCP list). In other countries, government authorities may approve dispersant use during a spill contingency plan approval process or when a spill occurs.
- For maximum effectiveness, dispersants should be applied as close to the source and as soon as possible after a spill. During the early stages of a spill, oil is un-weathered and less spread out, making it easier to target and disperse.
- Dispersants should be considered for use with other potential spill response methods and equipment, and not as a last resort.

The main goal of dispersant use is not to simply transfer oil into the water column but also to enhance its removal from the environment through the process of biodegradation. Along with this, the potential advantages of dispersants are as follows:

- Dispersants can be used over a wider range of environmental, meteorological, and oceanographic conditions than other response options for offshore spills. They can be applied in rough seas (up to 10 ft) and on thin oil slicks (<<1 mm).

- Dispersants can treat much more oil over time than other response options for offshore spills. They can be applied to surface slicks at high speeds by aircraft. In addition, aircraft allow rapid transit to a spill location and relocation to slicks separated by significant distances.
- Subsea injection of dispersants can proceed 24 hours per day and is less susceptible to any storm conditions at the sea surface.
- Dispersants can reverse, stop, or eliminate water-in-oil emulsion formation particularly when applied to low-viscosity oils. If emulsions form, the potential for oils to reach shorelines increases.
- Rapid dilution and biodegradation of dispersed oil occurs during both surface and subsea dispersant application. Dispersants accelerate the biodegradation of oil via the formation of very small dispersed oil droplets, which increase the surface area available to bacteria. Rapid dilution of dispersed oil ensures biological activity does not exhaust available nitrogen, phosphorous, and oxygen needed for biodegradation.
- Subsea injection of dispersant reduces the amount of oil rising to the sea surface and this in turn (a) reduces exposure of surface vessels and personnel to volatile components of the oil and (b) reduces the need for surface recovery using mechanical equipment, in situ burning, and surface dispersant operations. This reduces exposure of response personnel to accidents during these operations.

The potential disadvantages of dispersants are as follows:

- Dispersed oil, transferred into the water column, could potentially expose marine organisms which might not otherwise be exposed to oil. However, because dispersed oil rapidly dilutes, periods of exposure are short, and concentrations fall below toxicity thresholds within minutes to hours of initial dispersion.
- Dispersants are not effective on all types of oil. Higher viscosity oils, oils that have become more viscous, oils that have cooled below their pour point, and oils that have emulsified may be less dispersible. Some dispersants have been formulated to work on heavy and weathered oils.
- Although modern dispersant formulations exhibit low toxicity and are used in volumes that are a fraction of the spilled oil volume, they add chemicals to the marine environment. However, once in the environment, dispersants undergo the same dilution and biodegradation as the dispersed oil.
- Operationally, dispersant use on patchy slicks may be inefficient when applied by large fixed wing aircraft. A large, multi-engine aircraft such as a C-130 may have a swath width significantly greater than the width of slicks that form into windrows over time. In these cases, the advantages of aerial application may be lost as vessel-based application could be more suitable.

Potential advantages and disadvantages of dispersants are summarized in Table 7-1.

Table 7-1 Potential Advantages and Disadvantages of Dispersant Use

Advantages	Disadvantages
• Removing oil from the water surface keeps it from reaching shoreline	• May adversely affect some marine organisms that would not otherwise be exposed to oil
• Is often the quickest response method	• Not effective on all types of oil under all conditions
• Can be used in strong currents and higher sea states	• If dispersion is not achieved, may decrease the effectiveness of other method
• Reduces possibility of sea bird and marine mammal exposure	• Adds substances into the marine environment
• Inhibits formation of emulsions	• Limited time window for use
• Facilitate natural biodegradation	
• Dipersants lower the adhesive properties of oil	
Reference: *IMO/UNEP Guidelines on Oil Spill Dispersant Application*, 1995 edition, IMO, London, 1995.	

7.2 Suggested Dispersants

While the COREXIT™ products have been studied extensively and are present in a number of inventories around the world, other products are available as well. For example, Oil Spill Response Ltd (OSRL) is implementing a global stockpile of 5000 m^3 of three of the most common dispersants. These will be stored at various locations to enable prompt access to dispersant in the event of a release with a focus on a subsea intervention. In addition to COREXIT™ EC9500, Finasol OSR 52™ and Dasic Slickgone NS™ will also be available. Information concerning applicability, toxicity, and effectiveness should be obtained from the manufacturer.

7.3 Dispersant Use Near Sensitive Habitats

Dispersants can reduce the amount of oil reaching near shore and shoreline sensitive habitats such as:

- Mangroves
- Salt marshes
- Coral reefs
- Kelp beds

It is best to disperse oil some distance before it approaches important ecological habitats. For situations where this is not possible and with the agreement of the relevant government agencies, guidelines for using dispersants near specific ecological habitats are discussed below. In general, care should be taken to avoid excessive application.

7.3.1 Kelp Beds

Dispersant use is recommended for protecting kelp beds, which occur most often on rocky subtidal habitats. Dispersants should be used where there is sufficient water circulation and flushing for dilution.

7.3.2 Seagrass Beds

Dispersant application can protect seagrass beds in the intertidal zone. The use of dispersants over shallow, submerged seagrass beds or in areas of restricted flushing is generally not recommended, but should be weighed against the consequences of untreated oil stranding on shore.

7.3.3 Coral Reefs and Lagoons

Dispersant use should be considered in waters near coral reefs and lagoons to prevent oil from contacting the reefs. Applying dispersants to oil directly over shallow, submerged reefs is generally not recommended, particularly if the water exchange rate is low such as in lagoons and atolls.

7.3.4 Nearshore Sub-Tidal Zones

For nearshore zones of sandy and gravel/cobble beaches and for bay habitats, dispersant application is a possible option when there is sufficient water circulation and flushing capacity for dilution.

7.3.5 Tidal Flats

Dispersants should not be applied to oil that is stranded on exposed tidal flats. However, dispersant use can be considered in nearshore shallow waters after considering net environmental benefits. Limited biological impact to tidal flat sediments is expected because little dispersed oil is incorporated into the sediments.

7.3.6 Salt Marshes

Salt marshes can be protected either by applying dispersants offshore or to open water and channel areas in a marsh, but not to the marsh surface itself. If an oil slick is approaching a marsh, dispersants should be applied as the tide starts to rise, if possible. This approach will maximize dispersion of oil. Dispersants should not be used in marshes that cannot be flushed.

7.3.7 Mangroves

Dispersant use is a preferred technique for protecting mangroves because of the potential persistence and long term effects of oil on roots. If dispersed oil reaches a mangrove forest with a small tidal range, attempts should be made to flush it out as soon as practical.

7.3.8 Other Considerations—Marine Birds and Mammals

Dispersant use is recommended in offshore and coastal areas when this would prevent oiling of marine birds and mammals from contact with oil slicks. This is particularly true when large colonies of animals are engaged in nesting, rearing, feeding, and over-wintering activities near a shore. Direct spraying of dispersants on animals is to be avoided.

7.4 Dispersant Dosage

The conventional planning basis for dispersant dosage is 1 part to 20 parts of oil, also known as a dispersant to oil ratio (DOR) of 1:20. However, this does not take into account the wide range of properties found in both oil and dispersants which influence dispersant effectiveness. From a strategic point of view, less potent, lower cost dispersants may also be effective on oils that are easily dispersible at DORs of 1:20–30. Alternatively, lower dose rates of more potent dispersants could achieve the same goal, e.g., about 1:50–100 DORs. For oils of typical dispersibility, more robust products, such as Corexit™ EC9500 or comparable, would be used in the range of 1 part dispersant to 20–50 parts oil. For heavy oils or highly weathered

or emulsified oils, products specially formulated for heavy oils, such as Corexit™ EC9500 or similar products, may be required at levels as low as a 1:10 DOR to achieve effective dispersion. On lighter oils, dispersion may occur spontaneously or within a very short time after application. For the heavier oils, dispersion may not occur immediately and may in fact take as long as 30 minutes or more depending on wave activity, so longer term monitoring may be needed for the heavier oils to confirm effectiveness.

For typical slicks, an application rate for dispersant concentrates of between 2 and 10 US gallons per acre (19 to 94 liters per hectare) can be used. An application rate of 5 US gallons/acre (47 liters/hectare) is often used. On a volume-of-dispersant to volume-of-oil basis (i.e., the DOR), these application rates range from less than 1:100 to more than 1:10, depending on the thickness of the oil slick and its dispersibility. Two guidelines should then be followed:

- High application rates; e.g., 10 US gallons/acre (94 liters/hectare) and/or multiple pass applications are used for thicker layers of viscous oils.
- Lower rates are more applicable to thinner layers of lighter oils and to subsea injection.

The following formulas can help estimate the quantity of dispersant to apply:

D (dispersant dosage in US gal/acre) = 27,200 x t x R
P (pump rate in US gal/min) = 63.2 x N x S x t x R

where: t = average thickness of oil in inches
R = desired dispersant-to-oil volume ratio
N = speed of boat or aircraft in knots
S = swath width on the water surface in feet

1 US gal/acre = 9.353 liter/hectare
1 US gal/min = 0.0631 liters/sec

For example, at a:

speed = N = 140 knots (1 knot = 1.85 km/hr)
swath width = S = 150 ft (1 ft = 0.3048 m)
average oil thickness = t = 0.01 in. (1 in = 25.4 mm)
dispersant-to-oil ratio = R = 1:40

D (dispersant dosage) = 27,200 x 0.01 x 1/40 = 6.8 gal/acre
or approximately 64 liters/hectare

P (pump application rate) = 63.2 x 140 x 150 x 0.01 x 1/40 = 332 gal/min
or approximately 20.9 liters/sec

Swath width can be estimated or measured during tests. For vessel applications, to estimate a swath width for a spray boom system, multiply the width from the hull to the outermost spray impact on the water by two (2). Fire monitor swath width depends on the type of fire monitor and can be tested over land. For aircraft, the swath width estimate is 1.2 to 1.5 times the distance between terminal nozzles for operating at a 50 ft (15 m) to 75 ft (22.5 m) altitude. Altitude and winds affect swath width, and spotter aircraft guiding spraying operations should check these parameters.

7.5 Dispersant Application Techniques

Historically, there have been two basic methods used to apply dispersants:

- Vessel application
- Aerial application

In 2010, dispersants were injected at the source during an offshore well control event. Subsea use of dispersants provide an effective means of introducing dispersant very close to the source of a release, thereby offering the possibility of achieving very high encounter rates. This method was credited with keeping volatile fresh oil from the surface near where responders were attempting to control and contain a well blowout. This method reduced impacts to surface dwelling marine life and shorelines and minimized exposure of workers to volatile organic compounds. If a well control incident occurs in the future, subsea dispersant injection at the source should be considered.

The main goal of dispersant use is not to simply transfer oil into the water column but to enhance its removal from the environment through the process of biodegradation. Dispersant treatment of surface slicks should proceed as illustrated in Figure 7-1, taking into account the following considerations:

- Treating a spill with dispersants should prevent the intact slick from reaching a shoreline or sensitive area.
- Normally, treatment should begin at the outer edges of the thicker parts of the slick rather than through the middle or on very thin sheen surrounding a slick.
- If the slick is near shore, the preferred spray pattern is in swaths back and forth parallel to the shoreline.

While not shown in Figure 7-1, wind conditions generally dictate the spray pattern. The following rules of thumb should be considered:

- Boats may need to travel with the wind to avoid spray blowback onto the deck.
- Aircraft should spray while flying into the wind, though downwind application may be suitable for some wind conditions.
- Aircraft should avoid spraying into strong crosswinds which can carry dispersant off target.

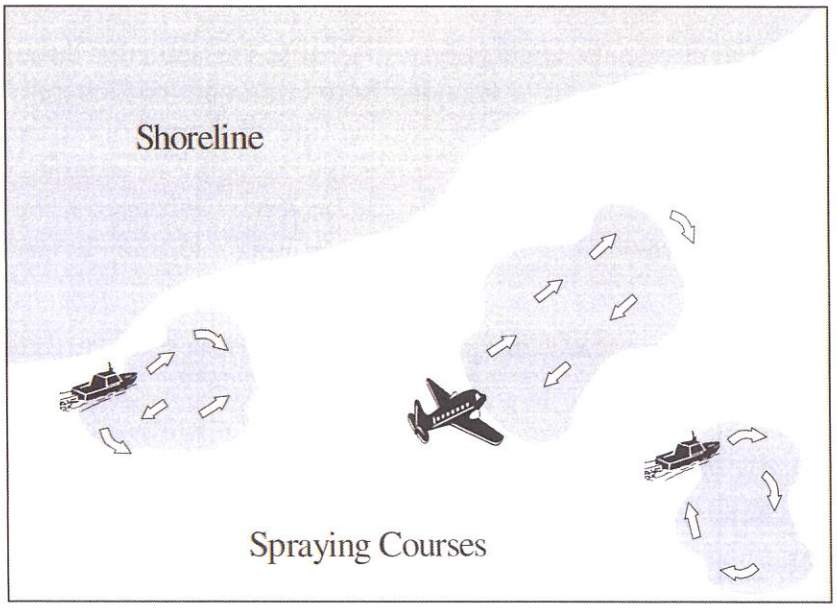


Figure 7-1 Dispersant Application

Dispersion of oil droplets into a water column is influenced by the amount of mixing energy. Dispersant application should proceed even if initial wind and sea conditions appear calm or if immediate dispersion of oil is not readily observed. Weather changes can generally be expected in marine environments (often very rapidly) and many dispersants tend to remain in an oil slick for some time after application. Further, low-energy seas make application of dispersant more efficient because slicks are easier to identify and treat.

The time taken to respond to a spill influences the effectiveness of a dispersant treatment. Over time, an oil slick weathers and becomes more viscous, especially if it incorporates droplets of water (emulsifies) and becomes a "mousse." The resulting increase in viscosity and water content makes chemical dispersion more difficult. The rate of weathering is primarily a function of oil type, slick thickness, sea state, and temperature. Treatment time can be significantly reduced by using large, multi-engine airplanes when operating over large distances.

7.5.1 Vessel Application Systems

Two systems for dispersant application from boats are spraying through a set of nozzles fixed on outboard arms or spraying from fire monitors. Generally, workboat systems are slow, have limited swath widths, and are used primarily for smaller spills close to land. In most cases, an airborne observer is useful to accurately guide the boat to thicker slicks. Treatment efficiency can be greatly enhanced if the vessels are re-supplied with dispersant and re-fueled at the treatment location to lessen delay in spray operations.

7.5.1.1 Vessels with Spray Arm Systems

- Spray arms with nozzles can be used to give a flat, uniform spray of droplets, not a fog or mist.
- Spray arms should be mounted as far forward as possible to minimize bow wave impacts.
- The added mechanical energy of a wake from a boat can enhance dispersion. Other dispersion-enhancing techniques that have been used and might be useful for some applications (e.g., nearshore and/or calm conditions) include the use of firehose water streams, other wakes produced by small boats, and towed wooden panels ("breaker boards").

Dispersant spray systems for boats are available from various manufacturers. Many differ in design, capability, versatility, size, weight, ease of handling, and control of dosage. Some equipment is fabricated for specially designed vessels.

Spray arm systems for boats should:

- Be easily transported and loaded.
- Preferably be light in weight, yet rugged.
- Be quickly and easily installed.
- Preferably have a pump as an integral part of the system and have a pressure gauge at the main pump outlet.
- Be versatile, i.e., easily adapted for different nozzles, for a range of dosages and use situations, or for placement on other vessels.
- Be equipped with nozzles that will produce a flat spray of droplets (not mist or fog) striking the water in a line perpendicular to the direction of travel of the vessel.
- Have features that allow variation/regulation/measurement of dispersant flow and water flow (if dilution is used).
- Be calibrated (using water) under potential conditions (e.g., variations in boat speed, water/dispersant flow rates, swath width sprayed) and have calibration charts prepared for use during spill response.

7.5.1.2 Vessels with Fire Monitors or Other Single Point Spray Systems

Fire monitors or similar hose-like devices on vessels are effective dispersant application systems provided that proper nozzles, pressures, flow rates, dispersant metering, and vessel operation practices are employed.

Two fire monitor application systems are recommended. The most flexible and easiest to operate is a package that uses positive pressure injection of dispersant into the water flow. This system relies on external pressure and metering systems to deliver a specific quantity of dispersant to the pressurized water stream. The second system uses eductors to draw dispersant into the water flow. The main advantage of an eductor system is its simplicity. The main disadvantages are poor control available on the amount of dispersant being drawn into the water stream and inflexibility in dealing with wide ranges of flows and pressures. Both systems rely on water-diluted application of the dispersant with a typical concentration of dispersant in the water stream of 5 to 10%.

Fire monitor dispersant application systems are capable of treating up to four times as much area as spray arm system. This is primarily due to their greater swath width, faster vessel speed, and the pitch and roll of a vessel, which do not affect the system to the same degree as the spray arm system. Fire monitor dispersant application systems are rugged for open water applications. Furthermore, vessels equipped with a fire monitor application system can perform other operations when not responding to spills.

When a fire monitor or fire hose is used, then raising the outlet nozzle to about 32° above horizontal will generally give the greatest reach. Mounting a "break-up screen" (coarse 4-mesh) over the end of the nozzle will spread the spray over a greater area. At the water surface, droplets should resemble a fine rain, not a fog or mist. If the fire monitor has an adjustable nozzle, the optimum adjustment is generally just short of the "straight-stream" position.

7.5.2 Aircraft Application

There are several factors to consider when applying dispersants from aircraft:

- As with boats, an important concern is a properly designed system of tanks, pumps, and nozzles. Dispersant droplet size in the range of 0.01-0.03 in (300-700 micron) is typically optimal for effective application.
- Some large helicopters and airplanes can treat more area per day than boats, especially when slicks are offshore or in remote areas.
- Helicopters and small fixed-wing aircraft are more appropriate for small spills or fragmented slicks close to shore.
- Large, multi-engine airplanes such as L-100/C-130 Hercules, DC-6, or DC-4 or DC-3 aircraft are appropriate for large spills, particularly in relatively open waters or far from shore.
- Jet aircraft, e.g., Boeing 727s and 737s, are being considered and developed as dispersant platforms (Figure 7-2). They offer much quicker transit to and from an oil spill, potentially increasing the surface slick size that may be treated effectively.

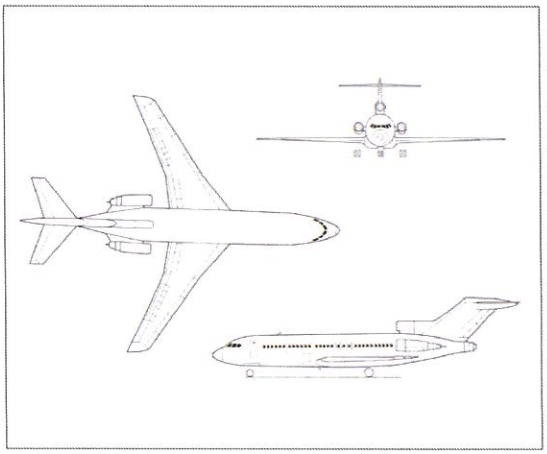


Figure 7-2 An example of the jet aircraft developed as a dispersant application platform

The characteristics of typical aircraft suitable for aerial dispersant spraying are given in Table 7-2. The dispersant delivery capabilities in a 10-hour day of various types of aircraft are shown in Table 7-3.

Table 7-2 Characteristics of Aircraft Suitable for Aerial Dispersant Spraying

Aircraft Type	Dispersant Tank Capacity		Transit Speed	Minimum Runway Length	
	gal	liters	knots	ft	m
Purpose-built Single-engine Agricultural Aircraft					
Aerospace Fletcher Cresco	405	1530	140	985	300
Aerospace Fletcher	275	1045	115	805	245
Air Tractor 502	500	1890	180	900	275
Air Tractor 602	630	2390	180	900	275
Air Tractor 802	800	3030	180	900	275
Antanov An 2 R	370	1400	100	490	150
Basant	240	900	100	705	215
Cessna Agtruck	280	1060	100	1310	400
Desmond Norman Fieldmaster	695	2640	145	575	175
EBM 701 Ipanema	180	680	105	1525	465
IAR-822	160	600	80	985	300
Pilatus Porter PC-6	250	950	110	590	180
Piper Brave 300	225	850	125	970	295
Piper Pawnee D	150	570	90	805	245
PZL Dromader M18	660	2500	100	820	250
PZL 106A Kruk	370	1400	90	720	220
Super AgCat B	300	1135	100	590	180
Thrush Commander	360	1365	100	985	300
Turbo Thrush	600	2275	125	820	250
Transavia Air Truk	215	820	95	1100	335
Converted Single and Multi-engine Aircraft					
Helicopters (fuselage mounted)					
Aerospatiale Lama	300	1140	80	—	—
Aerospatiale AS 350	290	1100	120	—	—
Bell 47	105	400	75	—	—
Bell 206	180	680	115	—	—
Bell 212	400	1515	125	—	—
Hiller UH-12E	132	500	80	—	—
Hughes 500	180	680	115	—	—
Enstrom F-28C	105	400	70	—	—

Table 7-2 Characteristics of Aircraft Suitable for Aerial Dispersant Spraying (continued)

Aircraft Type	Dispersant Tank Capacity		Transit Speed	Minimum Runway Length	
	gal	liters	knots	ft	m
Fixed-Wing					
Beech Varon	120	450	200	1345	410
BN Islander	125	480	140	560	170
BN Trislander	330	1250	145	1295	395
Canadair CL 215	1400	5300	160	3000	915
DC-3	1215	4600	130	3280	1000
DC-4	2500	9460	190	5000	1525
DC-6	3500	13250	210	5000	1525
Fokker F-27	1000	3780	260	3250	990
Grumman Avenger	530	2000	200	3000	915
737 Jet Aircraft	4000	15142	485	6000	1829
Lockheed L-100/C-130	5500	20820	300	5170	1575
Piper Aztec	150	570	175	985	300
Shorts Sky Van	315	1200	170	1675	510
Twin Otter	555	2100	170	1050	320
Volpar Turbo Beech 18	290	1100	220	1675	510
727 Jet Aircraft	4623	17500	480	6000	1829
737 Jet Aircraft	4200	15899	460	5000	1524

Conversions: 1 liter = 0.264 gallons (US)
1 knot = 1.85 km per hour
1 foot = 0.3048 meters

Table 7-3 Aircraft Capability for Oil Dispersant Delivery Over 10-Hour Period

Aircraft	Dispersant Load (gal)	Distance to Spill Site (miles)	Time per Flight (minutes)	Flights per 10-Hour Period	Number of Refueling Stops	On-site Working Time per 10 Hours (minutes)	Volume of Dispersant Delivered in 10 Hours (gal)
Helicopter	100	30	69	9	4	104	900
	300	30	94	6	5	219	1,800
	600	30	101	6	5	264	3,600
	100	50	103	6	5	69	600
	300	50	128	5	4	183	1,500
	600	50	135	4	3	176	2,400
Piper Pawnee	100	30	53	11	5	127	1,100
	150	30	59	10	4	178	1,500
	100	50	77	8	3	92	800
	150	50	83	7	6	124	1,050
DC-3	1,200	30	54	11	2	330	13,200
	1,200	50	70	8	2	240	9,600
	1,200	120	126	4	2	120	4,800
	1,200	170	166	3	2	90	3,600
DC-4 (C54)	2,100	30	60	10	2	303	21,000
	2,100	50	74	8	2	242	16,800
	2,100	120	120	5	1	151	10,500
	2,100	170	154	4	1	121	8,400
DC-6	3,000	30	55	11	2	319	33,000
	3,000	50	65	9	2	261	27,000
	3,000	120	103	6	2	174	18,000
	3,000	170	131	5	2	145	15,000
C-130	5,000	30	53	11	2	297	55,000
	5,000	50	63	9	2	243	45,000
	5,000	120	101	6	2	162	30,000
	5,000	170	129	5	2	135	25,000

Conversions: 1 gal = 3.785 liter
1 mile = 1.6 km

The number of nozzles used depends on the flow rates employed. The differential velocity between the aircraft speed and the exit velocity of a dispersant fluid should be less than about 210 ft/sec (64 m/sec) for best depositional efficiency.

$$V_d = V_a - V_f$$

$$V_f \text{ (ft/sec)} = \frac{0.41 \times \text{total gpm / number of nozzles}}{d^2}$$

where:

V_d = differential velocity, ft/sec
V_a = aircraft ground speed, ft/sec
V_f = fluid exit velocity, ft/sec
d = nozzle diameter, in

Smaller planes and helicopters, such as those used for agricultural spraying and forest fire fighting, have been and can be adapted for dispersant spraying. Although this would not serve for all operating speeds or pump rates, as a general guide, these small aircraft should not use nozzles with external orifice diameters smaller than 0.156 in (4 mm). Preferably, they should have no more than a total of 30 to 35 operating nozzles per plane.

The mechanical shear rate of a nozzle should be as low as possible and preferably less than 10,000 sec-1 to avoid generation of small droplets that may result in misting. The formula noted below can be used to calculate mechanical shear.

Shear Rate (sec-1) = $3.9\ q/d^3$

where:

q = flow rate (gal/min) *note*: if flow is given in ml/sec, use $q = \frac{\text{ml/sec}}{63.08}$

d = orifice diameter (in)

Dispersant viscosity can affect flow rate and spray patterns and should be checked at the application temperature. For satisfactory aerial spraying of dispersants, dispersant viscosity at application conditions should be taken into account, as shown in Table 7-4.

Table 7-4 Dispersant Fluid Viscosity and Application Conditions

Dispersant Fluid Viscosity (at application temperature)	Application Condition
≥ 60 centiStokes (cSt)	• Best for aerial application
30–60 cSt	• Adequate if aircraft's ground speed is less than 100 mph (160 km/hr) and altitude is not over 30 ft (10 m)
< 30 cSt	• Not satisfactory for aerial application since a fluid stream is easily shattered by air shear • Produces extremely small size droplets, which are subject to excessive drift

7.6 Material Take Off (MTO) List

There are a number of types of equipment required to successfully apply dispersants.

Table 7-5 Material Take Off List for Dispersants

Equipment	Use
Dispersant	Oil dispersion
Tanks	Temporary storage of dispersants
Pumps	Transfer of water/dispersant
Boats/Vessels	Dispersant application platform
Fixed-wing aircraft	Dispersant application platform, directing and monitoring operations (spotter aircraft)
Helicopters	Dispersant application platform
Fuel	Fueling aircraft
Spray equipment	Dispersant application
Tools	Setting up spraying, adjusting and repairing connections
Radios	Communication among vessels/aircraft
GPS	Positioning aircraft and vessels, documenting operations

7

8 In-Situ Burning

8

8.1 Introduction

In-situ burning (burning oil in place) can quickly eliminate large quantities of spilled oil. In-situ burning removes oil from a surface by combustion of hydrocarbon vapors and their conversion into predominantly CO_2 and water which are released to the atmosphere. There are often situations where burning may provide the only means of quickly and safely eliminating large amounts of oil. The objective is to select the optimal equipment and application techniques that will result in the least overall environmental impact.

Burning small spills has been routinely conducted for the following purposes:

- To quickly remove oil, so that it does not spread over larger areas or to sensitive sites.
- To reduce the generation of oily wastes, especially where transportation or disposal options are limited.
- As a final removal technique, when other methods begin to lose effectiveness or are judged to be too intrusive.

8.1.1 Regulatory Approval

In the United States, many coastal areas have been pre-approved for in-situ burning under certain conditions. This pre-approval process is an important step, and it will expedite the formal process of obtaining final approval to burn in the event of an oil spill. In contrast, many nations have yet to provide in-situ burning guidance or regulations.

Burning is valued where there are hard surfaces (manmade, snow, ice), ditches or trenches to collect spilled oil from porous soils, shallow water, soft substrates, or the remoteness of the location limits access to the spill site. The following conditions favorable for burning have been identified:

- Spills of fresh crude oil or light, refined products either on land, in freshwater, lakes, ponds, and streams, in marshes, or in offshore marine environments
- Winds <~20 miles/hour offshore and <12 miles/hour onshore (34 km/hr and 19 km/hr, respectively) for ignition
- Remote or sparsely populated sites
- Mostly herbaceous vegetation (fields, crop land, marshes)
- Dormant vegetation (not in active growing season)
- Unvegetated or poorly vegetated areas (dirt roads, ditches, dry streambeds)

- In wetlands with a water layer covering soil substrate, or water-saturated soils
- Where snow and ice provide natural containment and substrate protection
- In offshore environments

Advantages and disadvantages of In-Situ Burning are summarized in Table 8-1.

Table 8-1 Advantages and Disadvantages of In-Situ Burning

Advantages	Disadvantages
• Can quickly remove large amounts of oil	• Ignition of weathered or emulsified oil can be difficult
• Can lessen recovery time and disposal chain for oily wastes	• Generates smoke and soot
• Once ignited, most oils will burn	• Has inherent but manageable safety risks
• Can be used in any water environment (marine, estuarine, freshwater)	• Some residues can sink
• Can be carried out at night	• Fire booms required for burning of freshwater and marine oil spills are large pieces of equipment that are a challenge to rapidly transport

8.2 Basics of In-Situ Burning

8.2.1 Basic Requirements of In-situ Burning

- Oil layer thickness must be approximately 2 to 3 mm (0.08–0.12 in) or more to generate burnable concentrations of hydrocarbon vapors to sustain combustion.
- Oil must be relatively fresh and not contain too much water (i.e., emulsified) to generate burnable concentrations of hydrocarbon vapors to sustain combustion.
- Quantity of spilled oil should be sufficient to generate a supply of hydrocarbon vapors to sustain a burn, once it is ignited.

- A fire-resistant boom is generally used on open water to hold the oil in thicker slicks to help sustain a burn.
- An igniter is used to heat spilled oil to release more hydrocarbon vapors and then to ignite them to start a burn.
- For oils which are difficult to burn, an accelerant or promoter (e.g., lighter, highly evaporative oil) can be applied to assist with ignition.

For burns on water, the boom holding capacity can be estimated from Figure 8-1. Mouth openings of 0.3 total boom length (0.3 x L) and 0.6 total boom length (0.6 x L) are shown. The 0.3 x L configuration is recommended since it requires lower boom tension and is more easily controlled.

8.2.2 Efficiency of In-situ Burning

Burn efficiency depends on the original oil thickness, its weathering state or burnability, and, in a continuously fed oil fire, how well burn areas are maintained throughout the burn process.

- Thick oil layers (13 mm or more) normally burn with a thickness reduction rate of 2.54 mm /minute (i.e., about 2.5 liters per minute per square meter of burn area or 0.7 gallons / minute per 10 ft^2).
- With combustion normally taking place until the final thickness is approximately 1 mm, burn efficiencies in excess of 90% can be achieved. Figure 8-2 can be used to determine the area required to consume various amounts of encountered oil.

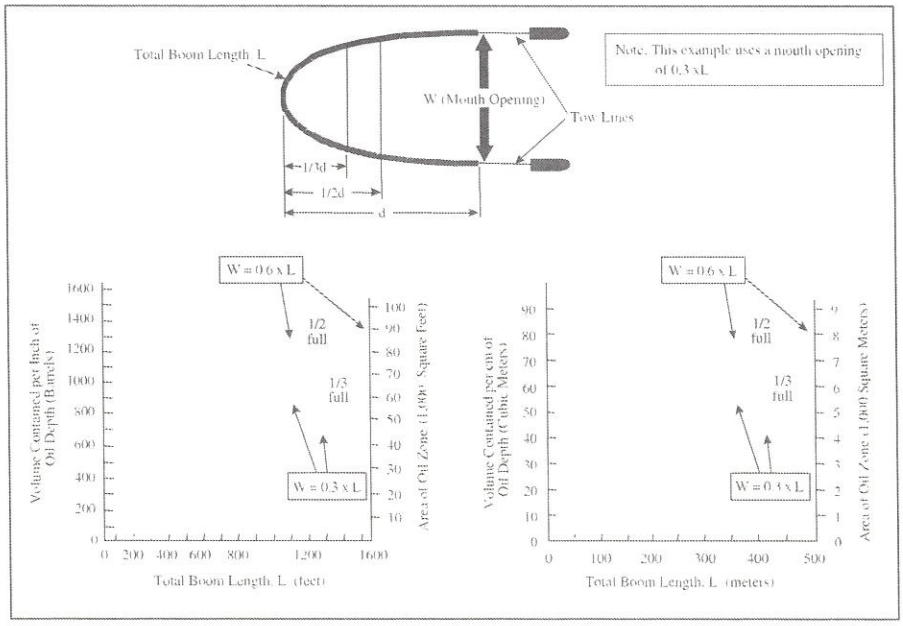


Figure 8-1 Estimating Boom Holding Capacity

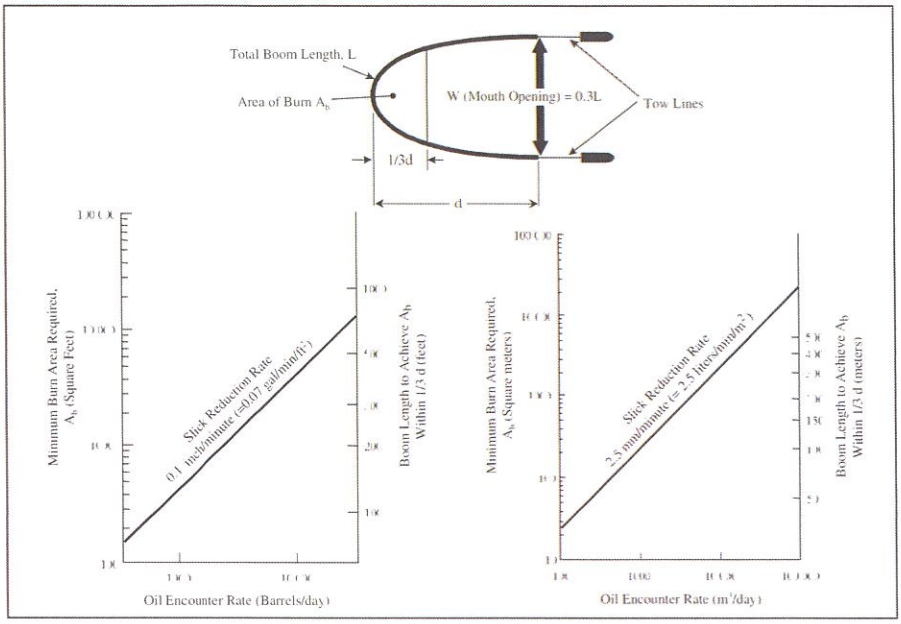


Figure 8-2 Estimating Area Required for Various Oil Encounter Rates

8

8.2.3 On-Water Conditions and Weathering

Oil slicks thicker than 2 to 3 mm (0.08–0.12 inches) on water can be ignited easily under light wind and wave conditions. Ignition and burning of floating oil may still be possible in winds up to approximately 21 mph (18 kts or 34 km/hr) and/or in waves as high as 1–1.5 m (3–5 ft). Ignition and sustained combustion may occur under much more severe conditions if the spilled oil is fresh and unemulsified.

Ignition of floating oil is affected by evaporative losses, dispersion (chemical or natural), and water-in-oil emulsions. Water content of 15 to 25% makes ignition difficult for some oils. For most oils, a 50 to 70% water content makes ignition almost impossible unless very large ignition areas, igniters, and/or other fire promoters are used. Minimum ignitable thicknesses include:

- Fresh oil: 1 mm
- Aged un-emulsified crude and diesel: 2–5 mm
- IFO 380, Resid, Bunker C: 10 mm

8.2.4 Recovery of Residue

Most crude oils will leave an unburnable residue after burning. This residue primarily consists of the non-volatile components in the oil: mostly inert tars and asphaltenes. Unburned oil residue may reach a thickness of several centimeters and be sufficiently viscous to be picked up with equipment such as boat hooks, screened rakes, or pitch

forks. Fishing nets with relatively small openings (2.5 cm [1 in] or smaller) would be adequate to corral and recover the buoyant residue from on-water burns. The residue, and most likely the fishing nets, could then be placed in plastic-lined containers or in drums for disposal.

8.3 Burning Equipment

The main equipment required for in-situ burning on land, snow, or ice is an igniter. The main equipment required for in-situ burning on water consists of fire-resistant boom, igniters, and vessels to pull the boom. Similar to conventional boom, fire-resistant boom requires ancillary equipment such as towing lines, bridles, buoys, and anchors. For pressure-inflatable boom, an air compressor is needed. Fire-resistant boom and igniters specific to in-situ burning are discussed in this section. Chemical herders could be used to help with on water burns.

8.3.1 Fire-Resistant Boom

Fire-resistant boom made of rugged material, such as stainless steel, can survive repeated burning for long periods. However, it is heavy and difficult to handle. Other types of less rugged boom incorporate fire-resistant, mineral-based fabric and ceramics in their structure. This less rugged boom is lighter and easier to deploy, position, and retrieve, but it may not be as capable of long-term deployment or tolerate long-term exposure to fire. The latest design of fire boom uses fire resistant fabric over a water-cooled interior, making the boom more durable and therefore reusable. In some instances, especially where the length of a fire boom is limited, conventional boom can be used as extenders on either end of a fire boom.

8.3.2 Igniters

A good ignition system has the following features:

- It produces a reliable source of heat that causes rapid vaporization of a surrounding oil slick without forcing the oil away from the igniter.
- It is safe to operate, simple in design, easy to use, has minimal storage and transportation requirements, and has a long shelf life.

For safety reasons, aircraft pilots generally prefer to work with ignition systems that do not involve lighting fuses within aircraft and releasing an igniter by hand from an open window or door.

Two types of ignition systems are commercially available: igniters for use from land or on a vessel and igniters used from helicopters. The two types are listed in Table 8-2.

Table 8-2 Igniters

Deployment	Igniter
Surface (including vessels)	• Propane or butane torch • Drip torch • Flare • Gelled fuel in hand-held container • Plastic Sphere Dispenser (PSD) • Terra torch
Aerial	• Helicopter-slung gelled fuel, contained in a remote controlled torch • Plastic Sphere Dispenser (PSD) (for on-land spills)

8.3.3 Chemical Herders

Chemical herders can be used to aid in-situ burning without booms. They are composed of surfactants dissolved in one or more solvents. Herders sprayed onto water surrounding an oil slick cause formation of a layer of surfactants on the water surface. When the surfactant layer reaches the edge of a thin oil slick it changes the balance of interfacial forces acting on the slick edge causing contraction of the oil into a thicker layer. Herders do not require a boundary to "push against" and work even in open (boundary-free) water. Herding agents applied around the perimeter of an oil slick can keep slicks from spreading and cause thin slicks to "herd" into thicker slicks. This action can keep slicks from spreading too thin to burn and can thicken slicks that are already too thin.

Herders have been approved for listing on the United States National Contingency Plan Product Schedule. Commercial quantities of herder, and a herder delivery system capable of being mounted in the cabin of a helicopter are available.

Herders are an important advance for in-situ burning because they can be deployed from a helicopter. This same helicopter can also carry ignition devices. Figure 8-3 shows a helicopter with a heli-torch ignition system. The drawing shows herder already sprayed around the perimeter of the slick.

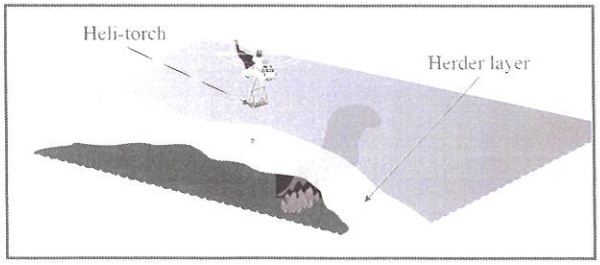


Figure 8-3 Conceptual drawing showing a helicopter herder – ISB system

8.4 Burning Operations

In-situ burning can be conducted on shorelines, inshore areas like wetlands or marshes, upland areas like fields and open terrain, on snow and ice, and in some forested areas if there is sufficient fire control. Until recently, most burn have been conducted in inland or upland areas.

8.4.1 Inland or Upland Burning

The following operational and post-burn guidelines need to be considered for inland or upland burns:

- Regulatory approvals.
- A means of fire control.
- Physical disturbance of the vegetation and substrate should be avoided.
- When oil does not ignite readily, an accelerant, e.g., diesel, may be needed.
- A crust or residue (which may hinder revegetation) may remain after incomplete combustion of spills on land, and may need to be cracked or removed.

The U.S. Department of Agriculture (USDA) Forest Service maintains a Fire Effects Information System. This database can be used to review information on local ecology and effects of fire on specific plant species.

- Erosion may be a problem in burned areas if plant cover is greatly reduced.
- Vegetation in, and adjacent to, a burn site can be affected by burning, including short or long term changes in the plant community.
- Burning can severely affect organic soils, such as peat, unless they are saturated.

Table 8-3 Inland and Upland Burning

Description

Oil is removed from a shoreline, ice / snow or soil surface by burning.

Application

- Use on any substrate or vegetation, except mangroves, where oil volume and properties will sustain combustion.
- Ignite the downwind end of oiled area and burn upwind.
- Use also on large pools of oil and on oily debris, e.g., logs.

Possible Adverse Effects

- Can result in mortality of surface organisms in a burn area.
- Can cause erosion if root systems are damaged; also may result in localized and temporary air pollution.
- Heating can reduce oil viscosity resulting in deeper oil penetration into a porous soil/beach, depending on their saturation.
- Generates black smoke and should not be used near population centers.

Primary Equipment	Type
Ignition Source	• Plastic Sphere Dispenser (PSD) • Helitorch • Drip Torch • Terratorch • Flares
Fire-fighting equipment	• Small fire trucks • Portable fire pumps with nozzles
Consumables	**Type**
Ignition agents	• Gelled gasoline • Diesel fuel • Flammable materials (rags soaked in diesel fuel, wood chips, dried brush, etc.) • Plastic spheres filled with potassium permanganate
Personnel	**Treatment Rate**
2–3 workers to ignite and control fire	See Section 8.2.2 burning rates
1 foreman for every 10 workers	
Access	
Foot path, roadways, shallow craft or helicopter	

8.4.2 Burning on Water

To conduct in-situ burning operations on water using booms, two vessels are generally needed to tow fire-resistant boom (Figure 8-4). One or two other vessels are needed for logistic support, such as transfer of personnel and recovery of residues. For larger spills, a spotter airplane should be used to assist in locating oil slicks, directing boom operations, and safety surveillance. Furthermore, it is strongly recommended that firefighting vessels be on site in case of any secondary fires.

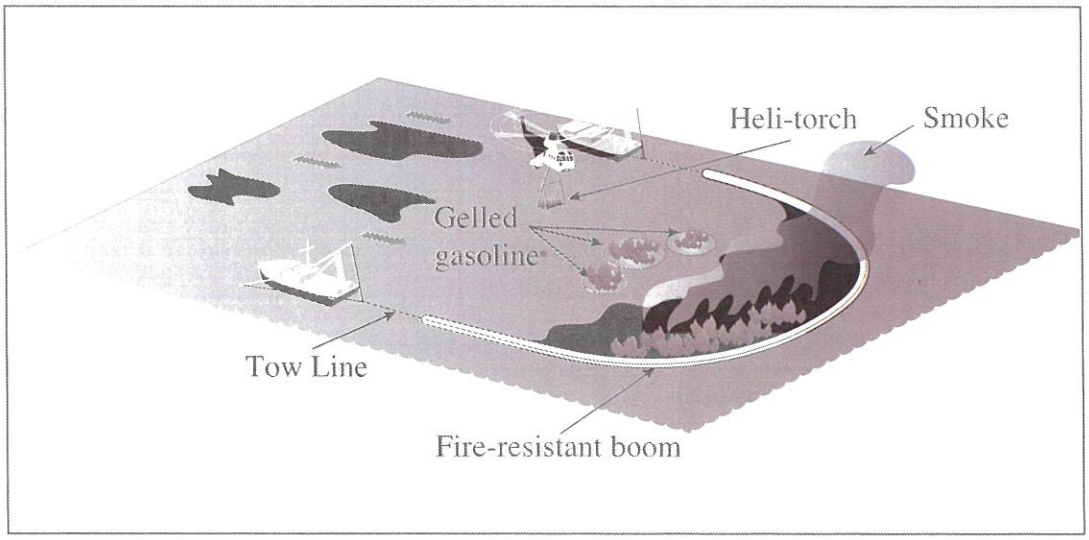


Figure 8-4 Typical In-Situ Burning Operation on Water

The transport and deployment of fire containment booms is not appreciably different from standard containment booms. Some fire booms are stored on reels, and the booms are deployed from, and retrieved back to, these reels. As long as the reels are properly sized, these booms can be transported in a variety of aircraft.

Other fire booms are stored in cradles that are lowered into the water during deployment to allow the boom to be towed out of the cradles. Fire boom is considerably heavier than most booms and is consequently more difficult to handle out of the water. The cradles do not fit in many types of aircraft, and the boom may have to be repackaged for air transport.

Any one of these booms could be damaged during burn operations, and retrieval could become difficult. Oil can penetrate deeply and soak the interior of the booms, and retrieval to the decks of vessels can be quite messy. While fire boom retrieval may be difficult, it must be compared to the difficulty of handling skimmers, transfer hoses, and storage containers during traditional oil recovery operations using mechanical devices.

Table 8-4 Burning On Water

Description

Oil is removed from the water's surface by burning.

Application

- Use on open water where oil volume and properties will sustain combustion.
- Boom oil to make it thick enough to burn.
- Ignite the downwind end of oiled area and burn upwind.

Possible Adverse Effects

- Generates burn residue that has the potential to harm benthic organisms if not collected
- Generates black smoke and should not be used near population centers.

Primary Equipment	Type
Ignition Source	• Marine flares • Helitorch
Fire Resistant Boom	
Vessels	• 2 for towing fire resistant boom • 1-2 small craft for ignition control
Consumables	**Type**
Ignition agents	• Gelled gasoline • Diesel fuel • Flares
Fire Resistant Boom	
Personnel	**Treatment Rate**
2–3 workers to ignite fire 2 crews for vessels pulling fire resistant boom	See Section 8.2.2 burning rates

8.4.3 Burning and Wind

Wind direction and strength (speed) each have an influence on the conduct of burn operations, whether on land or on water. Wind conditions and forecasts should be studied prior to burn operations.

Burning is most often planned with regard to wind direction for better fire control. Igniting a burn at an up-wind location provides added, natural fire control because the spread of flames and heat must overcome the contrary direction of the wind (Figure 8-5).

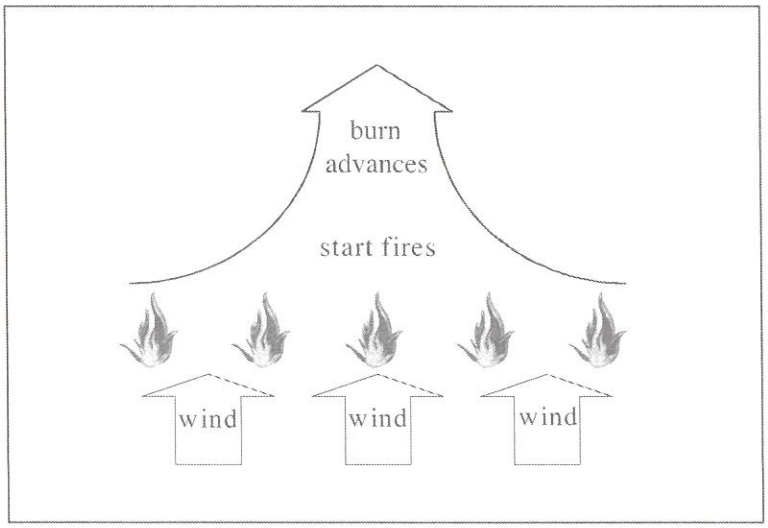


Figure 8-5 Initiating an In-Situ Burn

Wind strength can have a limiting influence on ignition. Since it is the hydrocarbon vapors evaporating from an oil slick which burn, those vapors must first collect in sufficient concentration to ignite. Winds tend to disperse vapors. A basic rule of thumb is that vapor concentrations cannot be maintained at wind speeds of > 35 knots (40 mph).

Once a burn is ignited for spills on water, there can be instances of induced winds created by the rising combustion plume from a larger burn. These winds can have a positive effect on total oil removals by drawing surrounding oil to a burn site for combustion.

8.5 Material Take Off (MTO) List

Various types of equipment are required to successfully ignite and burn oil, as listed in Table 8-5.

Table 8-5 Material Take Off List for In-Situ Burning

Equipment	Use
Fire-resistant boom	Slick containment
Rope	Towing
Cable	Towing
Conventional boom	Slick containment
Herder	Slick containment
Vessels	Ignition, boom deployment, fire-fighting
Helitorch	Ignition
Plastic Sphere Dispenser	Ignition
Hand-held igniters	Ignition
Gelled fuel/burning agents	Ignition
Vessels	Ignition, boom deployment
Fixed wing aircraft	Slick spotting, monitoring
Helicopters	Monitoring and slick ignition
Tools	Setting up igniter, booms; also for repairs
Radios	Communication among vessels/aircraft
Air monitors	Air quality sampling
Still/video cameras	Documentation
GPS	Positioning, documentation of operations

9 Skimmers

9.1 Introduction

Skimmers are mechanical devices that physically remove free or contained oil from the surface of water. There are many different types of skimmers but they can be grouped into four categories based on oil recovery principles. Each category contains various skimmer types distinguished by their oil collection mechanisms (Table 9-1) as well as other factors.

Manufacturers frequently offer several sizes or models of the same basic skimmer type and, in many cases, have updated older models with newer versions. For any given skimmer type, numerous manufacturers produce similar devices, each with its own specific design. Detailed performance and operational information are presented in Section 9.3 based on many decades of oil industry experience. However, this information is provided for background and general guidance only. The best source of data and information about a specific skimmer is the manufacturer. In a spill response, people use whatever skimmers are readily available so the information presented here is more useful for the selection and purchase of skimmers in advance of any response emergency. For responding in cold conditions, some skimmers can be fitted with a steam heating system to melt snow and ice in contact with the skimmer and to warm recovered oil for ease of pumping.

Consider each skimmer based on its own merits and the anticipated spill conditions.

Table 9-1 Skimmer Types

Skimmer Category	Examples
Weir skimmers	Simple, self-leveling, integral screw auger, advancing, and boom/weir systems
Oleophilic surface skimmers	Drum, grooved drum/disc, disc, fabric-coated drum/disc, rope mop, sorbent lifting belt, and brush
Hydrodynamic skimmers	Water jet, submersion plane/belt, and rotating vane
Other devices	Paddle belt, trawl/boom, vacuum skimmers

The advantages and disadvantages of mechanical skimmers are listed in Table 9-2.

Table 9-2 Advantages and Disadvantages of Skimmers

Advantages	Disadvantages
• Physically remove oil from the aquatic environment	• Relatively low encounter and recovery rates, especially in thin slicks
• Available in practically every equipment stockpile	• The use in high seas and high currents is often not practical
• Can be used in any water environment (bays, inlets, etc.)	• Considerable ancillary and supporting equipment must be planned for
• Their use is widely accepted	• Can be clogged by debris and ice

9.2 Skimmer Selection Matrix

Skimmer performance can be rated in three ranges of oil viscosity (Figure 9-1).

Figure 9-1 Oil Viscosity Ranges

Three sea states are considered in this section (Table 9-3).

Table 9-3 Sea States

Operating Environment	Significant Wave Height feet (m)	Wind Speed knots (m/s)
Calm water	<1 (< 0.3)	< 6 (< 3)
Protected water	<3 (< 1)	<16 (< 8)
Open water	<6 (< 2)	<21 (<10)

Table 9-4 is a simple matrix that can be used to select a skimmer best suited for a particular cleanup need. The expected performance of 17 generic types of skimmers is rated according to 12 performance criteria.

Table 9-4 Skimmer Selection Matrix

		Skimmer Type																
		Weir Skimmers					Oleophilic Skimmers								Hydro-dynamic Skimmers			*
		Simple Weir	Self-Leveling Weir	Weir with Integral Screw Auger	Advancing Weir	Weir Boom	Drum	Disc	Grooved Drum/Disc	Fabric-Coated Drum/Disc	Rope Mop	Zero Relative Velocity Rope Mop	Sorbent Lifting Belt	Brush	Water Jet	Submersion Plane/Belt	Rotating Vane	Paddle Belt
Operating Environment	Open Water	●	●	●	◑	◑	◑	◑	◑	◑	○	○	○	◑	●	●	◑	●
	Protected Water	◑	●	●	○	○	○	○	○	○	○	○	○	○	◑	◑	○	○
	Calm Water	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	High Current >1 knot (> 0.5 m/s)	●	●	◑	○	◑	●	●	●	●	◑	●	◑	◑	◑	◑	◑	●
	Shallow Water <1 foot (< 0.3 m)	○	◑	●	●	●	◑	◑	◑	◑	○	●	●	◑	●	◑	◑	○
	Debris (Including ice)	●	●	○	◑	●	◑	◑	◑	◑	○	○	○	○	◑	◑	◑	○
Oil Viscosity	High Viscosity	●	●	◑	●	●	◑	●	◑	◑	●	●	○	○	○	◑	◑	○
	Medium Viscosity	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Low Viscosity	○	○	◑	○	○	◑	◑	○	○	◑	◑	●	●	○	◑	○	◑
Skimmer Characteristics	Oil/Water Pickup % **	●	◑	◑	◑	◑	○	○	○	○	○	○	◑	◑	◑	◑	◑	○
	Recovery Rate	◑	●	●	◑	○	◑	◑	○	○	●	◑	◑	◑	●	◑	◑	◑
	Ease of Deployment	○	○	◑	◑	●	○	○	○	○	◑	○	○	○	◑	●	◑	◑
Available as VOSS (Vessel of Opportunity Skimming System)		✔	✔	✔		✔	✔	✔	✔	✔	✔		✔	✔			✔	✔
Available as Advancing Skimmer					✔	✔			✔			✔	✔	✔	✔	✔		✔
Available with Storage					✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔		✔

Legend ○ Good ◑ Fair ● Poor ✔ = Yes

* Other Devices

** Oil/Water Pickup % = % Oil in Recovered Product

The parameters rated in the Skimmer Selection Matrix (Table 9-4) should be considered together with other aspects when assessing a skimmer. The ratings of some criteria are independent of the size of a skimmer while the ratings of other criteria are directly proportional to skimmer size. For example, oleophilic discs operate poorly in debris but have high recovery efficiencies (low water pickup) regardless of disc or skimmer size. Recovery rate and suitability for use in open water, however, strongly depend on the size of a skimmer. A "good" rating, in any case, means that a commercial version of that skimmer type is available that will deliver the indicated performance. A more detailed assessment of each skimmer type is provided in Sections 9.3.1 to 9.3.17.

Users should be aware that the nominal oil recovery rate of a skimmer is seldom achieved due to difficulties associated with changing conditions, e.g., diminishing layers of oil.

The availability of three additional skimmer features is indicated in the last three rows of the Matrix:

- Deployable from an existing workboat as a Vessel of Opportunity Skimming System (VOSS)
- Can be used as an advancing skimmer (some models are designed to be towed through the water)
- Available with storage (some models have integral storage)

Stationary skimmers, i.e., those that are not towed or self-propelled, are generally used inside containment booms where the oil layer thickness can be maximized.

The following guidelines should facilitate skimmer operation:

- Skimmers that incorporate relatively complex mechanical systems, e.g., those with rotating or moving oil pickup mechanisms, require operator experience for effective/efficient use.
- Skimmers used with centrifugal pumps can mix oil and water to form emulsions that cannot be readily separated. This adds to the volume of liquid that must be transported.
- Skimmers with screw auger pumps can be used to recover highly viscous oils and debris.
- Weir skimmers tend to collect a substantial amount of water, especially when operated in waves.
- Weir skimmers work best in thick slicks in calm water.
- All skimmers will pick up some water, and oil/water separation of the recovered liquid may be required.
- Safe and effective operations at night will require floodlights that are positioned so that the work area is properly illuminated.

To use the Skimmer Selection Matrix, follow these steps:

Step 1 Identify the environment in which a skimmer will be operated. Usually, only one environment will apply. Select those skimmers that perform well in the given environment (good rating, or ◯).

Step 2 Identify the type of oil that a skimmer will be required to recover. From the skimmers identified in Step 1, select those that have a good rating (◯) for the oil viscosity of concern.

Step 3 Choose the most important, applicable selection criteria and list these in order of priority. From the skimmers that have "passed" Steps 1 and 2, choose those with the highest rankings of the most important criteria.

Having identified one or more suitable skimmer types, consult the *World Catalog of Spill Response Products, the International Oil Spill Control Directory*, or other similar publications, to identify potential suppliers and to compare equipment specifications.

9.2.1 Skimmer Selection Example

A skimmer is required for an offshore area with a significant amount of debris. The oil will reach a medium-to-high viscosity after 24 hours of weathering. The skimmer must have a large built-in storage capacity to ensure that it can operate for extended periods without returning to shore to discharge recovered oil. The collected oil should be relatively water-free to conserve storage space.

Step 1 From the matrix, we see that the following skimmers have a *good* rating in open water and in debris:

- Rope mop
- ZRV (zero relative velocity) rope mop
- Sorbent lifting belt

Step 2 Of these skimmers, the sorbent lifting belt is the best suited to the recovery of high viscosity oils, although rope mop and ZRV rope mop skimmers perform well in medium viscosity oils:

- Sorbent lifting belt
- Rope mop
- ZRV rope mop

Step 3 Choose a skimmer with internal storage:

- Sorbent lifting belt
- ZRV rope mop

The sorbent lifting belt skimmer would be the best choice because the oil will weather and become highly viscous.

9.3 Detailed Information on Skimmer Types

The following pages provide detailed operating information and performance characteristics of each skimmer type listed in Table 9-4.

9.3.1 Simple Weir

Operating Principle

Oil flows over a simple weir lip and is collected in a sump. Water is discharged through ports located below the weir. Some models have an onboard pump whereas others require a remote pump.

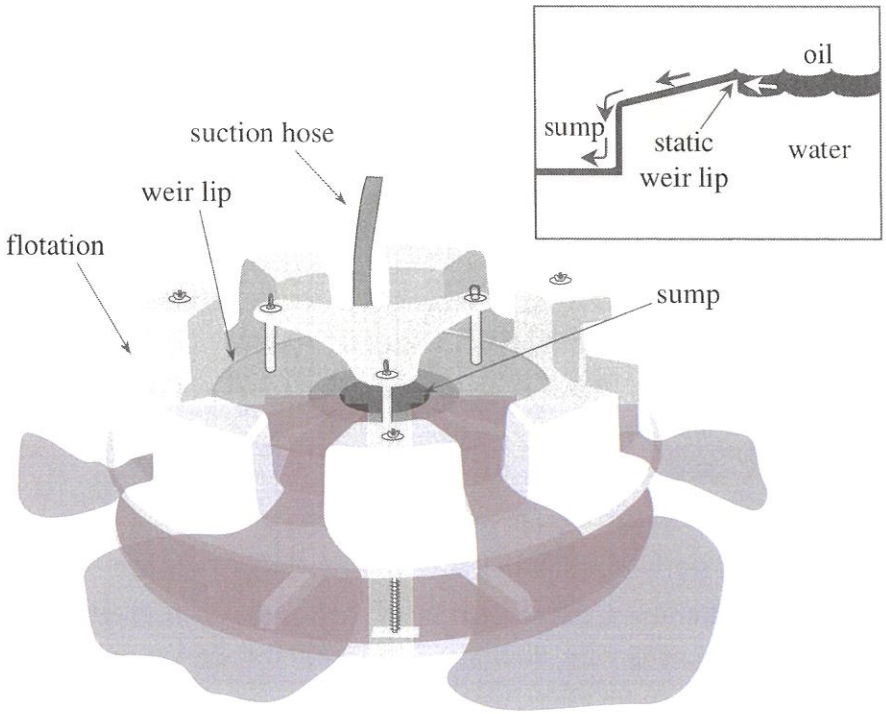


Figure 9-2 Simple Weir Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	●

Simple weir skimmers work well in thick layers of light, fresh crude oil. However, reflected waves inside containment booms combined with thin slicks can result in high water uptake. Once oil mixes with debris, weir skimmers may clog.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	●	●

Since these skimmers recover large amounts of water, transferring with centrifugal pumps should be avoided because they will emulsify the oil. Diaphragm or peristaltic pumps are preferred when remote from the skimmer.

Advantages	Disadvantages
• Suitable for shallow water • Simple design/good reliability • Often compact • Easily deployed and operated • Lightweight	• Weir may tilt, stop running, or operate poorly if suction hose connection or skimmer touches bottom • Can be clogged by debris • Does not recover high viscosity oil • Centrifrugal pumps cause water/ oil emulsions to form (can be used with other types of pumps)

9.3.2 Self-Leveling Weir

Operating Principle

Like a simple weir, these devices skim a discrete layer toward the top of a fluid. However, self-leveling weirs use a means of adjusting the weir's height. In the examples shown below, weir height changes as the pumping rate is increased or decreased and the fluid level in the sump changes.

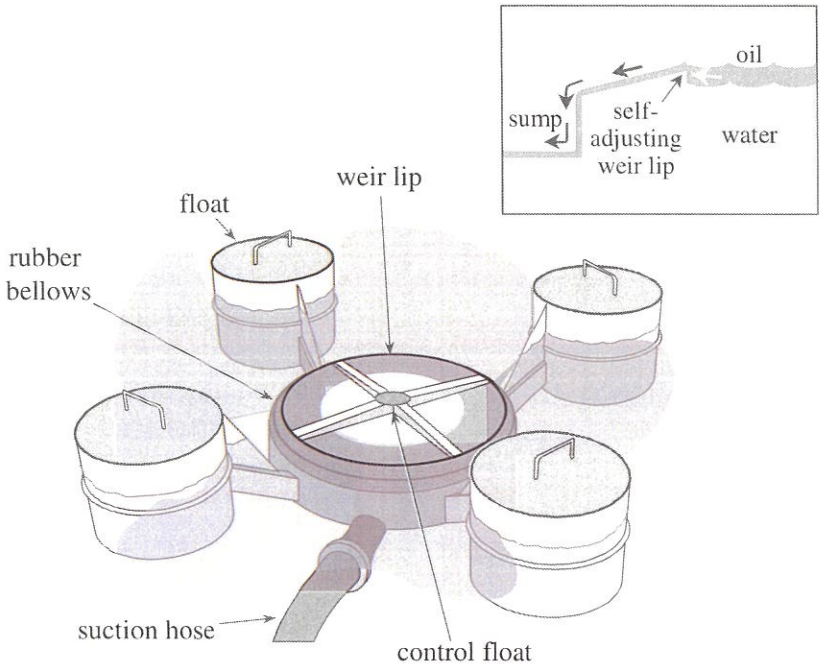


Figure 9-3 Self-Leveling Weir

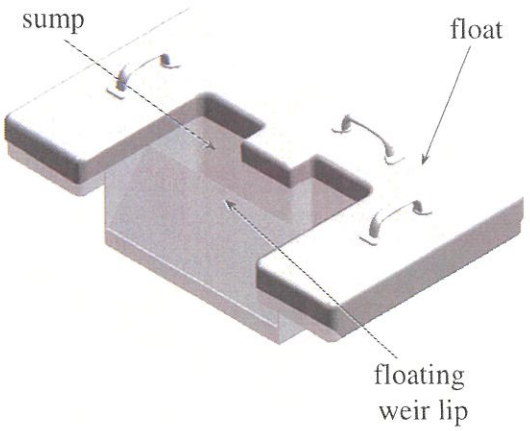


Figure 9-4 Self-Leveling Weir

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	●

Self-leveling weir skimmers are generally more effective than simple weirs. The liquid recovery rate depends on the capacity of the off-loading pump; however, they are ineffective when oil becomes too viscous to flow over the weir.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	●	◑

The flow of oil over a self-leveling weir can be optimized by adjusting the pump speed and/or by adjusting a valve on the suction line or air or hydraulic lifters to control the weir's height. Timed measurements of the oil phase collected in a storage container can be easily made to ensure optimum flow rates. Relatively high water content in the collected liquid should be expected in thin slicks (≤ 0.15 in or several mm).

Advantages	Disadvantages
• Can operate in shallow water • Simple design/good reliability • Easily deployed and operated • Some models have debris screens	• Limited to calm water • May tilt or operate poorly if suction hose or base of skimmer touches bottom • Does not tolerate heavy oil; debris causes weir to clog • Models with centrifugal pumps emulsify recovered fluids • Rubber bellows in some models deteriorate over time

9.3.3 Weir with Integral Screw Auger

Operating Principle

A simple weir skims the top layer of fluid into a hopper directly connected to a reversible, horizontal (see inset below from Figure 9-5) or vertical (Figure 9-5) screw auger pump. Some newer models use a self-leveling weir. The screw pump drives, and is cleared by, a rotating scraper. The tightly fitted scraper seals the screw and creates a positive head at the pump discharge. Note that a number of other skimmer types, e.g., belt and brush systems, utilize a screw auger pump for transferring collected liquid and not as an integral part of the recovery mechanism.

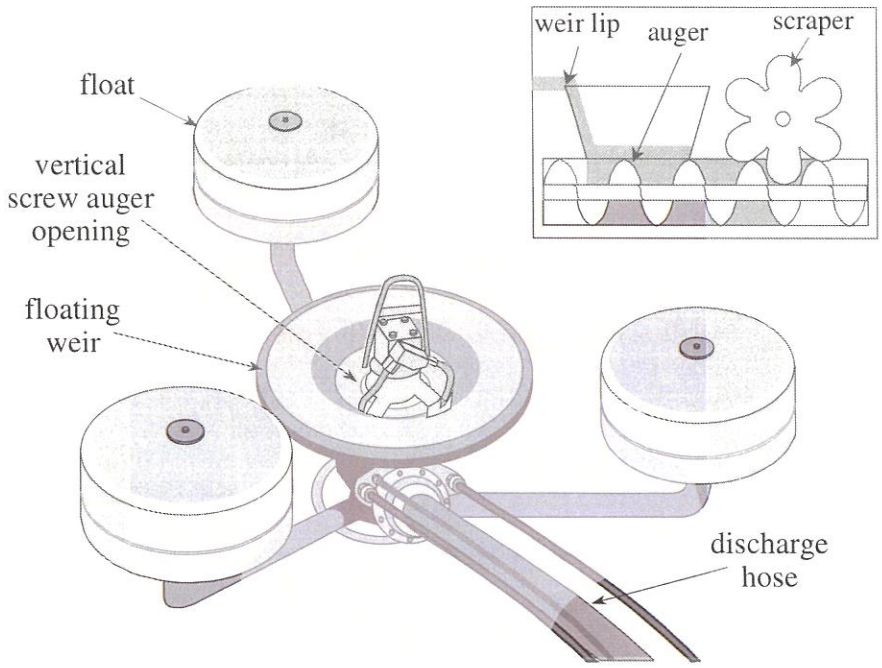


Figure 9-5 Weir with Integral Screw Auger

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	◑

Screw auger skimmers can recover heavy, viscous oils; however, oil must flow readily for these skimmers to function well. Some heavy (viscous) oils may not flow readily over the weir. They are also suitable for processing debris.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	○	◑

High water pickup (70–90%) should be expected and appropriate temporary storage/separation equipment must be planned for.

Advantages	Disadvantages
• Can operate in shallow water • Capable of pumping highly viscous oils mixed with debris, e.g., seaweed, ice, and wood chips • Screw auger pump neither requires priming nor forms oil/water emulsions • Easily deployed and operated	• Limited to calm and protected water with heavy, viscous oils • Performance decreases in choppy water or low viscosity oils • Heavy oils that do not flow over the weir lip must be manually pushed into the collection hopper • Can develop high back-pressure in the discharge line

9.3.4 Advancing Weir

Operating Principle

Various advancing weir skimmers are available with similar characteristics. In most devices, an initial weir lip is advanced through a slick allowing water and oil to pass into a collection/separation chamber where oil is pumped from the surface. Water is discharged through ports below. Some models, as shown in Figure 9-6, incorporate water jets to induce the flow of oil over the weir lip. Other advancing weir skimmers use impellers or eductors to draw in oil.

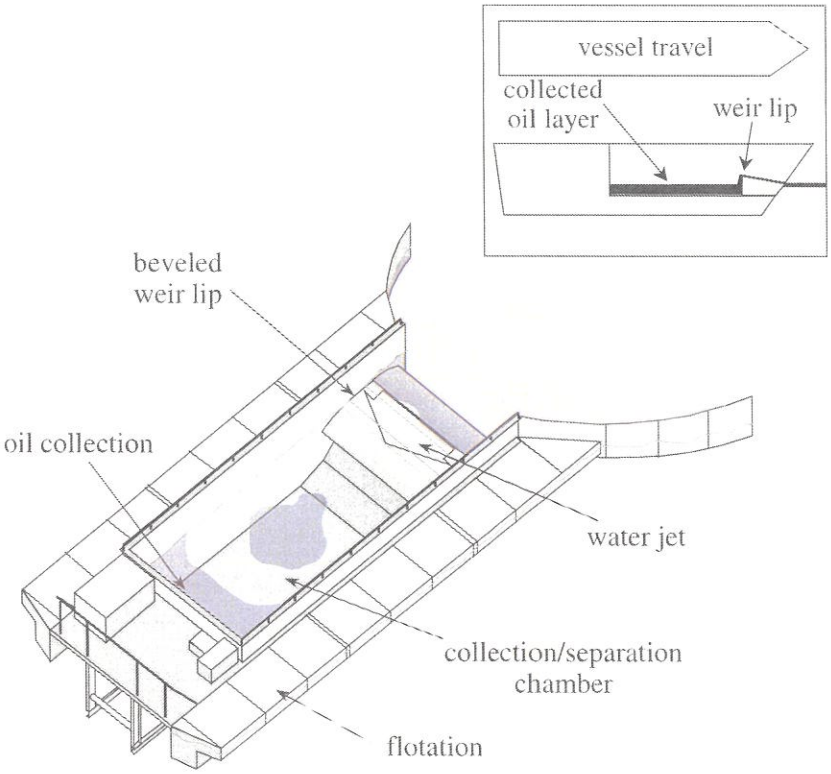


Figure 9-6 Advancing Weir Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	●

Advancing weir skimmers often use induced water flow to push oil into a containment/collection area. These units display high recovery rates in calm water and in light-to-medium viscosity oils.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Advancing	Calm/protected	◑	◑

Maximum recovery rates are achieved when a water flow angle is low, i.e., directed almost straight back (towards the stern of the vessel). Advancing weir devices that do not include induced water flow systems usually experience difficulties in maintaining the continuous flow of oil into the skimmer.

Advantages	Disadvantages
• Work well in thick layers of low and medium viscosity oil • Can tolerate some debris • Water recovery reduced by allowing water to flow through collection chamber • Operation possible in slightly rougher conditions than typical weir skimmer due to water jet/ weir design	• Not effective in higher viscosity oils • Best used in calm or protected water • Processing problems with large debris • Jet induction affected by waves and currents • Units without induced water systems may not maintain continuous oil flow

9.3.5 Weir Boom

Operating Principle

The boom is towed in a catenary shape into a slick or anchored to allow oil to be carried into it by water current and wind. Skimming weirs (horizontal slots) are built into several sections of boom at the apex. Collected oil is pumped to a vessel for storage. Various models are available including single-vessel units with boom-supported side-sweeps as well as smaller systems designed for coastal and harbor use. Although the model depicted below has a water-filled ballast chamber and inflatable flotation, weir booms with internal foam flotation and regular skirts have been produced.

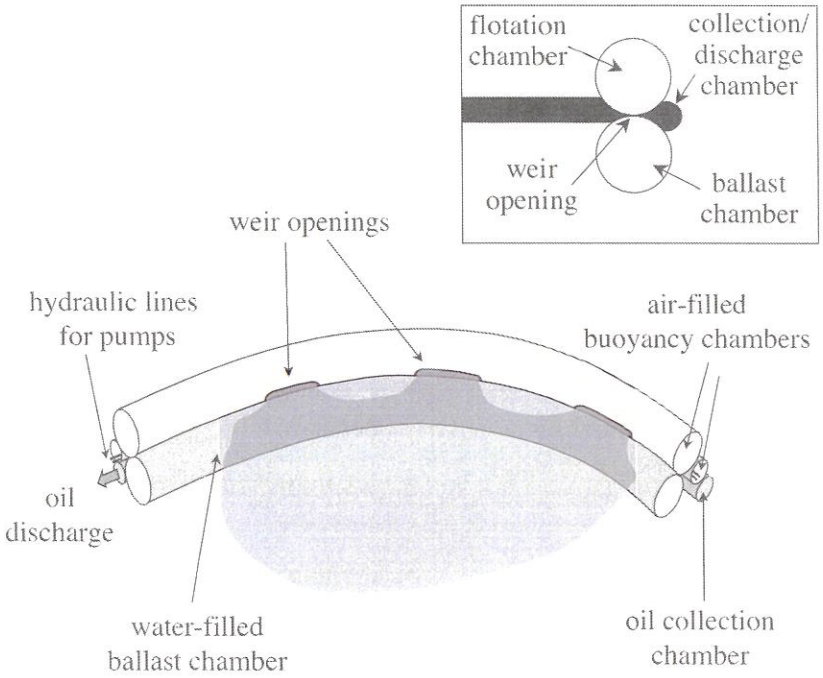


Figure 9-7 Weir Boom Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	●

Weir boom skimmers are generally capable of recovering light-to-medium viscosity oils. Although more effective in skimming thick slicks, weir booms can be used to concentrate and recover thin slicks. These skimmers generally require water depths of 4 to 5 ft (1.2 to 1.5 m) and should be towed at speeds of less than 1 kt (0.5 m/s).

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Advancing	Calm/protected	●	◑

Weir boom skimmers are often difficult to deploy, operate, and retrieve. They collect large amounts of water so that temporary storage and/or use of an oil/water separator must be planned when they are being used. When applied to spills in coastal waters, deployment problems have been experienced with weir boom skimmers. Weir booms have had low oil recovery rates in thin slicks.

Advantages	Disadvantages
• Can tolerate small debris • High pickup rate • Good wave-following ability • Some older models were designed to fit in air-deployable containers • Integral oil/water separators in some older models	• Limited to calm and protected water and thick oil slicks • Water depth of 4–5 ft (1.2–1.5 m) required • Generally exhibit low collection efficiency • Can be difficult to deploy and retrieve • Mechanically complex • Pumps that emulsify oil included in some models • Weir opening can be difficult to maintain at the optimum level • Collect large amounts of water

9.3.6 Drum

Operating Principle

One or more oleophilic drums that are driven by hydraulic, pneumatic, or electric motors are rotated downward into an oil slick. Recovered oil is then scraped off the drum(s) into a trough and, in some models, a sump. Either external or onboard discharge pumps are available. Some newer skimmers feature a mechanism to allow an operator to adjust the drum submersion depth.

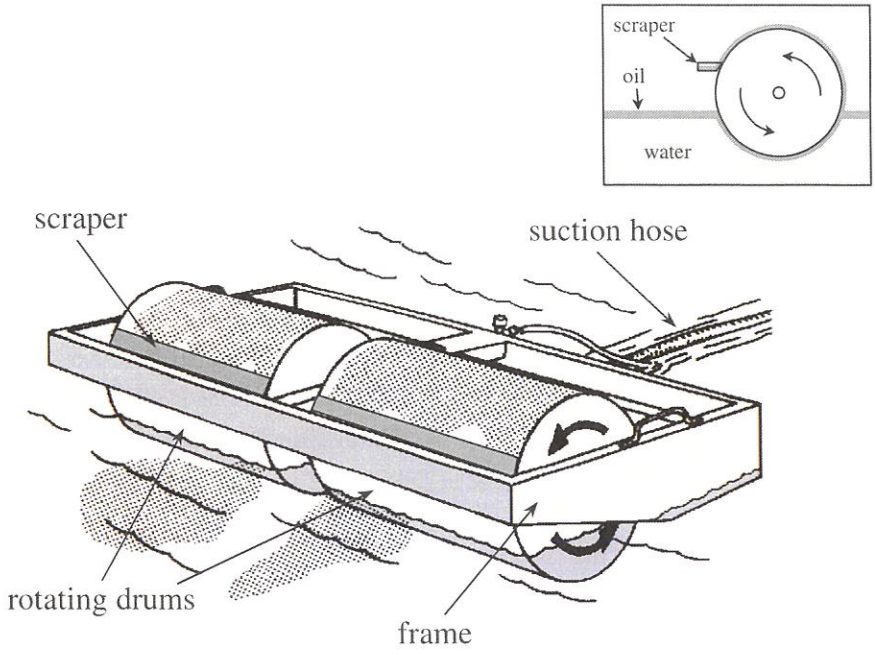


Figure 9-8 Drum Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	◑

Rotational speeds of approximately 40 rpm (revolutions per minute) result in the maximum recovery rate of medium viscosity oils. Reducing the rotational speed to 20 rpm generally improves the oil content in the recovered liquid by 10% but lowers the recovery rate by 50%.

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm/protected	◑	○

Waves often significantly decrease the recovery rate of self-contained (i.e., not vessel-mounted) drum skimmers. Calm water operation is recommended.

Advantages	Disadvantages
• Small units can be operated in shallow water • Simple design/good reliability • Often compact (including onboard pump) • Many models can be lifted by 2 people • High oil/water pickup ratio • Can tolerate some debris • Can be used in calm, harbor, and some offshore applications	• Limited to calm and protected water • Will not recover solidified/highly viscous oils due to pumping/oil flow problems • Will not recover dispersant-treated oil • Reduced recovery rate in thin slicks can occur if the drum water-wets • Limited capacity sump

9.3.7 Grooved Drum or Disc

Operating Principle

One or more oleophilic drums that are driven by hydraulic, pneumatic, or electric motors are rotated downward into an oil slick. The grooved disc skimmer replaces the flat discs (Section 9.3.8) with discs with shallow grooves and corresponding scrappers. A key difference is that this skimmer has a series of triangular-shaped groves on the drums or discs (Figure 9-9). This pattern maximizes the surface area of the drum and allows menisci to be formed in the depth of each channel which increases the amount of recovered oil. Recovered oil is then scraped off into a trough and, in some models, into a sump. Either external or onboard discharge pumps are available.

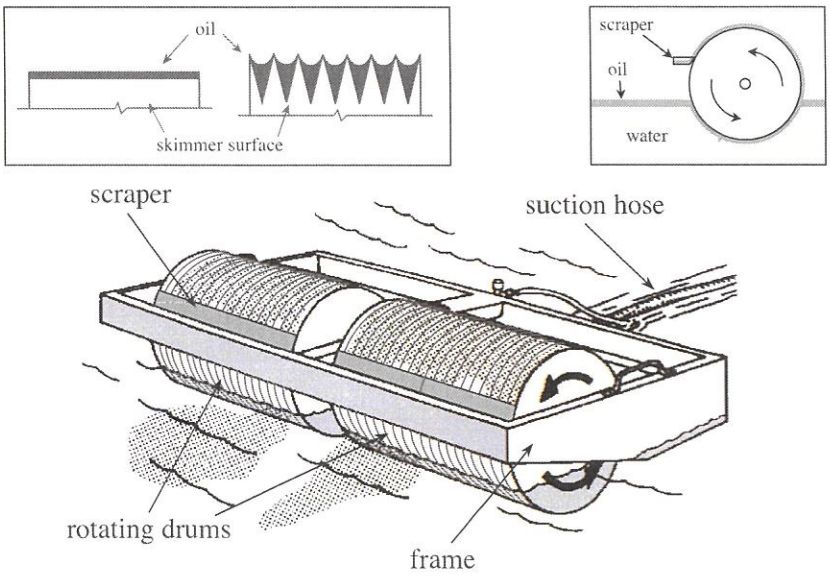


Figure 9-9 Grooved Drum Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	◑

Rotational speeds of approximately 65 rpm result in the maximum recovery rate of medium viscosity oils.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm/protected, limited offshore	◑	○

Waves often significantly decrease the recovery rate of self-contained (i.e., not vessel-mounted) grooved drum skimmers. Calm water operation is recommended.

Advantages	Disadvantages
• Very high oil/water pickup ratio • Small units can be operated in shallow water • Simple design/good reliability • Often compact (including onboard pump) • Many models can be lifted by 2 people • Can tolerate some debris • Can be used in calm, harbor, and some offshore applications	• Limited to calm and protected water • Will not recover solidified/highly viscous oils due to pumping/oil flow problems • Will not recover dispersant-treated oil • Limited capacity sump

9.3.8 Disc

Operating Principle

A series of oleophilic discs are arranged in a linear (i.e., single row), triangular (3 banks of discs), circular ("toroidal"), or square (4 banks of discs) configuration. Each group of discs is rotated downward into the oil, driven by hydraulic, pneumatic, or electric motors. PVC or aluminum scrapers remove oil adhering to the discs, and it flows down tubes or directly into a sump. Some smaller skimmers have external discharge pumps while other models have onboard pumps.

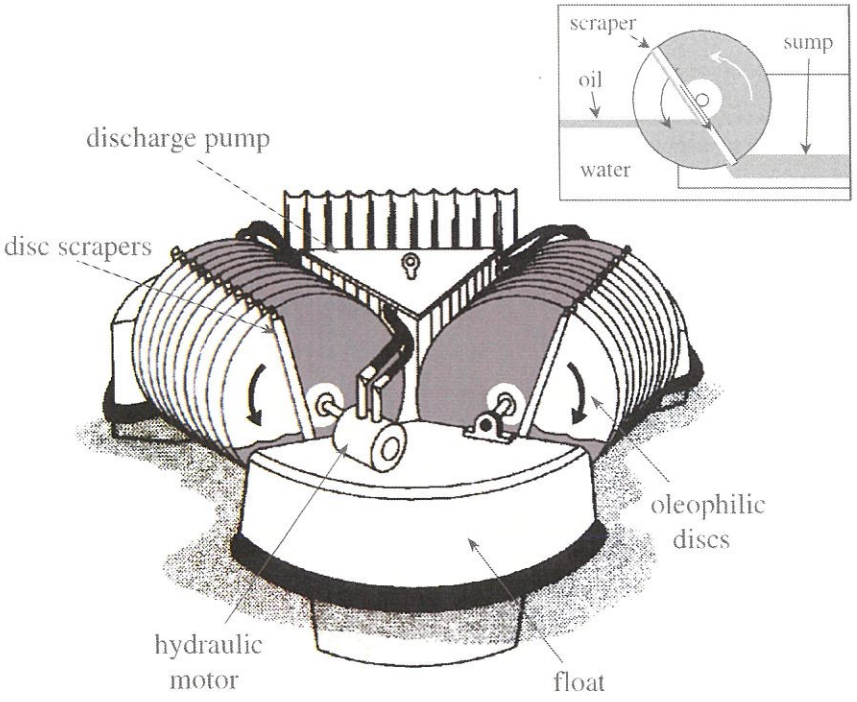


Figure 9-10 Disc Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	●

Disc skimmers recover liquid containing a high percentage of oil but can clog with debris. Down-tubes, scrapers, and discs should be cleaned frequently even when operating in what appears to be debris-free water.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	●	○

A disc speed of approximately 40 rpm optimizes oil recovery rate in most oils. Light oils, e.g., diesel, may require a lower rpm to reduce water uptake. Skimmer operation is optimal in calm and low wave conditions, but deteriorates if there is splash against the discs or skimmer body.

Advantages	Disadvantages
• Small units can be operated in shallow water • Few moving parts/good reliability • Often compact • Models with onboard pump function well • Smaller units can be lifted by 2–3 people • High oil/water pickup ratio • Oil can be recovered from all directions by models with 3, 4, and circular banks of discs • Can be used in calm, protected, and some offshore applications	• Not effective in heavy chop • Scrapers can be clogged by debris • Will not recover solidified/highly viscous oil • Will not recover dispersant-treated oil • Down-tubes may be clogged by heavy oil

9.3.9 Fabric-Coated Disc or Drum

Operating Principle

A series of fabric-coated oleophilic discs are arranged in a single row or in sets. The discs rotate downward into the oil, driven by hydraulic, pneumatic, or electric motors. PVC or aluminum scrapers remove oil adhering to the discs and it flows down tubes or directly into a sump. Some smaller skimmers have external discharge pumps while other models have onboard pumps. These pumps are essential to remove the high quantity of oil collected into the sump by the fabric coated discs. A similar system using drums has been developed as well.

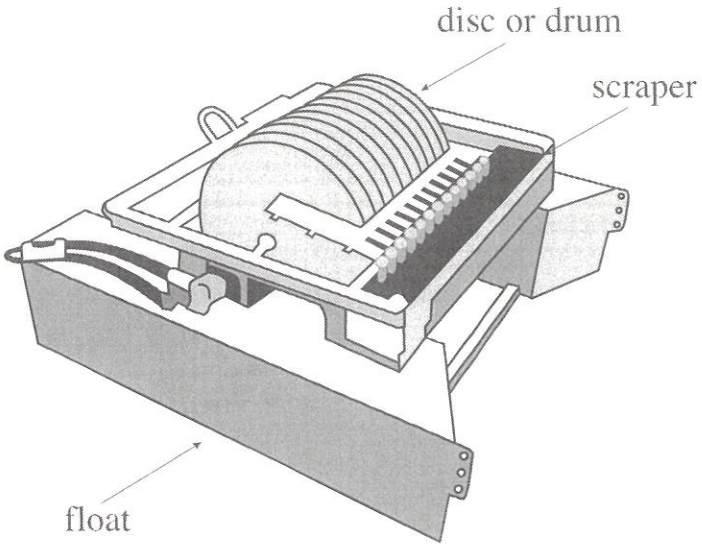


Figure 9-11 Fabric-Coated Disc Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	◑

Disc skimmers recover liquid containing a high percentage of oil but can clog with debris. Tubes, scrapers, and discs should be cleaned frequently even when operating in what appears to be debris-free water.

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm, some offshore applications	●	○

A disc speed of approximately 40 rpm optimizes oil recovery rate in most oils. Light oils, e.g., diesel, may require a lower rpm to reduce water uptake. Skimmer operation is optimal in calm and low wave conditions, but deteriorates if there is splash against the discs or skimmer body.

Advantages	Disadvantages
• Very high oil/water pickup ratio • Small units can be operated in shallow water • Few moving parts/good reliability • Models with onboard pump function well • Smaller units can be lifted by 2-3 people • Can be used in calm, protected, and some offshore applications	• Not effective in heavy chop • Scrapers can be clogged by debris • Will not recover solidified/highly viscous oil • Will not recover dispersant-treated oil • Tubes may be clogged by heavy oil

9.3.10 Rope Mop

Operating Principle

Single or multiple polyethylene fiber ropes are pulled through a slick by wringer-rollers. The rope mop is wrung and then continuously returned to the slick, repeating the cycle. Recovered oil is collected below the wringer assembly or pumped via a suction hose. Some models require a return pulley while those operated vertically are simply suspended above the slick so that the rope mop contacts the oil.

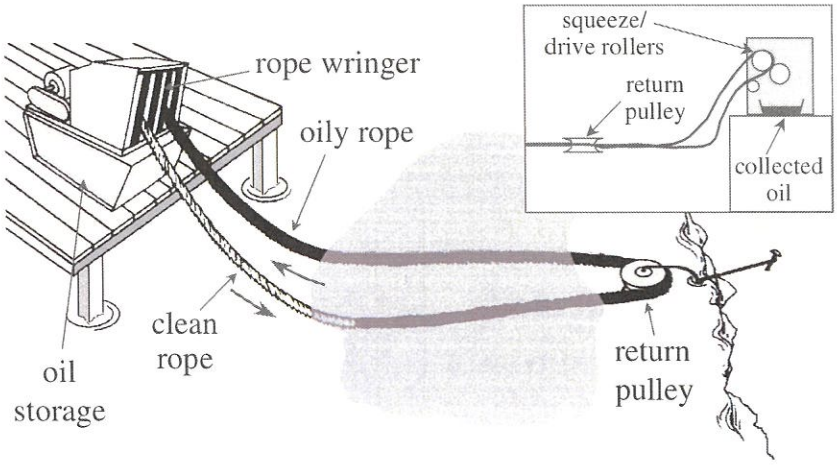


Figure 9-12 Horizontal Rope Mop Skimmer

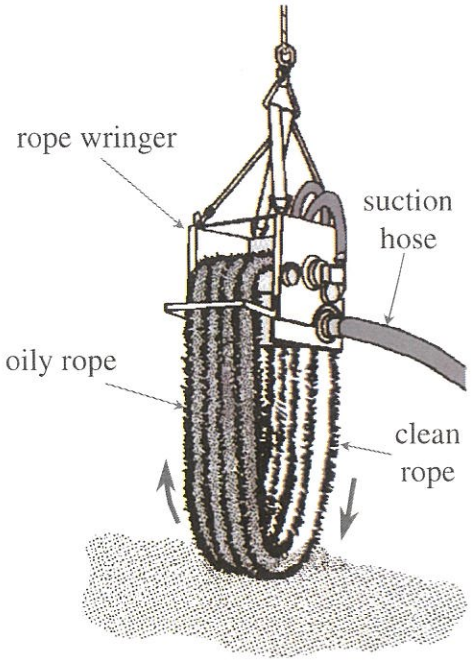


Figure 9-13 Vertical Rope Mop Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	●

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	All	○	○

Rope mop skimmers generally function best in warm weather (>68°F or >20°C) in medium viscosity oils that adhere to the mop. Operation in colder weather and lighter oils is possible, although the rope mop can freeze in low temperatures if it recovers water. The oil content in the collected liquid declines as mop speed exceeds about 1.25 ft/s (0.4 m/s).

Recovery in low waves of 1–2 ft (30–60 cm) should be possible. If oil is emulsified and viscous, rope mop strands can mat together and jam the wringer assembly. Low pickup rates of light oils, e.g., diesel, are common.

Advantages	Disadvantages
• Effective in calm, protected, and open water • Can operate in any water depth (and over dry patches) • Good pickup rate for medium viscosity oils • Wide, effective reach • Can tolerate most debris • Rope can recover oil in low currents • Can operate in broken ice	• Ropes and wringer-rollers will wear if oil is mixed with sand • Inefficient unless oil is confined or pooled • Attachment points/lines required for tail (return) pulley (horizontal models only) • Tail pulley may have to be repositioned when tide changes • Not effective in highly viscous oil

9.3.11 Zero Relative Velocity (ZRV) Rope Mop

Operating Principle

The standard configuration of a ZRV rope mop skimmer consists of a series of oleophilic ropes mounted and pulled in between the hulls of a self-propelled catamaran vessel. The rope mops are operated so that they contact the oil/water surface at the same speed as the vessel encounters slicks, resulting in zero relative velocity between the rope mops and the oil. Therefore, ZRV rope mop skimmers are effective in high currents. Hydraulically-driven squeeze rollers wring out the oil-laden rope mops. These skimmers must be advanced through slicks. They do not function well in the stationary mode. Recovered oil is stored onboard the vessel until it can be off-loaded.

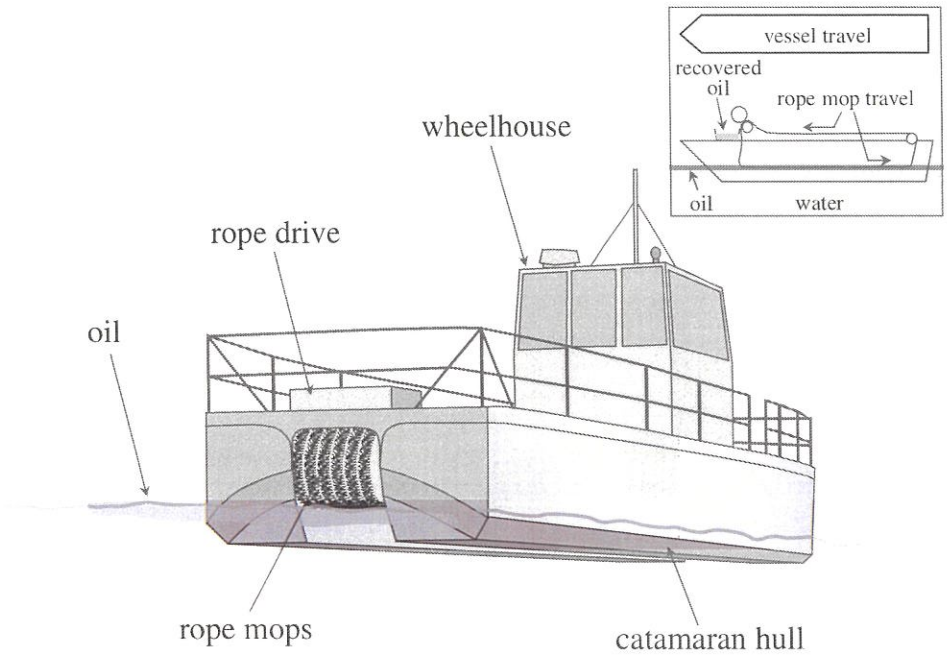


Figure 9-14 ZRV Rope Mop Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	●

ZRV rope mop skimmers function best in warm weather (>68°F or >20°C) in medium viscosity oil that adheres to the mop. Operation in colder weather and lighter oils is possible; however, the rope mops freeze at temperatures of 32°F (0°C) and below.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Advancing	Open	○	○

Oil recovery in low waves of 1–2 ft (30–60 cm) should be possible. Rope mop strands can mat together and jam wringer assemblies in emulsified and/or viscous oil (Bunker C, weathered crude). Low pickup rates of light oils, e.g., diesel, should be expected.

ZRV skimmers can be operated in speeds up to 3 knots (5.5 km/hr).

Advantages	Disadvantages
• Effective in calm and protected water • Good oil recovery in oil slicks thicker than ¼ in (6 mm), e.g., in embayments or near ice edges • Good oil/water pickup ratio • Onboard oil storage • Generally, good working conditions for crew	• Water depths greater than 3 ft (1 m) are required by most models • Difficult to transport to remote areas • A portion of some oils may flow by the rope mops and be left behind

9.3.12 Sorbent Lifting Belt

Operating Principle

An inclined oleophilic belt is advanced through a slick so that oil and debris are conveyed up the belt. Collected debris is scraped off and oil adhering to the belt is squeezed from it. In some models, an induction pump is positioned behind a semi-porous belt located just below the waterline. The pump impeller draws liquid through the belt, forcing oil onto and into the belt.

Sorbent and non-sorbent belt skimmers have been designed that rely on a belt that moves down into the water. The downward moving belt is described in Section 9.3.13 and is referred to as the submersion plane/belt skimmer.

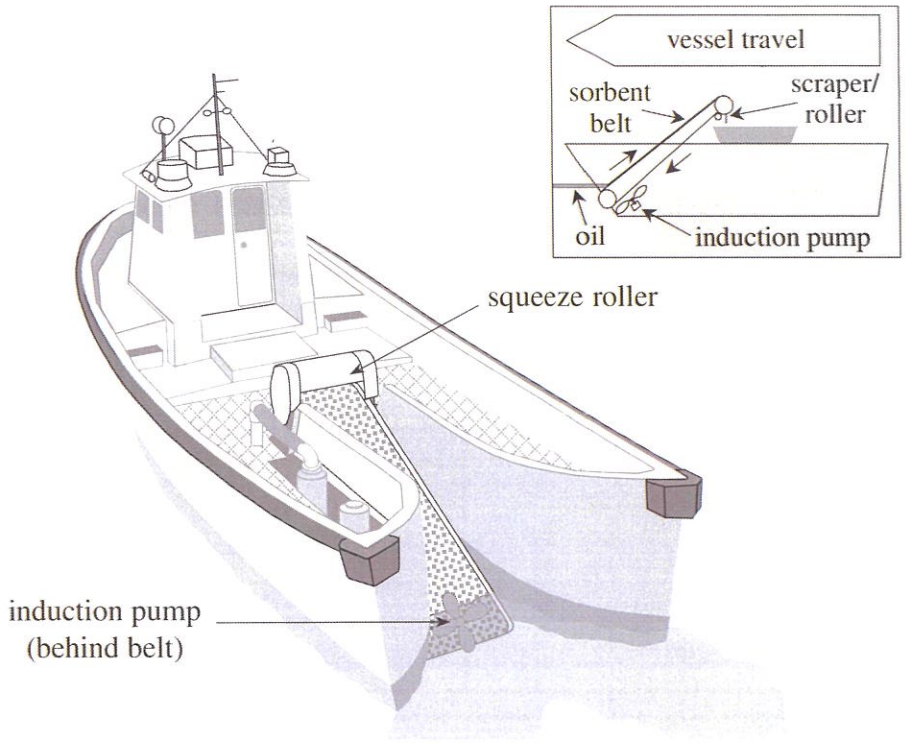


Figure 9-15 Sorbent Lifting Belt

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
●	○	○

Sorbent belt skimmers display good recovery rates for both fresh and viscous, debris-laden oil. They can recover light sheens but the percent oil recovered is low.

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary/ Advancing	All	○	◑

Self-propelled barges outfitted with belt skimmers can be effective in nearshore recovery operations due to their mobility, high recovery rate and storage capacity. The percent oil recovered is low with some types of belt skimmers but heated tanks in some models allow recovered water to be readily separated from oil and decanted.

Advantages	Disadvantages
• Effective in calm, protected, and open water • Some types allow debris collection • High oil recovery rate • Larger, self-propelled models have onboard storage • Self-propelled models can be deployed to remote sites • Recover highly viscous oils • Effective in a wider range of oils than many other skimmers • Can be disassembled for transport	• Larger units cannot operate in shallow water • Operation by qualified seamen required for larger models • Some models are mechanically complicated and difficult to maintain • Assembly of some models requires skilled mechanic and lifting gear • Belt life for some models can be relatively short • A portion of some oils may flow through the belt and surface behind these skimmers

9.3.13 Brush

Operating Principle

Closely spaced brushes collect oil, which is then removed by a comb-like scraper before being conveyed to storage. On some smaller models, brushes are mounted on a drum. Most larger models employ multiple linear chains deployed from the side (as shown below) or bow of a dedicated vessel or a vessel of opportunity. Side collectors require a jib, boom, multiple cables, and onboard storage and are often positioned on existing vessels used for multiple purposes, including spill response and fire fighting.

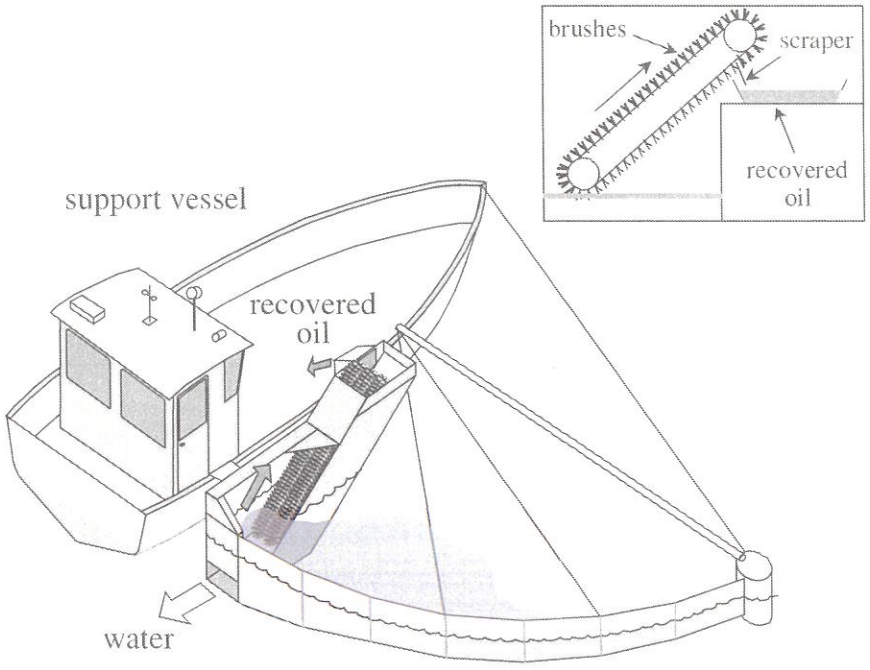


Figure 9-16 Brush Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
●	○	○

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Advancing	Open	○	◑

Brush skimmers function optimally in medium and high viscosity oils, provided that a suitable pump is used to transfer the latter to storage. Highest oil recovery rates in viscous products occur when brush drums are operated at approximately 20 rpm. However, the percent oil recovered in the collected liquid is highest at 5 to 10 rpm. The higher oil content is achieved at the expense of oil recovery rate, which decreases in direct relation to the decrease in rpm.

Linear brushes work best at 1 ft/s (0.3 m/s). Their wave tolerance is generally good since water flows through the brushes, but response of the entire skimming system depends on the sea-worthiness of the working platform. Excessive movement of the brush packs in waves due to vessel pitch and roll reduces oil recovery rate, particularly if brush packs are bow-mounted (side collectors are more common). Light oils, e.g., diesel, are not effectively recovered with most standard brushes due to low recovery rate and percent oil recovered.

Advantages	Disadvantages
• Suitable for weathered or emulsified oil • Relatively simple mechanical design (e.g., comb/scraper system) • Flow of oil into brushes not affected by waves if units are mounted on stable vessels • Can tolerate some debris	• Low pickup rate of light oil • Oil losses under booms of side collectors possible • Bow-mounted collectors affected by vessel movement/ bow wave interference • Not effective in stationary conditions

9.3.14 Water Jet

Operating Principle

Nozzles on a pressurized pipe spray water over an inclined weir. Entrained water rises and carries oil over the weir lip. Once over the weir lip, a containment boom, skimmer sump or other oil collection system retains the oil.

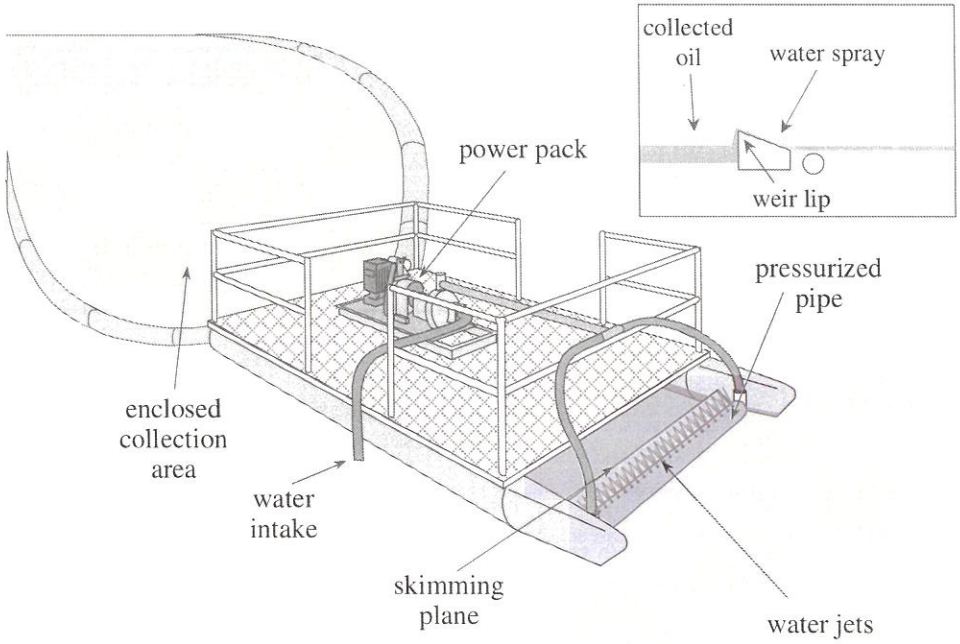


Figure 9-17 Water Jet Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	○

The water jet skimmer system functions by directing, confining, and concentrating slicks in a boom or other enclosed collection area so that the oil can be more efficiently recovered. As such, this skimming system is normally used in calm water.

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	◑	◑

Water jet skimmer systems can concentrate oils spanning a wide range of viscosity. However, high viscosity oils can be difficult to recover due to pumping problems.

Advantages	Disadvantages
• Integral, closed boom of some systems provides large storage area • Good oil/water separation achieved in storage area if sufficient residence time is allowed before pumping • Induces oil flow into the skimmer (including slicks in inaccessible areas) • Not affected by small debris • Gentle collection generally does not emulsify oil although some time may be required to allow separation	• Reduced performance in choppy water • Requires sufficient power to operate water jets • Does not work well in sub-freezing temperatures • Oil removal is required from the collection area using a skimmer or vacuum system • Emulsification of oil can occur in some models

9.3.15 Submersion Plane/Belt

Operating Principle

As the skimmer advances, oil is forced downward by a plane or moving belt (Figure 9-18). Once past the belt, the buoyancy of the oil causes it to rise up into a collection well from which it is pumped to onboard storage. Water leaves the collection well through a flow control gate (Figure 9-18 inset). Variations of this skimmer type have been designed that include porous plane and oleophilic belt elements.

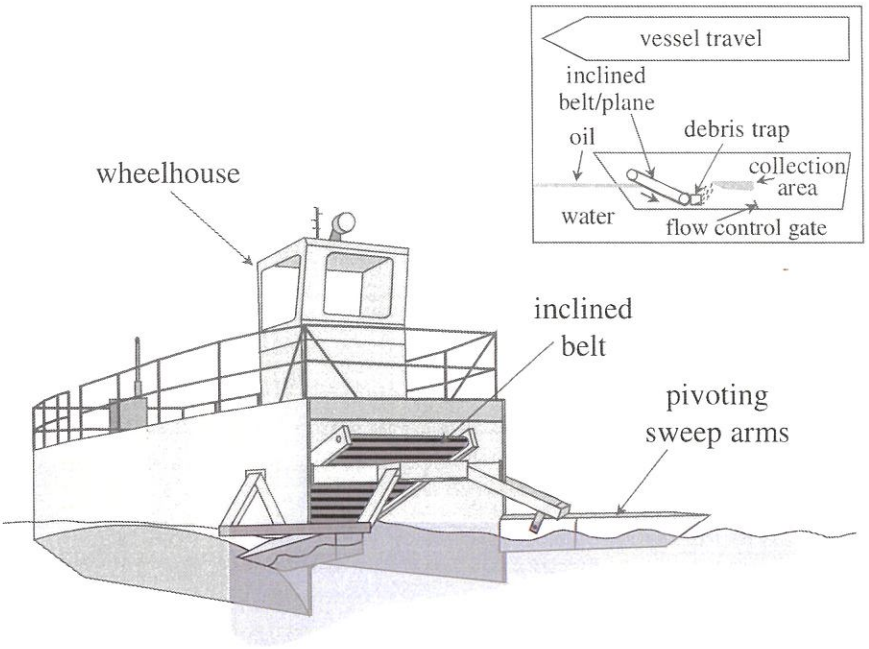


Figure 9-18 Submersion Plane/Belt Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	◑

Submersion plane/belt skimmers are effective in medium viscosity oils. Skimming in currents up to 3 kts (up to 1.5 m/s) is possible with some submersion plane models. Oils that are neutrally buoyant can pass under the collection well and escape recovery.

Mode	Sea State	Debris Tolerance	% Oil Recovery
Advancing	Open	◑	◑

Due to limited onboard storage in many models, recovered liquid must be pumped to support vessels. These skimmers can be relatively difficult to maintain since some components are mechanically complex.

Advantages	Disadvantages
• Suitable for medium viscosity oils • Can tolerate some debris and ice	• Debris that passes through the debris trap can impede recovery and requires messy, onboard removal • Less effective for both light and heavy oil • Skimming performance can be affected by vessel movement/bow wave effects

9.3.16 Rotating Vane

Operating Principle

A rotor with a series of vanes rotates beneath the water surface and draws oil towards the weir lip. Water passes through the vanes and is discharged below the skimmer. Recovered oil collects in a sump and is then pumped to remote storage.

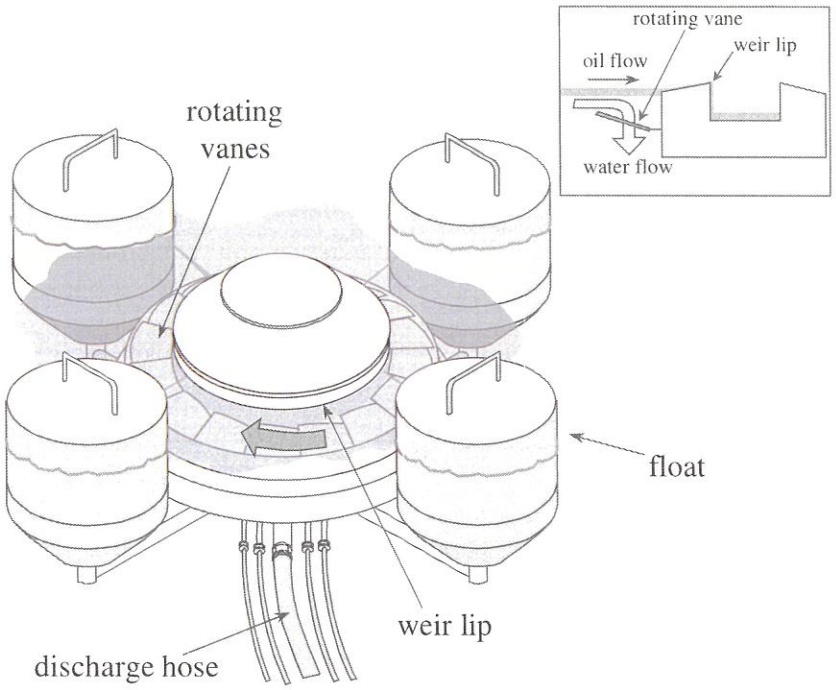


Figure 9-19 Rotating Vane Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
○	○	◑

Rotating vane skimmers pick up light-to-medium viscosity petroleum products. High viscosity oils either flow under the skimmer or can accumulate on the rotors.

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	◑	◑

Skimmers that induce flow to collect oil are generally effective in thick layers of low-to-medium viscosity oil in calm water. Waves can disrupt the desired flow pattern and prevent the entry of oil into the system.

Advantages	Disadvantages
• Lightweight, can be easily deployed and retrieved • Capable of drawing oil from several feet (1 meter) away • Work best in thick, contained oil • The shipping container of one version also serves as an oil/water separator	• When operated in thick layers of high viscosity oil, recovery rate is limited in models that utilize a remote pump • Pumping rate must be closely monitored to avoid high water pickup because oil collection is hidden below the skimmer • Long stringy debris, e.g., kelp, can clog rotor • Waves and currents can interfere with the vanes

9.3.17 Paddle Belt

Operating Principle

A series of paddles mounted on a moving belt rotate downward into the slick and convey the oil and water held against a baffle underneath the belt into a collection/ separation tank. The collected mixture is allowed to separate and the water is discharged.

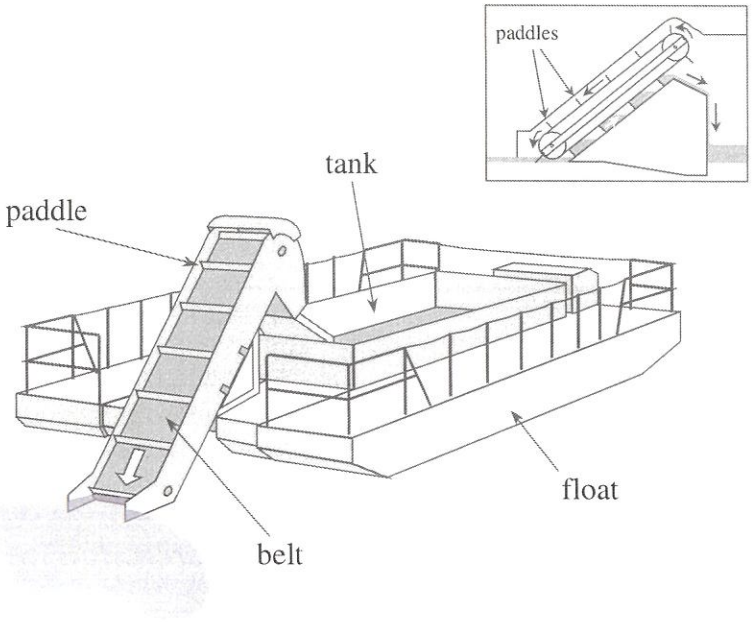


Figure 9-20 Paddle Belt Skimmer

Expected Performance		
Low viscosity oil	**Medium viscosity oil**	**High viscosity oil**
◑	○	○

Operational Considerations

Mode	Sea State	Debris Tolerance	% Oil Recovery
Stationary	Calm	○	○

Paddle belt skimmers are well suited to recovery of viscous oil and debris in calm water. These skimmers recover large amounts of water if the belt is rotated too quickly or in waves.

Advantages	Disadvantages
• Effective in contained oil with medium or high viscosity • Can tolerate most types of debris and some ice • High recovery rate in thick oil layers • Adjustable skimming head allows deployment of belt over booms	• Perforated plate models can be clogged by long, stringy debris • Limited to the recovery of high viscosity oils in calm water • Pick up high percentage of water in thin slicks

9.4 Material Take Off (MTO) List

There are a number of types of equipment required to successfully deploy and maintain skimming operations.

Table 9-5 Material Take Off List for Skimmers

Equipment	Use
Skimmers	Oil recovery
Booms	Oil containment
Pumps/hoses	Oil transfer
Storage	Temporary storage
Fittings	Connecting hoses, pumps, skimmers
Heaters	Assist in oil recovery
Tools	Setup, repair, maintenance
Rope	Positioning of skimmers
Cable	Positioning of skimmers
Vessels	Deployment/positioning of skimmers
Generators	Power for lights, heat, communications
Floodlights	Night-time operations
Oil-water separators	Reduction of oily wastes
Demulsifiers	Oil-water separation
Aircraft	Slick spotting, positioning of skimmers
GPS	Positioning skimmers, activity documentation
Sorbents	Cleaning equipment
Protective equipment	Protection of personnel
Crane/Davit	Used to raise and lower heavy equipment

10 Sorbents

10

10.1 Introduction

Sorbents are used to recover small amounts of oil through **ab**sorption, the penetration of oil into the sorbent material, and/or **ad**sorption, the adherence of oil onto the surface of sorbent material. To enhance recovery, most sorbents are both oleophilic (attract oil) and hydrophobic (repel water).

Use of sorbent materials on large spills on water is generally limited by five factors:

- Logistics of applying and retrieving sorbents on wide-spread slicks
- Labor-intensive nature of the operation
- Relative high cost (versus small skimmers)
- Relative low recovery rates
- Large amount of solid waste generated

In general, use of sorbents is only appropriate during the final stages of a cleanup or to aid in the removal of thin films of oil. Sorbents can also be used to clean up secondary spills, and protect and/or clean environmentally sensitive areas, such as turtle egg-laying areas or marshes, where the use of other cleaning methods is restricted because of the damage they could cause.

10.2 Selection Criteria

All sorbents are effective to some extent. To optimize selection of a particular sorbent product, the properties of a sorbent must be tailored to fit spill conditions. Sorbents that may be useful in one situation may be less desirable in another. In an emergency situation, however, use whichever sorbent is handy until a preferable one can be obtained. Parameters to be considered are discussed below.

10.2.1 Capacity

- Oleophilic and hydrophobic properties are desirable.
- Sorbents should have a high oil/water sorbing ratio when used in water.
- Field sorbent capacity is likely to be less than test data indicate. It may require approximately 25% more sorbent than suggested.
- Suitability of sorbent material depends on oil type and degree of weathering.

10.2.2 Rate of Sorption

- Light oils are sorbed rapidly.
- Sorption time required for saturation is much longer for viscous oils.
- Rate and effectiveness of sorption are proportional to the surface area of sorbent exposed to oil.
- Recovery rate decreases as the oil film becomes thinner. Booms can contain and thicken an oil layer to enhance the use of sorbents.

10.2.3 Buoyancy

- High buoyancy permits sorbents to float for long periods (days or weeks), even when saturated with oil and water.
- Some natural fibers, such as straw and peat moss, have high initial buoyancy but become waterlogged and sink.
- Excessive buoyancy may reduce efficiency to the point that sorbents need to be forced down into the oil to saturate them.

10.2.4 Oil Retention

- Some sorbent materials release much of the oil when the saturated sorbent is lifted out of the water.

10.2.5 Effect of Dispersants

- Dispersants prevent oil from sticking to a sorbent's oleophilic surface.

10.2.6 Suitable Uses

- Matted, lightweight (50 g to 200 g (2–7 ounces) per sheet) sorbent can be blown off the oil surface in strong winds. Two to three sheets in layers are more effective in windy conditions.
- Distribution of sorbents on oil contained in booms can effectively suppress waves and prevent the oil from splashing over the boom.

10.2.7 Reusability

- Reusable sorbents reduce waste.
- Some sorbents work better when "primed" or previously wetted with oil.
- Repeated handling and the need for wringers and storage containers increase the difficulty of applying reusable sorbents.

10.2.8 Ease of Retrieval

- Recovery of floating sorbents is very difficult but may be achieved by use of fishing techniques (such as seining nets) or some belt skimmers, provided they are not prone to clogging.
- Retrieval problems preclude use of uncontained particulate and loose sorbents on water.

10.2.9 Biodegradability

- In situations where material is difficult to recover, a sorbent should be environmentally safe and biodegradable.
- Sorbent products that incorporate nutrients can enhance biodegradation; however, the need for nutrients should be determined to avoid creating a eutrophic environment.

10.2.10 Disposal

- Sorbent selection should consider the ultimate disposal plan.
- Disposal facilities, whether for burial or incineration, generally need to be approved by regulatory authorities prior to the disposal of sorbents.
- Bag and/or drum requirements for storage of recovered sorbents should be calculated based on the quantity of sorbent to be distributed and the volume of oil likely to be sorbed.
- Sorbents must be burnable and not contain too much water for incineration.

The latest edition of the *World Catalog of Oil Spill Response Products* includes a listing of currently available sorbent materials and their suppliers. Also useful are sorbent test results from Environment Canada (Environment Canada, 1991, in Selected References Section of this manual).

Composition of sorbents can be grouped into three main types:

- Synthetic
- Organic
- Inorganic

Synthetic materials, such as polyethylene and polypropylene, generally offer superior oil recovery efficiency compared to organic and inorganic materials, such as peat moss or vermiculite. Typical materials and suitable applications are presented in Table 10-1.

Table 10-1 Sorbent Selection Matrix

Sorbent Type	Typical Materials	Considerations for Use
Synthetic	• Polyethylene/ polyurethane foams and pads • Polypropylene fabric, nets and ribbons • Nylon fabrics and strips • Polyester/cotton fabrics (windshield cleaner cloth)	• Generally the most effective (some absorb up to 25 times their weight of oil); highly oleophilic/hydrophobic • Available in many forms: rolls, sheets, blankets, open netting, pom-poms, loose, etc. • Not biodegradable but most are environmentally safe (inert) • White or light-colored products are preferred for oil visibility; avoid black/ dark colors • High surface area products are good for application to viscous oils • Some products are treated with surfactants to enhance oleophilic properties • Some are reusable
Organic	• Straw • Peat moss • Sawdust • Coconut fiber • Chicken feathers • Cork • Cellulose fiber • Biodegradable sponge • Ground corn cobs • Wool • Wood chips	• Generally absorb 5–10 times their weight • Biodegradable • Have been used to immobilize oil in sensitive environmental areas (e.g., marshes) to protect vegetation and wildlife • Some products are treated to enhance oleophilic properties • Many sink fairly rapidly when soaked • Primarily loose materials that are difficult to recover
Inorganic	• Perlite • Vermiculite • Glass wool • Volcanic rock	• Generally absorb 3–6 times their weight • Relatively inexpensive • Difficult and sometimes hazardous to apply • Some sink and cannot be recovered

10.3 Types of Sorbents

Sorbents are fabricated from various materials in many forms. Examples are shown below. Linear materials, such as pads, rolls, and boom, can be handled as one unit. Particulate sorbents consist of fine materials that are typically spread over the land and then recovered by scraping, raking or vacuuming. Other forms include loose fill that is spread over the spill and recovered mechanically.

	Boom • sorbent material, cylindrically-shaped and deployed like a boom • some models have ballasted skirt and flotation core
	Pads • sheets of sorbent material available in various configurations, e.g., melt-blown, sonic-bonded, laminated and air-laid
	Pillows • sorbent material enclosed in a small sack, which can be easily handled and placed in confined areas
	Pom-poms • bunches of oleophilic strips • can be strung together on a rope as a snare boom
	Rolls • continuous sheet of sorbent material
	Sweeps • long sheets of sorbent material, reinforced with rope and stitching
	Other • other forms include socks, barriers, loose fill, and particulate

10.4 Application

Wide use of sorbents is limited by the intensive labor required, the amount of solid waste generated and other factors listed in Section 10.1. Suitable application of sorbent includes:

- final recovery of residual spilled oil in nearshore areas or locations inaccessible to vessels and equipment
- rapid containment of or response to small, inshore spills while slicks are fresh and relatively thick
- cleaning and wiping lightly-oiled surfaces, such as short segments of rocky shoreline
- covering boat decks, piers, walkways, etc. to prevent contamination of vessels, vehicles, offices or any designated "clean" area
- protecting or cleaning of environmentally sensitive areas, such as turtle egg-laying areas or marshes, where other cleaning methods are restricted because of the damage they could cause

Application techniques for commonly used sorbents are shown in Table 10-2.

Table 10-2 Sorbent Material Application Techniques

Sorbent	Technique
Pads (squares and strips)	• Placed in confined areas to collect small quantities of oil. They should be left for several hours in spilled oil for greater effectiveness • Pads can be wrung out with a simple wringer and re-used
Rolls	• Used in the same manner as squares and strips, but usually more convenient since they can be either torn or cut to an optimum length • Very effective in protecting walkways, boat decks, working areas, previously uncontaminated or cleaned areas; can be used to cover areas used as temporary storage sites for oily materials • Disposal is facilitated by rolling-up the sorbent and placing it in a suitable container

Table 10-2 Sorbent Material Application Techniques (continued)

Sorbent	Technique
Boom	• Can serve a dual function by absorbing and containing oil, but only effective in very calm waters • Most effective on thin films of oil • Tightly compacted sorbent material encased in mesh restricts oil penetration, requiring a boom to be rotated and moved around in the oil to work efficiently. It is usually better to drive oil into the boom. • Solid "sausage" boom is better than loosely packed "pop-corn" (granular) boom. Loosely packed granules absorb more water and mesh bags break easily, requiring additional cleanup effort. • Can be used effectively to protect sheltered areas against oil contamination; also can be deployed behind skimmers to collect excess or missed oil, but not generally effective when used this way • Disposal is accomplished by folding, rolling, and/or stuffing a boom into plastic bags for disposal.
Pom-poms and snare booms	• Most effective on viscous or weathered oil • May be used to recover oil both on shore and in the water • Can be strung together and placed in intertidal area to recover oil • Can be used to seal the shore end of a boom so that no oil escapes. This is particularly useful in tidal waters, especially where the bottom is rocky or strewn with boulders. • Often used as a composite barrier inside a containment boom to limit the escape of oil under varying wind, wave and current conditions • Disposal is accomplished by stuffing the material in a plastic bag for disposal
Loose materials	• Loose sorbent materials are not recommended for use in spills on water; however, loose organic materials have been successfully used to stabilize stranded oil in remote locations.

10.5 Solidifiers

Solidifiers are typically polymeric products that react with oil to bind it into a cohesive mass, immobilizing it and reducing the rate of spreading and thinning. They have been successfully used on small harbor spills of light products and on spills to land. If applied to oil on water, the solidified mass may float until fishnets, perforated shovels or other pickup devices can physically remove it from the water. Because solidifiers are applied as powders, granular mixes, or gels, they are generally impractical for wide-scale application at large spills.

The following points summarize the strengths and weaknesses of solidifiers:

- unlike sorbents, solidifiers must generally be registered with and approved for use by government agencies
- large amounts of solidifier material (10–40% by weight of the oil mass) must be applied for full effectiveness
- solidifiers are most effective on light oils and at higher temperatures
- solidifiers can reduce the vapor emission rate of oil but care must be taken in storing solidified oil because hydrocarbon vapors can still build up over time
- some sinking agents market themselves as solidifiers; sinking agents should not be used on an oil spill
- solidifiers are effective in either a fresh or sea water environment
- most solidifiers are readily combustible so incineration is a feasible disposal option

11 Transfer Systems

11

11.1 Introduction

In oil spill response, transfer systems include pumps and means of transport of recovered oily waste. This chapter focuses on pumps because of their importance on initial oil recovery.

Pumps are used during oil spill response to transfer oil, water, emulsions, and dispersants. Recovered liquids typically need to be transferred:

- From a skimmer to interim storage
- From interim storage to a transportation vessel/vehicle
- From a transportation vessel/vehicle to a final storage/disposal facility

Preplanning recovered oil transfer is critical to ensure continuity of oil spill response operations.

Transfer systems must be selected to suit the quantities and types of liquids being moved. Although a wide range of pumps can be used for fresh, unemulsified oils, pump options can become limited as transfer conditions become more difficult. Careful consideration must be given to each specific transfer situation, particularly in the case of long-term mechanical recovery operations since over time, oil weathers, viscosity increases, and debris is collected.

Pumps may be used to off-load unspilled oil from stricken vessels (called "lightering") and to transfer dispersants from drums and temporary storage tanks to dispersant application systems.

Generally, spill cleanup does not require pumps with extreme capabilities. The head through which the pump must push liquid is usually about 6 to 20 ft (2 to 6 m) and suction lift from a skimmer to a pump is often much less (i.e., only a few feet or about a meter). In some cases, a large head is required, especially when oil is pumped from a skimmer to a large, unballasted barge or storage vessel. In this case, the head required may be 30 ft (10 m) or more.

Some pumps are more suitable for oil spill work for the following reasons:

- They self-prime and maintain prime if used on a skimmer and the skimmer rolls.
- There is provision for draining when shut down. This is essential in cold weather.
- Pumping capacity is steady even with slight increases in oil viscosity.
- Cavitation does not occur when pumping warm or high viscosity oil.
- Emulsification of water in oil and water is not increased by pump design.
- Debris tolerant.
- Parts are oil-resistant.

Pumping viscous oils may be difficult as friction caused by the oil traveling down a hose may reduce flow. To help minimize pressure loss, an annular injection flange may be connected to the discharge hose. The flange allows the injection of a small layer of water or steam around the oil passing through the hose reducing the total pressure loss. See Section 11.3.12 Annular Injection for more information.

11.2 Pump Selection Matrix

The Pump Selection Matrix in Table 11-1 lists 13 generic types of transfer pumps that are generally available worldwide and 15 selection criteria for them. An overall evaluation of each pump follows the table.

To use the Pump Selection Matrix, follow these steps:

Step 1 Identify the type of fluid and/or debris that needs to be transferred. Select pumps that will perform well in moving such material(s).

Step 2 Identify other criteria critical to the situation (e.g., portability) and rank them in order of importance. Search the Matrix for these criteria in descending order of importance, each time selecting the highest rated pump(s) which have not been eliminated in a previous step.

11.2.1 Pump Selection Example

A pool of highly viscous, weathered oil has collected in a remote swampy area. During the recovery process, it is likely that a considerable amount of silt and other small debris will be picked up with the oil. An example of the process of selection is as follows:

- Step 1. The area and conditions suggest that the most feasible oil removal method is a pump. Although rated "good" for handling silt, the vacuum truck is excluded because of its size and difficulty in gaining access to the site. The portable pumps best suited to moving highly viscous fluids are:
  - Lobe
  - Gear
  - Intermeshing Screw
  - Screw/auger
  - Progressive Cavity
  - Reciprocating
- Step 2. Because this is a difficult transfer operation, silt/sand and debris requirements take priority over transfer rate. Of the pumps picked in Step 1, only two have a rating of "good" for handling silt/sand:
  - Screw/auger
  - Progressive cavity
- Step 3. If there is a possibility of gravel being present, then the screw/auger pump should be chosen because of its higher tolerance for this type of debris. For drawing suction from distance, the progressive cavity is the preferred choice. Pump availability should then be verified.

Table 11-1 Pump Selection Matrix

	Characteristics of Transfer System															
	Fluid Type			Debris Tolerance			Other Criteria									
	High Viscosity	Medium Viscosity	Low Viscosity	Silt/sand	Gravel/particulate	Seaweed, stringy material	Transfer rate	Low emulsification tendency	Ability to run dry	Ability to operate continuously	Self-priming	Suction head	Back pressure/head	Portability	Ease of repair	Notes
Centrifugal	●	◑	○	○	○	●	○	●	○	○	●	●	●	○	○	5 8
Lobe	○	○	●	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	◑	◑	2
Gear	○	○	●	●	●	◑	●	◑	◑	◑	◑	◑	○	◑	●	2
Intermeshing Screw	○	○	●	●	●	◑	●	◑	●	◑	◑	◑	○	◑	◑	2
Rotary Vane	◑	◑	◑	●	●	●	◑	◑	●	◑	◑	◑	◑	◑	◑	-
Flexible Impeller	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	○	◑	◑	◑	◑	6
Screw/auger	○	○	●	○	○	●	●	○	◑	◑	●	●	◑	◑	◑	1
Progressive Cavity	○	○	◑	○	◑	◑	◑	○	●	◑	○	○	○	◑	◑	2
Reciprocating	○	○	◑	◑	◑	◑	◑	◑	○	◑	◑	○	○	◑	◑	2 4
Diaphragm	◑	◑	◑	○	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	○	1 3 7
Peristaltic	◑	○	○	○	○	◑	○	○	○	○	○	○	○	○	○	-
Annular Injection	○	○	○	○	○	●	○	○	N	●	N	N	N	○	○	-
Vacuum Truck	○	○	○	○	○	○	◑	○	○	◑	○	○	N	◑	◑	-
Air Conveyor	○	○	○	○	○	○	◑	○	○	◑	○	○	N	◑	◑	-

Legend ○ Good ◑ Fair ● Poor N = Not Applicable

Notes:

1 Normally have remote power sources — are safe around flammable fluids
2 Should have a relief valve in the outlet line to prevent bursting hoses
3 Air-powered models tend to freeze-up in sub-freezing temperatures
4 Units with worn ball valves are difficult to prime
5 Some remotely-powered models are designed to fit inside a tanker's Butterworth hatch
6 Can also pump air at low pressure
7 Transfer is pulsating rather than continuous
8 High shear action tends to emulsify oil/water mixtures

11.3 Detailed Information on Pump Types

11.3.1 Centrifugal Pump

Operating Principle

Liquid enters a pump at the center of a rapidly rotating fan-shaped impeller. Centrifugal force then accelerates fluid toward the impeller's outer edge. From there, the fluid exits through a nozzle on the periphery of the impeller housing. Pressure generated by this pump is from the kinetic energy imparted to fluids by the impeller.

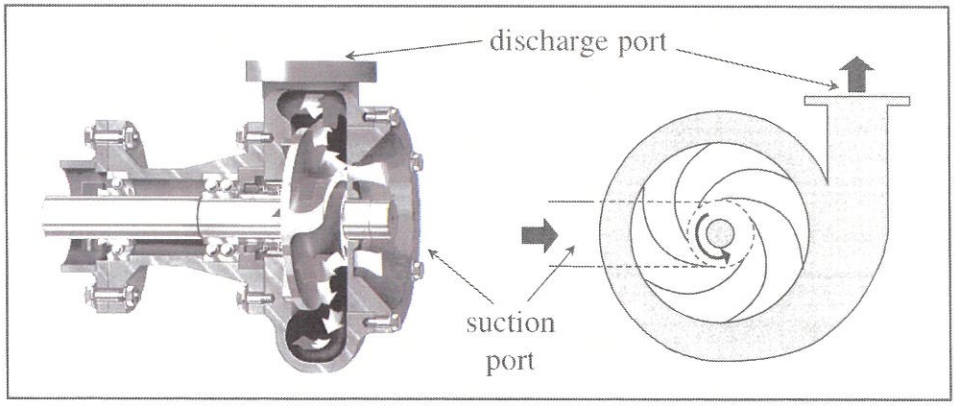


Figure 11-1 Centrifugal Pump

Suitable Uses

- Pumping low viscosity fluids at high rates for short distances
- Supplying water to dispersant spray booms or fire nozzles
- Flooding shoreline with seawater to prevent oil from sticking to soil
- Unloading drums of chemicals, fuels, etc.
- Mixing demulsifier chemical into emulsified oil

Advantages	Disadvantages
• Small, lightweight, easy to handle • High capacity with low viscosity fluids • Inexpensive, considering output capability • Mechanically simple (one moving part) • Tolerant of most debris • Easy to repair in the field	• Output decreases markedly with increasing viscosity of fluid • Many models are not self-priming • May generate oil/water emulsions • Pump performance impaired by stringy debris

11.3.2 Lobe Pump

Operating Principle

Incoming fluid fills cavities between the lobes of two rotating elements and becomes trapped where two adjacent lobes seal against a wall of the pump housing. As lobes rotate, trapped fluid is carried to the pump outlet. When a leading lobe loses contact with a wall, oil trapped in the cavity is forced out of the pump. This means that pumping rate is a function only of rotational speed. This pump shows little or no decrease in pumping rate with increasing fluid viscosity. Because very high pressure can develop in the discharge line, the outlet side should be equipped with a relief valve to prevent a discharge hose from bursting when viscous fluid is pumped at a high rate.

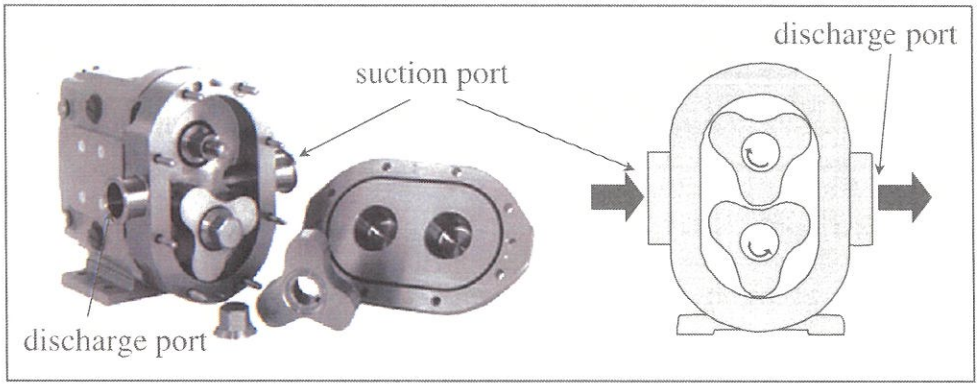


Figure 11-2 Lobe Pump

Suitable Uses

- Mixing viscous emulsions with demulsifier chemicals
- Pumping clean, solids-free fluids
- Feeding viscous emulsions to incineration devices
- Metering dispersant into spray boom systems

Advantages	Disadvantages
• Pumps high viscous fluids at a constant rate • Pumps against high back pressure • Gear-driven models can be run dry without serious damage	• Relatively slow pumping rate • Most models cannot tolerate sand or other abrasive debris • Non gear-driven models cannot be run dry

11.3.3 Gear Pump

Operating Principle

A gear pump works on the same principle as a lobe pump. It usually has close tolerances and many points of metal-to-metal contact. For this reason, a gear pump cannot process large particulate matter or highly abrasive solids. Most gear pumps are bi-directional.

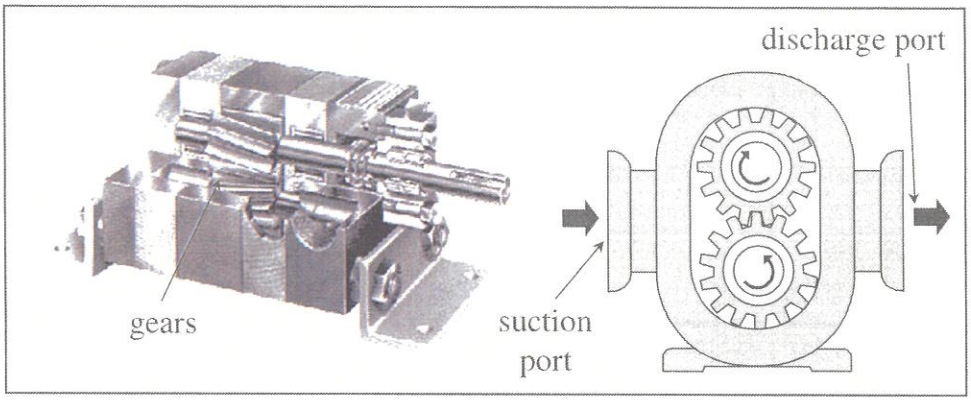


Figure 11-3 Gear Pump

Suitable Uses

- Mixing viscous emulsions with demulsifier chemicals
- Pumping clean, solids-free fluids
- Feeding viscous emulsions to incineration devices
- Metering dispersant into spray boom systems

11

Advantages	Disadvantages
• Pumps very viscous fluids at a constant rate • Pumps against high back pressure • Gear-driven models can be run dry without serious damage	• Relatively slow pumping rate • Most models cannot tolerate sand or other abrasive debris • Non gear-driven models cannot be run dry

11.3.4 Intermeshing Screw Pump

Operating Principle

Intermeshing screw pumps are very similar to gear pumps, but the area of contact between gears is higher in the screw pump. They are especially well suited for pumping clean viscous fluids at high pressures. Intermeshing screw pumps cannot tolerate abrasive solids.

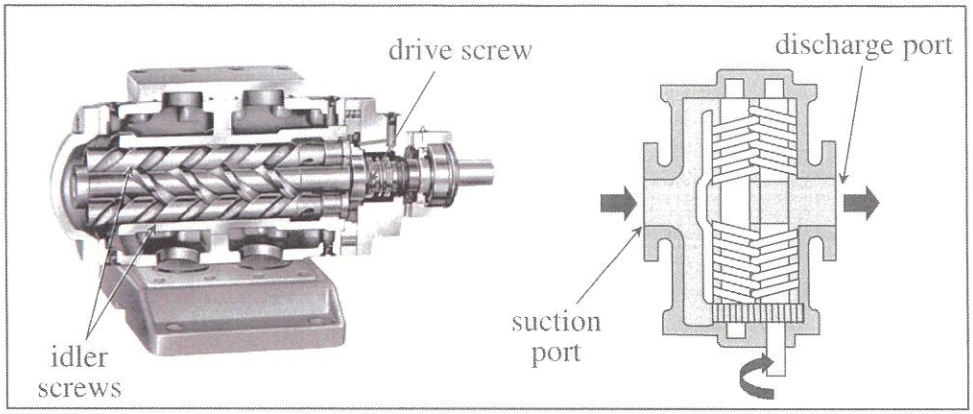


Figure 11-4 Intermeshing Screw Pump

Suitable Uses

- Mixing viscous emulsions with demulsifier chemicals
- Pumping clean, solids-free fluids
- Feeding viscous emulsions to incineration devices
- Metering dispersant into spray boom systems

11

Advantages	Disadvantages
• Pumps very viscous fluids at a constant rate • Pumps against high back pressure • Gear-driven models can be run dry without serious damage	• Relatively slow pumping rate • Most models cannot tolerate sand or other abrasive debris • Non gear-driven models cannot be run dry

11.3.5 Rotary Vane Pump

Operating Principle

A number of mechanical elements extend radially from a central rotating shaft and seal against the inner wall of the pump housing. A seal is accomplished by spring action. A rotating cavity fills with fluid that is transported from the inlet port to the outlet port by a 180° rotation of the central shaft. There is no clearance and because of metal-to-metal contact, vane pumps are sensitive to debris and abrasives.

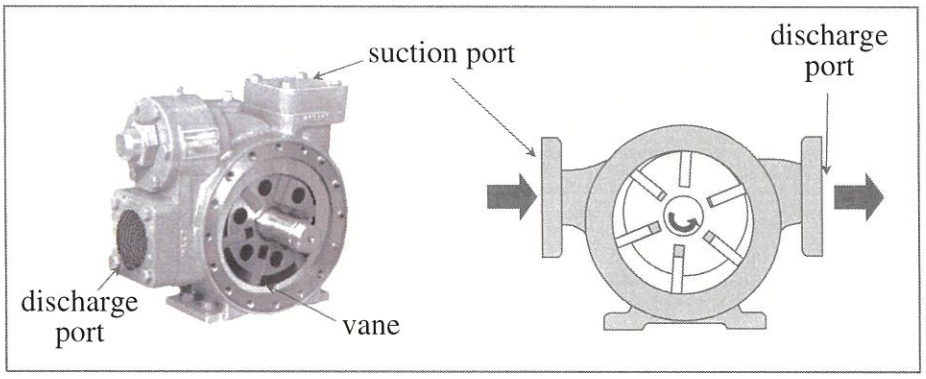


Figure 11-5 Vane Pump

Suitable Uses

- Pumping clean, solids-free fluids from offshore skimmers
- Emptying drums of chemicals or fuel
- Pumping seawater to dispersant spray booms
- Metering dispersant chemicals into spray boom systems
- Pumping oil and water from flexible storage containers to shoreline pits or incinerators

Advantages	Disadvantages
• Small, compact, and easy to handle and repair • Efficiently pumps both low and high viscosity fluids	• Cannot be run dry • Not available in a wide variety of sizes • Sensitive to abrasive solids

11.3.6 Flexible Impeller Pump

Operating Principle

A number of mechanical elements extend radially from a central rotating shaft and seal against the inner wall of the pump housing. A seal is accomplished by deforming the radial elements. A rotating cavity fills with fluid that is transported from the inlet port to the outlet port as the central shaft rotates. Flexible impeller pumps can deform around small, suspended particles and pass them without significantly reducing suction or pressure.

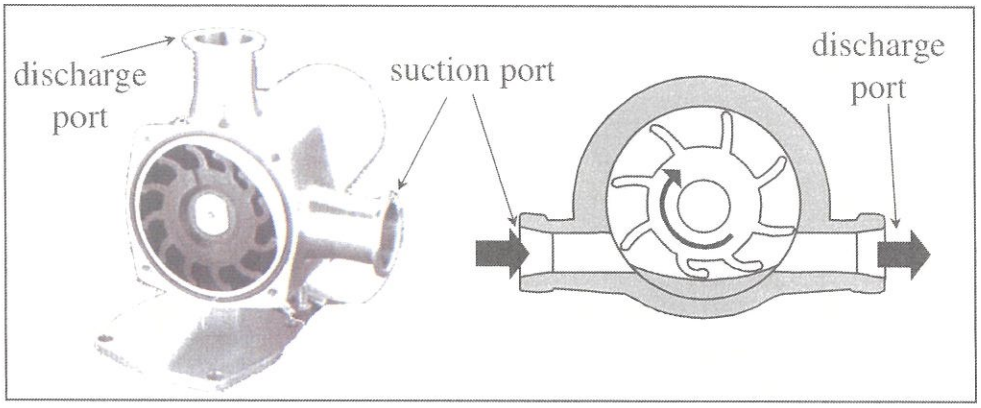


Figure 11-6 Flexible Impeller Pump

Suitable Uses

- Pumping fluids from offshore skimmers
- Emptying drums of chemicals or fuel
- Pumping seawater to dispersant spray booms
- Metering dispersant into spray boom systems
- Pumping oil and water from flexible storage containers to shoreline pits or incinerators

Advantages	Disadvantages
• Self-priming • Can handle small suspended particulates • Small, compact, and easy to handle and repair in field • Efficiently pumps both low and high viscosity fluids	• Cannot be run dry • Not available in a wide variety of sizes • Some models have impellers that are not oil-resistant

11.3.7 Screw/Auger Pump

Operating Principle

Oily material is gravity fed to a screw through a large hopper. As the screw rotates, it carries an oily mixture forward until a special rotary lobe scrapes oil from the groove and forces it out the front of a pump. Debris that fits between the "threads" of a screw is processed. A special cutter at the edge of a hopper can cut long stringy debris, so it can also be pumped. Because of its low rotational speed and the relatively loose clearance between screw, housing, and lobe, this pump has very little self-priming or suction capability.

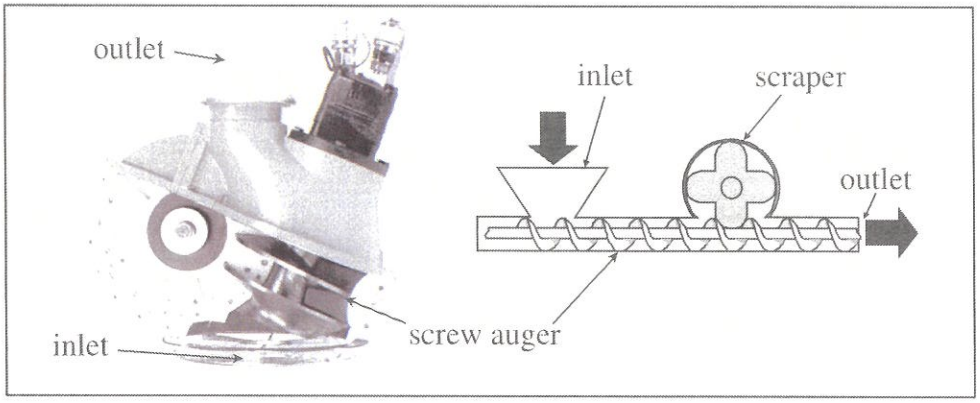


Figure 11-7 Screw/Auger Pump

Suitable Uses

- Pumping weathered crude or mousse
- Off-loading recovered oil from storage barges
- Transferring contents of earthen storage pits to incinerator
- Transferring oil/ice/snow slush

Advantages	Disadvantages
• Can pump highly viscous or semi-solid materials • Processes most debris • Does not emulsify oil/water • Some models can be run dry • Some models are integral with a weir skimmer	• Some models (with nylon casing) cannot be run dry • Not self-priming • Poor suction/lift capacity • Relatively low pumping rate for its power • Relatively expensive for capacity • Can develop high back pressure

11.3.8 Progressive Cavity Pump

Operating Principle

A spiral rotor turns inside a stationary chamber or stator to create pockets that move continuously towards the outlet. A rotor is a smooth, polished metal spiral or helix. A stator is similar in shape, but with only half the pitch of a rotor. It is made of a pliable, oil-resistant rubber, such as neoprene, Buna N, or polyurethane. As fluid enters a pump, it fills part of the cavity adjacent to the inlet. As the rotor turns, its specially shaped lobes seal against the stator and push fluid down the barrel in an advancing or progressing cavity. Pumping action is very gentle and tends not to emulsify oil and water. Depending on the size of cavities, this type of pump can pass solid particles, such as wood pieces, gravel, and ice, up to one inch (25 mm) in diameter. Because a stator is resilient, this pump can transfer fine abrasive solids effectively.

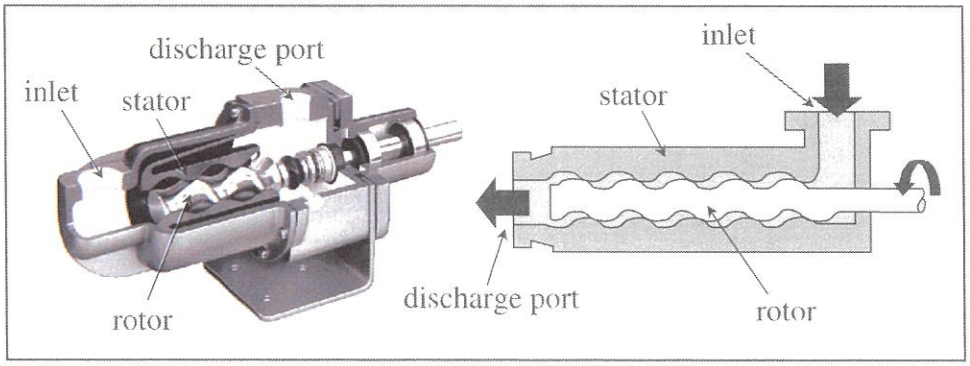


Figure 11-8 Progressive Cavity Pump

Suitable Uses

- Pumping viscous fluids at moderate rates against high back pressure
- Off-loading skimming vessels
- Transferring oil or emulsion from a skimmer to storage
- Pumping oily materials from storage pits to trucks, incinerators, etc.
- Miscellaneous pumping operations around the spill site

Advantages	Disadvantages
• Pumps oil of various viscosities at a constant rate • Can handle most small debris • Self-priming • Does not emulsify oil/water	• Large, heavy, awkward shape • Difficult to repair in field • Should not be run dry • Relatively low pumping rate

11.3.9 Reciprocating Pump

Operating Principle

A drive rod moves a diaphragm to one side of its housing, creating a vacuum in one chamber and pressure in the other. The vacuum opens one inlet valve and closes an outlet valve. When the rod reverses and moves the diaphragm to the other side of a housing, the action of all valves is reversed. Since liquid moves to the discharge port on both forward and reverse strokes of a rod at the same speed as the pump motor, a continuous discharge results.

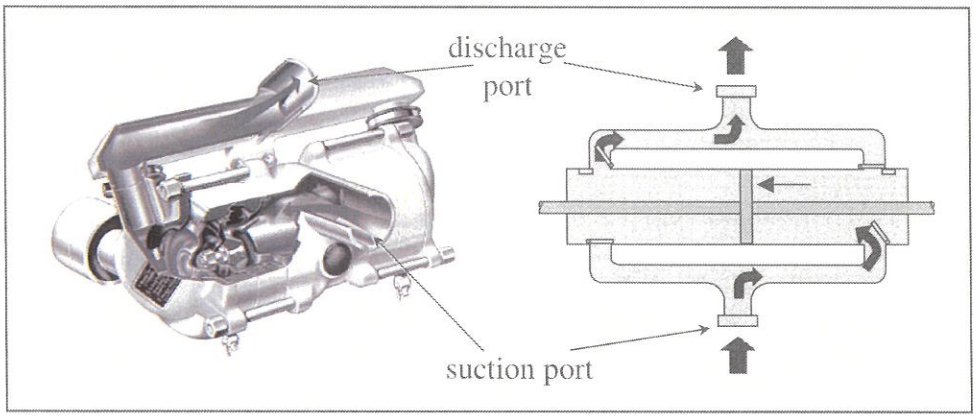


Figure 11-9 Reciprocating Pump

Suitable Uses

- Off-loading low and medium viscosity oils from skimming vessels or barges
- Injecting picked-up oil into incinerator devices

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Advantages	Disadvantages
• Can pump low to medium viscosity fluids at high pressures • Strong self-priming capability and good suction lift • Processes debris, i.e., small solids • Can be run dry for extended periods	• Some models tend to "walk" if not tethered • Rubber diaphragms wear when exposed to fine abrasives, e.g., sand • Units with worn ball valves are difficult to prime

11.3.10 Diaphragm Pump

Operating Principle

As a diaphragm moves to one side of its housing, it creates a vacuum in one chamber and pressure in the other. The vacuum opens one inlet valve and closes an outlet valve. Pressure opens the other outlet valve and closes the remaining inlet valve. When a diaphragm moves to the other side of its chamber, the action of all valves is reversed. Pumping action gives rise to a slight pulsating discharge. A diaphragm pump has a flexible elastomer piston (diaphragm) with wide clearances between moving parts.

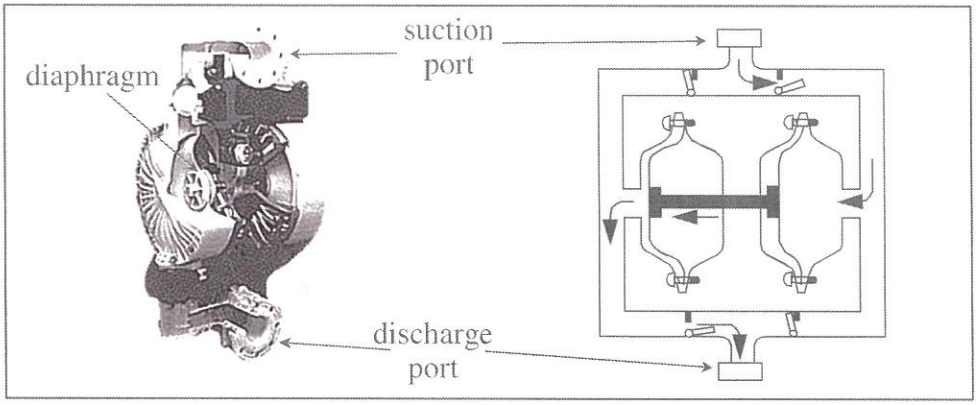

Figure 11-10 Diaphragm Pump

Suitable Uses

- Pumping fluid from small skimmer to nearby storage
- Pumping fluid in hazardous atmospheres (air-operated units)
- Pumping water and/or oil from storage containers to incinerators

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Advantages	Disadvantages
• Can run dry indefinitely • Can tolerate high concentrations of fine solids • Self-priming and gentle pumping action; good suction lift • Small, portable, easily repaired • Air-operated models are safe around flammable oil	• Diaphragms sometimes burst • Models with worn ball valves do not self prime • Some diaphragm materials are not compatible with oil • Some models require compressor • Cannot operate against high back pressure • Single-acting pumps have strong pulsating action making them less desirable than double-acting pumps

11.3.11 Peristaltic Pump

Operating Principle

The pumping action of a peristaltic pump (also called a "hose pump") is the result of alternate compression and relaxation of a specially designed resilient hose. A hose is compressed between the inner wall of the housing and the compression shoes of a rotor. A liquid lubricant in the housing minimizes sliding friction. The fluid being pumped is in contact only with the inner wall of a hose. During compression, abrasive particles in the fluid are cushioned in the thick inner hose wall, returning to the fluid stream after compression. This pump has no seats, seals, or valves. It is self-priming and can be run dry without damage. Suction, even for medium viscosity materials, is generally excellent.

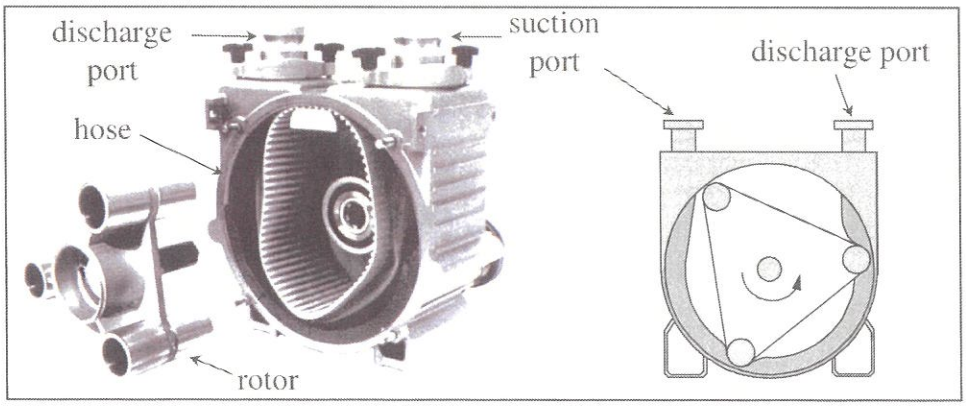

Figure 11-11 Peristaltic Pump

Suitable Uses

- Off-loading light emulsions from skimming vessels or oil storage barges
- Moving low and medium viscosity oils recovered in cold weather conditions as well as for more general use in warmer climates.

Advantages	Disadvantages
• Can be run dry without damage • Can process low to medium viscosity oils • Can pass most debris up to 1 in (25 mm) • Flow reversal can be used to clear blocked hose • Easily repaired in field • Self-priming; good suction lift	• Have pulsating flow • Internal hose wears and can require frequent replacement • Speed control can be difficult in medium viscosity oils • Vacuum on suction line can be lost on medium viscosity oils

11.3.12 Annular Injection

Operating Principle

Pumping flow rates can be adversely effected due to an increase in friction caused by three factors: (1) viscosity, (2) temperature, and (3) debris. An annular injection flange allows an operator to surround the oil within the hose with a layer of water or steam. This layer reduces the friction in the hose and allows for an increase in the distance that recovered oils are able to be pumped or the rate of pumping.

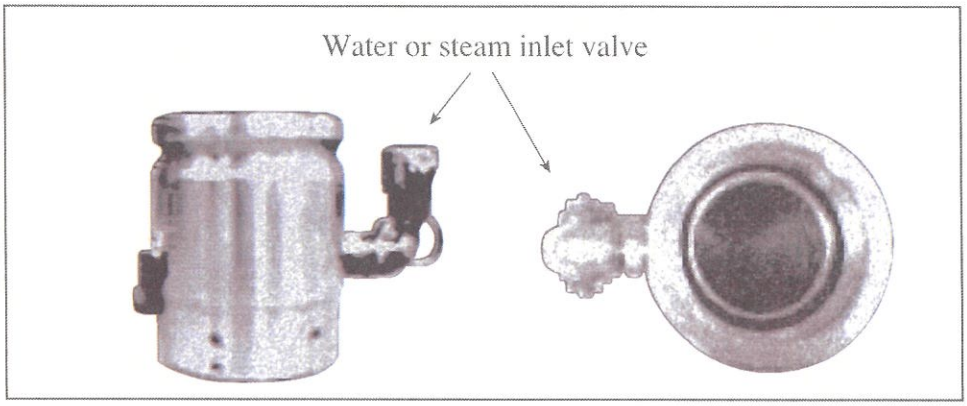

Figure 11-12 Annular Injection Flange

Suitable Uses

- To aid in transferring recovered oil in cold temperatures
- Assist in transferring viscous oil (e.g., emulsions) farther distances

Advantages	Disadvantages
• Assist in transferring oily waste and recovered oil • Compact size and lightweight • Attaches to inlet or outlet side of pumps via camlock fittings	• Not widely available • Secondary unit required to generate steam or pump water

11.4.1 Vacuum Truck

Operating Principle

Vacuum trucks are equipped with high vacuum pumps and a cylindrical chamber capable of sustaining very low internal pressures (i.e., about -14.5 to -12 psig [10–140 mm Hg absolute]). A vacuum is pulled on a chamber and a 3–4 in (8–10 cm) diameter hose is usually placed slightly below the surface of a slick. Depending on slick thickness, a mixture of oil and water enters the collection chamber. Positioning of the intake end of a hose is critical to minimize the amount of water collected. Floating weir skimmers can be attached to the inlet end of a hose to further reduce amounts of water recovered. In this case, a manual flow control valve may be useful.

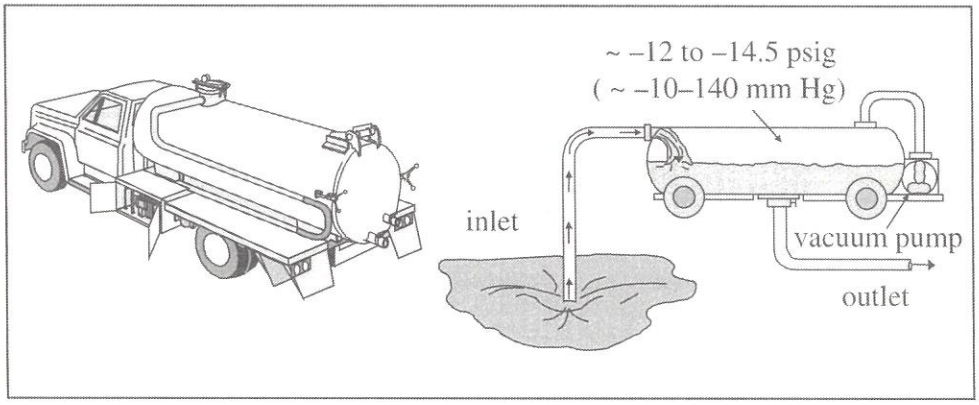

Figure 11-13 Vacuum Truck

Suitable Uses

- Off-loading viscous oil from skimming vessels or storage containers
- Providing suction for weir skimmers
- Removal of oil from boomed areas, earthen pits, flexible storage tanks, etc.
- Transporting recovered oil to a remote disposal site

Advantages	Disadvantages
• Normally readily available in industrialized areas • Can process a wide range of fluid viscosities • Provides transportation once oil is recovered • Does not emulsify oil/water • High pickup rate	• Large and heavy; requires good roads • Slow recovery from loss of vacuum • High water pickup

11.4.2 Air Conveyor

Operating Principle

Portable air conveyors are considered vacuum devices although the amount of vacuum developed in a chamber is relatively low (about -6 to -4 psig [450–550 mm Hg absolute]). Oil and water are entrained in a high velocity (i.e., 150 miles/hr or 240 km/hr) air stream and are conveyed into a collection chamber. Because an air conveyor relies on a steady air flow, the inlet nozzle on an intake hose must be placed slightly above the fluid surface.

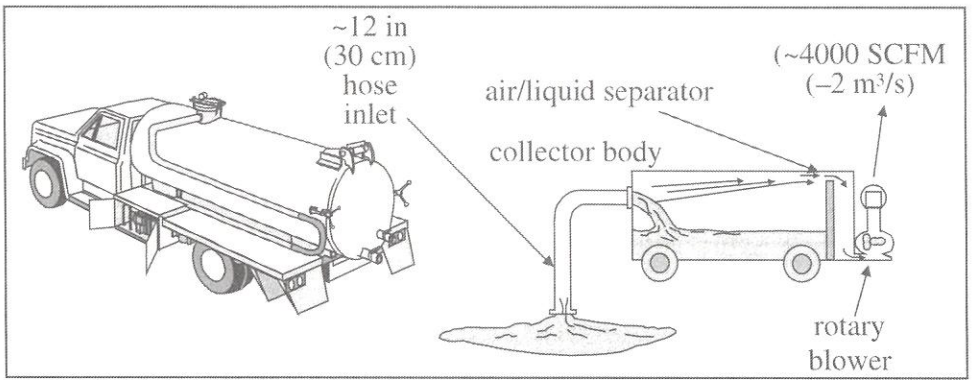

Figure 11-14 Air Conveyor

Suitable Uses

- Picking up weathered oil and tar balls from beaches or near shorelines
- Off-loading viscous oil from skimming vessels, pits, boomed areas, or debris-laden sites
- Moving oil vertically up to 30 ft (10 m)
- Recovery of used oil sorbents
- Providing supply air for portable incinerators

Advantages	Disadvantages
• Can handle most debris • Can process a wide range of fluid viscosities • Can lift fluids up to 30 ft (10 m) • Does not emulsify oil/water • Provides transport of recovered fluids	• Large and heavy; requires good roads • High water pickup • Difficult to make repairs in the field

11.4.3 Wheeled Vehicles

Operating Principle

In practically all oil spill cleanup operations, especially those conducted on or near land, a truck or some other type of wheeled vehicle eventually handles recovered oil and debris. Although vehicles are not usually thought of as transfer systems, they are essential in any cleanup operation. In planning response operations, it is important to match the type of vehicle to the service and road/soil conditions where it will be used. For instance, tank trucks can handle large volumes of water, oil and debris in any proportion. However, because of their heavy weight, they cannot be used on soft soil, unstable sand, or poor roads. Lighter trucks, vehicles with special tires for offroad travel, or light truck/trailer combinations are better suited for operation on beaches and poor roads.

Suitable Uses

- Carry fluids to storage or disposal sites
- Carry oily debris (logs, branches, vegetation, trash, etc.) to disposal sites
- Carry personnel and equipment around spill area

Advantages	Disadvantages
• Can generally handle any type of oil, water, emulsion, or oily debris • Widely available • Spare parts and component repair services are usually available. • Can be used to transfer equipment and personnel	• Limited transfer rate. The largest tank truck typically transfers only 100 barrels (16 m^3) per load. • Large units must have good roads or hard stable soil surfaces on which to operate. • Some units, like flatbeds and pickup trucks, must have separate containers for the waste material they transfer.

11.5 Material Take Off (MTO) List

Various types of equipment are required to conduct transfer operations.

Table 11-2 Material Take Off List for Pumps

Equipment	Use
Pumps	Oily liquid transfer
Suction hoses	Removal of oil/water from skimmers
Discharge hoses	Transfer to storage
Storage	Temporary storage
Fittings	Connectors, adapters, clamps
Tools	Repair/maintenance
Rope	Lashing of pump, hoses
Spare parts	Various
Generators	Power
Water source	Provide steam or water for annular injection
Oil-water separators	Oil-water separation
Demulsifiers	Oil-water separation
Sorbents	Cleanup of equipment
Transport vehicles	Move and/or collect recovered oil

12 Shoreline Treatment

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12.1 Introduction

The objective of shoreline treatment is to accelerate recovery of oiled shores while minimizing the impact of treatment operations. This approach is consistent with Net Environmental Benefit Analysis described in Section 1.

The selection of an appropriate shoreline treatment technique is based on many factors, including:

- Amount and type of oil
- Shoreline type
- Environmental or cultural sensitivity
- Logistics
- Waste generation
- Safety considerations
- Prevailing oceanographic and meteorological conditions
- Regulatory requirements

The first step in selection is to identify the amount and type/characteristics of the oil that has reached shore. Section 12.2 presents some guidance on how best to achieve this. The first step is shoreline assessment and there is considerable experience and knowledge available which would likely be employed to do this. Most experts use a form to capture the needed information and Section 12.2 describes all the data needed to record details of both the oiling and character of the shoreline. The next step is to select the most appropriate treatment method(s). Section 12.3 provides decision guides to facilitate this process.

Training in the proper use of mechanical equipment is essential for contractors and employees. Training is important to ensure safe operation and avoid accidents, improve oil recovery, minimize collection of clean material, and lessen the impact of equipment on a shoreline

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A site safety plan must be followed and general safety precautions should be used. Generally, workers will be given a safety briefing designed for the environment they will be working in prior to entering the work area. PPE (Personal Protective Equipment) should be selected to match exposure hazards. Proper electrical grounding of equipment and the use of back-up warning signals are two additional important safety items.

Shoreline treatment options are summarized in Section 12.4 for each shore type. Following a brief review of natural recovery (Section 12.5), each physical treatment method is reviewed in terms of its primary use, physical and biological effects, and the logistical support required including equipment, personnel, and access (Section 12.6). Summaries for bioremediation, and chemical techniques are also presented (Sections 12.7 and 12.8, respectively).

12.2 Assessment of Shoreline Oiling

The following information is used to assess shoreline oiling and its implications for response:

- Shoreline types and coastal character (geologic character and ecological conditions of affected shorelines)
- Amount and properties of an oil that has reached shorelines (possible interactions between any stranded oil and the environment)
- Ecological, cultural, archaeological, human use, or economic constraints/ priorities.

Outputs from assessment surveys are used to develop and implement shoreline treatment plans. During a major oil spill, shoreline oiling must be rigorously assessed before selection of appropriate treatment methods.

Shoreline assessment teams can be used to survey and document affected areas to then provide rapid geographic information on the locations and extent of shoreline oiling conditions. A form is usually employed to ensure that shorelines are characterized uniformly. Figure 12-1 and Table 12-1 present, as an example, the form used by NOAA in the US. The oiling summary form should be completed by a team of experts from a variety of organizations and specialties; e.g., geomorphologist, oil spill specialist, intertidal biologist, and archaeologist. Using a form helps provide a systematic approach to data collection that yields consistent data to aid comparisons among sites. A sketch can be drawn to locate specific oil deposits relative to major features.

Information which can be collected includes:

- General Information, such as date and time of survey, tide height, and some means of labeling or coding the various beach segments for later reference.
- Survey Team members and expertise.
- Some position data on where the segment is. GPS can be helpful, if available.
- Type of shoreline, e.g., rocky, sandy, muddy, wetland, etc. Table 12-1 has some code information which may be useful.
- Amount and distribution of oil on both the surface and subsurface.
- Observations as to sensitivity of the segment, either culturally or ecologically
- Any wildlife issues?

SHORELINE CLEANING ASSESSMENT FORM

1. GENERAL INFORMATION	Date (dd/mm/yy)	Time (24th standard/daylight)	Tide Height L/M/H H/M/L
Segment ID:			
Segment Name:		hrs to hrs	
Survey By: Foot / Boat / Helicopter / Overlook / Other:		Sun / Clouds / Fog / Rain / Snow / Windy	

2. SURVEY TEAM No. _____	Name	Organization	Phone Number

3. SEGMENT — Total Length _____ m/yd — Length Surveyed _____ m/yd — Differential GPS Yes / No

Start GPS: (if applicable) LAT ____ deg. ____ min. LONG ____ deg. ____ min.

End GPS: LAT ____ deg. ____ min. LONG ____ deg. ____ min.

4. SHORELINE TYPE: Select only ONE Primary (P) and ANY Secondary (S) types present

	Rocky Cliffs		Exposed Tidal Flats
	Exposed Man-Made Structures		Exposed Vegetated Tidal Flats
	Wave-cut Platforms		Sheltered Rocky Coasts and Clay Scarps
	Fine-Medium Grained Sand Beaches		Peat and Lowland Flats
	Coarse Grained Sand Beaches		Sheltered Tidal Flats
	Tundra		Salt Marshes and Mangroves
	Gravel and Cobble Beaches		Sensitive Habitats (Coral Reefs, Kelp, Seagrass, etc.)

5. OPERATIONAL FEATURES — Oiled Debris? Yes / No Type _____ Amount _____ bags

Direct backshore access? Yes / No — Access restrictions _____

Alongshore access from next segment? Yes / No — Suitable backshore staging? Yes / No

Table 12-1 Example Shoreline Oiling Summary
(Adapted from US National Oceanic and Atmospheric Administration)

Table 12-1 Example Shoreline Oiling Summary (continued)
(Adapted from US National Oceanic and Atmospheric Administration)

SHORELINE CLEANING ASSESSMENT FORM (continued)

6. SURFACE OILING CONDITIONS — Begin with "A" in the lowest tidal zone

Zone ID	Tidal Zone				Oil Cover			Oil Thickness					Oil Character						
					Length	Width	Distr.												
	LI	MI	UI	SU	m/ft	m/ft	%	PO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP	No

7. SUBSURFACE OILING CONDITIONS — Use letter of Zone location plus Number of trench, e.g., "A1"

Trench No.	Tidal Zone				Trench Depth	Oiled Interval	Subsurface Oil Character						Water Table	Sheen Color	Clean Below?
	LI	MI	UI	SU	cm/in	cm-cm/in-in	OP	PP	OR	OF	TR	No	cm/in	B, R, S, N	Yes / No

8. COMMENTS — Cleanup Recommendations: Ecological / Recreational / Cultural Issues / Wildlife Observations

Sketch: Yes / No Photos: Yes / No (Roll #_____ Frames _____) Video Tape: Yes / No (Tape #_____)

Table 12-1 Example Shoreline Assessment Form Codes
(Source: NOAA)

SHORELINE ASSESSMENT FORM EXPLANATIONS

Calibration and consistency ARE VERY IMPORTANT! Do a calibration exercise to make sure that all teams are consistently using the same terminology and estimations.

Units: Use either metric (m, cm) or English (yd, ft, in). Circle the units used.

Tide Height: Circle the two letters indicating the progression of the tidal stage during the survey.

Sect. 3 SEGMENT SURVEY LENGTH

Always record both lengths on the first survey, especially where the team creates the segments in the field. On repeat surveys, always enter in the Survey Length, especially if only part of the segment is surveyed. Measure in meters or yards. If, applicable, GPS may be used to record ends of segments.

Sect. 6 SURFACE OILING CONDITIONS

Zone ID: Use a different ID for each different oil occurrence, e.g., two distinct bands of oil at mid-tide and high-tide levels, or alongshore where the oil distribution changes from 10% to 50%. Describe each different occurrence on a separate line.

Tidal Zone: Use the codes to indicate the location of the oil being described, as in the lower (LI), mid (MI), or upper (UI) intertidal zone, or in the supra (SU) tidal zone (above the normal high tide level).

Oil Distribution in tidal zones: Enter the estimated percent of oil on the surface, or codes for the following intervals:

C	Continuous	91–100% cover
B	Broken	51–90%
P	Patchy	11–50%
S	Sporadic	<1–10%
T	Trace	<1%

Figure 12-1 Example Shoreline Assessment Form Codes (continued)
(Source: NOAA)

Surface Oil Thickness: Use the following codes:

PO	Pooled Oil (fresh oil or mousse >0.4 in. (~1 cm) thick)
CV	Cover (oil or mousse from >0.04 in (0.1 cm) to <0.4 in. (~1 cm) on any surface)
CT	Coat (visible oil <0.1 in (0.1 cm), which can be scraped off with fingernail)
ST	Stain (visible oil, which cannot be scraped off with fingernail)
FL	Film (transparent or iridescent sheen or oily film)

Surface Oil Character

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tarballs (discrete accumulations of oil <10 cm in diameter)
TC	Tar (highly weathered oil, of tarry, nearly solid consistency)
SR	Surface Oil Residue (non-cohesive, oiled surface sediments)
AP	Asphalt Pavements (cohesive, heavily oiled surface sediments)
NO	No oil (no evidence of any type of oil)

SUBSURFACE OILING CONDITIONS

Oiled Interval: Measure the depths (from the sediment surface to top/bottom of subsurface oiled) layer. Enter multiple oil layers on separate lines.

Subsurface Oiling Descriptors: Use the following codes:

OP	Oil-Filled Pores (pore spaces are completely filled with oil)
PP	Partially Filled Pores (the oil does not flow out of the sediments when disturbed)
OR	Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts, but little or no accumulation of oil within the pore spaces)
OF	Oil Film (sediments are lightly oiled with an oil film, or stain on the clasts)
TR	Trace (discontinuous film or spots of oil, or an odor or tackiness)

Sheen Color: Describe sheen on the water table as brown (B), rainbow (R), silver (S), or none (N).

Because the predominant grain size and substrate(s) in a section of oiled shoreline largely determine treatment methods, shoreline types are usually categorized in terms of their geologic character. The following shore types are used in this Manual as the basis for selecting treatment methods (Sections 12-3 and 12-4) (See also Table 6-1):

- Bedrock and wave-cut platforms
- Man-made solid structures and boulder beaches
- Fine-to-medium grain sand beaches
- Coarse-grain sand beaches
- Tundra cliffs
- Gravel and cobble beaches
- Riprap
- Exposed tidal flats
- Exposed vegetated tidal flats
- Sheltered rocky coasts and clay scarps
- Peat and lowland tundra
- Sheltered tidal flats
- Salt marshes and mangroves
- Sensitive near-shore and offshore habitats (coral reefs, lagoons, kelp beds, and seagrass beds)

12.3 Shoreline Treatment Decision Guides

Once a consensus is reached on the character of a shore and the nature of oiling, appropriate treatment methods can be selected. Figures 12-2 through 12-5 indicate potentially applicable treatment techniques, with the most preferred method listed first. If the first technique cannot be used, then the next one should be selected.

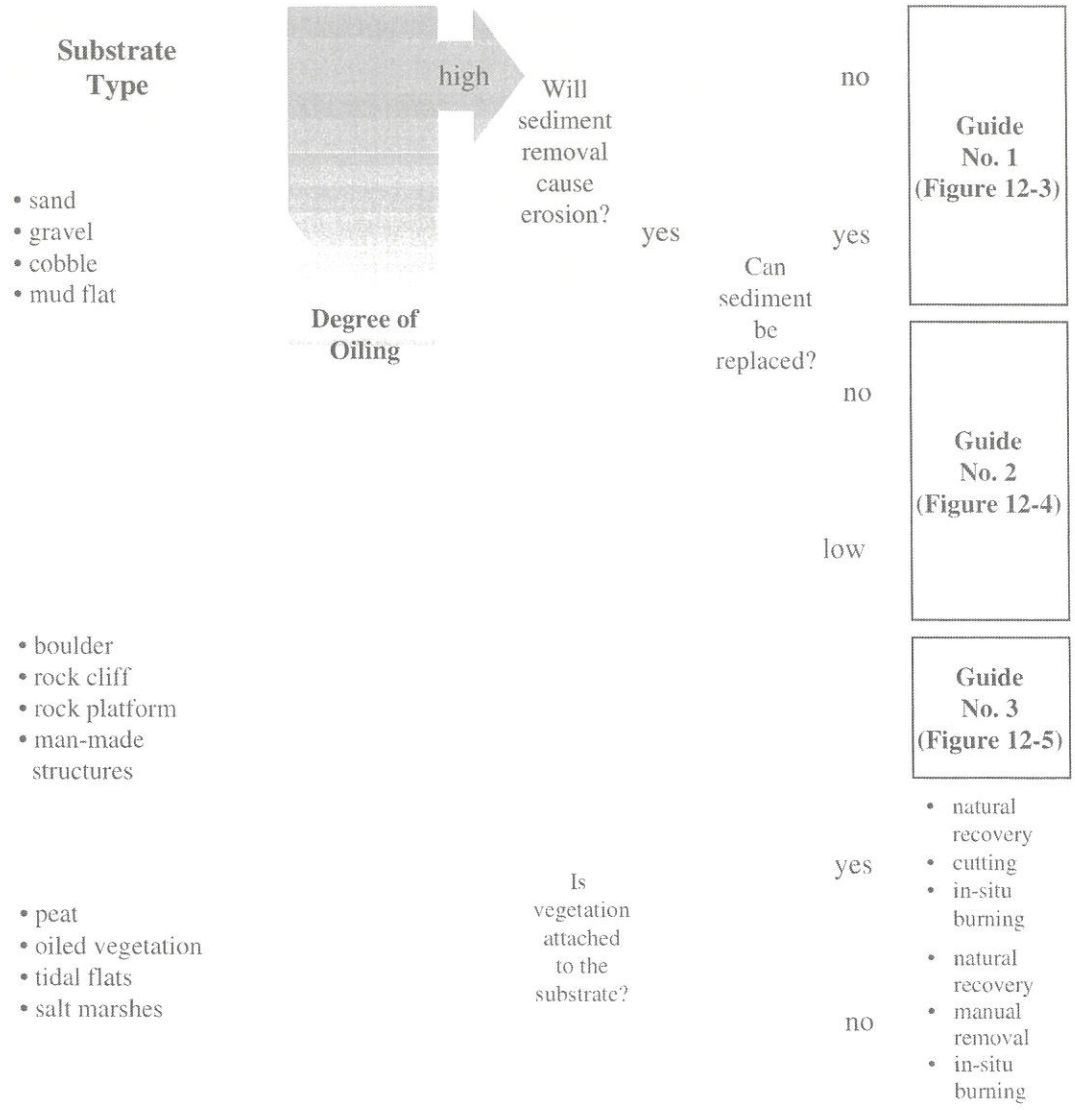

Figure 12-2 Shoreline Treatment Guide Key

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Trafficability		Substrate Type	Oil Penetration	Cleanup Technique in Order of Preference	Access		
Can rubber-tired equipment operate on the beach?	yes	• sand • gravel • mud • cobble	<1 in (2.5 cm)	• motor grader and elevating scraper • elevating scraper • motor grader and front-end loader	Is there access to the beach for heavy equipment or can access be constructed?	yes	Select preferred technique
			>1 in (2.5 cm)	• elevating scraper • front-end loader • bulldozer and front-end loader			
no							
Can tracked equipment operate on the beach?	yes	• sand • gravel • mud • cobble	<10 in (25 cm)	• front-end loader • bulldozer and front-end loader			
no					no		
Use dragline or hydraulic grader or allow to recover naturally					**Guide No. 2 (Figure 12-4)**		

Figure 12-3 Shoreline Treatment Guide No. 1

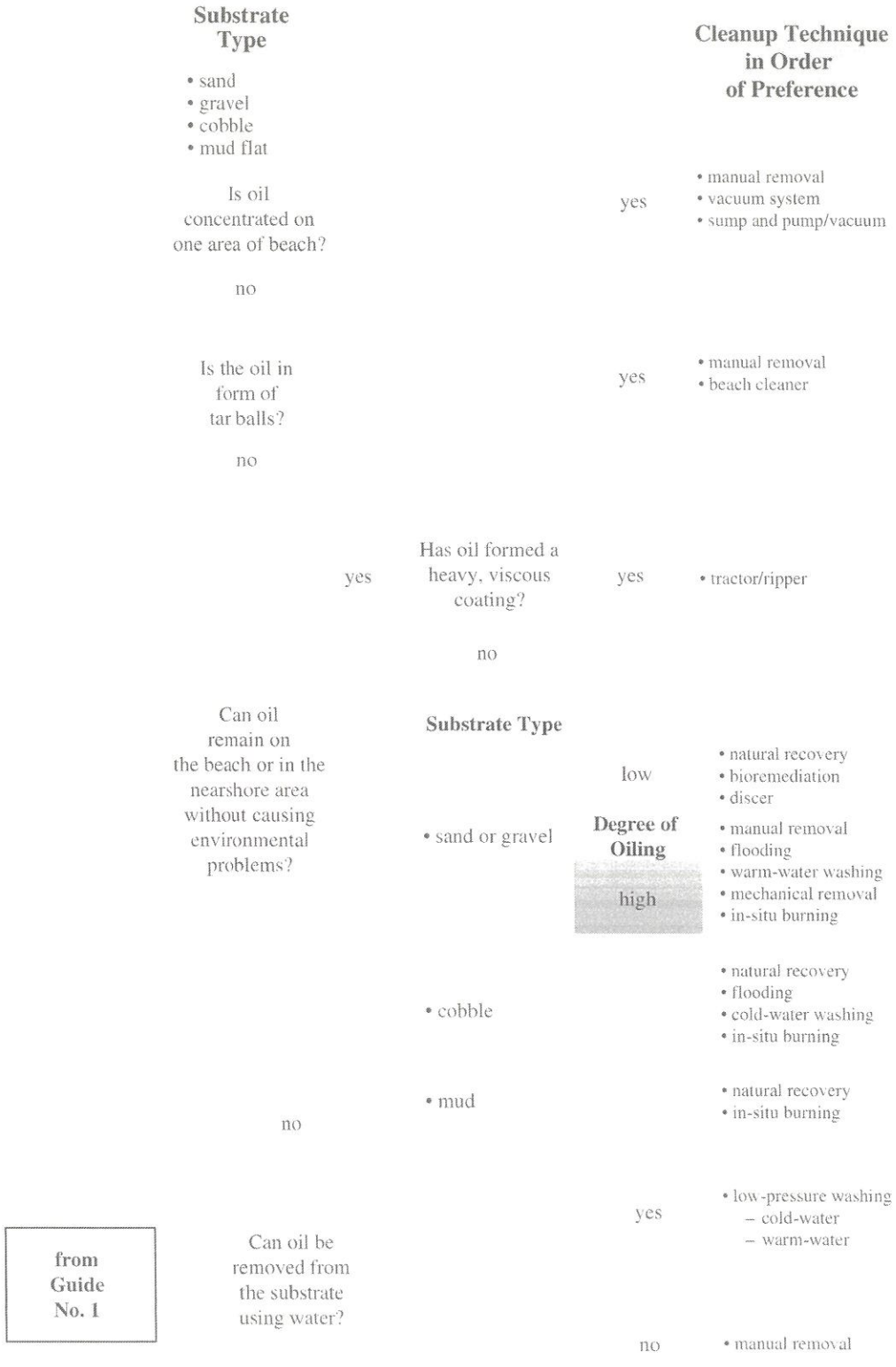

Figure 12-4 Shoreline Treatment Guide No. 2

Figure 12-5 Shoreline Treatment Guide No. 3

12.4 Treatment of Shoreline Types

Because many variables affect selection of treatment options, the decision-making process requires insights not provided in the Decision Guides. Table 12-2 supplements the Decision Guides by summarizing treatment options according to shoreline type. Further, note the following:

- Spray or flood from shore only when lower intertidal zones are under water.
- Do not spray freshwater on intertidal communities.
- Heat and hot water can affect organisms. Use with caution.
- Minimize foot traffic where organisms may be trampled.

Table 12-2 Treatment Options by Shore Type

Shore Type	Treatment Options
Exposed Rocky Headlands and Wave-Cut Platforms	• Natural recovery is preferred for light-medium oils that reach exposed coasts. Stranded, light oil may be rapidly removed by wave action. Light oil in sheltered areas is often removed by waves within weeks. Heavy oil can collect in hollows and be present for a significant time if not removed. • Vacuums are effective for light, medium and heavy oils that collect in tidal pools and hollows (unsafe for gasoline). • Flooding with water from a perforated pipe or hose without a nozzle is appropriate for light oils. Prevent oil flow downslope into lower intertidal zone. • Low-pressure, cold-water washing can also be used on light-medium oils. Washing from a boat or barge eliminates effects on organisms from foot traffic. Prevent oil flow downslope into lower intertidal zone. Contain and collect oil using booms and skimmers or sorbents. • Use high-pressure, cold-water washing on viscous oils that cannot be removed by low-pressure washing. • Manually remove small amounts of medium-heavy oils. Use low-pressure, warm/hot water wash on more viscous oils that cannot be removed by cold water. • Shoreline cleaners and chemicals may be used prior to flooding or low-pressure washing. Contain and collect recovered oil. • For steep cliffs, specially-designed omni-booms are the safest means of washing off oil.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Man-Made Solid Structures and Boulder Beaches	• Natural recovery is preferred for light-medium oils that reach exposed coasts. Stranded, light oil may be rapidly removed by wave action, although heavy oil can persist for some time and may collect in hollows. Light oil in sheltered areas is often removed by waves within weeks. • Manually remove small amounts of medium-heavy oils. • Apply dispersants or other cleaning agents on small amounts of oil during flooding tide in countries that approve this procedure. • Flooding from a perforated pipe or a hose without a nozzle is appropriate for light oils. Do not allow oil to flow downslope into lower intertidal zone. • Low-pressure, cold-water washing can also be useful for light-medium oils. Washing from a boat or barge eliminates effects on organisms from foot traffic. Do not allow oil to flow downslope into lower intertidal zone. Contain and collect oil using booms and skimmers or sorbents. • Low-pressure, warm/hot water washing can remove more viscous oils that are not affected by cold water. • Use high-pressure, cold-water washing on more viscous oils that cannot be removed by low-pressure washing. • Use high-pressure, warm/hot water washing, steam cleaning, or sandblasting for surfaces where no organisms are present. • High-pressure, warm/hot water washing may remove viscous oil from stonework and plaster. Do not use abrasives (e.g., sandblasting) or chemicals on these surface types if damage might result. Consult government agencies when cleaning historic structures.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Fine- to Medium-Grained Sand Beaches	• Natural recovery is preferred for small spills of light-medium oils on exposed or remote coasts. • Tilling/aeration or sediment relocation accelerates degradation and natural removal of light oils. • Mechanical removal is appropriate for long sections of beach with high concentrations of surface oil, provided that the operation can limit the removal of non-contaminated material. Graders and elevated scrapers are preferred since they can scrape a thin layer of oiled sand. Front-end loaders are less accurate, but can remove windrows made with graders. Bulldozers should be used as a last resort. Fine sand beaches are harder and provide better traction for vehicles. Traction is worse in the lower intertidal zone due to water-saturated sediments and above the normal intertidal area due to soft, wind-blown sediments. Reduced tire pressure can improve traction. Avoid excessive removal of sediment. • Manual removal is preferred for medium-heavy oils, but is less effective where oil is buried or reworked into sediments. Straight-edged shovels work better than pointed shovels. Front-end loaders can improve the efficiency of manual removal. • Flooding from a perforated pipe or a hose without a nozzle can remove light-medium oils on the surface but is ineffective if oils have penetrated below the surface. Flood oil into lined trenches or sumps and collect with skimmers or vacuum units. • Use low-pressure, cold-water washing on light-medium oils where penetration is not too deep and direct the liquid into lined trenches. Collect oil using vacuum units or skimmers. • Skimmers in boomed areas adjacent to a shoreline being cleaned can also collect washed oil. However, currents, waves, water depth, and the amount of debris may limit this approach.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Coarse-Grained Sand Beaches	• Natural recovery may be acceptable for small spills, light-medium oils, or on exposed or remote coasts. • Mechanical removal is appropriate using graders or scrapers only if large amounts of heavy-to-solid oil can be recovered. Due to poor bearing capacity, use front-end loader with backhoe only as second choice. • Natural replacement of coarse sediment is very slow so removal of oiled material may require replacement to prevent shoreline retreat. Obtain advice from a coastal geomorphologist regarding the appropriate quantity of sediment that can be removed. • Flooding from a perforated pipe or a hose without a nozzle can remove light-medium surface oils but is ineffective if oil has penetrated into underlying sediments. Flood oil into lined trenches or sumps and collect the oil with skimmers or vacuum units. • Low-pressure, cold-water washing can be applied to light-medium oils. This removes mobile oil from surface and subsurface sediments, which is more effective than flooding. Contain oil in lined trenches and collect the oil using vacuum systems. • Avoid using warm-water washing or flooding on viscous oils. Heating can reduce oil viscosity, resulting in deeper oil penetration into the beach. • Skimmers in boomed areas adjacent to the shoreline being cleaned can also collect washed oil. However, currents, waves, water depth, and the amount of debris present may limit this approach.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Tundra Cliffs	• Oil will most likely be naturally removed within a very short time. • Manual removal of oil or oiled tundra at the base of a cliff is only practical for a small amount of material. • Mechanical options are not advisable because they can accelerate erosion. • Natural peats are common and can be used as a sorbent, provided they do not come from the living tundra. • Vacuuming may be applicable for oil that has pooled. • Flooding can accelerate flushing of light oils from the beach sediment or from peat. • Aggressive treatments, such as high-pressure washing, hot-water washing, or burning are not appropriate.
Gravel and Cobble Beaches	• Natural recovery is preferred for small spills of light-to-medium oils on exposed or remote coasts. • Manually remove surface oiled sediments, asphalt pavement, tar patties, small oiled debris. Pointed shovels work best. • Flooding using water from a perforated pipe or a hose without a nozzle can remove light-medium oils but is ineffective on oils that have penetrated into underlying sediments. Direct oil into lined trenches or sumps and collect the oil with skimmers or vacuums. • Low-pressure, cold-water washing also can be used to direct oil into lined trenches. This is more effective in removing viscous oils from surface and subsurface sediments than flooding. • Avoid using warm-water washing or flooding on viscous oils. Heating can reduce oil viscosity resulting in deeper oil penetration into the beach. • Skimmers in boomed areas adjacent to the shoreline being cleaned can also collect washed oil. However, currents, waves, water depth, and the amount of debris present may limit this approach. • Before removing gravel or cobble, obtain advice from a coastal geomorphologist regarding the appropriate quantity of sediment that can be removed, if any. • For steep cliffs, specially-designed omni-booms are the safest means of washing off oil.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Riprap	• Natural recovery is preferred for lighter oils and more exposed settings. • Manual removal of debris and small persistent oil pockets. • Early use of vacuum on pooled oil in crevices can increase the oil recovery rate. • High pressure/temperature washing may be needed to flush out viscous oils.
Exposed Tidal Flats	• Natural recovery is preferred for all oil types since response activities can cause more impacts than the oiling of the shore. • Mechanical removal is not an option since the poor bearing capacity of tidal flats to support personnel and machinery causes difficulties for treatment operations. Operations may be staged from a barge or flat-bottomed boat, which can ground at low tide and be refloated at high water. Care should be taken not to disturb sediment. • Vacuum systems are useful for small amounts of pooled light-to-medium oil (unsafe for gasoline). Trenches may capture oil during ebb tide. • Manually remove small amounts of pooled oil. • Flooding can be used for low-medium viscosity oil with sorbent for collection. • Low-pressure, cold-water washing can be used on light-medium oils. Contain oil in lined trenches and recover with vacuum unit or skimmer.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Exposed Vegetated Tidal Flats	• Natural recovery is preferred for small spills of light-to-medium oils on exposed or remote coasts. • Manual removal of surface oiled sediments, asphalt pavement, tar patties, and small, oily debris is possible where the bearing capacity allows. • Flooding from a perforated pipe or a hose without a nozzle can remove light-medium oils, but is ineffective on oils that have penetrated into underlying sediments. Flood oil into lined trenches or sumps and collect it with skimmers or vacuum systems. • Methods of trapping or containing oil (trenches and ditches) for collection on a falling (ebb) tide may be effective. • Low-pressure, cold-water washing is more effective in removing viscous oils from surface and subsurface sediments than flooding. Wash oil into lined trenches. • Avoid using warm-water flooding or washing on viscous oils. Heating can reduce oil viscosity resulting in deeper oil penetration into the beach. • Manual removal with hand tools can be combined with vacuum systems and skimmers. • In situations where tidal flats do not support personnel or equipment, low-pressure, cold-water washing may be used at high tide to herd light-medium oil into boomed areas. Recover using either drum, disc, and rope mop skimmers, or sorbents for small amounts of oil. • Cutting vegetation can delay recovery, but may be advisable when migratory or nesting birds are at risk. Cutting affects plant re-growth and survival least during fall and winter. Consult ecology experts for advise.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Sheltered Rocky Shores and Clay Scarps	• Natural recovery is preferred for light-medium oils that reach sheltered rocky shores. Stranded, light oil may be removed by wave action within weeks, although heavy oil can persist for years and may collect in hollows or burrows. Manual removal of small amounts of medium-heavy oils is usually possible. • Vacuum systems are effective for light, medium and heavy oils that collect in tidal pools and hollows (unsafe for gasoline). • Flooding from a perforated pipe or a hose without a nozzle is appropriate for light oils. Do not allow oil to flow downslope into lower intertidal zone. • Low-pressure, cold-water washing can also be useful for light-medium oils. Washing from a boat or barge eliminates impacts to organisms from foot traffic. Prevent oil flow downslope into lower intertidal zone. Contain and collect the oil using booms and skimmers or sorbents. • Low-pressure, warm/hot water washing is appropriate on more viscous oils that cannot be removed by cold water. • High-pressure, cold-water washing can be used on viscous oils that cannot be removed by low-pressure washing. • High-pressure, warm/hot water washing, steam cleaning, or sandblasting are effective and appropriate on surfaces where no organisms are present. • Chemical shoreline cleaners may be applied to small amounts of oil during flooding tide where there is sufficient circulation. Sorbents can be used to collect the freed oil. • For steep cliffs, specially-designed omni-booms are the safest means of washing off oil.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Peat	• Natural recovery may be the preferred option. • Partial removal of heavily oiled peat may be beneficial. • Mechanical cleaning and aggressive removal are often not appropriate.
Inundated Lowland Tundra	• Natural recovery is preferred and has least impact for small to moderate spills. • Cleanup is warranted when large amounts of oil persist and act as a source of chronic re-oiling of adjacent sensitive habitats. • Sorbents, debris removal, and low-pressure flooding are the principal options to consider.
Sheltered Tidal Flats	• Natural recovery is preferred for all oil types since response activities can cause more impacts than shoreline oiling. • Flooding with water from a perforated pipe or a hose without a nozzle can remove light-medium oils but is ineffective if oil has penetrated to underlying sediment. Flood oil into lined trenches or sumps and collect with skimmers or vacuums. • Low-pressure, cold-water washing can be used on light-medium oils. Washing from a boat or barge eliminates impacts to organisms from foot traffic. Disc, drum and rope mop skimmers in boomed areas adjacent to the affected shoreline can collect washed oil.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Salt Marshes and Mangroves	• The best protection is to spray with dispersants offshore before the oil can enter these habitats. • Natural recovery is generally preferred since treatment may disrupt the natural regenerative processes. But, since oil can affect the root systems of mangroves, a shoreline cleaner sprayed onto mangroves, which are covered with heavy oil, may reduce adhesion. (See Section 12.8) • Burning in salt marshes is one of the preferred treatment methods. Avoid burning when the lower stems are dry and exposed. • Intervention may be appropriate in marshes where oil has concentrated and may be widely spread with tidal action, where oil is a threat to wildlife, or when recovery may take decades (thick deposits of heavy oil). To avoid disruption of root systems by sediment removal or compaction from machinery and workers, work should be carried out from a boat. Road mats and low-pressure tires can reduce impacts when equipment must be moved on land. • In marshes and mangroves, low-pressure, cold-water washing may be used to herd light-medium surface oil into boomed areas. Recover oil using drum, disc and rope mop skimmers, or sorbents for small amounts of oil. Care should be taken to avoid excessive erosion. • Cutting oiled marsh plants can delay recovery, but may be advisable where migratory or nesting birds are at risk. Consult ecology experts for advice.

Table 12-2 Treatment Options by Shore Type (continued)

Shore Type	Treatment Options
Sensitive Near-shore and Offshore Habitats *Coral Reefs, Lagoons, Kelp Beds, Seagrass Beds*	• Dispersants can be used to protect coral reefs and associated nearshore kelp and seagrass beds when applied in waters >30 ft (10 m) or in areas with rapid natural dispersal. Their use minimizes cleanup vessel traffic. • In coral lagoons, removal of surface oil using booms and skimmers or vacuum units is advisable. • Navigating fringe coral reef areas is difficult and may preclude skimming, particularly when surface oil obscures sight of the coral. Natural recovery is preferred. • Low-pressure water streams can sometimes be used to direct oil floating above corals into booms for removal by skimmers or vacuum units. • Avoid in-situ burning and sinking agents directly above coral reefs, kelp, and seagrass beds. • Sorbents and manual removal methods should not be used on coral reefs.

12.5 Natural Recovery

Natural recovery is a treatment technique that allows a site to recover without intervention or intrusion. All shore types affected by small amounts of non-persistent oil can recover naturally, given appropriate circumstances. Assessment of the oiling (Section 12.2) and resources at risk is required to determine the likely consequences of allowing oil to weather naturally. Shorelines should be monitored to ensure that recovery occurs.

Natural recovery may be appropriate when:

- Oiling has occurred on high-energy beaches (primarily cobble, boulder and rock) where wave action will remove most of the oil in a relatively short time.
- Shorelines are remote or inaccessible.
- Treatment or cleaning of stranded oil may cause more damage than leaving the shore to recover naturally.
- Other response techniques either cannot accelerate natural recovery or are not practical.

Natural recovery may not be appropriate when:

- Important ecological resources or human activities/resources are threatened.
- Stranded oil might be remobilized and contaminate or re-oil adjacent resources or clean sections of shore.

Possible ramifications of natural recovery include:

- Sensitive areas may take considerable time to recover.
- The oil may adversely affect vegetation and organisms (smothering and/or toxicity).

12.6 Physical Treatment Techniques

Physical techniques are typically used to remove oil stranded in an intertidal zone when natural recovery is not an acceptable response strategy. In this section, a series of tables presents information on physical treatment options, including a brief description of each method, where it likely would be applied, its possible effects, and the logistical support required. Treatment rates and personnel requirements have been estimated based on the level of effort generally required to treat an area in an 8-hr day. Techniques have been arranged in approximate order of their likely environmental impact, beginning with the least intrusive:

- Four methods used by cleanup teams to manually remove oil from shores are described in Tables 12-3 through 12-6.
- Treatment techniques involving the application of water to remove oil from sediments and bedrock have been summarized in Tables 12-7 through 12-9.
- Steam cleaning and sandblasting, sometimes used to remove oil from hard surfaces, are described in Tables 12-10 and 12-11. Operators and nearby crew of such equipment need PPE, especially respiratory protection from any aerosols created during use.
- Vacuums, including truck-mounted and portable units (see also Section 11.4) used to remove oil pooled on shore, are listed in Tables 12-12 and 12-13.
- Heavy machinery, used singly and in combination when access and other circumstances allow, are detailed in Tables 12-14 through 12-23. In selected circumstances, draglines or clamshell dredges could be used to collect oiled sediment and debris.

Many types of mobile mechanical equipment use inflatable tires, whose pressure can influence the efficiency of operation. It is advisable to adjust tire pressures to suit shoreline conditions.

Table 12-3 Sorbent Application

Description

Sorbents are applied manually to soak up non-sticky oil stranded on shore. Pom-poms are positioned in the intertidal zone as a passive array to collect viscous (sticky) oil.

Application

Use on all shore types to remove small accumulations of oil.

Possible Adverse Effects

Foot traffic may disturb sediments and affect organisms. Birds and small mammals may ingest particulate sorbents if they are left uncollected.

Equipment	Quantity Required (per day)
Sorbent sheets	20 bales (100–200 pads/bale)
Sorbent rolls	20 rolls [36 in (90 cm) x 150 ft (45 m)/roll]
Sorbent boom	20 bales [4 ft (1.2 m) length x 8 in (20 cm) dia. x 10 ft (3 m)/bale]
Pom-poms (for viscous (sticky) oil)	10 bales (100/bale)
Pitchforks, rakes, etc.	10–20
6-mil (0.15 mm) plastic bags (white or light color)	10 cartons (40–50/carton)
Personnel	**Optimum Treatment Rate**
10–20 workers	Treatment rate is highly variable. Expect up to 1/4 gal (1 liter)/pad of oil recovery, depending on oil type.
1 foreman for every 10 workers	
Disposal	**Suggestion**
Pads and rolls	Disposal is facilitated by rolling up sorbent and placing it in suitable containers.
Boom	Disposal is accomplished by folding, rolling and/or stuffing the boom into plastic bags for removal.
Loose material	Loose sorbent materials are not recommended for use on oil on water or tidal shorelines due to difficulty in recovery for disposal.
Access	
Light motor vehicle, shallow craft or helicopter	

Table 12-4 Manual Removal of Oiled Materials

Description
Oiled sediment and debris are removed by hand, shovels, rakes, etc.

Application
Use on mud, sand, gravel, and cobble when oiling is light, sporadic, and/or at or near the beach surface, or on beaches where there is no access for heavy equipment.

Possible Adverse Effects
May disturb/remove sediment and shallow burrowing organisms.

Equipment	Number Required	
	Lightly Oiled Shoreline [~1.2 miles (2 km)]	**Heavily Oiled Shoreline [~1.2 miles (2 km)]**
Shovels, rakes, picks	10–20	50–100
Debris box or super sac	2	3–4
ATV[1] with trailers or wheelbarrows	1–2	1–2
Personnel	**Lightly Oiled Shoreline [~1.2 miles (2 km)]**	**Heavily Oiled Shoreline [~1.2 miles (2 km)]**
Workers	10–20	50–100
Foremen	1–2	5–10
Access		
Foot path, road, shallow craft or helicopter		

[1] ATV is an All Terrain Vehicle.

Table 12-5 Manual Scraping

Description

Oil is manually scraped from substrate using hand tools.

Application

Use on lightly oiled boulders, rocks, and man-made structures or heavy accumulations when other techniques are not allowed or are not practical.

Possible Adverse Effects

May disturb sediment and remove or injure organisms. Unremoved or unrecovered oil can injure organisms that are repopulating the rocky substrate or inhabiting sediment downslope of cleanup activities.

Equipment	Number per Crew
Paint scrapers	1 per worker (plus several extra to allow for loss of edge or breakage)
Sharpening tool (file/hone)	1
Rakes, shovels, trowels	1 each per worker
Plastic bags	75–100
Ground cover (for initially catching removed oil) such as: • Plastic film • Cloth • Sorbents	1–3 rolls
Personnel	**Optimum Treatment Rate**
5 crews of 10 workers each	The treatment rate is highly variable, depending on degree of oiling, type of substrate, and the number of non-oiled plants and animals to be protected.
1 foreman for each crew	
Access	
Foot path, shallow craft, or helicopter	

Table 12-6 Vegetation Cutting

Description

Oiled vegetation is cut by hand, collected, and put into bags or containers for disposal.

Application

Use on oiled vegetation.

Possible Adverse Effects

May disturb and remove sediment and organisms. Heavy foot traffic may cause root damage and delayed recovery. May cause erosion due to loss of vegetation.

Equipment	Number per Crew
Cutting tools such as: • Scythes • Power cutters • Shears	3–4 (plus 1 or 2 extra in case of breakage or dull blades)
Sharpening tool (file/hone)	1
Collecting tools such as: • Pitch forks • Rakes	4–6
Plastic bags	75–100
Ground cover such as: • Plastic film • Burlap • Sorbents	1–3 rolls
Personnel	**Optimum Treatment Rate**
5 crews of 10 workers each	Each crew can cut and bag about 77 yd^2/hr (65 m^2/hr) of vegetation on a heavily vegetated shoreline.
1 foreman for each crew	
Access	
Foot path, shallow craft or helicopter	

Table 12-7 Low Pressure, Cold-Water Washing

Description

Low-pressure water spray removes oil from substrate and channels it to recovery points. [Nozzle pressure is kept below 100 psi (690 kPa)].

Application

Use to wash oil from mud, cobble, boulder, rock, man-made structures, and vegetation.

Possible Adverse Effects

May create a potential for re-oiling and disturbance of organisms downslope of cleanup if oil is not contained and removed.

Primary Equipment	Type	Number
Washing unit (pump and hoses)	10–20 psi (70–140 kPa) pressure @ 50–100 gpm (190–380 L/min)	3–5
Vacuum system	110 barrel (17.5 m^3) capacity	1–2
Pump and tank truck	50–75 gpm (190–285 L/min), 125 barrel (20 m^3) capacity	1–2
Equipment to contain and recover loosened oil, if required	Boom and skimmer	
Personnel	**Optimum Treatment Rate**	
1–2 workers per washing or recovery unit; PPE required	The rate of treatment depends on the degree of oiling, type of oil and substrate and is difficult to forecast. (~220 gpm [50m^3/hr])	
1 foreman for every 10 workers; PPE required		
Access		
Road for heavy equipment, barge, or landing craft for trucks		
Light motor vehicle, shallow craft, or helicopter for washing unit		

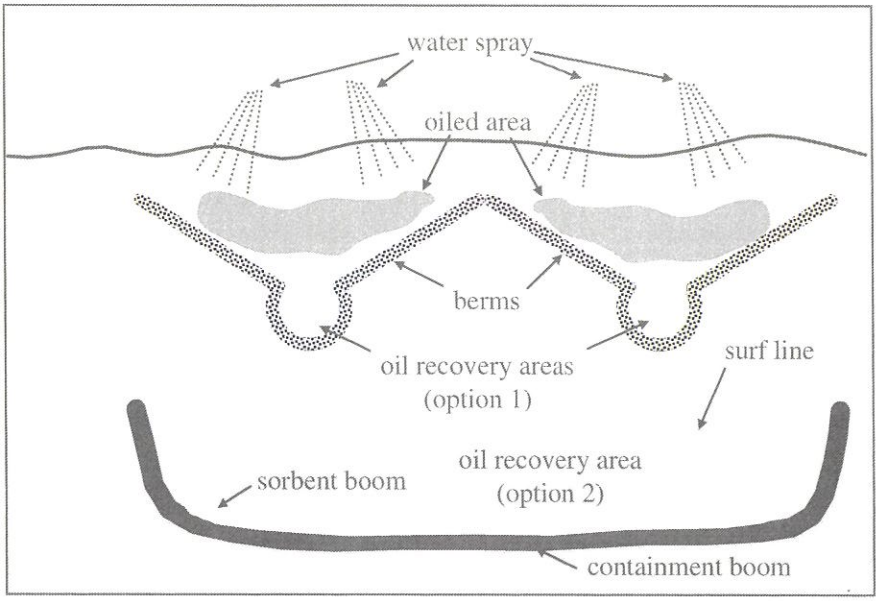

Figure 12-6 Low Pressure Flushing

Table 12-8 Low-Pressure, Warm-Water Washing/Cold-Water Flooding

Description

Heated seawater softens weathered oil; cold-water flooding moves the loosened oil to the adjacent water for collection. These two techniques can be used separately or together.

Application

Use on heavy concentrations of weathered, sticky oil that has reached sheltered or moderate energy shorelines composed of rock, cobble, and gravel.

Possible Adverse Effects

May injure intertidal organisms. High nozzle pressure can cause localized erosion.

Primary Equipment	Size of Unit	Quantity
Landing craft (or suitable trailers for land-based operations)	40–80 ft (12–24 m)	1
Direct-fired water heater	8 million BTU/hr (2340 kW) 125 gpm (475 L/min) @ 140°F (60°C)	2
Pumps	6 in (15 cm) @ 100 psi (690 kPa)	2
Generator	70 hp (50 kW)	1
Containment boom	inshore boom	600 ft (180 m)
Sorbent boom		300 ft (90 m)
Fire hoses/nozzles	1/2–1 in (1.25–2.5 cm)	4
Perforated flushing header, corrugated pipe	6 in (15 cm)	100 ft (30 m)
Manifold hose	6 in (15 cm)/4 in. (10 cm)	100 ft (30 m)
Snare boom/pom-poms		300 ft (90 m)
Support Equipment		
Water heater • Pump and generator • Landing craft		
Personnel	**Optimum Treatment Rate**	
2 crews of 10 workers each, 1 foreman for each crew; PPE required	The rate of treatment depends on the degree of oiling, type of oil and substrate, and is difficult to forecast. (~220 gpm [50m³/hr])	
Access		
Landing craft or road for heavy equipment, barge		

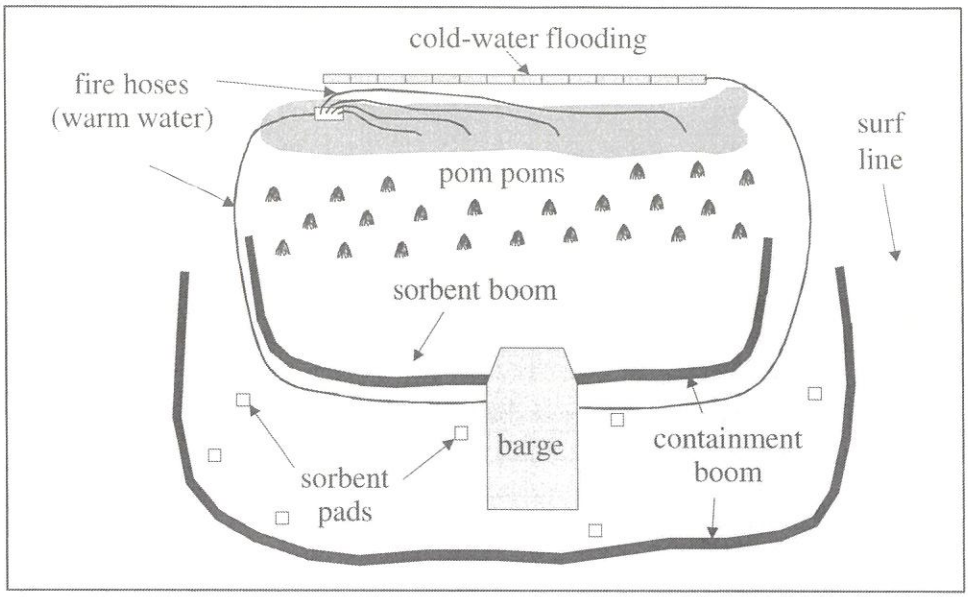

Figure 12-7 Low-Pressure, Warm-Water Washing/Cold-Water Flooding

Table 12-9 High-Pressure Washing

Description

High-pressure cold or warm water streams remove oil from substrate and channel it to a recovery area.

Application

Use to remove oil from boulder, rock, and man-made structures.

Possible Adverse Effects

May remove some organisms and shells from substrate. Can disturb substrate surface and wash oil into sub-surface sediments and downslope organisms.

Primary Equipment	Type	Number
Pressure washing unit	Self-contained 10 gpm (38 L/min) @ 4000 psi (27,000 kPa)	2–3
Equipment to contain and recover loosened oil, if required	Boom and skimmer	
Support Equipment	**Type**	**Number**
Vacuum system	60–80 barrel (9.5–13 m^3) capacity	1
Trash pump	25–50 gpm (95–190 L/min)	1
Tank truck	60–80 barrel (9.5–13 m^3) capacity	1
Personnel	**Optimum Treatment Rate**	
1–2 operators per pressure washing unit; PPE required	One unit that produces 3,000–4,000 psi (20,000–26,667 kPa) pressure can clean 7–15 ft^2 (0.75–1.5 m^2) per minute.	
1–2 workers per recovery equipment; PPE required		
1 foreman for every 10 workers; PPE required		
Access		
Road or barge for heavy equipment, trucks		
Light motor vehicle path, shallow craft, or helicopter for washer only		

Table 12-10 Steam Cleaning

Description

Steam removes oil from substrates and it is channeled to a recovery area.

Application

Use to remove oil coatings from man-made structures, boulders, and rock. Establish an exclusion zone.

Possible Adverse Effects

Removal of and mortality to some organisms are likely. Oil not recovered can affect organisms downslope of cleanup activities.

Primary Equipment	Size of Unit	Number Required	Optimum Treatment Rate
Steam cleaner	280 psi (1930 kPa) @ 325°F (163°C)	4–6	600 ft²/hr (55 m²/hr)
Vacuum truck	80–100 barrel (12.7–15.9 m³) capacity	1–2	
Skimmer	Small	1–2	
Containment boom	2–4 x length of shoreline cleaned	2	

Consumables	Fresh Water Consumption/Unit
Steam cleaner	3.8–4.3 gpm (14–16 L/min)

Personnel
2 operators for each cleaning unit; PPE required
1 foreman for every 10 workers; PPE required

Access
Road for heavy equipment, trucks
Light motor vehicle path, shallow craft, or helicopter for steam cleaning units

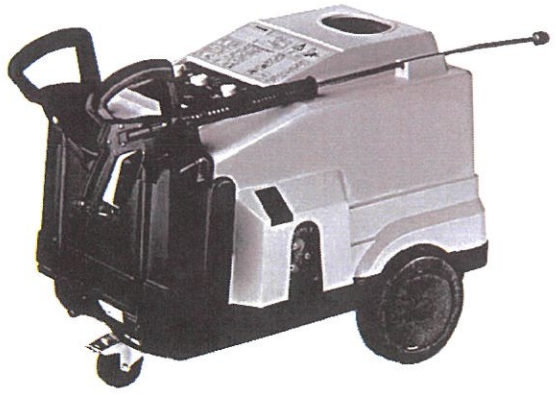

Figure 12-8 Steam Cleaner

Table 12-11 Sandblasting

Description

Sand moving at high velocity removes oil from a substrate.

Application

Use to remove thin oil residue from man-made structures and other hard surfaces. Establish an exclusion zone.

Possible Adverse Effects

May remove organisms and shells from a substrate and leave behind a clean, barren surface. Can affect downslope organisms. Adds sand to environment, along with potential re-oiling, erosion, and deeper oil penetration.

Primary Equipment	Number Required	Optimum Treatment Rate
Sandblasting unit (compressor included)	1	150 ft²/hr (14 m²/hr)
Sand supply truck	1	
Front-end loader (if used)	1	
Consumables	**Amount**	**Optimum Treatment Rate**
Sand	Approx. 1000 lb/hr (455 kg/hr)	150 ft²/hr (14 m²/hr)
Ground cover	1–3 rolls	
Personnel	**Number Required**	**Optimum Treatment Rate**
Workers for sandblasting	2–4; PPE required	150 ft²/hr (14 m²/hr)
Cleanup workers	2–3; PPE required	
Foreman	1; PPE required	
Access		
Road for heavy equipment, barge or landing craft		

Figure 12-9 Sand Blaster

Table 12-12 Vacuum Systems

Description

Truck or portable vacuum unit is positioned near oil pool or recovery site where oil is collected via vacuum hose.

Application

Use to remove oil accumulations on water in the absence of skimmers and to recover oil pooled in natural depressions on all shoreline types (except inaccessible vegetated or other areas). Unsafe for recovery of gasoline.

Possible Adverse Effects

May remove some organisms. Watch for collection of vapors.

Primary Equipment	Typical Suction Rate for Pooled Oil	Typical Suction Rate for Oil on Water	Typical Fill Time for 110-bbl (17.5 m^3) Tank
Vacuum unit[1] with 2–3 in (5–7.5 cm) suction hose and skimming head	50–100 gpm (190–380 L/min) (75% oil)	25–50 gpm (95–190 L/min) (5% oil)	0.75 hr @ 100 gpm (380 L/min) 1.5 hr @ 50 gpm (190 L/min) 3 hrs @ 25 gpm (90 L/min)

Range of Capacities	
Vacuum system	6–140 barrels (0.9 m^3–22.3 m^3)
6 in (15 cm) suction hose	700–900 gpm (2650–3400 L/min) maximum[2]
4 in (10 cm) suction hose	500–600 gpm (1900–2270 L/min) maximum[2]
3 in (7.5 cm) suction hose	50–400 gpm (190–1510 L/min) maximum[2]
2 in (5 cm) suction hose	50–200 gpm (190–760 L/min) maximum[2]

Support Equipment

Devices for herding oil on water can include:

- Boom
- Skimming boards
- Low-pressure water hoses
- Leaf blowers/air movers

Personnel

1 worker per suction hose

1–2 workers for containing, herding and manual skimming of oil

1 foreman for every 10 workers

Access

Road for heavy equipment, barge or landing craft

[1] Number of vacuum units required is dependent on the quantity of oil, the number of recovery sites, and the oil-to-water ratio.

[2] Intake is completely submerged, drawing fluid with little or no suction lift.

Table 12-13 Sump Pump/Vacuum System

Description

Oil flows into and collects in a sump where it is removed by pump or vacuum unit.

Application

Use on firm sand or mud beaches that are being continuously oiled.

Possible Adverse Effects

May cause removal of organisms due to excavation of 2–4 ft (0.6–1.2 m) sump. Watch for collection of vapors.

Primary Equipment	Typical Suction Rate for Thick Oil [0.08 in (2 mm)]	Typical Suction Rate for Thin Oil [0.04 in (1 mm)]	Typical Fill Time for 110-bbl (17.5 m^3) Tank
Vacuum unit[1] or high capacity pump typically with 2–3 in (5–7.5 cm) suction hose and skimming head	75 gpm (285 L/min) 50 gpm (190 L/min) (50% oil)	50 gpm (190 L/min) 25 gpm (95 L/min) (5% oil)	1 hr @ 75 gpm (285 L/min) 1.5 hr @ 50 gpm (190 L/min)

Range of Capacities	
Vacuum unit	6–140 barrels (0.9 m^3–22.3 m^3)
Tank truck	20–160 barrels (3.2 m^3–25.4 m^3)
6 in (15 cm) suction hose	700–900 gpm (2650–3400 L/min) maximum[2]
4 in (10 cm) suction hose	500–600 gpm (1900–2270 L/min) maximum[2]
3 in (7.5 cm) suction hose	50–400 gpm (190–1510 L/min) maximum[2]
2 in (5 cm) suction hose	50–200 gpm (190–760 L/min) maximum[2]

Personnel
1 worker per suction hose
1–2 workers for containing, herding and manual skimming of oil
1 foreman for every 10 workers

Access
Road for heavy equipment, barge or landing craft

[1] Number of vacuum units or pumps required is dependent on the quantity and collection rate of oil in the sump.

[2] Intake is completely submerged, drawing water with little or no suction lift.

Table 12-14 Beach Cleaner

Description
Pulled by tractor or self-propelled across a beach picking up tar balls or patties.

Application
Use on lightly oiled (tar balls or patties) sand or gravel beaches.

Possible Adverse Effects
May disturb upper sediments and shallow-burrowing organisms.

Primary Equipment	Number	Optimum Treatment Rate
Operated at 4 mph (6.4 km/hr)	1	25 min/acre (1 hr/hectare)
taking a skim cut 6 ft (1.8 m) wide Operated at 1 mph (1.6 km/hr) taking a deep cut 6 ft (1.8 m) wide	1	1.4 hr/acre (3.5 hr/hectare)
Support Equipment		
Tractor (rubber-tired)		
Personnel		
1 operator for each piece of equipment		
Access		
Road for heavy equipment, barge, or landing craft		

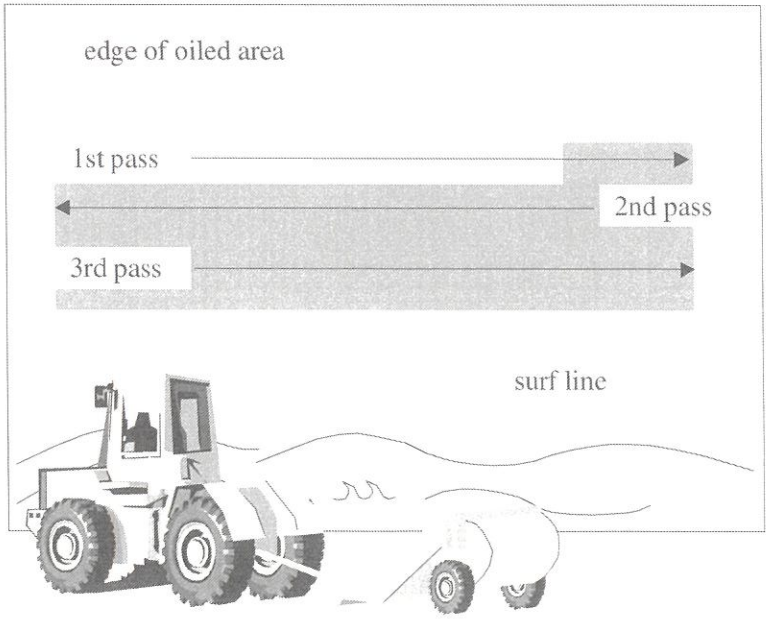

Figure 12-10 Beach Cleaner Treatment Pattern

Table 12-15 Heavily Oiled Sediment Mixing-Tractor/Ripper

Description

Tractor fitted with either a ripper or tines is operated up and down beach (so sediments remain and erosion is minimized) to promote evaporation and weathering by shoreline processes.

Application

Use on heavy surface oiling ("pavement") on cobble, gravel, and sand beaches. Use on low amenity beaches. Use where substrate removal would cause erosion.

Possible Adverse Effects

May disturb sediments and both shallow- and deep-burrowing organisms.

Primary Equipment	Number Required	
	66 ft (20 m) x 1.2 mi (2 km) Area	165 ft (50 m) x 1.2 mi (2 km) Area
Tractor/ripper	1	2

Personnel	Optimum Treatment Rate
1 operator for each piece of equipment	Machine operating at 1.5 mph (2.4 km/hr) can rip a 10 ft (3 m) swath at 1.8 acres/hr (7280 m²/hr). About 1.2 mi (2 km) of beach can be cleaned per day.

Access
Road for heavy equipment, barge or landing craft

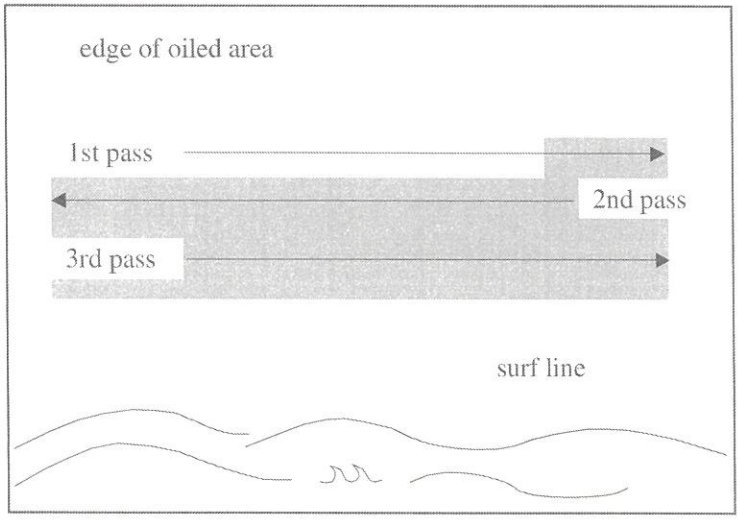

Figure 12-11 Tractor/Ripper Treatment Pattern

Table 12-16 Lightly Oiled Sediment Mixing-Discer

Description
Tractor pulls discing equipment along an oiled area to promote evaporation and weathering by shoreline processes.

Application
Use on lightly oiled, non-recreational sand and gravel beaches.

Possible Adverse Effects
May disturb surface substrate and shallow-burrowing organisms.

Primary Equipment	Number Required	Optimum Treatment Rate
Tractor (track-type preferred, Rubber-tired 2nd choice) and:	1	
8 ft (2.4 m) wide discer 12 ft. (3.6 m) wide discer	1 1	0.3–0.4 hr/acre (0.75–1 hr/hectare) 0.2–0.3 hr/acre (0.5–.75 hr/hectare)
Personnel		
1 operator for each piece of equipment		
Access		
Road for heavy equipment, barge or landing craft		

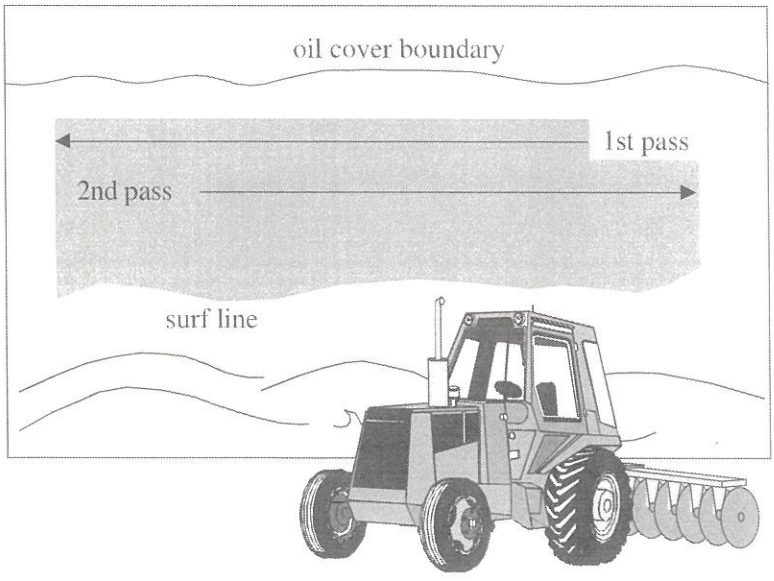

Figure 12-12 Discer Treatment Pattern

Table 12-17 Surf Washing–Bulldozer

Description

Mechanical equipment pushes oiled substrate into the surf zone to accelerate natural cleaning while causing minimal erosion.

Application

Use on level gravel and cobble beaches or firm sand where erosion of beach or backshore area is a concern.

Possible Adverse Effects

Leaves oil in the intertidal zone (re-oiling is possible) and may disrupt the top layer of substrate. Because of a less accurate depth of cut and pushing of sediments, considerable mixing of sediments is likely.

Primary Equipment	Number Required		Optimum Treatment Rate
	66 ft (20 m) wide oiled zone	165 ft (50 m) wide oiled zone	
Bulldozer	2	5	264 ft (80 m) shoreline/hr

Personnel	Optimum Treatment Rate
1 operator for each piece of equipment	Each bulldozer covers about 5 hr/acre (12.5 hr/hectare)

Access
Road for heavy equipment, barge, or landing craft

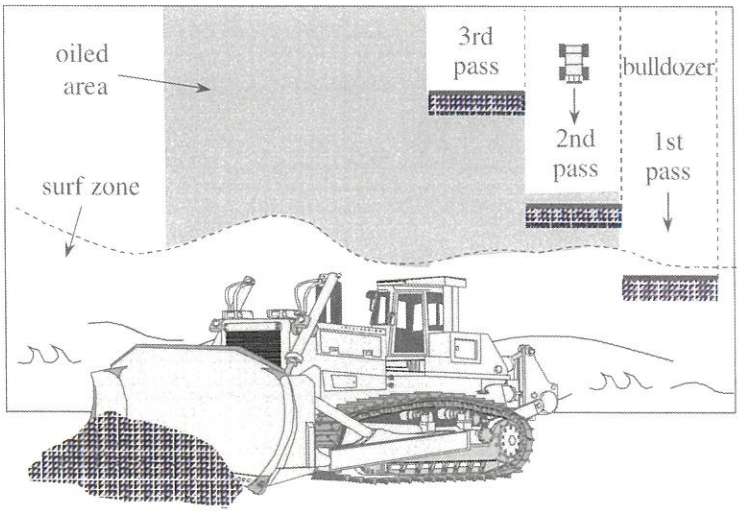

Figure 12-13 Bulldozer Treatment Pattern

Table 12-18 Mechanical Surface Cleaner–Elevating Scraper

Description

Elevating scraper collects oiled material directly off a beach.

Application

Use to remove surface oil, tar balls, and patties on sand and gravel beaches.

Possible Adverse Effects

May cause disturbance of upper sediments (<1 in/2.5 cm) and shallow- and deep-burrowing organisms. Minor reduction of beach stability may lead to erosion and beach retreat.

Primary Equipment (elevating scraper)	Number Required		Optimum Treatment Rate
	500 ft (150 m) Haul Distance	2,000 ft (600 m) Haul Distance	
20 yd^3 (15 m^3) Holding capacity	2	4	1.2–1.4 hr/acre (3–3.5 hr/hectare)
10 yd^3 (7.5 m^3) Holding capacity	4	8	
Estimated Maximum Hourly Waste Generation			
Approx. 100 yd^3 (76 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

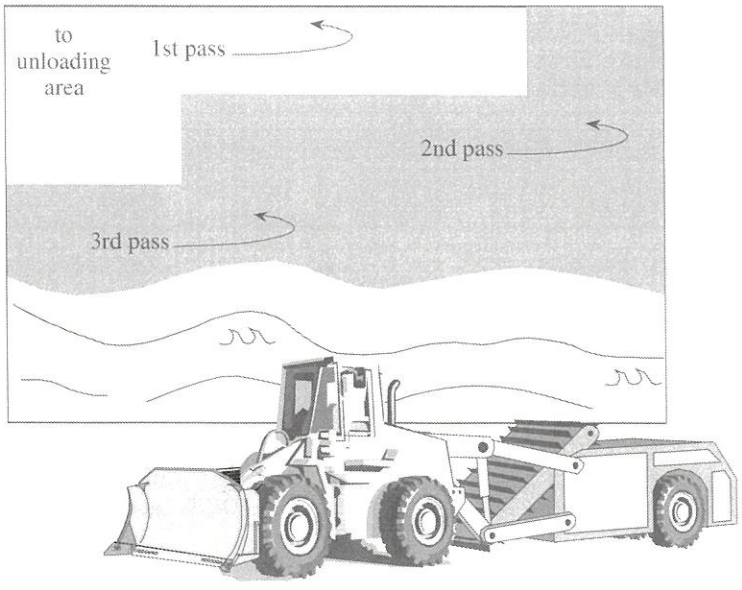

Figure 12-14 Elevating Scraper Treatment Pattern

Table 12-19 Mechanical Sediment Removal — Motor Grader/Elevating Scraper Combination

Description
Motor grader forms windrows for collection by an elevating scraper.

Application
Use to remove surface oil on hard-packed sand with good trafficability.

Possible Adverse Effects
May cause disturbance of upper beach sediments (up to 6 in (15 cm) or greater) and shallow-burrowing organisms. May remove clean material.

Primary Equipment	Number Required		Optimum Treatment Rate
	500 ft (150 m) Haul Distance	2,000 ft (600 m) Haul Distance	
Motor grader and:	1	1	—
Elevating scraper: 20 yd^3 (15 m^3) Holding capacity	2	4	1.2–1.4 hr/acre (3 to 3.5 hr/hectare)
10 yd^3 (7.5 m^3) Holding capacity	4	8	
Estimated Maximum Hourly Waste Generation			
Approx. 620 yd^3 (475 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

Note: Spillage from graders can increase when multiple passes are made to side-cast oiled sediments.

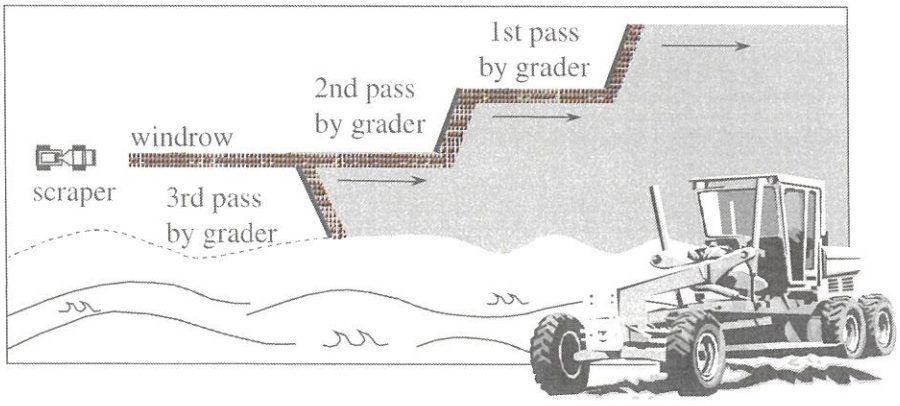

Figure 12-15 Motor Grader/Elevating Scraper Combination Treatment Pattern

Table 12-20 Mechanical Sediment Removal–Front-End Loader

Description

Front-end loader collects material directly off a beach and hauls it to an unloading area. 1st choice: rubber-tired loaders, 2nd choice: track-type loaders

Application

Use on light-to-moderately oiled firm mud, firm sand, gravel, and (especially) cobble beaches where oil penetration exceeds 1 in (2.5 cm) and on extensively oiled vegetation. Depth of cut is ~ 6 in (15 cm).

Possible Adverse Effects

May remove sediment and shallow- and deep-burrowing organisms. Reduction of beach stability may lead to beach erosion and retreat.

Primary Equipment	Number Required		Optimum Treatment Rate [3 yd^3 (2.2 m^3) bucket 2/3 full]
	100 ft (30 m) Haul Distance	500 ft (150 m) Haul Distance	
Front-end loader (rubber-tired: preferred)	2	4	3.2–3.4 hr/acre (8–8.5 hr/hectare)
Front-end loader (track-type: 2nd choice)	2	6	4.4–4.6 hr/acre (11–11.5 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	3.6 hr/acre (9 hr/hectare) and 850 yd^3/acre (1521 m^3/hectare)
Estimated Maximum Hourly Waste Generation			
Approx. 180–240 yd^3 (140–180 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

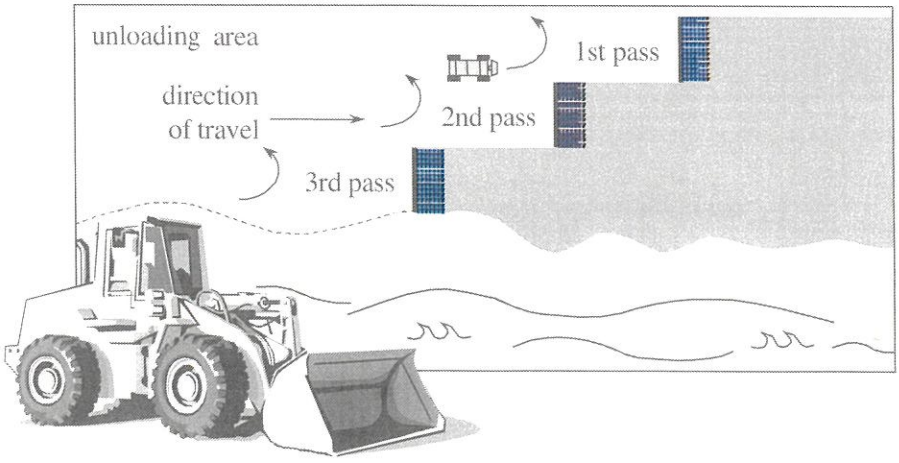

Figure 12-16 Front-End Loader Treatment Pattern

Table 12-21 Mechanical Sediment Removal–Motor Grader/Front-End Loader Combination

Description

Motor grader forms windrows for pickup by a front-end loader.

Application

Use to remove surface oil from hard-packed sand beaches.

Possible Adverse Effects

May remove shallow-burrowing organisms. May remove clean material up to 6 in (15 cm) or greater.

Primary Equipment	Number Required		Optimum Treatment Rate [3 yd^3 (2.2 m^3) bucket 2/3 full]
	500 ft (150 m) Haul Distance	2000 ft (600 m) Haul Distance	
Motor grader and:	1	1	—
Front-end loader (rubber-tired)	2	4	1.3–1.5 hr/acre (3.25–3.75 hr/hectare)
Front-end loader (track-type)	4	6	1.6–1.8 hr/acre (4–4.5 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	1.6–1.8 hr/acre (4–4.5 hr/hectare) 304 yd^3/acre (575 m^3/hectare)
Estimated Maximum Hourly Waste Generation			
Approx. 500 yd^3 (400 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

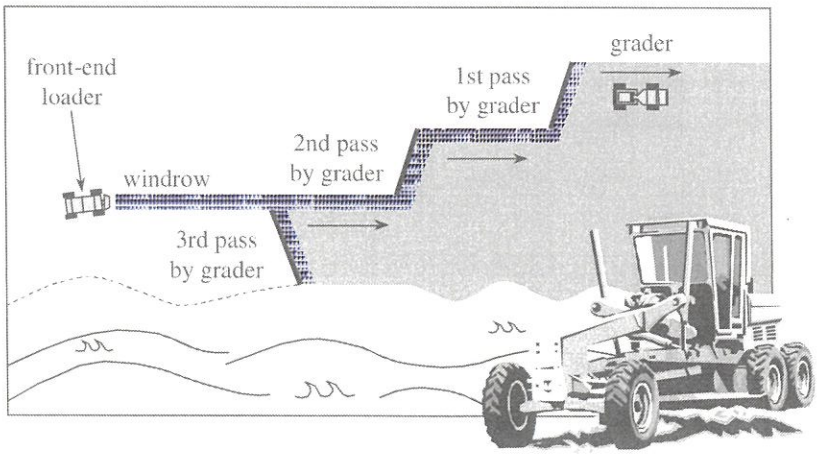

Figure 12-17 Motor Grader/Front-End Loader Combination Treatment Pattern

Table 12-22 Mechanical Sediment Removal–Bulldozer/Front-End Loader (Rubber-Tired) Combination

Description

Bulldozer pushes oiled substrate into piles for pickup by front-end loader.

Application

Use on level, heavily oiled coarse sand, gravel, and cobble beaches with poor trafficability.

Possible Adverse Effects

Removes 6–20 in (15–50 cm) of beach and organisms. May lead to erosion and cliff or beach retreat and inundation of backshores in extreme circumstances.

Primary Equipment	Number Required		Optimum Treatment Rate [3 yd^3 (2.2 m^3) bucket 2/3 full]
	100 ft (30 m) Haul Distance	500 ft (150 m) Haul Distance	
Bulldozer and:	1	1	—
Front-end loader (rubber-tired)	2	4	~5 hr/acre (12.5 hr/hectare)
Front-end loader (track-type)	2	6	~4.5 hr/acre (11.2 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	5.3 hr/acre (13 hr/hectare) and 1207 yd^3/acre (2281 m^3/hectare)
Estimated Maximum Hourly Waste Generation			
Approx. 160–180 yd^3 (120–140 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

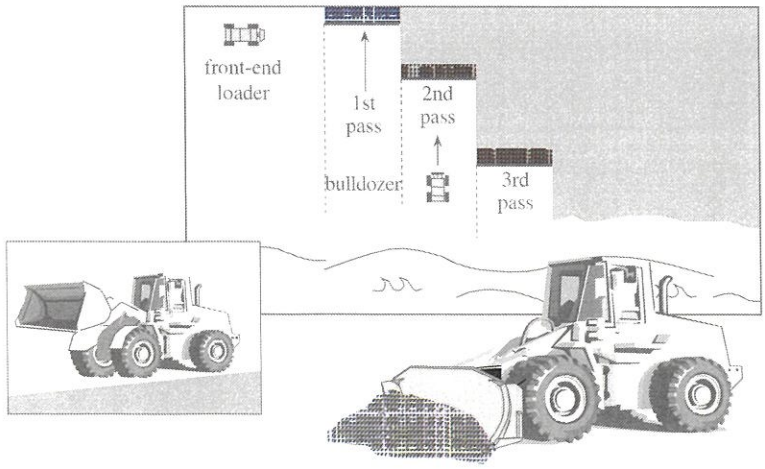

Figure 12-18 Bulldozer/Front-End Loader Combination Treatment Pattern

Table 12-23 Mechanical Sediment Removal–Backhoe

Description

Operates from top of a bank or beach and from a shore to remove oiled sediments and loads them into a truck.

Application

Use to remove oiled material, including logs and debris.

Possible Adverse Effects

Removes 6 – 20 in (15 – 50 cm) of beach and organisms. May lead to reduction of beach stability and beach retreat.

Primary Equipment	Number Required		Optimum Treatment Rate
	0.45 yd^3 (0.3 m^3) Bucket	0.6 yd^3 (0.4 m^3) Bucket	
Backhoe	4	3	6.4–6.8 hr/acre (16–17 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	6.8 hr/acre (17 hr/hectare), 1 ft cut depth
Estimated Maximum Hourly Waste Generation			
Approx. 120 yd^3 (90 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

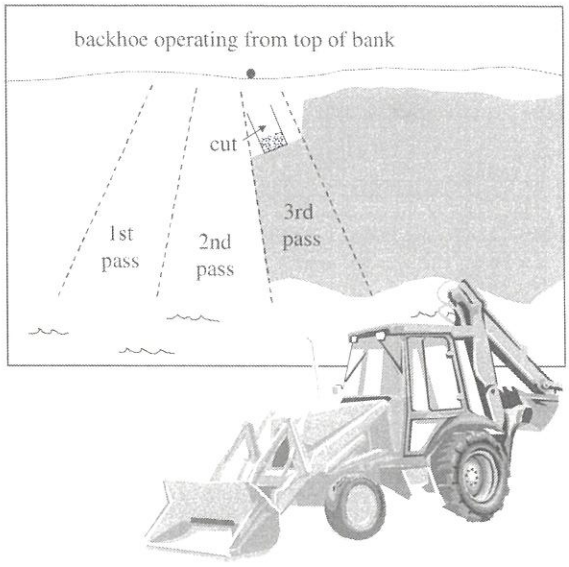

Figure 12-19 Backhoe with Front Bucket Treatment Pattern

12.7 Bioremediation

Biodegradation is the microbial conversion of hydrocarbons in oil to carbon dioxide and water. It typically occurs at an oil-water interface and may be limited by the availability of oxygen, moisture, and nutrients, particularly nitrogen and phosphorus. Biodegradation rate is a function of temperature.

Bioremediation is acceleration of the microbial conversion of hydrocarbons in oil to carbon dioxide and water. This typically occurs through application of nutrients where organisms are metabolically limited. On many shorelines, the limiting nutrients will be nitrogen and phosphorus, which can be applied in the form of fertilizer.

- In temperate climates, bioremediation generally works best during summer months, provided sufficient moisture is present.
- Low ambient temperatures do not necessarily exclude bioremediation. Activity has been recorded at temperatures below freezing, and biodegradation does occur in arctic areas during summer.
- In most cases, other forms of treatment may be required prior to nutrient addition to achieve the desired enhancement rate.

Most areas of the world have indigenous bacteria capable of degrading oil.

- The use of products containing non-native bacteria and enzymes is currently not recommended because they are generally not required and may be detrimental.
- The decision to use bioremediation should be based on the nature of an oil, the character of an affected shoreline, and the relevant political jurisdiction.

Bioremediation is typically used as a final treatment step after completing conventional shoreline treatment or in locations where other forms of treatment are either not possible or not recommended. In cases where surface oiling is either moderate or high, water or chemical washing of a shoreline is recommended as a first step to remove bulk oil. For light surface oiling and subsurface oil, bioremediation may be considered without pre-treatment. Any pooled oil, mousse, or tar balls should be manually or mechanically removed before attempting bioremediation.

The challenge for bioremediation is to supply nutrients in such a way that they are not applied in excessive amounts and are not washed away by tides, beach runoff, or any water supplied by mechanical sprinkler systems. For similar reasons, application of nutrients to spills on open water is not recommended.

Data collected to date indicate that when application guidelines are followed, the environmental risks associated with bioremediation are negligible.

- Toxicity concerns to biota in the water column and on the shoreline are primarily related to ammonia concentration.

- Ammonia is not a problem when nutrients are properly applied.
- Concerns about algae blooms due to increased nutrient levels need to be addressed, especially for beaches with relatively poor natural flushing.

Fertilizer application does not preclude future physical treatment techniques, but it will be most effective after physical techniques have been conducted.

- Applying fertilizer at the same time that any tilling or berm relocation is done would be particularly effective.
- Experience has shown that fertilizer applications are most effective when applied some time after the initial oiling, probably at least 14 days after oil has become incorporated into beach material.
- There is time to get fertilizers to the spill site after the spill has occurred. Therefore, it is unnecessary to stockpile fertilizers as part of contingency planning.

Application rates. For a liquid fertilizer, for example containing 7–8% nitrogen and 3% phosphorus, a suitable application rate of 0.75 gal/100ft^2 (300 g/m^2) may be used. When using solid, time-release fertilizers use a suitable application rate for example of 4 lb/100 ft^2 (200 g/m^2). These fertilizers typically contain 25-30% nitrogen and 3-4% phosphorous. Reapplicaton may be warranted.

12.8 Chemical Treatment Methods

Chemical treatment products can increase the efficiency of water-washing oiled shorelines, seawalls, and docks. These products include treatment chemicals, such as COREXIT EC9580. For use on shorelines, such products must be listed on government-approved product schedules in some countries.

An important consideration in selecting a chemical treatment product is whether the authorities require that the oil be recovered or allow it to be dispersed into the sea.

- When recovery of the washed oil is required, a shoreline treatment product may be applied as a pre-soak at a rate of 0.5 to 1 gallon per 100 ft^2 (2–4 liters per 10 m^2) 10 to 15 minutes before water washing.
- No chemical cleansing product is normally needed in the wash water.
- Boom is used to contain the oily washings in the area immediately offshore.
- Washing should be done during an incoming tide.
- Skimmers and/or sorbents are used to recover the released oil from the surface of the water.
- For spot washing applications, sorbents (in the form of pads, snares, or booms) can be placed around the base of the rock surfaces to be cleaned in order to recover oil from the wash water.

In the US, the Environmental Protection Agency maintains a list of products that may potentially be used in the event of an oil spill response. Other countries may maintain similar lists.

12.9 Inland Spills

Inland spills present a variety of challenges in regard to soil composition, vegetation, geology, bodies of water and water tables, and access to spill site in some cases. The proximity of human populations, land use, and potable water sources should be considered in developing response strategies. Depending on the season, inland spills may have a high potential for wildlife exposure. For spills on or near roadways, traffic control and safety may be the dominant factors in response decision-making.

A spill on land can occur to the surface (e.g., tanker truck rollover, train derailment) or subsurface (e.g., pipeline, underground storage tank). It may be difficult to model the trajectory or path of oil due to natural contours of the land, vegetation, and manmade structures. Oil on land is greatly influenced by the sorbtive capacity of land surfaces, will flow down slope to lower lying areas, and can flow to surface waters or ground waters. A spill to flowing freshwater has a greater potential for transporting a slick than a spill to a quiesant lake or pond.

12.9.1 Cleanup Strategies

As with spills on water, cleanup operations on land should begin as soon as possible. Response options include mechanical recovery, in-situ burning, manual collection, and bioremediation. Unlike response on water, where the spreading of oil is unabated except for the use of containment boom, other barrier, or when oil strands on a shoreline, containing a spill on land can be done by berms, dams, sorbents or trenches.

Response strategies should consider the type of land oil is spilled on, the season, and the type of oil, which will influence the slick transport, its weathering, and potential effects (e.g., including adhesion, penetration, degradation, and toxicity). For example,

- Gasoline does not adhere well to vegetation in comparison to heavy crude, and it will degrade and evaporate much faster.
- Frozen ground in winter will be impermeable to spilled oil.

Natural depressions will cause pooling of surface oil that can be collected using skimmers and vacuum systems. The use of heavy machinery, such as bulldozers and front-end loaders should be considered in view of potential damage to some substrates (see Section 12 treatment guides). For altered terrains and in developed areas, their use may be preferred. For spills on or near roadways, vapor suppression

and firefighting may be the preferred initial response strategy. Use of in-situ burning should consider proximity to populated areas due to estimated particulates in the smoke plume and its forecast trajectory.

12.10 Material Take Off (MTO) List

A wide variety of equipment is used to conduct shoreline treatment.

Equipment	Use
Graders/draglines	Shoreline treatment
Tractor/rippers	Shoreline treatment
Front-end loaders	Shoreline treatment
Beach cleaners	Shoreline treatment
Discers	Shoreline treatment
Backhoes	Shoreline treatment
Bulldozers	Shoreline treatment
Elevating scrapers	Shoreline treatment
Flatbed, dump trucks	Removal of oiled material
Vacuum trucks	Removal of pooled liquid
Garbage cans and bags	Removal of oiled material
Portable tanks	Storage of recovered materials
Sorbents	Recovery of pooled liquid
Booms and skimmers	Containment and removal of oil
Hand tools	Vegetation cutting, equipment repair
Shovels/rakes/pitchforks	Removal of oiled material
Protective clothing	Personal protection
Pumps/hoses	Transfer of collected oil
High-pressure washers	Low- and high-pressure washing
Steam cleaners	High-pressure washing
Sandblasting equipment	High-pressure washing
Fuel	Fueling equipment
Chemicals	Removal of oil coating on hard surfaces
Fertilizer	Biodegradation of oil

12.6 Physical Treatment Techniques

Physical techniques are typically used to remove oil stranded in an intertidal zone when natural recovery is not an acceptable response strategy. In this section, a series of tables presents information on physical treatment options, including a brief description of each method, where it likely would be applied, its possible effects, and the logistical support required. Treatment rates and personnel requirements have been estimated based on the level of effort generally required to treat an area in an 8-hr day. Techniques have been arranged in approximate order of their likely environmental impact, beginning with the least intrusive:

- Four methods used by cleanup teams to manually remove oil from shores are described in Tables 12-3 through 12-6.
- Treatment techniques involving the application of water to remove oil from sediments and bedrock have been summarized in Tables 12-7 through 12-9.
- Steam cleaning and sandblasting, sometimes used to remove oil from hard surfaces, are described in Tables 12-10 and 12-11. Operators and nearby crew of such equipment need PPE, especially respiratory protection from any aerosols created during use.
- Vacuums, including truck-mounted and portable units (see also Section 11.4) used to remove oil pooled on shore, are listed in Tables 12-12 and 12-13.
- Heavy machinery, used singly and in combination when access and other circumstances allow, are detailed in Tables 12-14 through 12-23. In selected circumstances, draglines or clamshell dredges could be used to collect oiled sediment and debris.

Many types of mobile mechanical equipment use inflatable tires, whose pressure can influence the efficiency of operation. It is advisable to adjust tire pressures to suit shoreline conditions.

Table 12-3 Sorbent Application

Description

Sorbents are applied manually to soak up non-sticky oil stranded on shore. Pom-poms are positioned in the intertidal zone as a passive array to collect viscous (sticky) oil.

Application

Use on all shore types to remove small accumulations of oil.

Possible Adverse Effects

Foot traffic may disturb sediments and affect organisms. Birds and small mammals may ingest particulate sorbents if they are left uncollected.

Equipment	Quantity Required (per day)
Sorbent sheets	20 bales (100–200 pads/bale)
Sorbent rolls	20 rolls [36 in (90 cm) x 150 ft (45 m)/roll]
Sorbent boom	20 bales [4 ft (1.2 m) length x 8 in (20 cm) dia. x 10 ft (3 m)/bale]
Pom-poms (for viscous (sticky) oil)	10 bales (100/bale)
Pitchforks, rakes, etc.	10–20
6-mil (0.15 mm) plastic bags (white or light color)	10 cartons (40–50/carton)
Personnel	**Optimum Treatment Rate**
10–20 workers	Treatment rate is highly variable. Expect up to 1/4 gal (1 liter)/pad of oil recovery, depending on oil type.
1 foreman for every 10 workers	
Disposal	**Suggestion**
Pads and rolls	Disposal is facilitated by rolling up sorbent and placing it in suitable containers.
Boom	Disposal is accomplished by folding, rolling and/or stuffing the boom into plastic bags for removal.
Loose material	Loose sorbent materials are not recommended for use on oil on water or tidal shorelines due to difficulty in recovery for disposal.
Access	
Light motor vehicle, shallow craft or helicopter	

Table 12-4 Manual Removal of Oiled Materials

Description
Oiled sediment and debris are removed by hand, shovels, rakes, etc.

Application
Use on mud, sand, gravel, and cobble when oiling is light, sporadic, and/or at or near the beach surface, or on beaches where there is no access for heavy equipment.

Possible Adverse Effects
May disturb/remove sediment and shallow burrowing organisms.

Equipment	Number Required	
	Lightly Oiled Shoreline [~1.2 miles (2 km)]	**Heavily Oiled Shoreline [~1.2 miles (2 km)]**
Shovels, rakes, picks	10–20	50–100
Debris box or super sac	2	3–4
ATV[1] with trailers or wheelbarrows	1–2	1–2
Personnel	**Lightly Oiled Shoreline [~1.2 miles (2 km)]**	**Heavily Oiled Shoreline [~1.2 miles (2 km)]**
Workers	10–20	50–100
Foremen	1–2	5–10
Access		
Foot path, road, shallow craft or helicopter		

[1] ATV is an All Terrain Vehicle.

Table 12-5 Manual Scraping

Description

Oil is manually scraped from substrate using hand tools.

Application

Use on lightly oiled boulders, rocks, and man-made structures or heavy accumulations when other techniques are not allowed or are not practical.

Possible Adverse Effects

May disturb sediment and remove or injure organisms. Unremoved or unrecovered oil can injure organisms that are repopulating the rocky substrate or inhabiting sediment downslope of cleanup activities.

Equipment	Number per Crew
Paint scrapers	1 per worker (plus several extra to allow for loss of edge or breakage)
Sharpening tool (file/hone)	1
Rakes, shovels, trowels	1 each per worker
Plastic bags	75–100
Ground cover (for initially catching removed oil) such as: • Plastic film • Cloth • Sorbents	1–3 rolls
Personnel	**Optimum Treatment Rate**
5 crews of 10 workers each	The treatment rate is highly variable, depending on degree of oiling, type of substrate, and the number of non-oiled plants and animals to be protected.
1 foreman for each crew	
Access	
Foot path, shallow craft, or helicopter	

Table 12-6 Vegetation Cutting

Description

Oiled vegetation is cut by hand, collected, and put into bags or containers for disposal.

Application

Use on oiled vegetation.

Possible Adverse Effects

May disturb and remove sediment and organisms. Heavy foot traffic may cause root damage and delayed recovery. May cause erosion due to loss of vegetation.

Equipment	Number per Crew
Cutting tools such as: • Scythes • Power cutters • Shears	3–4 (plus 1 or 2 extra in case of breakage or dull blades)
Sharpening tool (file/hone)	1
Collecting tools such as: • Pitch forks • Rakes	4–6
Plastic bags	75–100
Ground cover such as: • Plastic film • Burlap • Sorbents	1–3 rolls
Personnel	**Optimum Treatment Rate**
5 crews of 10 workers each	Each crew can cut and bag about 77 yd^2/hr (65 m^2/hr) of vegetation on a heavily vegetated shoreline.
1 foreman for each crew	
Access	
Foot path, shallow craft or helicopter	

Table 12-7 Low Pressure, Cold-Water Washing

Description

Low-pressure water spray removes oil from substrate and channels it to recovery points. [Nozzle pressure is kept below 100 psi (690 kPa)].

Application

Use to wash oil from mud, cobble, boulder, rock, man-made structures, and vegetation.

Possible Adverse Effects

May create a potential for re-oiling and disturbance of organisms downslope of cleanup if oil is not contained and removed.

Primary Equipment	Type	Number
Washing unit (pump and hoses)	10–20 psi (70–140 kPa) pressure @ 50–100 gpm (190–380 L/min)	3–5
Vacuum system	110 barrel (17.5 m^3) capacity	1–2
Pump and tank truck	50–75 gpm (190–285 L/min), 125 barrel (20 m^3) capacity	1–2
Equipment to contain and recover loosened oil, if required	Boom and skimmer	
Personnel	**Optimum Treatment Rate**	
1–2 workers per washing or recovery unit; PPE required	The rate of treatment depends on the degree of oiling, type of oil and substrate and is difficult to forecast. (~220 gpm [50m^3/hr])	
1 foreman for every 10 workers; PPE required		
Access		
Road for heavy equipment, barge, or landing craft for trucks		
Light motor vehicle, shallow craft, or helicopter for washing unit		

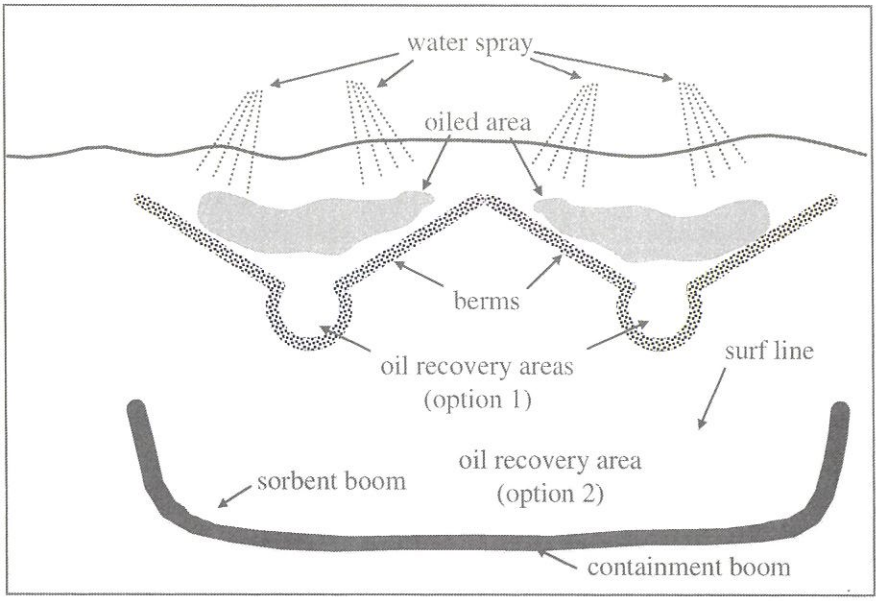

Figure 12-6 Low Pressure Flushing

Table 12-8 Low-Pressure, Warm-Water Washing/Cold-Water Flooding

Description

Heated seawater softens weathered oil; cold-water flooding moves the loosened oil to the adjacent water for collection. These two techniques can be used separately or together.

Application

Use on heavy concentrations of weathered, sticky oil that has reached sheltered or moderate energy shorelines composed of rock, cobble, and gravel.

Possible Adverse Effects

May injure intertidal organisms. High nozzle pressure can cause localized erosion.

Primary Equipment	Size of Unit	Quantity
Landing craft (or suitable trailers for land-based operations)	40–80 ft (12–24 m)	1
Direct-fired water heater	8 million BTU/hr (2340 kW) 125 gpm (475 L/min) @ 140°F (60°C)	2
Pumps	6 in (15 cm) @ 100 psi (690 kPa)	2
Generator	70 hp (50 kW)	1
Containment boom	inshore boom	600 ft (180 m)
Sorbent boom		300 ft (90 m)
Fire hoses/nozzles	1/2–1 in (1.25–2.5 cm)	4
Perforated flushing header, corrugated pipe	6 in (15 cm)	100 ft (30 m)
Manifold hose	6 in (15 cm)/4 in. (10 cm)	100 ft (30 m)
Snare boom/pom-poms		300 ft (90 m)
Support Equipment		
Water heater • Pump and generator • Landing craft		
Personnel	**Optimum Treatment Rate**	
2 crews of 10 workers each, 1 foreman for each crew; PPE required	The rate of treatment depends on the degree of oiling, type of oil and substrate, and is difficult to forecast. (~220 gpm [50m³/hr])	
Access		
Landing craft or road for heavy equipment, barge		

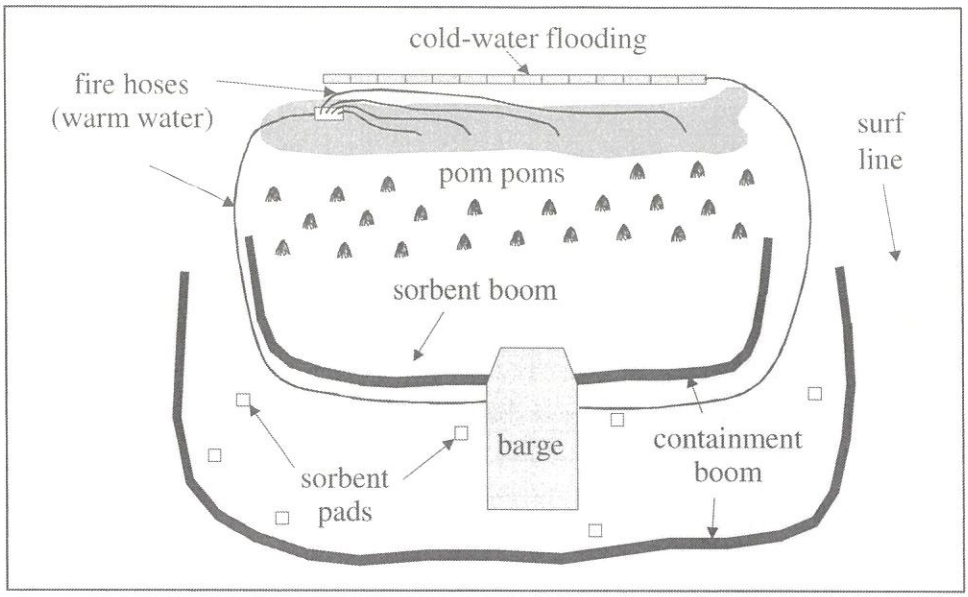

Figure 12-7 Low-Pressure, Warm-Water Washing/Cold-Water Flooding

Table 12-9 High-Pressure Washing

Description

High-pressure cold or warm water streams remove oil from substrate and channel it to a recovery area.

Application

Use to remove oil from boulder, rock, and man-made structures.

Possible Adverse Effects

May remove some organisms and shells from substrate. Can disturb substrate surface and wash oil into sub-surface sediments and downslope organisms.

Primary Equipment	Type	Number
Pressure washing unit	Self-contained 10 gpm (38 L/min) @ 4000 psi (27,000 kPa)	2–3
Equipment to contain and recover loosened oil, if required	Boom and skimmer	
Support Equipment	**Type**	**Number**
Vacuum system	60–80 barrel (9.5–13 m^3) capacity	1
Trash pump	25–50 gpm (95–190 L/min)	1
Tank truck	60–80 barrel (9.5–13 m^3) capacity	1
Personnel	**Optimum Treatment Rate**	
1–2 operators per pressure washing unit; PPE required	One unit that produces 3,000–4,000 psi (20,000–26,667 kPa) pressure can clean 7–15 ft^2 (0.75–1.5 m^2) per minute.	
1–2 workers per recovery equipment; PPE required		
1 foreman for every 10 workers; PPE required		
Access		
Road or barge for heavy equipment, trucks		
Light motor vehicle path, shallow craft, or helicopter for washer only		

Table 12-10 Steam Cleaning

Description

Steam removes oil from substrates and it is channeled to a recovery area.

Application

Use to remove oil coatings from man-made structures, boulders, and rock. Establish an exclusion zone.

Possible Adverse Effects

Removal of and mortality to some organisms are likely. Oil not recovered can affect organisms downslope of cleanup activities.

Primary Equipment	Size of Unit	Number Required	Optimum Treatment Rate
Steam cleaner	280 psi (1930 kPa) @ 325°F (163°C)	4–6	600 ft²/hr (55 m²/hr)
Vacuum truck	80–100 barrel (12.7–15.9 m³) capacity	1–2	
Skimmer	Small	1–2	
Containment boom	2–4 x length of shoreline cleaned	2	

Consumables	Fresh Water Consumption/Unit
Steam cleaner	3.8–4.3 gpm (14–16 L/min)

Personnel
2 operators for each cleaning unit; PPE required
1 foreman for every 10 workers; PPE required

Access
Road for heavy equipment, trucks
Light motor vehicle path, shallow craft, or helicopter for steam cleaning units

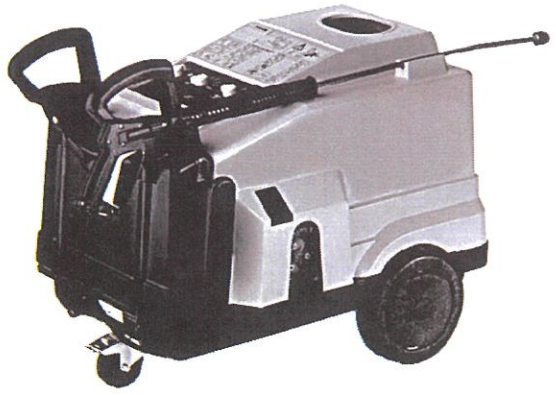

Figure 12-8 Steam Cleaner

Table 12-11 Sandblasting

Description

Sand moving at high velocity removes oil from a substrate.

Application

Use to remove thin oil residue from man-made structures and other hard surfaces. Establish an exclusion zone.

Possible Adverse Effects

May remove organisms and shells from a substrate and leave behind a clean, barren surface. Can affect downslope organisms. Adds sand to environment, along with potential re-oiling, erosion, and deeper oil penetration.

Primary Equipment	Number Required	Optimum Treatment Rate
Sandblasting unit (compressor included)	1	150 ft²/hr (14 m²/hr)
Sand supply truck	1	
Front-end loader (if used)	1	
Consumables	**Amount**	**Optimum Treatment Rate**
Sand	Approx. 1000 lb/hr (455 kg/hr)	150 ft²/hr (14 m²/hr)
Ground cover	1–3 rolls	
Personnel	**Number Required**	**Optimum Treatment Rate**
Workers for sandblasting	2–4; PPE required	150 ft²/hr (14 m²/hr)
Cleanup workers	2–3; PPE required	
Foreman	1; PPE required	
Access		
Road for heavy equipment, barge or landing craft		

Figure 12-9 Sand Blaster

Table 12-12 Vacuum Systems

Description

Truck or portable vacuum unit is positioned near oil pool or recovery site where oil is collected via vacuum hose.

Application

Use to remove oil accumulations on water in the absence of skimmers and to recover oil pooled in natural depressions on all shoreline types (except inaccessible vegetated or other areas). Unsafe for recovery of gasoline.

Possible Adverse Effects

May remove some organisms. Watch for collection of vapors.

Primary Equipment	Typical Suction Rate for Pooled Oil	Typical Suction Rate for Oil on Water	Typical Fill Time for 110-bbl (17.5 m^3) Tank
Vacuum unit[1] with 2–3 in (5–7.5 cm) suction hose and skimming head	50–100 gpm (190–380 L/min) (75% oil)	25–50 gpm (95–190 L/min) (5% oil)	0.75 hr @ 100 gpm (380 L/min) 1.5 hr @ 50 gpm (190 L/min) 3 hrs @ 25 gpm (90 L/min)

Range of Capacities	
Vacuum system	6–140 barrels (0.9 m^3–22.3 m^3)
6 in (15 cm) suction hose	700–900 gpm (2650–3400 L/min) maximum[2]
4 in (10 cm) suction hose	500–600 gpm (1900–2270 L/min) maximum[2]
3 in (7.5 cm) suction hose	50–400 gpm (190–1510 L/min) maximum[2]
2 in (5 cm) suction hose	50–200 gpm (190–760 L/min) maximum[2]

Support Equipment

Devices for herding oil on water can include:

- Boom
- Skimming boards
- Low-pressure water hoses
- Leaf blowers/air movers

Personnel

1 worker per suction hose

1–2 workers for containing, herding and manual skimming of oil

1 foreman for every 10 workers

Access

Road for heavy equipment, barge or landing craft

[1] Number of vacuum units required is dependent on the quantity of oil, the number of recovery sites, and the oil-to-water ratio.

[2] Intake is completely submerged, drawing fluid with little or no suction lift.

Table 12-13 Sump Pump/Vacuum System

Description

Oil flows into and collects in a sump where it is removed by pump or vacuum unit.

Application

Use on firm sand or mud beaches that are being continuously oiled.

Possible Adverse Effects

May cause removal of organisms due to excavation of 2–4 ft (0.6–1.2 m) sump. Watch for collection of vapors.

Primary Equipment	Typical Suction Rate for Thick Oil [0.08 in (2 mm)]	Typical Suction Rate for Thin Oil [0.04 in (1 mm)]	Typical Fill Time for 110-bbl (17.5 m^3) Tank
Vacuum unit[1] or high capacity pump typically with 2–3 in (5–7.5 cm) suction hose and skimming head	75 gpm (285 L/min) 50 gpm (190 L/min) (50% oil)	50 gpm (190 L/min) 25 gpm (95 L/min) (5% oil)	1 hr @ 75 gpm (285 L/min) 1.5 hr @ 50 gpm (190 L/min)

Range of Capacities	
Vacuum unit	6–140 barrels (0.9 m^3–22.3 m^3)
Tank truck	20–160 barrels (3.2 m^3–25.4 m^3)
6 in (15 cm) suction hose	700–900 gpm (2650–3400 L/min) maximum[2]
4 in (10 cm) suction hose	500–600 gpm (1900–2270 L/min) maximum[2]
3 in (7.5 cm) suction hose	50–400 gpm (190–1510 L/min) maximum[2]
2 in (5 cm) suction hose	50–200 gpm (190–760 L/min) maximum[2]

Personnel
1 worker per suction hose
1–2 workers for containing, herding and manual skimming of oil
1 foreman for every 10 workers

Access
Road for heavy equipment, barge or landing craft

[1] Number of vacuum units or pumps required is dependent on the quantity and collection rate of oil in the sump.

[2] Intake is completely submerged, drawing water with little or no suction lift.

Table 12-14 Beach Cleaner

Description
Pulled by tractor or self-propelled across a beach picking up tar balls or patties.

Application
Use on lightly oiled (tar balls or patties) sand or gravel beaches.

Possible Adverse Effects
May disturb upper sediments and shallow-burrowing organisms.

Primary Equipment	Number	Optimum Treatment Rate
Operated at 4 mph (6.4 km/hr)	1	25 min/acre (1 hr/hectare)
taking a skim cut 6 ft (1.8 m) wide Operated at 1 mph (1.6 km/hr) taking a deep cut 6 ft (1.8 m) wide	1	1.4 hr/acre (3.5 hr/hectare)
Support Equipment		
Tractor (rubber-tired)		
Personnel		
1 operator for each piece of equipment		
Access		
Road for heavy equipment, barge, or landing craft		

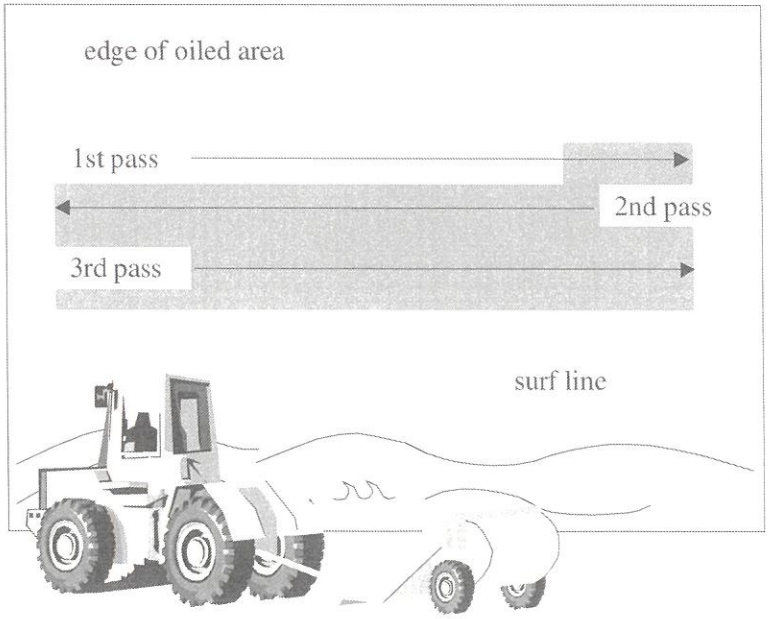

Figure 12-10 Beach Cleaner Treatment Pattern

Table 12-15 Heavily Oiled Sediment Mixing-Tractor/Ripper

Description

Tractor fitted with either a ripper or tines is operated up and down beach (so sediments remain and erosion is minimized) to promote evaporation and weathering by shoreline processes.

Application

Use on heavy surface oiling ("pavement") on cobble, gravel, and sand beaches. Use on low amenity beaches. Use where substrate removal would cause erosion.

Possible Adverse Effects

May disturb sediments and both shallow- and deep-burrowing organisms.

Primary Equipment	Number Required	
	66 ft (20 m) x 1.2 mi (2 km) Area	165 ft (50 m) x 1.2 mi (2 km) Area
Tractor/ripper	1	2

Personnel	Optimum Treatment Rate
1 operator for each piece of equipment	Machine operating at 1.5 mph (2.4 km/hr) can rip a 10 ft (3 m) swath at 1.8 acres/hr (7280 m²/hr). About 1.2 mi (2 km) of beach can be cleaned per day.

Access
Road for heavy equipment, barge or landing craft

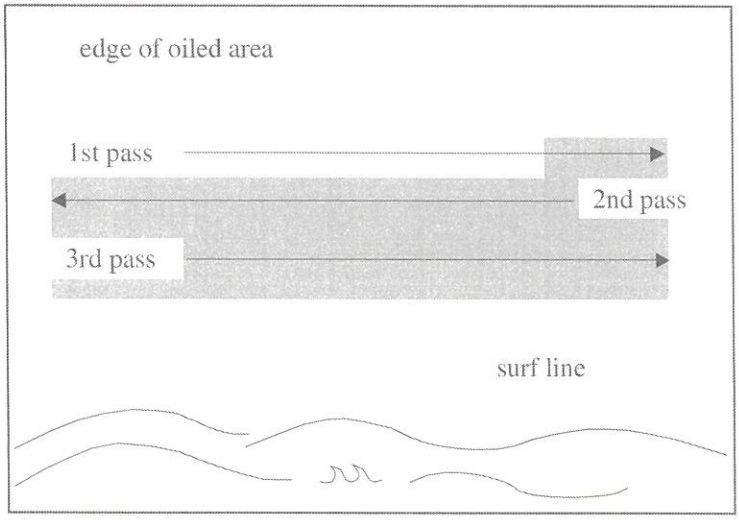

Figure 12-11 Tractor/Ripper Treatment Pattern

Table 12-16 Lightly Oiled Sediment Mixing-Discer

Description
Tractor pulls discing equipment along an oiled area to promote evaporation and weathering by shoreline processes.

Application
Use on lightly oiled, non-recreational sand and gravel beaches.

Possible Adverse Effects
May disturb surface substrate and shallow-burrowing organisms.

Primary Equipment	Number Required	Optimum Treatment Rate
Tractor (track-type preferred, Rubber-tired 2nd choice) and:	1	
8 ft (2.4 m) wide discer 12 ft. (3.6 m) wide discer	1 1	0.3–0.4 hr/acre (0.75–1 hr/hectare) 0.2–0.3 hr/acre (0.5–.75 hr/hectare)
Personnel		
1 operator for each piece of equipment		
Access		
Road for heavy equipment, barge or landing craft		

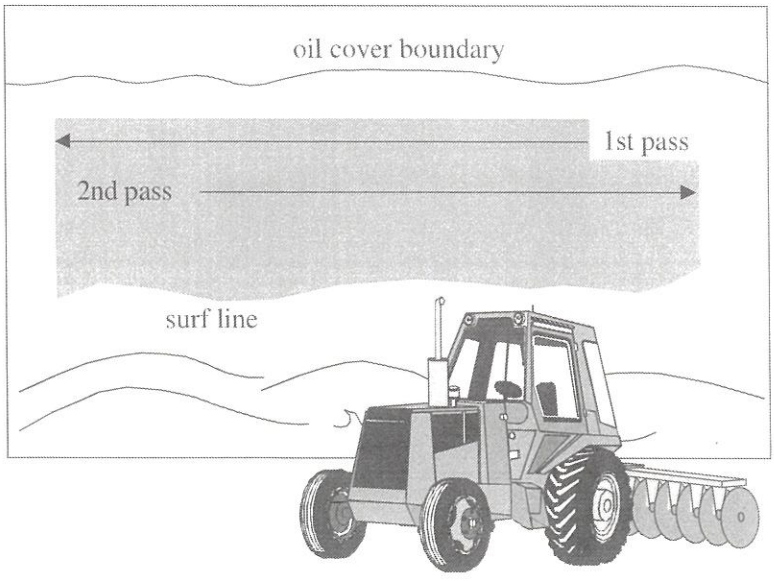

Figure 12-12 Discer Treatment Pattern

Table 12-17 Surf Washing–Bulldozer

Description

Mechanical equipment pushes oiled substrate into the surf zone to accelerate natural cleaning while causing minimal erosion.

Application

Use on level gravel and cobble beaches or firm sand where erosion of beach or backshore area is a concern.

Possible Adverse Effects

Leaves oil in the intertidal zone (re-oiling is possible) and may disrupt the top layer of substrate. Because of a less accurate depth of cut and pushing of sediments, considerable mixing of sediments is likely.

Primary Equipment	Number Required		Optimum Treatment Rate
	66 ft (20 m) wide oiled zone	165 ft (50 m) wide oiled zone	
Bulldozer	2	5	264 ft (80 m) shoreline/hr

Personnel	Optimum Treatment Rate
1 operator for each piece of equipment	Each bulldozer covers about 5 hr/acre (12.5 hr/hectare)

Access
Road for heavy equipment, barge, or landing craft

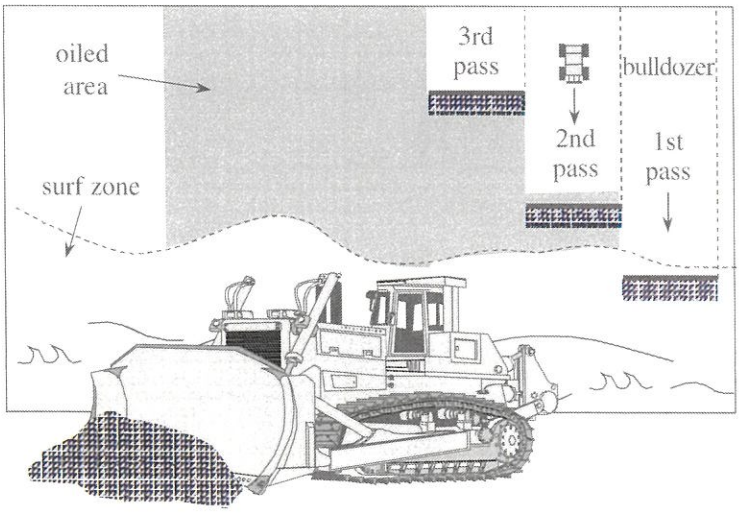

Figure 12-13 Bulldozer Treatment Pattern

Table 12-18 Mechanical Surface Cleaner–Elevating Scraper

Description

Elevating scraper collects oiled material directly off a beach.

Application

Use to remove surface oil, tar balls, and patties on sand and gravel beaches.

Possible Adverse Effects

May cause disturbance of upper sediments (<1 in/2.5 cm) and shallow- and deep-burrowing organisms. Minor reduction of beach stability may lead to erosion and beach retreat.

Primary Equipment (elevating scraper)	Number Required		Optimum Treatment Rate
	500 ft (150 m) Haul Distance	2,000 ft (600 m) Haul Distance	
20 yd^3 (15 m^3) Holding capacity	2	4	1.2–1.4 hr/acre (3–3.5 hr/hectare)
10 yd^3 (7.5 m^3) Holding capacity	4	8	
Estimated Maximum Hourly Waste Generation			
Approx. 100 yd^3 (76 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

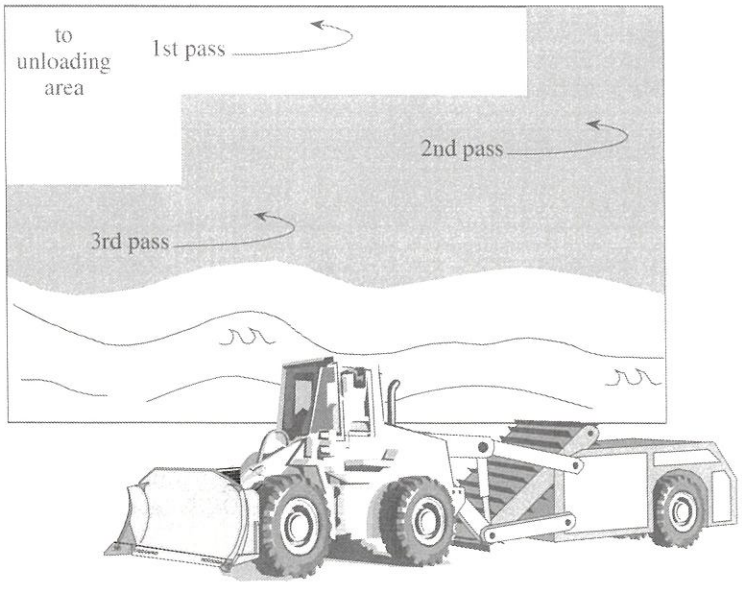

Figure 12-14 Elevating Scraper Treatment Pattern

Table 12-19 Mechanical Sediment Removal — Motor Grader/Elevating Scraper Combination

Description
Motor grader forms windrows for collection by an elevating scraper.

Application
Use to remove surface oil on hard-packed sand with good trafficability.

Possible Adverse Effects
May cause disturbance of upper beach sediments (up to 6 in (15 cm) or greater) and shallow-burrowing organisms. May remove clean material.

Primary Equipment	Number Required		Optimum Treatment Rate
	500 ft (150 m) Haul Distance	2,000 ft (600 m) Haul Distance	
Motor grader and:	1	1	—
Elevating scraper: 20 yd^3 (15 m^3) Holding capacity	2	4	1.2–1.4 hr/acre (3 to 3.5 hr/hectare)
10 yd^3 (7.5 m^3) Holding capacity	4	8	
Estimated Maximum Hourly Waste Generation			
Approx. 620 yd^3 (475 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

Note: Spillage from graders can increase when multiple passes are made to side-cast oiled sediments.

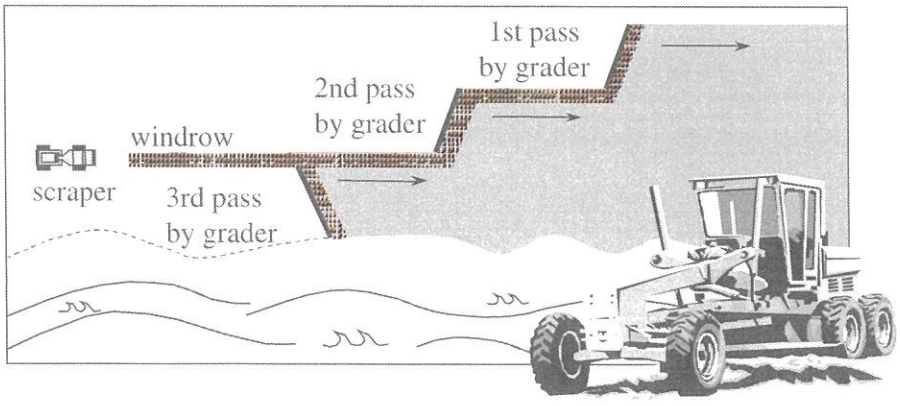

Figure 12-15 Motor Grader/Elevating Scraper Combination Treatment Pattern

Table 12-20 Mechanical Sediment Removal–Front-End Loader

Description

Front-end loader collects material directly off a beach and hauls it to an unloading area. 1st choice: rubber-tired loaders, 2nd choice: track-type loaders

Application

Use on light-to-moderately oiled firm mud, firm sand, gravel, and (especially) cobble beaches where oil penetration exceeds 1 in (2.5 cm) and on extensively oiled vegetation. Depth of cut is ~ 6 in (15 cm).

Possible Adverse Effects

May remove sediment and shallow- and deep-burrowing organisms. Reduction of beach stability may lead to beach erosion and retreat.

Primary Equipment	Number Required		Optimum Treatment Rate [3 yd^3 (2.2 m^3) bucket 2/3 full]
	100 ft (30 m) Haul Distance	500 ft (150 m) Haul Distance	
Front-end loader (rubber-tired: preferred)	2	4	3.2–3.4 hr/acre (8–8.5 hr/hectare)
Front-end loader (track-type: 2nd choice)	2	6	4.4–4.6 hr/acre (11–11.5 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	3.6 hr/acre (9 hr/hectare) and 850 yd^3/acre (1521 m^3/hectare)
Estimated Maximum Hourly Waste Generation			
Approx. 180–240 yd^3 (140–180 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

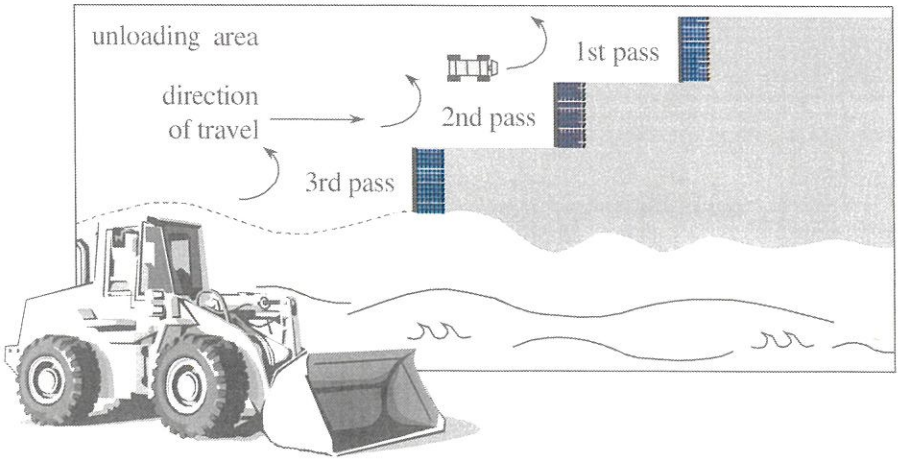

Figure 12-16 Front-End Loader Treatment Pattern

Table 12-21 Mechanical Sediment Removal–Motor Grader/Front-End Loader Combination

Description

Motor grader forms windrows for pickup by a front-end loader.

Application

Use to remove surface oil from hard-packed sand beaches.

Possible Adverse Effects

May remove shallow-burrowing organisms. May remove clean material up to 6 in (15 cm) or greater.

Primary Equipment	Number Required		Optimum Treatment Rate [3 yd^3 (2.2 m^3) bucket 2/3 full]
	500 ft (150 m) Haul Distance	2000 ft (600 m) Haul Distance	
Motor grader and:	1	1	—
Front-end loader (rubber-tired)	2	4	1.3–1.5 hr/acre (3.25–3.75 hr/hectare)
Front-end loader (track-type)	4	6	1.6–1.8 hr/acre (4–4.5 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	1.6–1.8 hr/acre (4–4.5 hr/hectare) 304 yd^3/acre (575 m^3/hectare)
Estimated Maximum Hourly Waste Generation			
Approx. 500 yd^3 (400 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

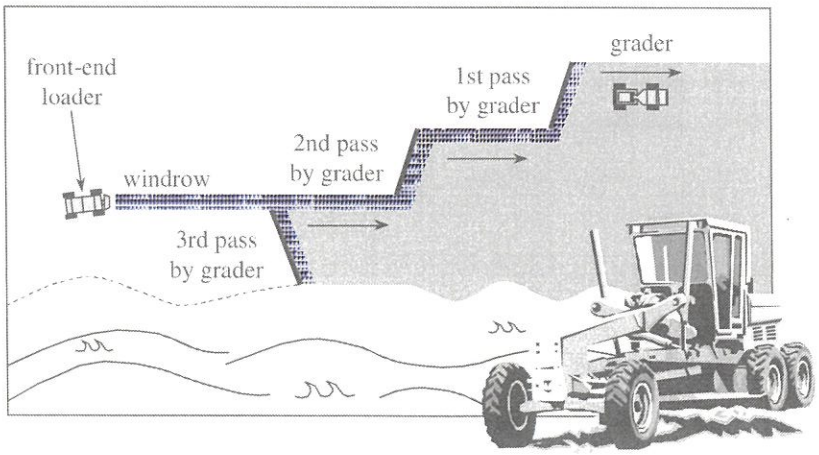

Figure 12-17 Motor Grader/Front-End Loader Combination Treatment Pattern

Table 12-22 Mechanical Sediment Removal–Bulldozer/Front-End Loader (Rubber-Tired) Combination

Description

Bulldozer pushes oiled substrate into piles for pickup by front-end loader.

Application

Use on level, heavily oiled coarse sand, gravel, and cobble beaches with poor trafficability.

Possible Adverse Effects

Removes 6–20 in (15–50 cm) of beach and organisms. May lead to erosion and cliff or beach retreat and inundation of backshores in extreme circumstances.

Primary Equipment	Number Required		Optimum Treatment Rate [3 yd^3 (2.2 m^3) bucket 2/3 full]
	100 ft (30 m) Haul Distance	500 ft (150 m) Haul Distance	
Bulldozer and:	1	1	—
Front-end loader (rubber-tired)	2	4	~5 hr/acre (12.5 hr/hectare)
Front-end loader (track-type)	2	6	~4.5 hr/acre (11.2 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	5.3 hr/acre (13 hr/hectare) and 1207 yd^3/acre (2281 m^3/hectare)
Estimated Maximum Hourly Waste Generation			
Approx. 160–180 yd^3 (120–140 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

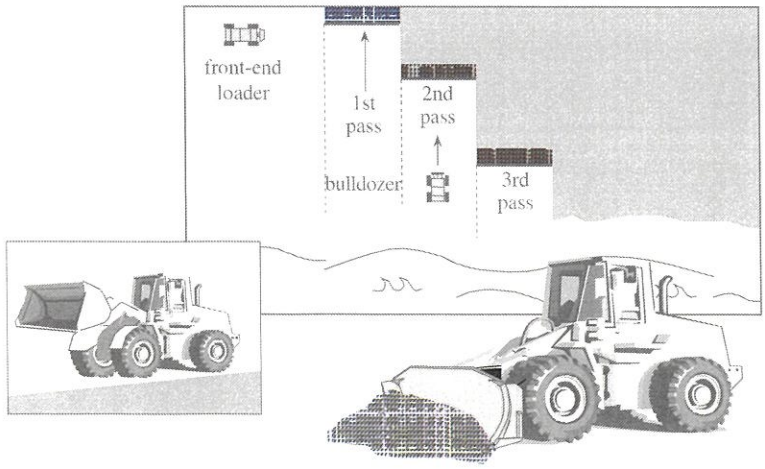

Figure 12-18 Bulldozer/Front-End Loader Combination Treatment Pattern

Table 12-23 Mechanical Sediment Removal–Backhoe

Description

Operates from top of a bank or beach and from a shore to remove oiled sediments and loads them into a truck.

Application

Use to remove oiled material, including logs and debris.

Possible Adverse Effects

Removes 6 – 20 in (15 – 50 cm) of beach and organisms. May lead to reduction of beach stability and beach retreat.

Primary Equipment	Number Required		Optimum Treatment Rate
	0.45 yd^3 (0.3 m^3) Bucket	0.6 yd^3 (0.4 m^3) Bucket	
Backhoe	4	3	6.4–6.8 hr/acre (16–17 hr/hectare)
Support Equipment	**Optimum Number of Truck Loads/Hr**		**Optimum Treatment Rate**
	10 yd^3 (7.5 m^3)	**20 yd^3 (15 m^3)**	
Dump trucks	20	10	6.8 hr/acre (17 hr/hectare), 1 ft cut depth
Estimated Maximum Hourly Waste Generation			
Approx. 120 yd^3 (90 m^3) with a 6 in (15 cm) cut			
Personnel			
1 operator for each piece of equipment			
Access			
Road for heavy equipment, barge or landing craft			

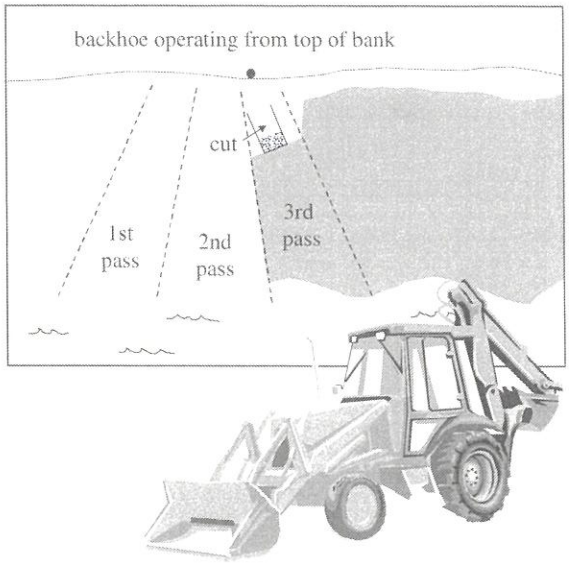

Figure 12-19 Backhoe with Front Bucket Treatment Pattern

12.7 Bioremediation

Biodegradation is the microbial conversion of hydrocarbons in oil to carbon dioxide and water. It typically occurs at an oil-water interface and may be limited by the availability of oxygen, moisture, and nutrients, particularly nitrogen and phosphorus. Biodegradation rate is a function of temperature.

Bioremediation is acceleration of the microbial conversion of hydrocarbons in oil to carbon dioxide and water. This typically occurs through application of nutrients where organisms are metabolically limited. On many shorelines, the limiting nutrients will be nitrogen and phosphorus, which can be applied in the form of fertilizer.

- In temperate climates, bioremediation generally works best during summer months, provided sufficient moisture is present.
- Low ambient temperatures do not necessarily exclude bioremediation. Activity has been recorded at temperatures below freezing, and biodegradation does occur in arctic areas during summer.
- In most cases, other forms of treatment may be required prior to nutrient addition to achieve the desired enhancement rate.

Most areas of the world have indigenous bacteria capable of degrading oil.

- The use of products containing non-native bacteria and enzymes is currently not recommended because they are generally not required and may be detrimental.
- The decision to use bioremediation should be based on the nature of an oil, the character of an affected shoreline, and the relevant political jurisdiction.

Bioremediation is typically used as a final treatment step after completing conventional shoreline treatment or in locations where other forms of treatment are either not possible or not recommended. In cases where surface oiling is either moderate or high, water or chemical washing of a shoreline is recommended as a first step to remove bulk oil. For light surface oiling and subsurface oil, bioremediation may be considered without pre-treatment. Any pooled oil, mousse, or tar balls should be manually or mechanically removed before attempting bioremediation.

The challenge for bioremediation is to supply nutrients in such a way that they are not applied in excessive amounts and are not washed away by tides, beach runoff, or any water supplied by mechanical sprinkler systems. For similar reasons, application of nutrients to spills on open water is not recommended.

Data collected to date indicate that when application guidelines are followed, the environmental risks associated with bioremediation are negligible.

- Toxicity concerns to biota in the water column and on the shoreline are primarily related to ammonia concentration.

- Ammonia is not a problem when nutrients are properly applied.
- Concerns about algae blooms due to increased nutrient levels need to be addressed, especially for beaches with relatively poor natural flushing.

Fertilizer application does not preclude future physical treatment techniques, but it will be most effective after physical techniques have been conducted.

- Applying fertilizer at the same time that any tilling or berm relocation is done would be particularly effective.
- Experience has shown that fertilizer applications are most effective when applied some time after the initial oiling, probably at least 14 days after oil has become incorporated into beach material.
- There is time to get fertilizers to the spill site after the spill has occurred. Therefore, it is unnecessary to stockpile fertilizers as part of contingency planning.

Application rates. For a liquid fertilizer, for example containing 7–8% nitrogen and 3% phosphorus, a suitable application rate of 0.75 gal/100ft^2 (300 g/m^2) may be used. When using solid, time-release fertilizers use a suitable application rate for example of 4 lb/100 ft^2 (200 g/m^2). These fertilizers typically contain 25-30% nitrogen and 3-4% phosphorous. Reapplicaton may be warranted.

12.8 Chemical Treatment Methods

Chemical treatment products can increase the efficiency of water-washing oiled shorelines, seawalls, and docks. These products include treatment chemicals, such as COREXIT EC9580. For use on shorelines, such products must be listed on government-approved product schedules in some countries.

An important consideration in selecting a chemical treatment product is whether the authorities require that the oil be recovered or allow it to be dispersed into the sea.

- When recovery of the washed oil is required, a shoreline treatment product may be applied as a pre-soak at a rate of 0.5 to 1 gallon per 100 ft^2 (2–4 liters per 10 m^2) 10 to 15 minutes before water washing.
- No chemical cleansing product is normally needed in the wash water.
- Boom is used to contain the oily washings in the area immediately offshore.
- Washing should be done during an incoming tide.
- Skimmers and/or sorbents are used to recover the released oil from the surface of the water.
- For spot washing applications, sorbents (in the form of pads, snares, or booms) can be placed around the base of the rock surfaces to be cleaned in order to recover oil from the wash water.

In the US, the Environmental Protection Agency maintains a list of products that may potentially be used in the event of an oil spill response. Other countries may maintain similar lists.

12.9 Inland Spills

Inland spills present a variety of challenges in regard to soil composition, vegetation, geology, bodies of water and water tables, and access to spill site in some cases. The proximity of human populations, land use, and potable water sources should be considered in developing response strategies. Depending on the season, inland spills may have a high potential for wildlife exposure. For spills on or near roadways, traffic control and safety may be the dominant factors in response decision-making.

A spill on land can occur to the surface (e.g., tanker truck rollover, train derailment) or subsurface (e.g., pipeline, underground storage tank). It may be difficult to model the trajectory or path of oil due to natural contours of the land, vegetation, and manmade structures. Oil on land is greatly influenced by the sorbtive capacity of land surfaces, will flow down slope to lower lying areas, and can flow to surface waters or ground waters. A spill to flowing freshwater has a greater potential for transporting a slick than a spill to a quiesant lake or pond.

12.9.1 Cleanup Strategies

As with spills on water, cleanup operations on land should begin as soon as possible. Response options include mechanical recovery, in-situ burning, manual collection, and bioremediation. Unlike response on water, where the spreading of oil is unabated except for the use of containment boom, other barrier, or when oil strands on a shoreline, containing a spill on land can be done by berms, dams, sorbents or trenches.

Response strategies should consider the type of land oil is spilled on, the season, and the type of oil, which will influence the slick transport, its weathering, and potential effects (e.g., including adhesion, penetration, degradation, and toxicity). For example,

- Gasoline does not adhere well to vegetation in comparison to heavy crude, and it will degrade and evaporate much faster.
- Frozen ground in winter will be impermeable to spilled oil.

Natural depressions will cause pooling of surface oil that can be collected using skimmers and vacuum systems. The use of heavy machinery, such as bulldozers and front-end loaders should be considered in view of potential damage to some substrates (see Section 12 treatment guides). For altered terrains and in developed areas, their use may be preferred. For spills on or near roadways, vapor suppression

and firefighting may be the preferred initial response strategy. Use of in-situ burning should consider proximity to populated areas due to estimated particulates in the smoke plume and its forecast trajectory.

12.10 Material Take Off (MTO) List

A wide variety of equipment is used to conduct shoreline treatment.

Equipment	Use
Graders/draglines	Shoreline treatment
Tractor/rippers	Shoreline treatment
Front-end loaders	Shoreline treatment
Beach cleaners	Shoreline treatment
Discers	Shoreline treatment
Backhoes	Shoreline treatment
Bulldozers	Shoreline treatment
Elevating scrapers	Shoreline treatment
Flatbed, dump trucks	Removal of oiled material
Vacuum trucks	Removal of pooled liquid
Garbage cans and bags	Removal of oiled material
Portable tanks	Storage of recovered materials
Sorbents	Recovery of pooled liquid
Booms and skimmers	Containment and removal of oil
Hand tools	Vegetation cutting, equipment repair
Shovels/rakes/pitchforks	Removal of oiled material
Protective clothing	Personal protection
Pumps/hoses	Transfer of collected oil
High-pressure washers	Low- and high-pressure washing
Steam cleaners	High-pressure washing
Sandblasting equipment	High-pressure washing
Fuel	Fueling equipment
Chemicals	Removal of oil coating on hard surfaces
Fertilizer	Biodegradation of oil

13 Oiled Wildlife Response

13

13.1 Introduction

This section is intended as an overview and to provide general guidance when dealing with wildlife in conjunction with oil spill response activities. New technology and methods have increased the success rate for oiled wildlife response. Research continues to improve the successes of oiled wildlife response. The basic sequence of steps in oiled wildlife response is:

- Hazing
- Capture and transport
- Processing captured animals
- Health assessment / triage
- Stabilization and cleaning
- Conditioning and release
- Necropsy and disposal

Success of a rescue program will depend on the level of cooperation with government agencies and wildlife rehabilitators. Capture of and care for oiled wildlife can be a hazardous activity and a rescue program will be successful only if people are not injured or placed at unreasonable risk. In addition to the health and safety information in Section 2, there are special considerations due to the potential for injury and infection from the capture and caring of wildlife.

Oiled wildlife response is logistics-intensive and requires significant planning for trained personnel, equipment, and facilities. The sooner oiled wildlife are captured and rehabilitated, the better their chance of survival. Although many animal species can be exposed by oil spills, birds are the most likely to be affected by oil spills as they may fly into an oiled area, on land or on water. Therefore, birds are used as wildlife examples in the process flow depicted in Figure 13-1 and in the Decision Trees provided in Figures 13-4 and 13-5.

13.2 Key Considerations

Important considerations in any wildlife response are to:

- Ensure the safety of the workforce
- Coordinate with the proper agencies and experienced rehabilitation organizations.

Following a significant oil spill, federal and state/provincial/territorial wildlife agencies and wildlife rescue centers should be contacted. These professionals are knowledgeable about vulnerable wildlife, including threatened or endangered species, and regulatory requirements including applicable wildlife permits. Additionally, it is often the case that an oiled wildlife hotline phone number will be provided for the public and regulatory authorities to report the locations of oiled animals.

13.3 Safety Guidelines

Wildlife rescue/rehabilitation workers can minimize risks associates with physical and chemical hazards by following the precautions below:

- Observe all safety precautions stated in the Health and Safety Plan. *Consult with site safety personnel as field conditions can change.*
- Wildlife capture and handling should be done by experienced personnel who are trained in oiled wildlife rescue and rehabilitation.
- Ensure wildlife rescue/rehabilitation workers are trained to deal with the hazards of work tasks and the proper use and limitations of personal protective equipment.
- Never conduct rescue/rehabilitation work alone; always work in teams.
- Wear approved personal protective equipment (goggles, gloves, non-skid boots or shoes, etc.).
- Maintain situation awareness in the field regarding hazardous conditions (e.g. weather, waves, tides, slippery terrain, venomous snakes, etc.)
- Keep animals below waist level to protect face and eyes from pokes, bites, and scratches. Animal bites or scratches have the potential to transmit diseases to the handler.
- Remove protective equipment and wash hands and face with soap and water or approved cleaners before eating, drinking, or smoking.
- Never eat, drink, or smoke in animal handling areas.
- Report all injuries or illnesses.

13.4 Wildlife Protection

Wildlife exposure to oil can occur through multiple routes. Exposure can occur from direct contact, through inhalation of volatile components of oil, through ingestion of oil-contaminated food or water, or through ingestion of oil as an animal cleans its oiled feathers, fur, or skin. The most effective method for protecting wildlife is to minimize potential exposure to surface oil. Therefore, the primary response strategy for wildlife protection emphasizes controlling the release and spread of spilled oil at a source. The use of dispersants, in-situ burning, protective booming, and mechanical recovery operations will help reduce the amount of oil that could potentially affect wildlife.

Wildlife species and habitats at risk should be rapidly identified and prioritized for protection. Oil-contaminated food sources including carcasses should be removed from the field.

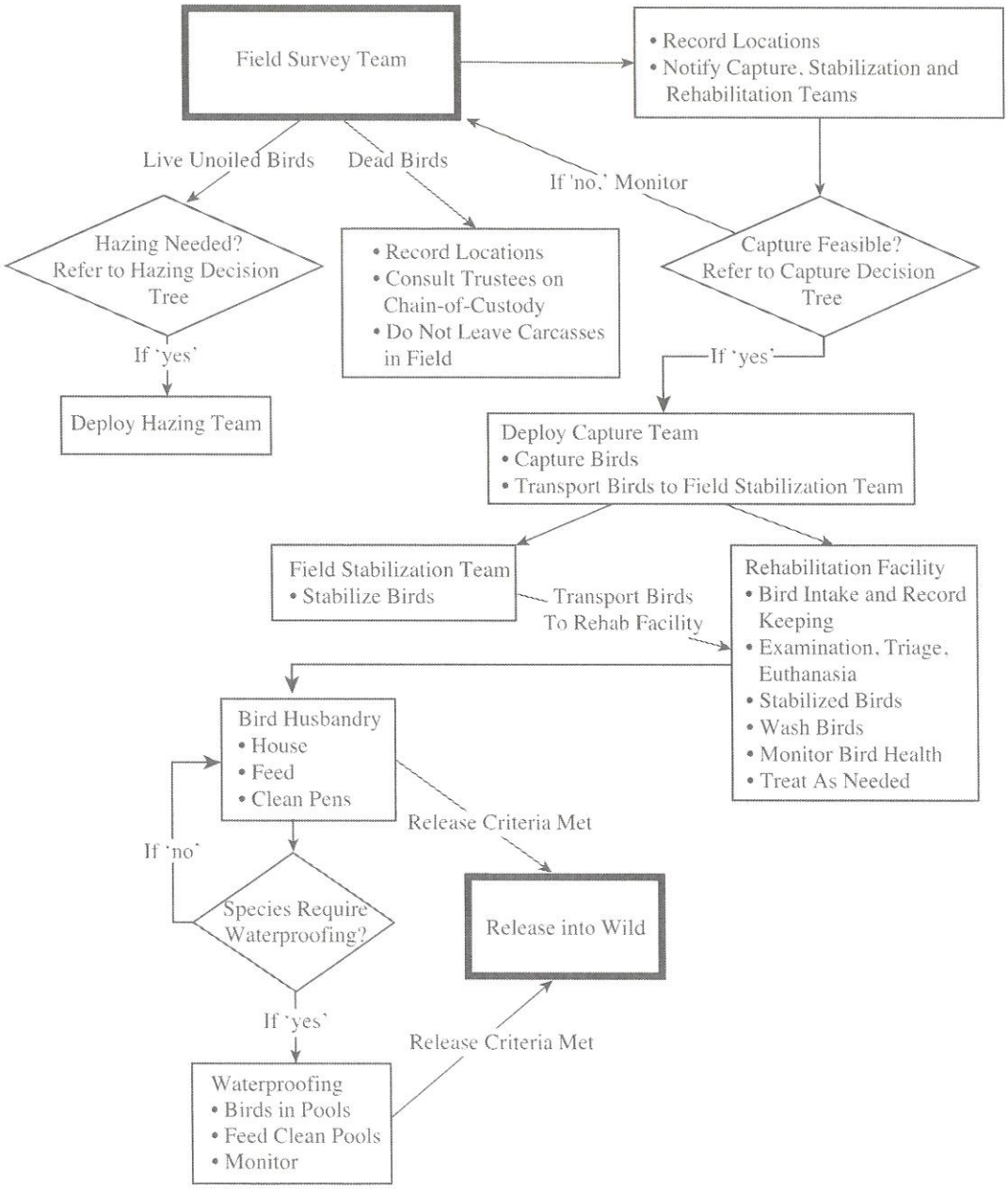

Figure 13-1 Bird rescue and rehabilitation process

13.5 Deterrence (Hazing)

Wildlife deterrent techniques can be used to move wildlife from locations that are in the predicted pathway of spilled oil. Hazing techniques can be used to deter wildlife from entering into areas that have been previously oiled. Hazing should be carefully planned and executed. It should be done in full cooperation with regulatory agencies responsible for wildlife, especially when dealing with threatened or endangered species. Figure 13-4 provides a decision tree to help determine whether hazing operations should occur. Hazing techniques include:

- Noise deterrents, including pyrotechnics, shotgun or pistol-launched projectiles, air horns, motorized equipment, propane cannons (Figure 13-2), and recorded bird alarm sounds.
- Scare devices, including deployment of reflective tape, helium-filled balloons (Figure 13-3), and scarecrows (either human or predator effigies) on oiled beaches.
- Herding wildlife using aircraft, boats, or other vehicles.
- Hazing by human presence.

Deterrent operations should consider the potential effects of human activity and disturbance on sensitive habitats and species. Disturbance of nesting, rookery, or haulout sites should be avoided as much as possible.

Figure 13-2 Noise deterrent - propane cannon

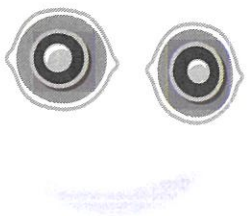

Figure 13-3 Visual deterrent - scare balloon

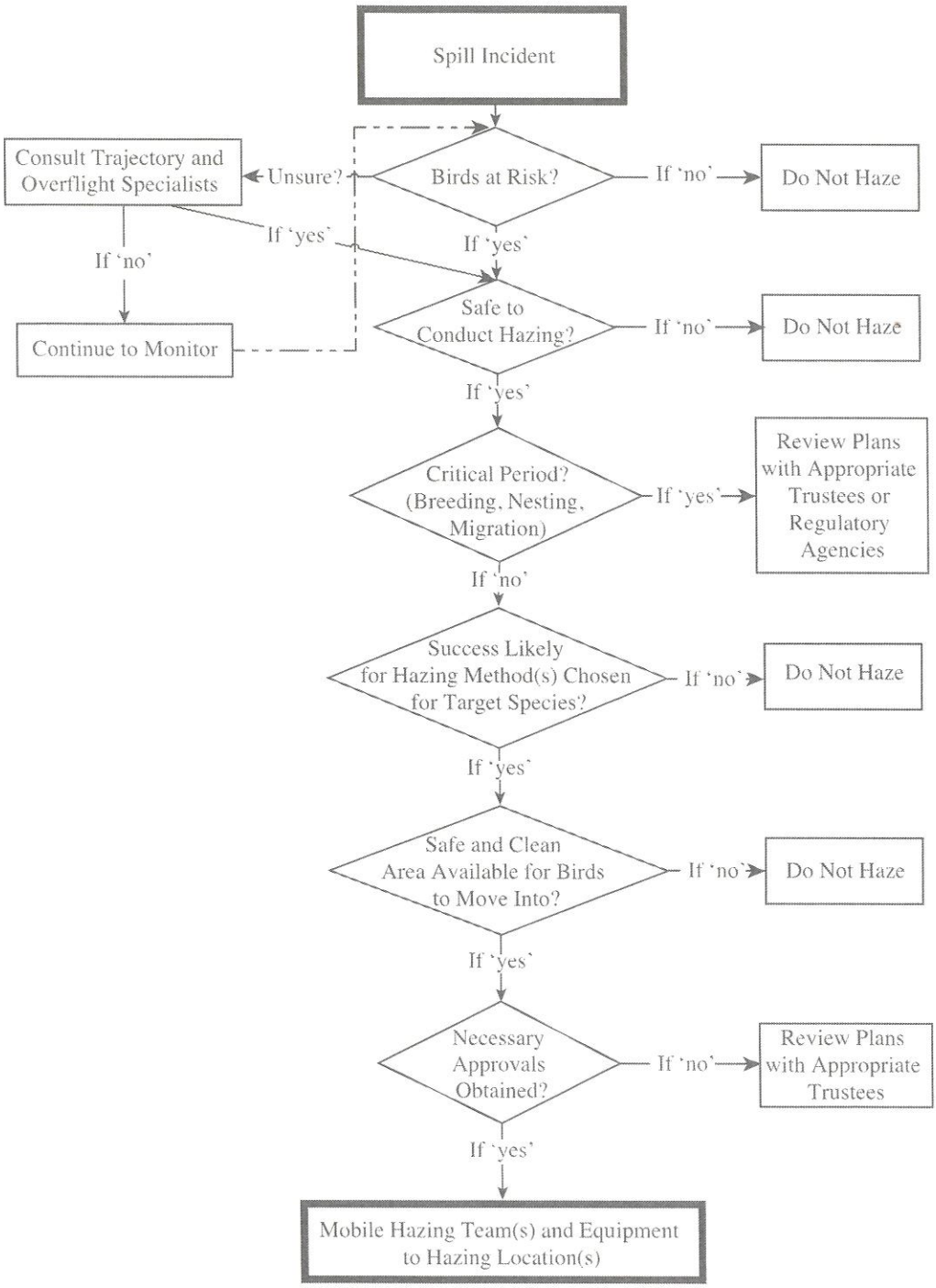

Figure 13-4 Hazing Decision Tree

13.6 Oiled Birds

Effects of oil on birds are separated into physical and toxicological effects. An example of a physical effect is oil coating and penetrating into feathers. When feathers become oiled, their water repellent and insulating properties are compromised. The loss of insulation can lead to hypothermia and possible death of an exposed animal. Toxicological effects of oil exposure can include irritation and damage to eyes, skin, and digestive tract. Many petroleum products are toxic to eggs. Spills occurring during nesting season are a concern, since adults with oiled feathers can contaminate nests, eggs, and young. During the breeding and nesting season, nesting areas should be given priority for protection. During response and clean-up operations, take care to minimize disturbance to nesting birds.

The following guidelines should be considered:

- Capturing birds is hazardous and should only be done by trained wildlife specialists.
- Once captured, birds should be handled and treated only by appropriately trained wildlife specialists.
- Threatened birds, especially large water birds (e.g., herons, loons, and cormorants) may strike at face and hands and cause serious injury.
- Boat-based capture efforts are usually less successful than land-based efforts, since oiled birds can easily elude wildlife specialists in boats.
- Wildlife specialists should wear protective clothing including glasses, gloves, and non-skid waterproof boots.
- Birds are best caught with either a long-handled fishing net or by throwing a towel, sheet, or throw net over them.
- Beached birds should be approached from the water to avoid driving them back into the water.
- To avoid injury to a wildlife specialist's eyes and face, captured birds should be held below waist level.
- Captured birds should be handled with extreme care and kept individually in warm, dry, quiet areas until release or transfer to trained caretakers.

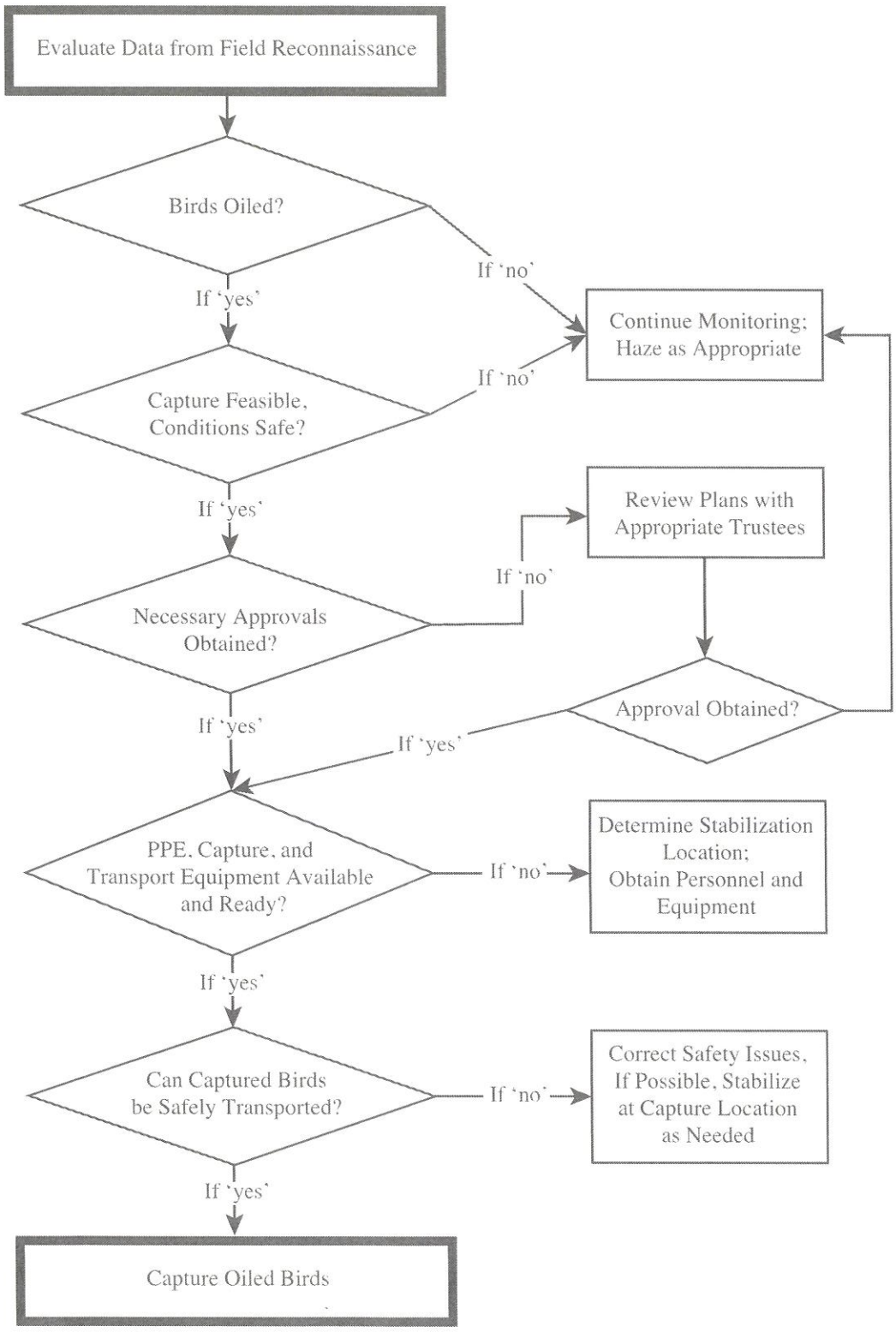

Figure 13-5 Decision Tree for Oiled Bird Capture

13.7 Oiled Mammals

Some groups of mammals are more vulnerable to oil spills than others. One observed effect of oil on some animals is their loss of body temperature control (thermoregulation). No thermoregulatory effect is expected for whales, dolphins, and manatees, which rely on blubber for insulation. However, sea otters and some seal species that depend on fur for insulation can be at risk of hypothermia. Oiling can disrupt the insulating properties of their fur and can be especially hazardous to young seals at pupping areas. Often, mammals that forage in intertidal areas (such as bear, deer, skunk, raccoon, and fox) can become exposed to oil. Contact with oil can cause skin or eye irritation. Regardless of habitat, oiled animals may try to clean themselves and can ingest oil. Depending on the amount of oil ingested, effects can occur to internal organs, the immune system, and reproduction. During spill response and clean-up operations, take care to minimize disturbances near seal rookeries or haul-out areas. Pup mortality can occur if pups are abandoned. If adults are disturbed and stampede, severe injury and mortality can occur to pups. Additionally, some mammals have inherent hazards of their own (claws, teeth) and can also be carriers of diseases such as rabies.

13.8 Oiled Reptiles and Amphibians

Oil exposure can cause both physical and/or toxicological effects. Physical effects include those from tarry residues causing blockage of nostrils, mouth, and gastrointestinal tract. Toxicological effects include skin and eye irritation, damage to internal organs, or mortality. Oil exposure can be toxic to eggs and could cause reduced hatching success and developmental abnormalities.

Sea turtles are endangered or threatened in many parts of the world. Therefore, sea turtle nesting beaches should be given priority for spill protection efforts. During spill response and clean-up operations, take care to minimize impacts to nesting beaches. Turtle eggs may need to be relocated to prevent oil contamination. Consult with regulatory authorities as to the best plan of action. Past spill events demonstrate that oiled turtles, snakes, and toads can be successfully rehabilitated and released.

Capturing turtles can be done using floating turtle traps which will reduce animal stress induced by chasing the animals (Figure 13-6). Venomous snakes may be encountered within the response zone and must only be handled by experienced wildlife handlers. Using reptile tongs and snake chaps will mitigate the risk of being bitten (Figure 13-7).

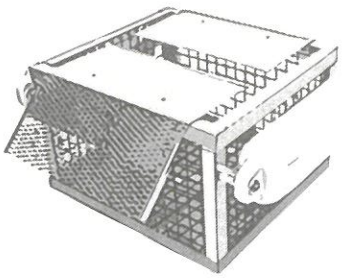

Figure 13-6 Floating turtle trap

Figure 13-7 Reptile tongs

13.9 Wildlife Treatment

Policies regarding capture, cleaning, and caring of wildlife vary in different countries. Within the United States, state and federal permits may be required depending on the animal types that are being captured. Consult with officials and prepare a wildlife management plan.

The capturing, cleaning, and caring for wildlife requires specialized procedures and wildlife professionals should be used to support a rescue and rehabilitation program and to direct less experienced workers.

Refer to the *Rehabilitation Manual for Oiled Birds* (cited in References) for more information.

13.10 Material Take Off (MTO) List

Equipment Description	Use
Baby Pool	Rehabilitation
Containers for washing animals	Rehabilitation
Collapsible Nets	Rehabilitation
Danger Tape	Rehabilitation
Detergent/soap	Rehabilitation
Water dechlorinator	Rehabilitation
Drum Liners/Trash Bags	Rehabilitation
Food	Rehabilitation
Heat Lamps	Rehabilitation
Hot Water	Rehabilitation
Towels	Rehabilitation
Kennels	Rehabilitation
Decoys	Hazing
Mist netting and net gun	Hazing
Propane cannon	Hazing
Reflective tape	Hazing
Scarecrow	Hazing
Seine net	Hazing
Traps	Hazing
Wildlife Camera	Hazing
Freezer	Medical
Antiseptic solutions	Medical
Bandaging materials	Medical
Sterile instruments	Medical
Syringes and catheters	Medical
Dissection instruments	Medical
Diagnostic equipment	Medical

13

14 Waste Management

14

14.1 Introduction

Waste disposal is a major oil spill response consideration. For large spills, as much waste can be generated as the amount of oil spilled and in some cases considerably more. In the 2002 Prestige spill, almost twice as much waste was collected as was spilled (117,000 tons vs. 63,000 tons spilled). It is important to develop waste management strategies that minimize the amount of waste generated by the response including oiled material as well as non-oiled material. Some response options, such as dispersants and burning, can significantly reduce the volume of waste generated.

A good practice is to remove debris from shorelines BEFORE the oil impact. Since oil recovery operations are rarely conducted near existing waste management facilities, it is critical to pre-identify, evaluate, and select waste management logistical infrastructure (trucks, containers, etc.) as well as storage and disposal options. Decisions regarding logistics, storage and disposal will depend on the size of a spill, its location, and local or regional regulatory requirements. Refer to the IPIECA Report Series, "Guidelines for Oil Spill Waste Minimization and Management" and ITOPF's Technical Information paper 'Disposal of Oil and Debris' for additional useful information.

Response to spills that will involve storing wastes for more than a few days should include the following:

- A thorough review of the applicable laws and regulations.
- Development of storage and disposal plans.
- Permit acquisition.

14.2 Waste Management and Regulations

Treatment, storage, handling, and disposal of waste materials may be subject to a variety of local, regional, and national laws and regulations, and may require special permits and/or other approvals. Oil spill wastes in some areas are considered "hazardous wastes" and are subject to special regulation. It is important to note that the legal responsibility of a waste generator begins from the time the waste is generated until final disposition.

Proper hazardous waste identification is necessary to appropriately manage the disposal of wastes. We can evaluate if a waste can be considered a hazardous waste by asking two questions: 1) Is the waste a listed hazardous waste? or 2) does it exhibit a characteristic of a hazardous waste? Plans for handling and temporary storage of wastes during initial stages of an oil spill response should be discussed with local stakeholders as well as regulatory agency personnel. It is suggested that local consultants be contacted. For example, some waste management companies

also offer emergency response services such as hazardous waste storage, transport and disposal and hazmat personnel.

Special consideration should be given to storage of wastes, depending on the anticipated quantity or volume, especially if the waste can be considered a hazardous waste. These considerations should include compatibility of the waste with the storage container in which the wastes are going to be placed; consideration of the odor or vapors that may be released into the atmosphere; and consideration of the characteristics and/or any chemical reactions that could be taking place with the wastes.

When developing waste minimization strategies, it is important to include waste management options that focus on recycling, reuse, and reclamation. While such options may have initial costs, the benefit in terms of elimination of future potential liability is often worth these added costs. Consideration of waste disposal operations should begin immediately upon the commencement of spill response efforts.

During any size response precautions must be taken to ensure worker safety and proper handling to minimize potential future liability. Suggestions included:

- Extensive photo / electronic documentation of any temporary storage sites as well as the operational area should be gathered; before, during and after the cleanup is finished.
- Secondary containment (i.e., placement of synthetic liners) should be placed under storage containers to prevent soil contamination.
- Storage container covers are essential to prevent rainwater entering which may cause the oil to float or overspill plus increasing the volume of oiled waste to be disposed which has cost implications.
- Secondary contamination of the immediate area / vehicles / personnel / roads from oily waste should be considered and actions taken to minimize this in the form of decontamination stations for personnel and vehicles.
- Testing, evaluation, inventorying, labeling, profiling and manifesting of wastes should be done in order to document that proper precautions, procedures, and regulations are followed.
- Security should be provided to prevent unauthorized dumping, vandalizing, and to ensure that waste storage does not endanger other parties.

A waste management plan following an oil spill should be based on the following principles:

- Provide safe working conditions and necessary personnel protection.
- Comply with all applicable laws and regulations.
- Minimize the amount of waste generated by implementing waste reduction principles.
- Minimize the possibility that disposed wastes will cause future environmental problems or require future remediation.
- Personnel handling hazardous wastes must be appropriately trained for such handling as mandated by governmental and regulatory agencies.
- Provide sufficient temporary and interim storage to prevent any bottleneck of recovery operations.
- Minimize risks of secondary pollution incidents in all operations.
- Cooperate with all local community and government agencies to minimize impacts on local waste disposal facilities.
- Handle, store, and transport oily wastes in appropriate containers/tanks.
- Consider response strategies that focus on segregation of waste streams at initial collection
- Segregate oily wastes and non-oily wastes to allow optimum reclamation and disposal of each waste stream.
- Sample and characterize each waste stream in order to understand risks and appropriate regulations.
- Complete appropriate waste profiles and submit to the selected disposal facility(ies) for approval.
- Dispose of all waste streams in a safe manner and at approved disposal sites.

14.3 Storage Equipment

Oil spill response operations can very quickly generate large volumes of waste. Completing arrangements for permanent disposition of wastes may require a great deal of time that could delay recovery operations. Therefore, facilities for temporary storage of waste should be provided. There are many temporary storage options that can meet operational requirements, including commercial products specifically designed for oil spill response, general-purpose devices, and containers of opportunity.

The selection of appropriate storage equipment and methods is based on the type and volume of material to be stored. The following factors should be considered:

- Storage location, e.g., offshore, onshore, or near shore.
- Storage capacity required.
- Type of material to be stored; e.g., fresh, emulsified or weathered oil, oil mixed with debris such as sorbents, sticks, trash, logs, seaweed, fishing equipment, sand, gravel, pebbles, cobbles.
- All wastes, especially hazardous wastes, should be protected from exposure to heat, fire, weather and should be secured. Containers which are used to store hazardous wastes should be compliant with all regulations.
- Duration of storage; e.g., days, weeks, or months.
- Access to storage sites.
- Consideration of storage in environmentally sensitive areas i.e., wildlife reserves during nesting seasons.
- Consideration should be given to the usage of regulatory-approved and / or performance-oriented shipping containers.
- Expected method of disposal.

Note that waste accumulation and storage locations should meet the following criteria:

- Spill prevention, control and countermeasures are in place.
- Storm water pollution prevention plans (rain water collection and control).
- Have severe weather (e.g., hurricane, flooding, etc.) contingency plans
- Ample storage space for the segregation of wastes which are not compatible.
- An emergency response plan should be developed for the waste accumulation/ storage location(s).

Table 14-1 lists options for storage of wastes and debris associated with oil spill cleanup operations and the appropriate timeframe for their use.

Table 14-1 Storage Options

Type of Storage	Estimated Timeframe for Use
Air (Inflatable) berm	Initial (days)
Container of opportunity	Temporary (weeks)
Deck barge with deck tanks (Must be regulatory approved)	Temporary (weeks)
Drum 55-gallon (208 liter)	Initial (days) - temporary (weeks)
Dumpster, Roll-On/Roll-Off	Temporary (weeks) - semi-permanent (months)
Dump truck (lined)	Initial (days)
Earthen dike (snow berm)	Initial (days)
Earthen pit (ice pit)	Initial (days)
Flexible, towable tank/bladder	Initial (days) and Temporary (weeks)
Fractionation ("Frac") Tanks, 21,000 gallon capacity	Initial (days) – temporary (weeks)
Heavy duty plastic trash bag	Initial (days) - temporary (weeks)
Livestock tank	Initial (days) - temporary (weeks)
Oilfield tank	Semi-permanent (months)
Open-top barge, lash barge, or hopper barge	Temporary (weeks)
Pillow tank	Initial (days) - temporary (weeks)
Plastic swimming pool	Initial (days)
Prefabricated kit	Initial (days) - temporary (weeks)
Skimmer vessel	Initial (days)
Supply boat with deck tanks	Temporary (weeks)
Tank barge	Temporary (weeks) - semi-permanent (months)
Tanker	Semi-permanent (months)
Tank truck	Temporary (weeks)
Vacuum or air conveyor truck	Initial (days) - temporary (weeks)

14.4 Storage Selection Guides

This section presents information on suitable options for temporary offshore and onshore / near shore storage according to spill size, oil weathering, and debris content.

The storage selection guides are used as follows:

1. Determine the appropriate storage selection guide [either offshore (Table 14-2) or onshore/near shore (Table 14-3)].
2. Estimate the storage capacity that will be needed.
3. Select the type of material to be stored; e.g., fresh or weathered oil, and with or without debris.
4. Estimate the required storage timeframe (Table 14-1).
5. Choose from storage options in the appropriate storage selection guide, Table 14-2 or Table 14-3, that are denoted by a ✓.
6. Consult Tables 14-4 through 14-25 for more information on each option.
7. Follow regulatory requirements for waste stream and container.

It is assumed that there will be no debris collected during offshore recovery (Table 14-2). If debris is present from an offshore spill, use the onshore/nearshore guide (Table 14-3). Care should be taken if oiled debris contains plant or animal matter because potentially dangerous gases can accumulate in closed storage devices.

Table 14-2 Offshore Storage Selection Guide

Offshore Storage					
Option	Spill Size[1]			Oil	
	Small	Medium	Large	Fresh[2]	Weathered
Deck barge with deck tanks	✓	✓	✓	✓	✓
Drum (55 gallon)	✓			✓	✓
Flexible towable tank	✓	✓	✓	✓	
Open-top, lash, or hopper barge		✓	✓		✓
Skimmer vessel	✓			✓	✓
Supply boat with deck tanks	✓	✓	✓	✓	✓
Tank barge		✓	✓	✓	✓
Tanker			✓	✓	✓

[1] Small <100 bbl (<16 m^3)
Medium 100–1000 bbl (16-160 m^3)
Large >1000 bbl (>160 m^3)

[2] Fresh, volatile oils should not be stored in open-top devices if vapors pose a health and/or safety risk.

Table 14-3 Onshore/Nearshore Storage Selection Guide

Offshore Storage								
Option	Spill Size[1]			Oil Debris			Oil	
	Small	Medium	Large	Small Light	Large Heavy	Sand or Gravel	Fresh[2]	Weathered
Air (Inflatable) berm	✓					✓	✓	✓
Boom	✓	✓		✓	✓		✓	✓
Livestock Tank	✓	✓		✓	✓	✓	✓	✓
Deck barge with deck tanks			✓				✓	✓
Drum (55 gallon)	✓			✓		✓	✓	✓
Dump truck (lined)	✓				✓			✓
Earthen berm, earthen pit or snow berm	✓	✓		✓	✓	✓	✓	✓
FRAC tank	✓	✓		✓	✓		✓	✓
Heavy duty plastic trash bag	✓			✓		✓		
Oilfield tank	✓	✓	✓				✓	✓
Open-top, lash, or hopper barge			✓					✓
Pillow tank	✓						✓	
Plastic swimming pool	✓	✓						✓
Prefabricated kit	✓	✓	✓	✓	✓	✓		✓
Roll-On/Roll-Off dumpster	✓			✓	✓	✓	✓	✓
Skimmer vessel	✓	✓		✓			✓	✓
Supply boat with deck tanks			✓	✓		✓	✓	✓
Tank barge			✓				✓	✓
Tank truck	✓	✓					✓	
Tanker			✓				✓	✓
Towable tank	✓	✓	✓				✓	✓
Vacuum or air conveyor truck	✓	✓					✓	✓

[1] Small <100 bbl (<16 m^3)
Medium 100–1000 bbl (16-160 m^3)
Large >1000 bbl (>160 m^3)

[2] Fresh, volatile oils should not be stored in open-top devices if vapors pose a health and/or safety risk.

Table 14-4 Air (Inflatable) Berm

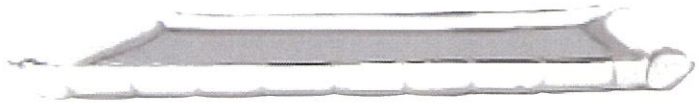	
Capacity	• 20–70 barrels (3–10 tons)
Uses	• Storage of oily liquids, oily debris encircled by an air-inflated tube • Separation of oil/water and oil/debris
Auxiliary Equipment	• Air blower to inflate berm
Advantages	• Portable • Requires little storage space
Disadvantages	• Contents are lost if air chamber deflates

Table 14-5 Boom

Capacity	• Up to several hundred barrels
Uses	• Storage of oily liquids and oily debris
Auxiliary Equipment	• Anchors and or anchoring systems • Buoys
Advantages	• Adapts to any shoreline and size configuration • Readily available
Disadvantages	• On water applications only.

Table 14-6 Deck Barge with Deck Tank

	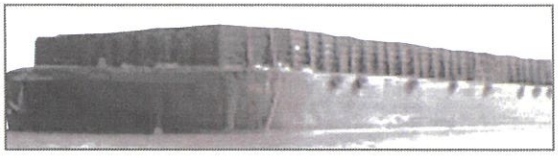
Capacity	• 10–1000 bbls (1.6–160 tonnes)
Uses	• Remote site storage, especially for oily liquids, debris
Auxiliary Equipment	• Tugboat is required for mobilization or movement and may be required for safety in exposed locations • Portable tanks, completely enclosed for liquid or open-top for heavily weathered oil or debris, hoses, pumps, etc.
Advantages	• May be readily available in major ports
Disadvantages	• River barges may not be usable offshore due to licensing/ certification restrictions (regulatory approvals); waivers take time to obtain; severe weather may make platforms unstable

Table 14-7 55-Gallon (208 Liter) Drum

Capacity	• 55 gal (208 liters)
Uses	• Liquid or oily solids storage
Auxiliary Equipment	• None
Advantages	• Easily accessible in most places • Portable
Disadvantages	• High weight/storage volume ratio • Can be difficult to handle by hand when full
Comments	• Can be carried aboard small boats or other boats to transport and store recovered materials from remote cleanup sites • Must be in regulatory approved condition for transport.

Table 14-8 Lined Dump Truck

Capacity	• 25 yd^3, 100 bbl (16 tonnes) average size
Uses	• Short-term storage of oily debris
Auxiliary Equipment	• Plastic line • Cover
Advantages	• Portable • Can be easily obtained • Handles variety of oily debris
Disadvantages	• Prone to leak liquids unless designed for liquid containment
Comments	• Line bed with plastic to prevent oil leakage • Over the road transport of waste must be conducted in conformance with regulations.

Table 14-9 Earthen Pit, Earthen Berm, Ice Berm or Ice Pit

	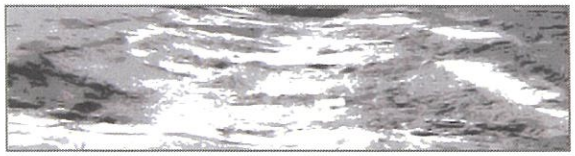
Capacity	• Up to several thousand barrels
Uses	• Shoreline storage of liquids and solids • Separation of oil from water and solids
Auxiliary Equipment	• Backhoe, bulldozer, or front-end loader • Pit liner (synthetic liner, usually 4.5 cm or greater thickness) that is compatible with oil; e.g., 6.0 cm high-density polyethylene or 2–3 in (5–8 cm) of clay (check regulations) • Pipe for monitoring wells (Not at all sites) • Fencing material • Bird hazing equipment • Soil tamper (optional)
Advantages	• Easy to install (once engineered) • Useful in many locations
Disadvantages	• May require permit or approval to construct • Can leak or walls can subside • May attract birds that could be injured by oil
Comments	• Excavated soil can be used to form an earthen dike • Surface must be packed smooth to prevent liner damage • Excavation pit can be used as additional storage • In the Arctic, water can be sprayed over snow to solidify a berm and reduce its permeability

Table 14-10 Flexible, Towable Tank (Dracone)

Capacity	• 14–12,500 bbls (2.2–2,000 tonnes)
Uses	• Storage of oily liquids
Auxiliary Equipment	• Vessel to tow tank • Transfer hose and pump • Cover
Advantages	• Portable • Compact for storage
Disadvantages	• May be difficult to empty (particularly if the contained product is viscous)
Comments	• Flexible tanks are fragile and must be towed slowly • Tube "dracones" are difficult to unload; "covered inflatable barges" with removable covers are easier to unload • Tank should be vented to prevent buildup of gases which may be hazardous

Table 14-11 Plastic Trash Bag or "Super Sac"

	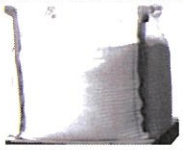
Capacity	• About 7 ft^3 (0.2 m^3) trash bag maximum. "Super Sacs" 50 ft^3 (1.4 m^3)
Uses	• Storage of light oily debris
Auxiliary Equipment	• Crane for "Super Sacs"
Advantages	• Lightweight • Readily available
Disadvantages	• Can be punctured by sharp debris debris, can leak • Cannot be used to store liquids
Comments	• Heavy duty (3–4 mm or 0.1–0.15 in) or reinforced bags are preferred • "Super Sacs" best for lightly oiled sediment

Table 14-12 Livestock Tank

Capacity	• 5–50 bbls/unit (0.8–8 tonnes/unit)
Uses	• Liquid or oily solids storage • Separation of oil from water and debris
Auxiliary Equipment	• Hand tools required to assemble large livestock tanks • Hoses • Pumps
Advantages	• Portable • Available in many locations
Disadvantages	• Bulky to store when assembled unless stackable
Comments	• Containers of opportunity may be fish boxes, mining containers, or any leakproof containers available in the area of the spill

Table 14-13 "Frac" Tank

Capacity	• Up to five hundred barrels
Uses	• Storage of liquids
Auxiliary Equipment	• Transfer pump(s)
Advantages	• Readily available in many locations • Large storage capacity
Disadvantages	• Can only be used for storage, cannot be transported with waste inside. • Must be decontaminated following use.

Table 14-14 "Oilfield" Tank

Capacity	• Up to several hundred thousand barrels
Uses	• Storage of liquids
Auxiliary Equipment	• Transfer system
Advantages	• Rapid source of large storage capacity when available
Disadvantages	• Heavy; not generally available • Difficult to restore for clean product use • May not be appropriate in all cases
Comments	• Self-dumping hopper barges may need to be lined or have doors welded shut before use

Table 14-15 Open Top Barge, Lash Barge or Hopper Barge

Capacity	• Up to several thousand bbls
Uses	• Remote site storage, especially for oily debris
Auxiliary Equipment	• Tugboat is required for mobilization or movement and may be required for safety in exposed locations
Advantages	• May be readily available in major ports
Disadvantages	• River barges may not be usable offshore due to licensing/ certification; waivers take time to obtain
Comments	• Self-dumping hopper barges may need to be lined or have doors welded shut before use

Table 14-16 Pillow Tanks

Capacity	• 10–1000 bbls (1.6–160 tonnes)
Uses	• Storage of liquids • Can be used in combination with a truck for storage and transport of oil
Auxiliary Equipment	• Hose and pump to fill and empty
Advantages	• Lightweight • Easily transportable to spill site • Compacts for storage
Disadvantages	• Can be accidentally punctured, very hard to decontaminate may become waste after use
Comments	• Some are transportable by helicopter

Table 14-17 Plastic Swimming Pools

Size	• Varies, 10–20 ft (3–6 m) diameter and 4–5 ft (1–1.5 m) high
Capacity	• Up to 1000 bbls (160 tonnes)
Uses	• Shoreline storage of liquid or light debris
Auxiliary Equipment	• Hoses and pumps
Advantages	• Compacts for storage • Easily transportable to spill site
Disadvantages	• For short-term storage only since oil deteriorates the fabric, only used for very small amounts of waste
Comments	• Use a heavy-duty oil-resistant liner with the pool

Table 14-18 Prefabricated Kits

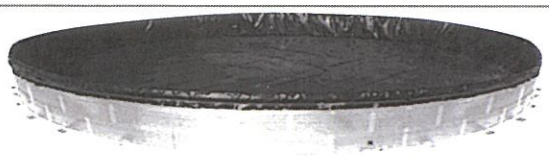	
Capacity	• 50–50,000 bbls/unit (8–8000 tonnes/unit)
Uses	• Storage of liquids and oiled debris • Separation of oil from water and solids
Auxiliary Equipment	• Hand tools for field assembly • Mechanical equipment to install sub grade
Advantages	• Portable • Dismantles for easy storage
Disadvantages	• Requires flat surfaces
Comments	• Large units may require multiple days to assemble by unskilled workers

Table 14-19 Skimmer Vessel

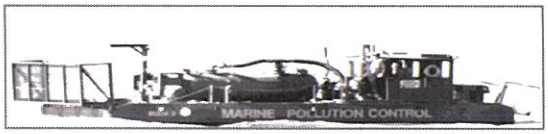	
Capacity	• Up to a few hundred bbls
Uses	• Initial storage of recovered oil
Auxiliary Equipment	• Transfer hose and pump
Advantages	• Portable
Disadvantages	• Very limited volume (hours of use at most)
Comments	• This storage can only be used for a limited period without transfer if the skimmer is to remain in operation

Table 14-20 Supply Boat with Deck Tanks

Capacity	• 10–1000 bbls (1.6–160 tonnes)
Uses	• Mobile storage and transfer from skimmers to shore for disposal
Auxiliary Equipment	• Portable tanks that are closed for liquid or open for heavily weathered oil or debris; e.g., debris containers and roll-on/ roll-off dumpsters
Advantages	• Highly mobile; can transit between spill site and shore at over 10 kts (5 m/sec)
Disadvantages	• Some vessels cannot tolerate addition of much topside weight because of stability concerns in severe weather • Limited deck space • May need regulatory approval for tanks, or receive waiver as needed.

Table 14-21 Tank Barge

Capacity	• Up to several thousand bbls
Uses	• Storage of liquids and weathered oil
Auxiliary Equipment	• Tugboat • Transfer hose and pump
Advantages	• Large volumes • Portable
Disadvantages	• Slow transit speed to spill site • Limited availability in remote areas • May have too much freeboard (when empty) to receive recovered oil from small skimmers
Comments	• When available, one of the best storage options for medium/large oil spills • Internal transfer pumps may be damaged by debris; external transfer pumps may be required for offloading • Heating coils help when pumping viscous products • Barge capacity of 10,000–20,000 bbls (1,600–3,200 tonnes) preferred • Decontamination after use is huge issue and generates more waste.

Table 14-22 Tank Vessel

Capacity	• Typically hundreds of thousands of bbls
Uses	• Storage of liquid and heavy oils
Auxiliary Equipment	• Transfer hose and pump
Advantages	• Portable • Large volume
Disadvantages	• Not normally available for oil spill response operation; deep draft and high freeboard
	• Regulations for use in oil recovery and at-sea transfer operations apply in some countries
	• Decontamination of vessel following use for waste is very difficult
Comments	• Probably the best storage option available for responding to a tanker spill, especially to lighter a stricken tanker

Table 14-23 Tank Truck

Capacity	• Up to 130 bbls (20 tonnes)
Uses	• Storage of liquids with minor quantities of debris
Auxiliary Equipment	• None
Advantages	• Can be easily obtained • Portable • Can transport oil to disposal site
Disadvantages	• Difficult to restore for clean products use (decontamination of tank is difficult)

Table 14-24 Vacuum or Air Conveyor Truck

	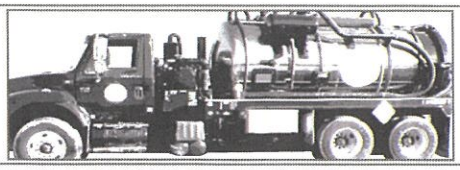
Capacity	• Large vacuum tanker, up to 130 bbls (20 tonnes)
Uses	• Short-term storage of liquids and oil solids • Separation of oil and water
Auxiliary Equipment	• None
Advantages	• Portable
Disadvantages	• May not be readily available or may be in short supply depending on spill location • Vacuum transfer to storage (e.g gulley-sucker) should not be used for volatile products

Table 14-25 Roll-On/Roll-Off Dumpster

Capacity	• 20 yd^3, 80 bbl (13 tonnes) average size
Uses	• Storage of oily debris
Auxiliary Equipment	• Plastic liner • Cover
Advantages	• Can be easily obtained • Handles variety of oily debris
Disadvantages	• Prone to leak liquids
Comments	• Line bed with plastic to prevent oil leakage • Cover dumpster to exclude precipitation and help control vapors depending on waste type

14.5 Waste Stream Segregation and Minimization

Each type of waste has different optimal disposal methods. It is important to:

- Segregate wastes by type.
- Minimize the quantity of each type.
- Avoid mixing hazardous and non-hazardous wastes together to prevent creating a larger volume of hazardous waste.
- Avoid mixing oiled and non-oiled (PPE / pre-cleaned debris from shoreline, domestic waste) together to prevent creating larger volumes of oiled waste.
- Label all waste containers and identify the source.

Waste can be segregated according to the following chart:

Liquid	Oily • Further segregate for final disposal • Reclaim at existing oil recycling/reclamation facility Non-oily • Process through municipal plant or other approved method • Construct closed loop systems that generate small volumes of waste
Solid	Oily • Transport to central waste processing center • Further segregate for final disposal Non-oily • Transport to shore for disposal at local landfills, Waste To Energy facilities • In Europe "zero" landfill policies may make this option extremely expensive for any type of waste
Special Wastes	Hazardous • Segregate and handle in accordance with regulations Non-hazardous • Maintain as separate waste stream until disposed

Guidelines for minimizing the amount of waste generated are listed in the following sub-sections.

14.5.1 Solid wastes

- Establish response strategies / procedures that segregate materials at collection.
- Do not mix any oil or oily wastes with domestic or non-oiled waste.
- Prevent oily wastes from contaminating soil: use liners underneath drums, tanks, and cleaning operation sites.
- When using manual cleanup methods, minimize the amount of underlying clean sediments that are collected.
- In some instances, use of non-hazardous detergents can be utilized to clean solids impacted by oily wastes (Note: this will most likely require additional approvals and may also generate a new waste stream that requires separate handling and characterization).
- Whenever any neat product or chemical is utilized, use all material in containers and wash out the residue in place (this may require the approval of regulatory agencies).

14.5.2 Liquid wastes

- Prevent water or debris from entering containers. Decant when permitted to minimize volumes and concentrate emulsions
- Determine disposal implications before using chemicals; depending on the chemical properties, non-hazardous oil can be considered as hazardous for disposal purposes.
- Use cleaners and wash water sparingly. Consider closed loop cleaning/ decontamination systems to minimize waste.
- Use decanting methodologies for recovered oil and water mixtures on site. This practice is approved in certain areas when proper protocols are applied (i.e., water treatment and discharge via a regulatory agency permit).

14.6 Disposal Methods

Non-oily wastes (e.g., PPE, sewage, domestic waste) generated during cleanup operations can be disposed of at local wastewater treatment plants and municipal landfills. In some countries, current "zero" landfilling initiatives may heavily impact selection of the preferred disposal method. Disposal taxes and other fees may influence the selection of options typically thought of as more expensive, but are preferred for financial as well as long term environmental liability management reasons.

Options for disposing of oiled and hazardous wastes (subject to regulatory requirements) include:

- Industrial landfilling
- Landfarming
- Open burning
- Portable incineration
- Commercial incineration, waste to energy facilities
- Reprocessing
- Reclaiming/recycling

With regard to sewage or septic wastes, it is important to note and consider that some areas require different permitting for storage and/or transportation of this type of wastes.

Further information on each disposal alternative above is provided in the tables below.

Table 14-26 Industrial Landfilling

Disposal Rate	• Depends on local capacity and access constraints, as well as governmental restrictions
Uses	• Disposal of bulky oil spill waste such as sea grass, shoreline vegetation, wood, sand, and general oiled trash
Auxiliary Equipment	• Earth-moving equipment and trucks
Advantages	• Useful for a wide variety of debris types • Can be implemented rapidly
Disadvantages	• Can lead to future environmental problems if containment fails
Comments	• Total volume of debris accepted per site may be small • Be sure site is permitted to accept each specific waste steam • Be sure site is on approved waste site list

Table 14-27 Landfarming

Capacity	• Application rates for crude oils are typically 300 bbl/ acre (120 tonnes/hectare) at a rate of 2–3 times/year
Uses	• Disposal of liquids and oil mixed with sand or sediment
Auxiliary Equipment	• Transport truck • Tillers • Fertilizer
Advantages	• Proven method used by hydrocarbon processing plants for many years to dispose of oils and oily sludges • Oil degrades rapidly • Can be implemented quickly
Disadvantages	• Requires large linear surface area • Periodic maintenance is required to fertilize, till, and spread • Not a final disposal option, often used to reduce concentration of oil or to generate a useable product (road base, containment berms at industrial facilities). • There may be significant permitting and regulatory requirements at sites other than existing landfarms
Comments	• Local officials and refinery operators are useful sources of information • The location should be on the contingency plan list of approved facilities • Opportunities to use this strategy are becoming limited due to increased regulation and control

Table 14-28 Open Burning

Disposal Rate	• Depends on the volume of oily waste and debris
Uses	• Disposal of bulky combustible debris such as sorbents, vegetation, and logs
Auxiliary Equipment	• Earth-moving equipment and trucks • Fire-fighting equipment • Air blowers • Smoke suppression chemicals
Advantages	• Useful in remote areas • Eliminates large volumes of waste, residue will still need to be handled. • Can be quickly implemented
Disadvantages	• Air emissions may be a problem • Requires governmental permission in most locations • Can cause contamination of underlying soils • Incomplete combustion may leave residue requiring disposal
Comments	• Burning is often conducted by excavating several ditches and alternately loading and burning in each one • A recommended safety procedure is to cover residue with a layer of dirt to prevent smoldering embers from prematurely igniting the next load being placed in a pit • Air blowers may be required to improve combustion and to control smoke emissions

Table 14-29 Portable Incineration – Offshore Burners (Liquids)

Disposal Rate	• Up to 15,000 bbl (2,400 tonnes) per day
Uses	• Incineration of pure oil and emulsions, either offshore on platforms and barges or on land
Auxiliary Equipment	• A method to mount a burner away from heat-sensitive areas (e.g., tower, boom, or shielding) • Air compressor • Oil pumps (high pressure) and hoses • Water pumps for water shroud • Note: auxiliary equipment may be supplied by manufacturer
Advantages	• Proven method of disposal but may not be available • High rates of disposal doubtful • Useful in remote areas • Can be used to increase the efficiency of burning oil or solid waste materials in the field
Disadvantages	• Requires time to set up (unless already mounted on a platform or barge) including permitting. • Significant amounts of diesel or fuel may be required to reduce viscosity of emulsions to be pumped • Requires debris-free oil or emulsions • May require permit depending on location

Table 14-30 Portable Incineration – Air Curtain Incinerators

Disposal Rate	• Oily debris, up to 1–2 tonnes per hour • Oil emulsions up to 600 bbl (100 tonnes) per day
Uses	• On land disposal of liquids and oily debris
Auxiliary Equipment	• Earth-moving equipment to form earthen incinerator pit • System to load debris or liquids • Above-ground combustion chamber (optional in some cases)
Advantages	• Portable systems for disposal of waste in the field • Medium disposal rates • Permanent disposal of waste will still have residue to address and dispose • Accepts both liquids and solids
Disadvantages	• Requires time to set up and may require permitting
Comments	• Several types of air curtain incinerators are manufactured; some are designed to be used only with above-ground chambers, while others are designed to be used within ground trenches, and some with either.

Table 14-31 Portable Incineration – Rotary Kiln/Other Portable Devices

Disposal Rate	• Oily debris, up to 40–70 tonnes/day • Oiled sediments, 100 tonnes/day (possibly more) • Maximum about 1 tonnes/hour (based on oil content)
Uses	• Disposal near the source of oily sorbents, etc. • Remediation of contaminated soils near the source
Auxiliary Equipment	• Size reduction equipment (shredder or chipper) may be needed, depending on incinerator type and debris size
Advantages	• High disposal rate • Permanent disposal of waste oil and oiled combustibles such as soiled gear and spent sorbents • May accept both liquids and solids
Disadvantages	• Requires time to construct/mobilize • Air emission permit may be needed • Portable ones (not currently in use) may not be an option due to permitting and approvals needed, existing fixed facilities in the theatre of operations are options.

Table 14-32 Commercial Incineration

Disposal Rate	• Up to several hundred bbls/hr (several tonnes/hr)
Uses	• Disposal of both liquids and solids
Auxiliary Equipment	• An efficient storage and transportation network
Advantages	• Permits usually already in place • Quick to implement if close to cleanup site • Safe • Controlled emission release
Disadvantages	• Most incinerators are designed to burn a narrow range of products
Comments	• Incinerators are located at refineries, hazardous waste disposal sites and waste reclamation plants.

Table 14-33 Reprocessing/Recycling

Disposal Rate	• Several hundred bbls/hr (several tonnes/hr)
Uses	• Disposal of debris-free oils and emulsions
Auxiliary Equipment	• None
Advantages	• Oil is recycled
Disadvantages	• Facility must be convenient and permitted
Comments	• Sites that accept oil include refineries, pipeline pump stations, terminals and production facilities • Some locations with oil/water separators can accept debris-free emulsions

Table 14-34 Reclaiming/Recycling

Disposal Rate	• If storage facilities are available at the plant, disposal rates can be high
Uses	• Disposal of oil or emulsions with small amounts of sand, gravel or debris (<5%) • Disposal of weathered oil
Auxiliary Equipment	• None
Advantages	• Oil could be salvaged • Oil could be sold
Disadvantages	• Location must be convenient to cleanup site

14.7 Transportation

Transportation of oil spill wastes as well as waste oil is subject to a variety of regulations in many countries. Placards (special signage) may be required for trucks transporting waste oil. Usually, these placards must comply with regulations that stipulate a symbol, hazard class and number that identify the material. Placards must be clearly visible from the back and sides of the vehicle. Special permits may also be required for transport vehicles, as well as shipping documents/manifests that indicate the type of material being transported. A journey management plan as well as a transportation contingency plan may be part of the regulatory requirements (e.g., preferred routing, emergency contacts, product data, and spill cleanup procedures). In some locations, if a waste spill occurs during transport, a notification to regulatory authorities may be required within a specified time period.

Trans-border disposal is subject to complex regulations and can be conducted after the appropriate authorities have been notified and clearance has been obtained. This may include meeting the requirements of each country involved, including an approved ultimate disposal method/location. Truck drivers and equipment operators transporting wastes should be trained and licensed accordingly. Drivers and operators should review and be aware of any transportation security plans, transportation contingency plans and have a copy of the Material Safety Data Sheet for the oil type if known.

14.8 Material Take Off (MTO) List

In addition to the specific auxiliary equipment items addressed for each type of storage equipment (see Table 14-1), other items are often required to successfully conduct waste management/disposal operations.

Equipment	Use
Dump trucks	Removal of oiled material
Vacuum trucks	Removal of pooled liquid
Garbage cans	Removal of oiled material
Flatbed trucks	Removal of oiled material
Liners	Lining storage containers and storage areas
Protective clothing	Personal protection equipment
Incinerators	Burning of oiled materials
Heavy duty clear plastic bags	Enclosing and segregating waste
Buckets / shovels	Removal of oiled material
Pumps/hoses/connectors	Transfer

15 Spill Response in Cold Regions

15

15.1 Introduction

Response in a cold environment must take into account its unique physical, biological, oceanographic and atmospheric features in developing proper response strategies and contingency plans. Precautions must be integrated into safety plans and training due to inherent dangers of working at low temperatures. Low temperatures can affect the efficiency and effectiveness of both equipment and personnel. Low temperatures resulting in formation of ice can improve or reduce accessibility.

15.2 Safety and Health Considerations

The main safety concerns in cold environments are low temperature, ice, fog, and snow. Proper protective clothing is essential to guard against frostbite and hypothermia (Refer to Section 2.2.3.2 and Table 2-6). Replace any wet clothing and boots as soon as possible. Cold environments also tend to be remote so one should be prepared for the added dangers of travel breakdowns and wildlife. When traveling over cold water by air or sea, cold-water survival suits can extend survival time in the event of accidental immersion. Speed is essential when rescuing a person who has fallen overboard. It is critical that field workers stay in communication with operations and rescue bases.

Other safety and health issues associated with low temperature response are:

- The probability of slips, trips, and falls escalates dramatically with icy surfaces.
- The daylight period in winter is typically short. Adjust work shifts accordingly to allow sufficient time for safe return to the staging area.
- In offshore environments, ice may be dynamic. Conditions can change rapidly and wind shifts may cause ice leads to open and close quickly or shore-fast ice can break and float away.
- Weather patterns can change rapidly. Frequent weather updating is essential.
- Train all workers to recognize symptoms of hypothermia and frostbite (Table 2-6) and to provide appropriate first aid.
- Medical facilities may not be available in remote areas. Teams should arrange for their own medical staff and equipment.
- Low temperatures reduce the rate of volatile emissions. Gases like benzene and hydrogen sulfide may persist longer than normal; however, slower emission rates should reduce their concentration in air.
- Health specialists need to ensure that subsistence fish, shellfish, and wildlife are safe for consumption.
- Exercise care to avoid fire or explosion risks as vapors persist longer. When drilling holes in ice, hydrocarbon gases may be present beneath, especially over an ongoing well blowout or pipeline leak.

15.3 Effects of Low Temperature on Oil

Low temperature affects hydrocarbons in ways that have implications for response:

- Oils with higher pour points can solidify in the cold, which will affect the response strategy. Under certain conditions, solidification could make recovery on land or water easier.
- Oil viscosity increases at low temperature so recovery, burning and dispersion could become more difficult for some oils.
- Loss of light ends (weathering) slows down at lower temperatures, which can offset some of the temperature effect on viscosity. The evaporation rate at 5°C is approximately 1/3 of what it is at 30°C.
- Phenomena that depend on weathering, such as emulsification and tar ball formation, should take longer to occur.
- Biological recovery on shorelines may be slower, though many organisms grow well at near-freezing temperatures. Biodegradation of oil occurs at a somewhat slower rate compared to temperate conditions. Biodegradation is likely to stop if shorelines freeze solid.

15.4 Environmental Factors That Can Affect Cold Region Response

Unique environmental factors—not found in temperate and tropical climates—influence response in cold regions. Some factors have positive effects whereas others will have negative impacts on response strategies and tactics.

15.4.1 Positive Influences on Response

- Cold temperatures slow the weathering process so oils may remain amenable to treatment by recovery, burning, and dispersion for a longer period.
- Cold, viscous oil will spread more slowly providing additional time for response.
- Frozen conditions can facilitate response by providing a solid working platform, reducing the oil's mobility, and providing natural storage capacity for oil on and under ice.
- Snow and ice can be used to contain oil. Snow is also an effective sorbent.
- Water is at or near its maximum density so heavier oils are less likely to sink.
- There is a lower incidence of highly sensitive habitats, such as tidal flats and salt marshes in Arctic regions. Vulnerable times for key sensitivities typically are shorter than in temperate and tropical settings. Therefore, planning protective strategies should be more straightforward.

- Land-fast ice causes significant annual impacts to intertidal biological communities. Concerns about adverse oil spill impacts on intertidal communities are not as much of an issue where land-fast ice occurs in winter and scours shorelines annually.
- Land-fast ice can protect the shoreline from oiling.
- Ice can limit oil penetration on beaches.

15.4.2 Negative Influences on Response

- Oil will be more difficult to recover in dynamic ice-laden waters due to access limitations and safety concerns.
- Thoroughly dry equipment such as pumps, spray booms, and nozzles after use to minimize residual water that can freeze, causing damage or limiting use.
- Diversity of marine biota in colder regions is lower than in warmer regions. Re-colonization may take longer in arctic settings than in temperate or tropical areas.
- Equipment will be more difficult to operate, especially skimmers, in broken ice.
- There is usually poor infrastructure and few roads. Transport of equipment can be a serious challenge.
- Dynamic ice floes can damage booms, vessels, and skimmers.
- Disposal of oily wastes could be an issue in remote and sensitive (e.g., tundra) areas. Wastes may have to be transported long distances. To limit transportation risks, local incineration may be an attractive alternative.
- Shoreline protection strategies may not be possible in broken ice or in the presence of large, moving ice floes.
- The salinity of ice-laden water can vary significantly. Consider this when selecting dispersants whose effectiveness depends on higher salinity.

15.5 On Water Response Options

The development of spill response strategies in cold regions will depend almost exclusively on the season during which a spill occurs. Depending on the time of year, responders could be facing a spill in open water, broken ice, or solid ice. Response considerations for each of these conditions are presented below.

15.5.1 Open Water

Spills in open water in cold regions are treated the same as in temperate and tropical climates. The only difference is the temperature of water and associated safety issues (see Section 15.2).

15.5.1.1 Containment and Recovery

The first step is to identify the spilled oil's physical properties, particularly the pour point. If the pour point is 5–10 degrees above ambient water temperature, there is a strong possibility that the oil has already solidified. Nets and other collection devices will be required for recovery. If the pour point of the spilled oil is below the water temperature, and if currents and wind conditions allow, then booms and skimmers are applicable (see Sections 5 and 9 for selection information).

15.5.1.2 In-Situ Burning

Even if a spilled oil has cooled and is solidifying into a gel, burning should be applicable as long as conditions are appropriate (see Section 8). The oil may be more difficult to ignite at low temperature but once burning begins, it will continue regardless of ambient temperature. Extra igniter fluid or accelerant (e.g., diesel or gelled gasoline) may be needed.. Most crude oils should still be burnable within 2–5 days of the spill and may be burnable for extended periods, as low temperatures will slow weathering.

15.5.1.3 Dispersants

Considerable laboratory, wave basin, and field data exist which indicate that dispersants should be effective in open water conditions even at a low water temperature of 0°C (32°F). While viscosity increases as the temperature drops, effective dispersion may still occur even if the crude oil viscosity exceeds 10,000 cSt. It is important that water temperature should be above the oil's pour point. Most dispersants are formulated to be fluid and spray smoothly even at temperatures below freezing. However, if dispersants are applied using a diluting water carrier, take care to keep the spray boom and nozzles from freezing between uses.

15.5.2 Broken Ice

Periods of seasonal transition occur during early winter freeze-up and spring ice breakup. This ice is likely to be moving, not stationary. Oil spilled into such broken ice will move with the ice. Oil slicks tend to spread far less and remain thicker in broken ice conditions than in open water.

During freeze-up, diminishing open water can exert a time pressure for response. Open water response techniques can be used up to about 30% ice cover but there are limitations of access and safety. In ice concentrations greater than "close pack"

(>60% ice coverage), the sea ice provides a natural containment and can serve to physically limit oil spreading. However, safe access can be limited for vessels, equipment, and responders.

15.5.2.1 Containment and Recovery

Booms are of little or no use in large moving ice floes or in ice concentrations > 30%. Boom material selection is extremely important for durability, with conveyor belting booms being preferable to those made of PVC or polyurethane. Anchoring booms in broken ice can be difficult or impractical and frequent tending is essential once anchored.

Skimmers work best when positioned in open water and in leads between ice pieces. The most appropriate skimmers for ice-laden waters are oleophilic:

- Rope mop
- Sorbent lifting belt
- Brush
- Paddle belt
- Drum

Recovered oily fluid can contain significant amounts of slurry and/or slush ice. Be sure to provide sufficient storage and oil/water separation capacity.

15.5.2.2 In-Situ Burning

Burning is an optimum response strategy for spills in broken ice, subject to the conditions listed in Section 8, and may be the preferred option if it is unsafe to work in or on ice. Deployment of a fire-resistant boom may not be feasible in broken ice. In some cases booms may be unnecessary, as some oil may be contained by the ice. Typically, oil contained between ice leads and along the edges burns at a rate faster than skimmers can otherwise recover it.

In very close pack ice (>90% coverage), ice-breaking vessels can be used to carefully break ice around a spill site to expose trapped oil for burning. Oil in broken ice can be ignited by dropping a torch or flame from a helicopter into pooled oil. Due to reduced evaporation rates, burning in broken ice may be possible for extended periods—up to several months after a spill occurs—particularly if oil is trapped in or below ice in which case evaporation is insignificant.

15.5.2.3 Dispersants

Dispersants can be effective on spills in broken ice if there is some mixing energy present. The pumping action of waves in brash ice and between ice floes can provide the required energy. Tests have shown that bobbing brash ice can actually stimulate dispersant action. However, large pieces of ice and slush and increased ice cover can

inhibit mixing by dampening waves. Vessels can be used to provide added energy by moving through and churning the surface ice and water. Spraying efficiency is likely to be lower than in open water because some dispersant will land on ice. Apply dispersants by air under conditions where mechanical recovery and burning are not possible and in areas deemed too unsafe for workers.

15.5.3 Solid Ice Cover on Water

The formation of solid sea ice over a spill area significantly reduces response options. However, frozen conditions can actually serve to facilitate recovery operations by providing a solid working platform over the oil and by creating natural barriers that can be used to advantage to contain and immobilize oil. Downward-growing ice can quickly encapsulate oil under ice and there will be many in- and under-ice pockets where oil can accumulate in natural depressions, providing access for recovery (Figure 15-1).

Even large spills (tens of thousands of barrels) of crude oil, underneath or on top of solid "shore-fast" ice, could be contained within hundreds of meters from the spill source, depending on under-ice currents and ice roughness. Along the Alaskan North Slope, late winter (April) under-ice storage capacities have been estimated to be as high as 400,000 barrels per km^2 from surveys of fast ice; early winter estimated capacities are about half as much, reflecting smoother underside ice surfaces. However, North Slope offshore waters are relatively shallow and the currents are weak. Under-ice oil retention in higher speed currents would likely be less.

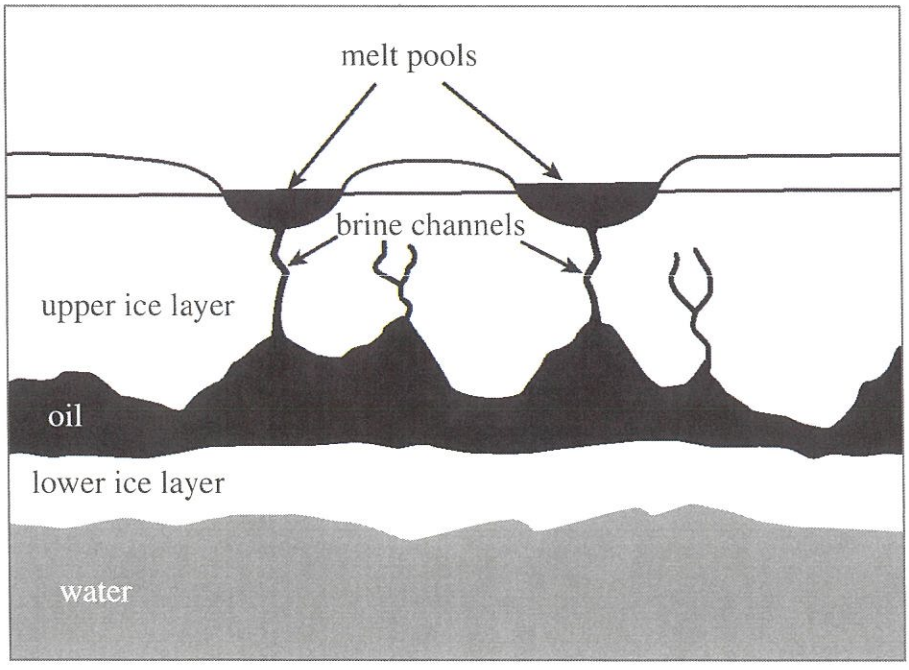

Figure 15-1 Melt Pools and Encapsulated Oil (from EPPR 1998)

15.5.3.1 Containment and Recovery

If the ice is accessible and sufficiently thick to support heavy equipment, ice can be an effective response platform, allowing a number of response options. This is especially true for frozen rivers, streams, lakes and ponds. Use mechanical graders and bulldozers to move snow into the shape of a collection dike and either freeze the snow into ice with water or cover it with an impermeable liner. Dig a trench or series of holes through the ice to reach the oil. Use rope mop skimmers, vacuums or pumps to lift the oil into the temporary storage dike until removal to more permanent storage or treatment and disposal. Cut trenches or holes using ice augers, chain saws, backhoes or a ditchwitch.

15.5.3.2 In-Situ Burning

Burning is a preferred technique for oil spilled on ice and snow-covered surfaces (See Section 15.6). If the release is under ice, then equipment (e.g., ice augers, pumps, ice-breaking vessels) can be used to provide access to it. Once oil has been exposed, it can either be burned in-situ or lifted onto ice surface for burning. Burning is an ideal way to dispose of 90+% of the oil encountered, as long as water content is not too high (maximum 25%), and the oil is of sufficient thickness (2–3 mm). Burning is also a sound approach for oil that rises through brine channels into melt pools in the ice during spring thaw.

15.5.3.3 Dispersants

Dispersants are applicable to oil under ice-cover if the currents and water exchange rates are sufficient to ensure mixing and dilution (minimum 0.5 knot current, but 1.5–3 knots preferred). Add dispersants into the below-ice oil pool or use ice-breaking vessels to bring the oil to the surface and provide mixing needed for dispersion. This could be especially effective if injection were into a steady stream of fresh oil rising from a well blowout under ice. Oil trapped in and under ice remains relatively fresh because the evaporation rates are insignificant, which should help dispersion even after a considerable period. Research is ongoing to develop new dispersant formulations that could keep the dispersants associated with oil for longer periods than presently feasible.

15.6 On Land Response Options

Response to spills on land in colder regions must consider some unique challenges compared to response in more temperate regions. Clearly, if snow and ice are present on the surface, then responders face the same issues and opportunities as for response on frozen seas, but without the challenges of moving ice and breakup periods. Many of the techniques discussed above would apply and the ice can function as an effective barrier preventing the oil from penetrating to the soil below.

Response in snow and ice conditions on land provides opportunities and limitations.

- Snow is a sorptive, porous material and will allow oil spilled on the surface to slowly flow into the snow until it solidifies in place.
- Snow covering a spill to land will be obscured unless responders are fortunate enough to be able to mark slick perimeters before or during a snow event.
- Ice is not particularly porous when oil is spilled on top of it or onto nearly-frozen soil. However, cracks in ice may provide access for spilled oil to slowly flow before it solidifies.

Main response options for spills to snow or ice on land are: mechanical recovery and in-situ burning.

- Mechanical equipment can be used to gather oiled snow and ice for burning or melting prior to oil:water recovery operations.
- Oiled snow with as much as 70% snow by weight can be burned (Figure 15-?)

Any available snow near a spill can be used to advantage by forming snow berms to help contain oil and minimize its spreading prior to removal by mechanical means. If the berm has not completely frozen, it can be lined with polyethylene sheet to fully contain the oil.

Handle spills into lakes using techniques similar to those discussed for open and frozen seas, but note the situation is more straightforward.

- Dispersant approvals are unlikely for such applications.
- If lakes are frozen, ice leads can be opened to provide access to the oil for either recovery or burning.
- The ability to deal with spills into rivers depends largely on the current.
- The principal weapon for these spills is angle booming (or inverted weirs in ice) to divert the oil into pre-determined locations with calm areas (or leads) for containment and removal.

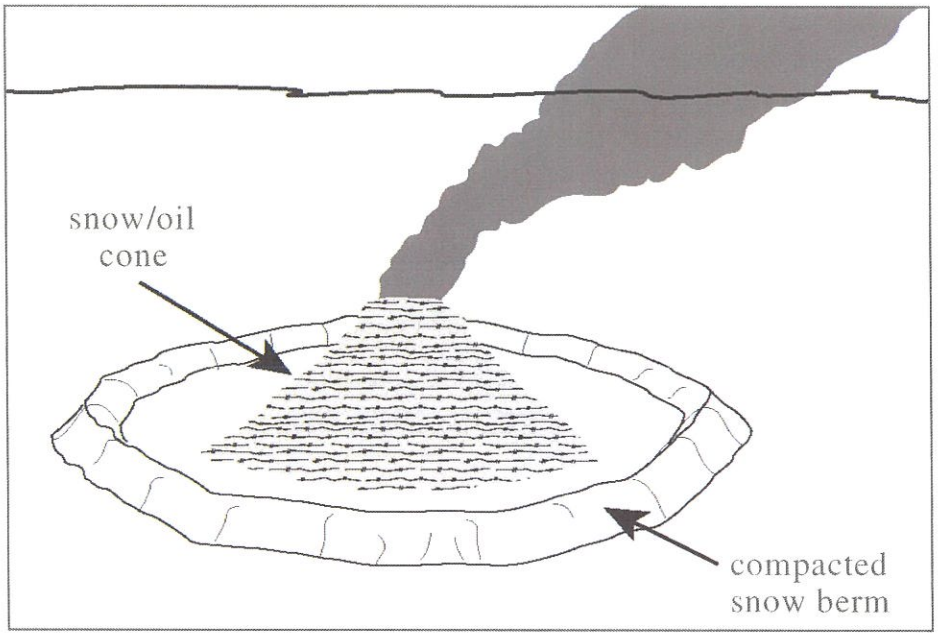

Figure 15-2 Burning Snow Cone (From EPPR 1998)

15.7 Assessment, Mapping, & Tracking

Use experienced specialists to map the oil's location beneath ice. Operational tools to detect or map oil in any ice type are not yet commercially available. Two techniques that hold promise for the future are a high-frequency, ground penetrating radar and an ethane gas sensor. For spills to inland waters, the most reliable means to map a slick is by boring holes in the ice to seek the oil.

- This is a time consuming endeavor and has its own safety risks.
- The current recommended practice is to drill numerous boreholes and then conduct extensive sampling to map the oil location and determine how much is present. Use markers to track the location of the spill as it moves.

Operational tools to remotely detect or map spilled oil in any ice type are not yet commercially available.

Tracking oiled ice offshore or in fast moving rivers will become a priority when active response measures are not possible. Place radio and/or satellite position buoys strategically in the oil deposition zone to monitor ice movements. Place pylons with light strobes on ice floes in the oil slick to assist aerial tracking. Conduct aerial reconnaissance using visual observations and remote sensing devices (e.g., airborne FLIR: forward-looking infrared).

15.8 Cleaning of Oiled Shorelines

Shoreline types in cold regions are not as diverse as in warmer regions. They include:

- Bedrock
- Man-made structures (e.g., drilling platforms and work islands)
- Permanently ice-covered shores
- Sand beaches
- Mixed sediment shorelines
- Pebble/cobble shorelines
- Boulders and riprap
- Scarps and cliffs
- Sand flats
- Mud flats
- Peat
- Inundated lowland tundra
- Salt marshes (not common, but important)

Techniques for cleaning these shorelines are described in Section 12.

Shorelines with high energy and/or frequent ice coverage tend to have low biological diversity and abundance. Biological activity is highest on low energy shorelines and protected pockets occurring in rocky shorelines. In most instances, the presence of ice onshore or in the adjacent near-shore water prevents oil from contacting the shoreline.

For the majority of these shorelines, natural recovery is the preferred clean-up option, except for pockets of very thick heavier oil. Remove these using the least intrusive cleaning methods summarized in Section 12.

In-situ treatment techniques, such as sediment relocation or mixing, may be preferred in remote areas where treatment is considered necessary and where the risk of re-mobilized oil affecting biological resources is low. These treatments minimize waste generation and have been shown to be effective in the acceleration of weathering and, in particular, biodegradation.

Burn pooled oil on shorelines if it is feasible and safe to do so. Oil/snow mixtures are relatively easy to remove, either manually or mechanically. Take mixtures to a heated facility for melting and separation or to a less sensitive area for storage until warm weather can make oil recovery feasible.

The most sensitive time of year for cold region shorelines is during bird migration (June through September) when high concentrations of birds land on beaches, mud flats, and marshes to feed on zooplankton, insects, larvae, and worms. Spills during or prior to this time may warrant accelerated and aggressive oil removal to protect migrating birds. If shoreline cleaning is not possible, employ bird hazing techniques to prevent birds from landing in the more heavily oiled areas (see Section 14).

Finally, peat is an excellent sorbent and is usually plentiful in colder areas. For effective cleaning, only use dried cultivated peat and not the wet peat present on the shorelines. Use oiled peat as a fuel for incineration.

15.9 Response in Permafrost Habitats

In Arctic regions and some sub-arctic regions, the average annual temperature is below 0°C (32°F) and the sub-soil remains frozen. This frozen soil, or permafrost, is typically found under treeless, lichen- and moss-covered plains called tundra. Tundra occurs where

- extreme winter cold and wind, brief cool summers, and shallow continuous permafrost prevent trees from growing.
- the softened ground above permafrost, in summer, contains fauna and flora that if disturbed could take many years and even decades to recover.

Spill response over oiled permafrost during warmer (thaw) seasons must consider the potential traffic impacts from response itself on the tundra. Aggressive response could do more long-term harm than good and the best course of action may be to allow natural recovery. However, such recovery could take a considerable length of time because of the relatively short duration of the growth season. If oil is to be removed during thaw periods, it must be done using techniques such as vacuuming and sorption that will leave the area as undisturbed as possible. In winter, surface soil above the permafrost freezes so one may use conventional land-based response techniques, such as burning, with less concern for physical disruption.

Inundated, lowland tundra habitat occurs in coastal areas which have flooded because of subsidence. Strong onshore winds can lead to flooding of these areas up to 1 meter deep and hundreds of meters inland. This creates a thriving plant and insect community that is an important resource for migrating birds. This habitat, and its communities, is very sensitive to an oil spill and to associated clean-up efforts.

- A spill occurring coincident with strong onshore winds could mean oil deposits well in-land.
- Surface sediments and peat deposits are often water saturated, which will keep spilled oil from seeping into soil. However, oil could remain for some time.
- It may be best to undertake removal only after freezing sets in to minimize damage.

Pipelines are generally not buried in a permafrost layer. If a pipeline above permafrost leaks, then it is likely any spilled oil will either solidify and stay in place (if the oil's pour point temperature is higher than the ambient temperature) or, if still fluid, will flow to some low point where it will accumulate and can eventually be recovered.

16 Aviation Support

16.1 Introduction

The value of aviation is often under-appreciated during contingency planning and response. Aviation (expertise and aircraft) can be used for strategic purposes to provide overflight and surveillance, and tactical purposes including slick targeting, equipment spotting, dispersant spraying, and sometimes for environmental monitoring. It is critical to pre-identify, evaluate, and select aerial logistical infrastructure (airport, fuel, and maintenance shops) during contingency planning.

For small spills, having support of rotary wing aircraft early in a response can maximize the efficiency of response resources. For large spills, having a good understanding of the location of spilled oil and response resources can help ensure a successful operation by providing information to decision-makers who may be far from the incident location. The process of assigning missions for overflight and surveillance, and in support of in-situ burning, mechanical recovery, and dispersant operations requires an understanding of aerial support options.

Our ExxonMobil aviation safety philosophy:

- No air operations without a daily safety briefing and pre-flight briefing form
- Establish a minimum acceptable ceiling and visibility requirements
- Situational awareness of the weather, operational requirements, obstacle data, etc.
- Posting of NOTAMs (Notice To AirMen), as needed
- Debrief of all flights at day's end and a posting of lessons learned.

The following topics will be described in this chapter:

- Use of approved aviation contractors and aircraft
- Strategic planning and coordination
- Aerial observation
- Aerial support for dispersant spray operations
- Aerial support for in-situ burn operations

16.2 Use of Approved Aviation Contractors and Aircraft

Prior to contracting or use of any aviation assets, it is generally required that a company or resource has been evaluated and recommended for use by a qualified aviation advisor or suitably qualified individual. Third-party aircraft should meet standards of safety/technical quality comparable to those of the contracting company. Industry guides are available to provide guidelines outlining minimal aircraft technical and operational specifications.

Consider the following factors when establishing any aviation contractual scope of work (not all inclusive):

- Environmental factors such as climatic conditions, altitude, temperatures, weather, topography, etc.
- Type of typical cargo
- Special equipment (emergency/oil spill response, etc.)
- Training for aircraft crews and personnel to be flown
- Medevac, and search and rescue
- Pilot duty time
- Total anticipated flying time
- Crew rotation schedules
- Airline schedules for crew changes in remote locations
- Personnel transportation frequency and numbers
- Fuel availability and location
- Available support facilities, airports, etc.
- Aircraft availability including back-up aircraft
- Duration of services
- Drug and alcohol programs in compliance with Company policy

16.3 Planning and Roles

16.3.1 Basic Aviation Services Planning

In addition to addressing safety and specific response support roles, aviation plans should address the following:

Communications:

- Frequency allocation plan prevents frequency congestion
- No unnecessary chatter on radios
- Use call signs as opposed to tail numbers
- Obtain weather forecasts and disseminate

Command and Control Structure:

- No air operations to be conducted without approval of aviation advisor or similarly empowered individual
- Coordination and scheduling of aircraft movements and operations.

The decision to use a rotary or fixed-wing aircraft is influenced by a number of factors. Although both platforms are capable of providing an overview, situational-dependent factors may make one more advantageous than the other (e.g., transit time to spill, airport availability, and requirement to stay on-station). Initially, only one type of aircraft could be available and would be used until replacement aircraft can be positioned. Table 16-1 can help make a decision between rotary and fixed-wing aircraft.

Table 16-1 Advantage and Disadvantages of Aerial Platforms

Aircraft Capability Factors	Rotary Wing	Fixed-Wing
Provides overview of locations of interest	+	+
Able to fly slow	+	–
Transit time to spill	–	+
Distance capability	–	+
Time on-station	–	+
Hold on-station (if permitted)	+	–
Level of logistical support (e.g., runway)	+	–

The use of unmanned aerial systems (UAS) is expected to increase as the availability of this technology grows. There are a number of advantages of UASs including safety (i.e., personnel not on board, operational flexibility) and generally decreased logistical requirements. UAS operators will need to meet regulatory requirements for approval to operate, pilot training, operations manual, etc. It is recommended that an aviation advisor review UAS operations.

16.3.2 Aviation Support Roles

16.3.2.1 Aviation Advisor or Air Operations Branch Director

Industry aviation advisors can assist in recommending specific aircraft types which are preferred, as well as contractors that are qualified to provide a particular service. To provide necessary additional specifications for the local area and anticipated operating plan, qualified aviation advisors should be used to technically review bid proposals as well as final bid submissions. During a response, they can assist with guidance on:

- Separation of aircraft by altitude
- Lateral separation distance
- Flight paths
- Restricted airspace

16.3.2.2 Local Aviation Contact

It is recommended that those responsible for managing a spill response should identify an individual to serve as the primary local aviation contact, who is familiar with local resources (e.g., airports, aviation assets, etc.) and state/federal regulations. The local aviation contact will provide aviation stewardship and liaise with unified command, the air operations branch director or a suitably qualified aviation advisor, and any aviation services contractors. The local aviation contact:

- Should have direct interface with the Operations section;
- Interfaces with the contract administrator for related contractual matters. The aviation contact typically approves aircraft flight schedules and the dispatch of aircraft; and
- Typically oversees local aviation operations, and passes operational, technical or safety related queries to the appropriate individual within the air operations structure (e.g., air operations branch director or a aviation advisor).

16.3.2.3 Aerial Observer

The information provided by trained observers is critical to response and as such it is important to use trained observers who have experience in identification, distribution, and quantification of spilled oil. The efficiency of mechanical recovery, in-situ burning, and dispersant application can be directly influenced by the accuracy of information from an aerial observer since it will be provided to response management or command center staff for strategic decision-making. Terminology and codes have been developed to provide a consistent manner of reporting spilled oil appearance and distribution during a response.

16.3.2.4 Spotter

It is important to use trained spotters who have experience in identification and quantification of spilled oil to help direct tactical operations. The efficiency of mechanical recovery, in-situ burning, and dispersant application can be directly influenced by the accuracy of targeting information from a spotter since it is important to focus efforts to those areas with the highest concentration of oil. Familiarity with natural conditions which may mimic appearance of spilled oil can limit the frequency of false positive and false negative identifications.

16.4 Aviation Support

Information compiled through use of aviation assets supports the tactical deployment of mechanical recovery, dispersant, and in-situ burn operations. For more complex incidents it can be prudent to conduct periodic overflights to assess slick conditions and locations. This may include flights early in the morning to confirm the movement of the spilled oil on water overnight.

16.4.1 Mechanical Recovery Operations

Aviation assets and services can be provided for spill incidents on land and on water. In many responses, mechanical recovery is the primary response option utilized due to a number of factors such as size of spill, the state of oil weathering, location, type of oil, equipment or response assets available. Depending on the size of an incident and ease of access for responders for spills on land, the use of aviation support may be beneficial to assess distribution, locations of thickest oil, and/or access points for response operations which would otherwise be unknown. For spills to surface water, aviation support may be beneficial to assess distribution and locations of thickest oil (Figure 16-1).

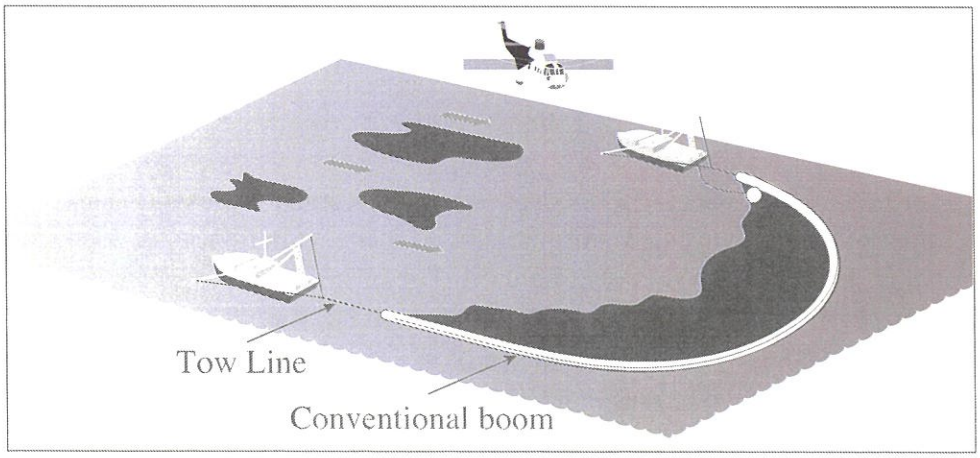

Figure 16-1 Rotary wing aircraft can provide details and guidance to operations on where the larger quantity of oil is located

16.4.2 Aviation Support of Surface Dispersant Operations

Frequently aircraft are used for oil spill dispersant spray operations. When more than one aircraft is responding, the formulation of an aviation plan is advisable. The basic plan below is a template for modification to meet local situations (Figure 16-2).

DISPERSANT MISSION PRE FLIGHT BRIEFING FORM

The following topics should be addressed during a daily pre-flight mission briefing and included in flight packets to be given to each flight crew scheduled for duty.

1. Safety of flight
2. Weather
3. Location of activities - Latitude/Longitude
4. Control Points, Routes - Latitude/Longitude
5. Altitude assignments
6. Frequency allocation
7. Assignment of call signs
8. Filing of flight plans
9. Refueling locations
10. Schedule of activities
11. Restricted airspace
12. NOTAMS

DISPERSANT SPRAY RESOURCES

CALL SIGN	LOCATION	CONTACT FREQ	TYPE
Spotter 1			
Spotter 2			
Spray Plane 1			
Spray Plane 2			
Air Eye 1			
Command and Control 1			

Command & Control Operations Brief @ _____
Place
Entry / Exit / Hold Points

Point	Lat/Long	Max. Altitude
Spill Site		
Entry		
Exit		

Forward Air Observer in Spotter 1 for airborne control
Altitude Assignments
Appropriate Visual Flight Plans

Figure 16-2 Sample Pre-Flight Briefing Form

Figure 16-3 illustrates a typical flight and spray path showing entry and exit control points.

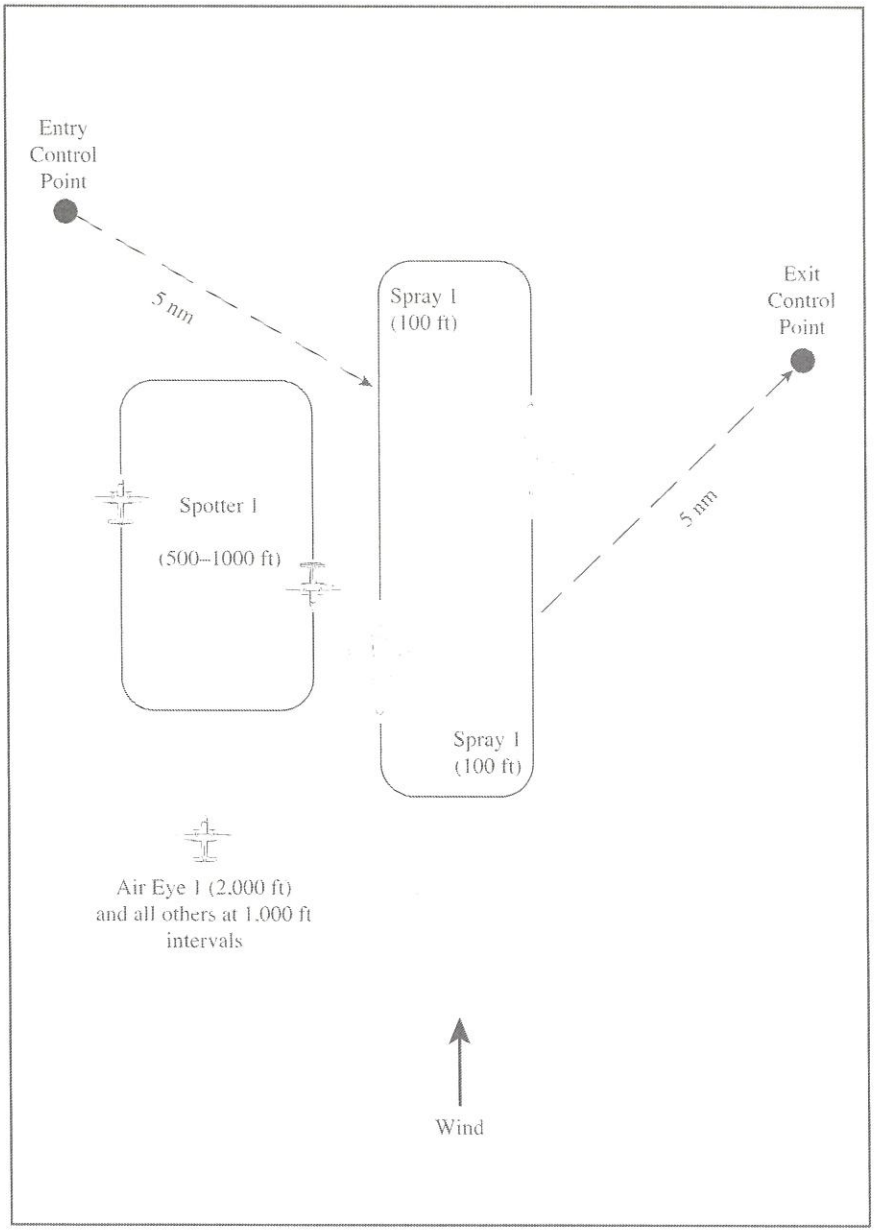

Figure 16-3 Diagram of Possible Dispersant Spray Operations to illustrate coordination and scheduling of aircraft movements and operations

16.4.3 Aviation Support for In-situ Burn Operations

Primary aerial support for in-situ burning includes targeting the slick and then to ignite the vapors of spilled oil. This section focuses on the use of a heli-torch which can be used on spilled oil on water or land (Figure 16-4).

16.4.3.1 Heli-Torch Operations:

General Considerations:

- An In-Situ Burn Operations Group Supervisor or similarly qualified individual typically has the overall responsibility for a successful burn and develops a burn plan
- The best technique is for the pilot to use vertical reference (VR) on the torch
- Use of a long line is mandatory
- Use of a bubble window or removal of the pilot window is encouraged
- Management of rotor wash is very important, as the downwash can extinguish the flames

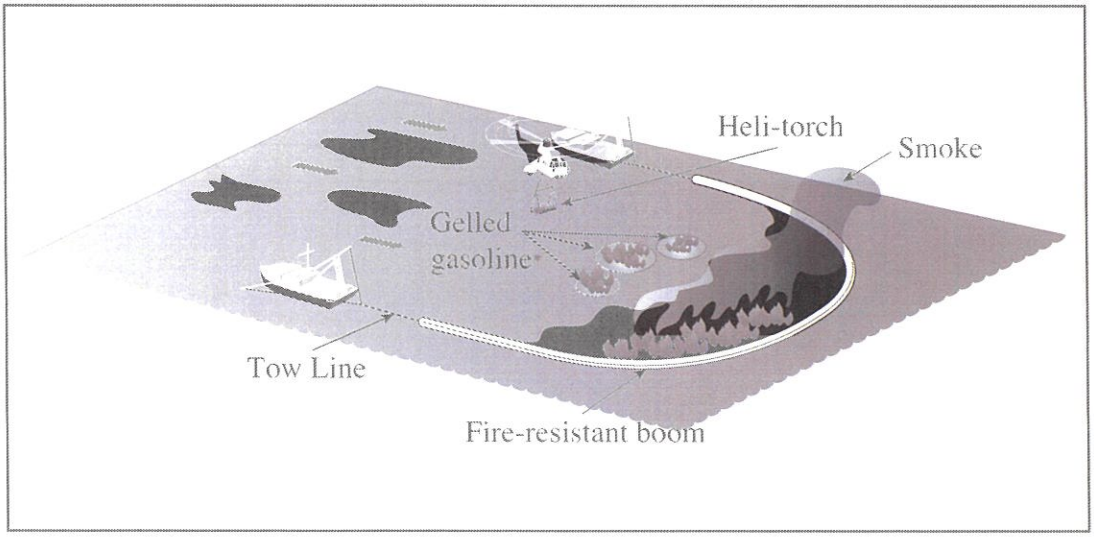

Figure 16-4 In-Situ Burn Operation using a helicopter and heli-torch

References & Websites

References

The following is a list of selected references that are widely available and which may be useful to those seeking additional information related to oil spill response. The list is not intended to be all encompassing.

Alaska Clean Seas. 2014. *Technical Manual, Volume 1—Tactics Descriptions.*

Alaska Department of Environmental Conservation (ADEC). 2005 *Tundra Treatment Guidelines*, A Manual for Treating Oil and Hazardous Substance Spills to Tundra. Division of Spill Prevention and Response. Juneau, Alaska.

American Petroleum Institute (API), National Oceanic and Atmospheric Administration (NOAA), U.S. Coast Guard, and U.S. Environmental Agency (EPA). 2001. *Environmental Considerations for Marine Oil Spill Response*. API Publication No. 4706. Regulatory and Scientific Affairs Department. Washington, D.C.

API. 2001. *Chemical Human Health Hazards Associated with Oil Spill Response*. API Publication No. 4689. Regulatory and Scientific Affairs Department. Washington, D.C.

API. 2013. *Remote Sensing in Support of Oil Spill Response*. API Technical Report 1144. 80 pp.

API, NOAA, United States Coast Guard (USCG), and EPA. 2001. *Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments.* Available from NOAA Office of Response and Restoration HAZMAT, Seattle, WA. June. 80 pp.

API and NOAA. 1995. *Options for Minimizing Environmental Impacts of Freshwater Spill Response*. API Publication No. 4558. Health and Environmental Sciences Department. Washington, D.C. February. 136 pp.

Aspen Publishers, *Oil Spill Intelligence Report*, published weekly, New York, N.Y.

ASTM International (formerly American Society for Testing and Materials). 1995. *The Use of Chemicals in Oil Spill Response*, Peter Lane, editor. ASTM publication code number STP 1252. West Conshohocken, PA.

REF

ASTM. 1998. *Oil Spill Response Performance Review of Skimmers*. Prepared by R. Schulze. ASTM Manual Series MNL34. West Conshohocken, PA, 151 pp.

Bonn Agreement. 2009. *Part 2: Remote Sensing and Operational Guidelines* in Bonn Agreement Aerial Operations Handbook, 2009.

Bonn Agreement. 2009. *Part 3: Guidelines for oil Pollution Detection, Investigation and Post Flight Analysis/Evaluation for Volume Estimation* in Bonn Agreement Aerial Operations Handbook, 2009. http://www.bonnagreement.org

Dickins, D.F., and I. Buist, 1999. *Countermeasures for Ice Covered Waters, Pure and Applied Chemistry*, Vol. 71, No. 1, pp 173–191.

Emergency Prevention, Preparedness and Response (EPPR). 1998. *Field Guide for Oil Spill Response in Arctic Waters 1998* (prepared by E.H. Owens, L.B. Solsberg, M.R. West and M. McGrath), for the Arctic Council. Environment Canada, Yellowknife, NT, Canada, 348 pp.

Environment Canada. 2000. *The SCAT Manual. A Field Guide to the Documentation and Description of Oiled Shorelines*. 2nd Ed. Catalog No. En-40-475/2000E. Edmonton, Alberta. 108 pp.

Environment Canada. 1996. *Field Guide for the Protection and Cleanup of Oiled Arctic Shorelines*. Catalog No. En-40-519/1996E. Prairie and Northern Region. Yellowknife, NT. 213 pp.

Environment Canada. 1991. *Selection Criteria and Laboratory Evaluation of Oil Spill Sorbents, Update IV*. Report EPS 3/SP/3. 71 pp.

Exxon Biomedical Sciences, Inc. and Tri-State Bird Rescue and Research, Inc. 2010. *Oiled Bird Response Guidance for Remote Regions*.

Exxon Biomedical Sciences, Inc. and Tri-State Bird Rescue and Research, Inc. 1998. *Rehabilitation Manual for Oiled Birds*.

ExxonMobil Research and Engineering Company (EMRE). 2008. *Dispersant Guidelines*. Available from EMRE. Dispersant Guidelines.

Exxon Production Research Company. 1998. *Planning Guide for Oil Spill Response Equipment and Vessels*. Report No. EPR.2PR.98.

Fingas, M.F., Brown, C.E., and L. Gamble. 1999. *The Visibility and Detectability of Oil Slicks and Oil Discharges in Water*. Proceedings of the Twenty-Second Arctic Marine Oilspill Program Technical Seminar. Environment Canada, Ottawa, Ontario, pp 865–886.

REF

Foget, C.R., Schrier, E., Cramer, M., and R.W. Castle. 1979. *Manual of practice for protection and cleanup of shorelines. I: Decision guide. II: Implementation guide.* Office of Research and Development, U.S. EPA, Cincinnati, OH, EPA-600/7/187 (a and b), two volumes, 283 pp.

Greer, R.D. and D.J. O'Connor. 1994. *Waterbird Deterrent Techniques. Marine Spill Response Corporation.* Technical Report Series 94-003. Available through API.

International Maritime Organization. 1995. *IMO/UNEP Guidelines on Oil Spill Dispersant Application including Environmental Considerations*, IMO, London.

The International Tanker Owners Pollution Federation Ltd. (ITOPF). 1997. *Response to Marine Oil Spills*, London, UK.

Interspill Conference Proceedings, *Session 7 on Cold Water Response*. 2004. Papers by C.K. Owens, J.V. Mullin, I. Buist, H. Jensen, P.J. Brandvik, and D. Dickins. Trondheim, Norway.

Lessard, R.R., and G. DeMarco, 2000. *The Significance of Oil Spill Dispersants*, Spill Science & Technology Bulletin, Vol. 6, No. 1, Elsevier Science Ltd., pp 59–68.

Mackay, D., Buist, I., Mascarenhas, R., and S. Paterson. 1980. *Oil Spill Processes and Models*, University of Toronto, Prepared for Environmental Emergency Branch, Environmental Impact Control Directorate, Environmental Protection Service, Ottawa, Ontario.

National Research Council (NRC). 1989. *Using Oil Spill Dispersants on the Sea.* National Academy Press. Washington D.C. 335 pp.

NRC. 2005. *Understanding Oil Spill Dispersants: Efficacy and Effects.* The National Academies Press. Washington, D.C.

NOAA. 2000. *Characteristic Coastal Habitats, Choosing Spill Response Alternatives.* Office of Response and Restoration. November. Seattle, WA.

NOAA. 2000. *Shoreline Assessment Manual.* Office of Response and Restoration. HAZMAT Report No. 2000-1. August. Seattle, WA.

NOAA. 2007. *Dispersant Application Observer Job Aid.* Office of Response and Restoration. Seattle, WA.

NOAA. 2012. *Open Water Oil Identification Job Aid for Aerial Observation.* Office of Response and Restoration. Seattle, WA.

Oil and Gas Producers (OGP). 2013. Aircraft Management Guidelines. Report No. 390. United Kingdom. 214 pp.

REF

S.L. Ross. 2013. *World Catalog of Oil Spill Response Products, 10th Edition*. S.L. Ross Environmental Research Ltd., Ottawa, Ontario, Canada.

United States Coast Guard (USCG). 2001. *Oil Spill Response in Fast Currents, A Field Guide*. U.S. Coast Guard Research and Development Center. Report No. CG-D-01-02. Washington, D.C.

U.S. Fish and Wildlife Service. 2003. *Best Practices for Migratory Bird Care During Oil Spill Response*. Division of Environmental Quality. Arlington, VA.

Websites

The following is a list of selected websites which may be useful to those seeking additional information related to oil spill response.

API. Oil Spill Prevention & Response. http://www.spillprevention.org.

- Joint Industry Task Force Reports. http://www.spillprevention.org/apijitfreports.html.

Arctic Response Technology Joint Industry Program. http://www.arcticresponsetechnology.org.

ARPEL (Regional Association of Oil, Gas and Biofuels Sector Companies in Latin America and the Caribbean. http://www.arpel.org.

ASTM. Committee F20 on Hazardous Substances and Oil Spill Response. http://www.astm.org/COMMITTEE/F20.htm.

Australian Marine Oil Spill Centre Pty Ltd. (AMOSC). http://www.amosc.com.au.

Bureau of Safety and Environmental Enforcement (BSEE) – Oil Spill Response Research. http://www.bsee.gov/Research-and-Training/Oil-Spill-Response-Research/index/.

Center of Documentation, Research, and Experimentation on Accidental Water Pollution (CEDRE). http://www.cedre.fr/index-en.php.

Clean-up Oil.com. The International Directory of Oil Spill Contractors. http://www.cleanupoil.com.

Environment Canada. Environmental Emergencies. https://www.ec.gc.ca/ee-ue.

REF

EPA. Emergency Management. http://www.epa.gov/oilspill.

- National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Product Schedule – Subpart J. http://www.epa.gov/emergencies/content/ncp/index.htm.
- Freshwater Spills Symposia. http://www.epa.gov/emergencies/content/fss/index.htm.

International Oil Spill Conference (IOSC) Proceedings. http://ioscproceedings.org.

Interspill Conference Proceedings. http://www.interspill.com.

IPIECA. Oil Spill Preparedness and Response Report Series. http://www.ipieca.org.

Topics:

1. Biological Impacts of Oil Pollution: Mangroves
2. Biological Impacts of Oil Pollution: Saltmarshes
3. Biological Impacts of Oil Pollution: Rocky Shores
4. Biological Impacts of Oil Pollution: Fisheries
5. Biological Impacts of Oil Pollution: Sedimentary Shores
6. Choosing Spill Response Options to Minimize Damage: Net Environmental Benefit Analysis
7. Guidelines for Oil Spill Waste Minimization and Management
8. A Guide to Oiled Wildlife Response Planning
9. Sensitivity Mapping for Oil Spill Response
10. Dispersants and Their Role in Oil Spill Response

Additional Oil Spill Good Practice guides are being developed.

National Institute for Occupational Health and Safety (NIOSH). http://www.cdc.gov/niosh/.

NOAA. Office of Response and Restoration. http://response.restoration.noaa.gov.

- Responder Tools. http://response.restoration.noaa.gov/oil-and-chemical-spills/chemical-spills/response-tools/guide-responder-tools.html.
- Job Aids. http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/job-aids-spill-response.html.

Occupational Safety & Health Administration (OSHA). https://www.osha.gov.

OHMSETT – National Oil Spill Response Research Facility. http://www.ohmsett.com.

REF

Pipeline and Hazardous Materials Safety Administration (PHMSA). http://phmsa.dot.gov/hazmat.

The International Tanker Owners Pollution Federation Ltd. (ITOPF). 2012. Technical Information Papers (TIPS). ITOPF. London, UK. http://www.itopf.com.

Topics:

1. Aerial observation of marine oil spills
2. Fate of marine oil spills
3. Use of booms in oil pollution response
4. Use of dispersants to treat oil spills
5. Use of skimmers in oil pollution response
6. Recognition of oil on shorelines
7. Clean-up of oil from shorelines
8. Use of sorbent materials in oil spill response
9. Disposal of oil and debris
10. Leadership, command & management of oil spills
11. Effects of oil pollution on fisheries and mariculture
12. Effects of oil pollution on social and economic activities
13. Effects of oil pollution on the marine environment
14. Sampling and monitoring of marine oil spills
15. Preparation and submission of claims from oil pollution
16. Contingency planning for marine oil spills
17. Response to marine chemical incidents

USCG. National Response Center. http://www.nrc.uscg.mil.

USCG. Research, Development, Test and Evaluation: Research and Development Center. http://www.uscg.mil/hq/cg9/rdc/rdc.asp.

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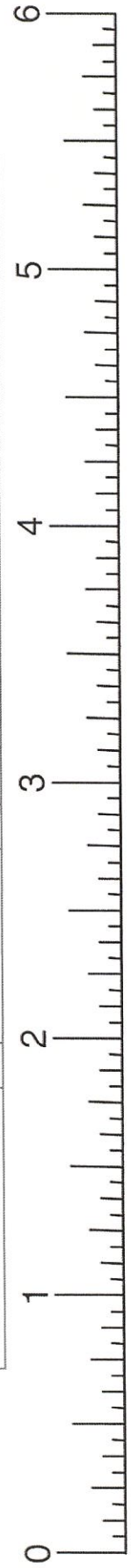
English Conversion Factors

Volume	Flow Rate
1 yd^3 = 27 ft^3 = 46,656 in^3 1 gallon liquid US = 0.134 ft^3 = 231 in^3 1 gallon British = 1.2 gallon liquid US 1 API barrel = 42 gallon liquid US	1 gpm = 0.0167 gps (gal/sec) = 60 gal/hr = 1,440 gal/day 1 gpm = 0.00223 cfs (ft^3/sec) 1 gpm = 34.3 API bbl/day
Length	**Velocity**
1 ft = 0.333 yd = 12 in 1 fathom (US) = 6 ft 1 mile (US) = 8 Furlong = 660 ft 1 mile (US) = 320 Rod = 5,280 ft 1 mile (US) = 0.87 Nautical Mile (NM)	1 knot = 1 NM/hr 1 knot = 1.15 mph (US) 1 knot = 1.69 ft/sec 1 knot = 6,080 ft/hr 1 mph = 88 ft/min = 1.47 ft/sec
Area	**Mass/Weight**
1 yd^2 = 9 ft^2 = 1,296 in^2 1 acre = 43,560 ft^2 = 4,840 yd^2 1 sq mile = 640 acre 1 ton (short) = 2,000 lb	1 slug = 32.17 lb 1 lb = 16 oz 1 long ton = 1.12 ton
Surface Tension	**Force**
1 lb/ft = 0.0833 lb/in	1 lb (force) = 32.17 poundal
Pressure	**Application Rates**
1 atm = 406.8 inch of water 1 atm = 14.70 lb/in^2 = 2,116 lb/ft^2 1 lb/in^2 = 27.68 inch of water 1 lb/in^2 = 144 lb/ft^2	1 gal/ft^2 = 1.604 in. thick 1 gal/ft^2 = 1.037 API bbl/acre
Miscellaneous	
storage volume for boom, volume/length: ft^3/ft x 0.093 = m^4/m mg/L = parts per million (ppm) = % x 10^{-2} x 10^6 = ppm (example: 0.7% oil content: 0.007 x 10^6 = 7,000 ppm) water density = 62.4 lb/ft^3 = 8.34 lb/gal viscosity in centipoise (cp) = viscosity in centistokes (cSt) x density temperature Fahrenheit = (temperature Centigrade x 1.8) + 32	



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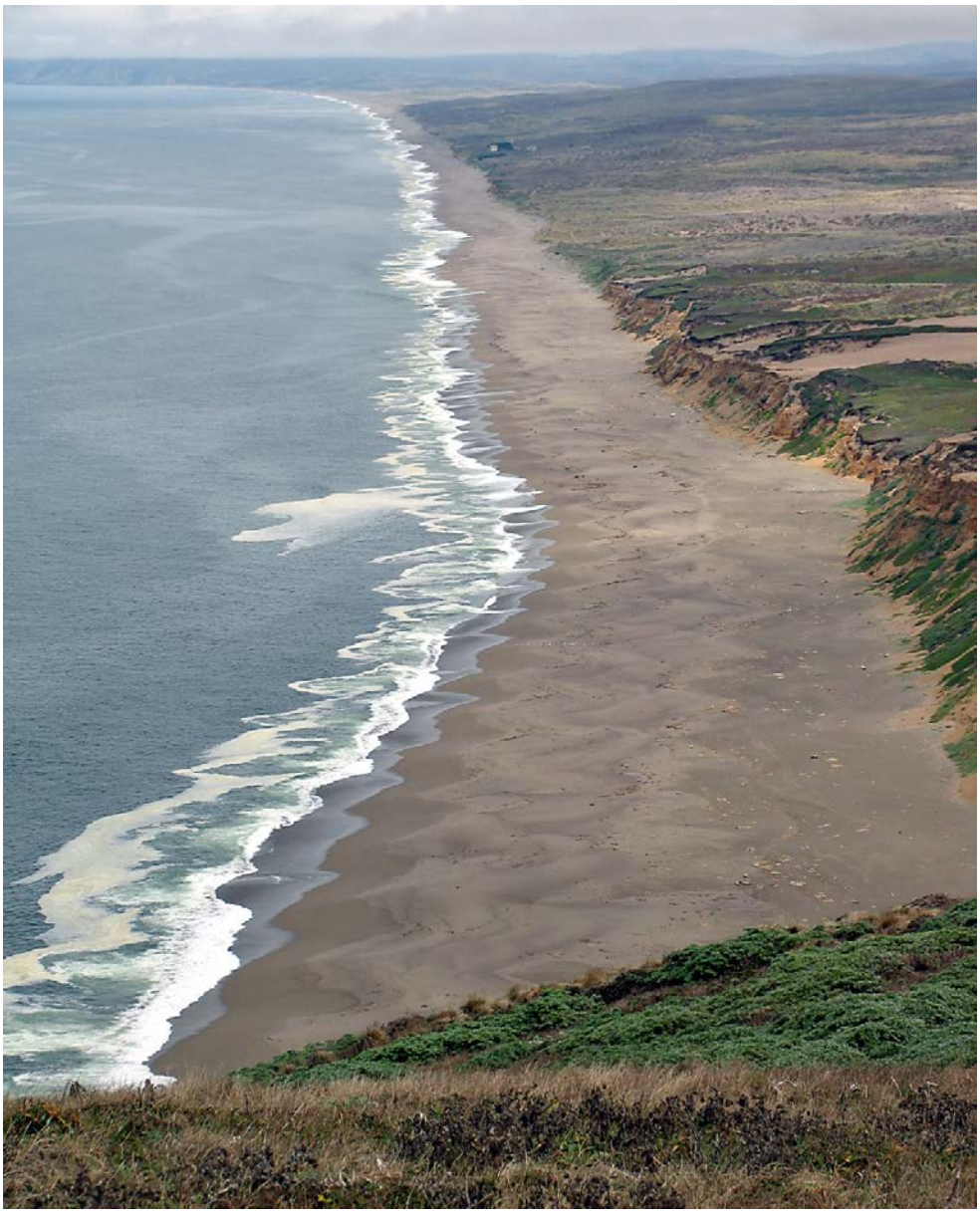
NOAA's Shoreline Assessment Manual

NOAA
Shoreline Assessment Manual

4th Edition



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Shoreline Assessment Manual

4th Edition

August 2013

U.S. DEPARTMENT OF COMMERCE Penny Pritzker, Secretary	**National Oceanic and Atmospheric Administration** Dr. Kathryn Sullivan, Acting Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator	**National Ocean Service** Dr. Holly Bamford, Assistant Administrator for Ocean Services and Coastal Zone Management

NOAA's Office of Response and Restoration

NOAA's Office of Response and Restoration (OR&R) is a center of expertise in preparing for, evaluating, and responding to threats to coastal and marine environments, which may include oil and chemical spills, releases from hazardous waste sites, and marine debris. OR&R is comprised of three divisions: Emergency Response, Assessment and Restoration, and Marine Debris.

To fulfill its mission of protecting and restoring the nation's coastal and marine ecosystems and resources, OR&R:

- Provides world-class scientific and technical support to prepare for and respond to oil and chemical releases.
- Determines injuries to natural resources from spills and other hazards, then seeks damages for restoration to make the public whole.
- Protects and restores marine and coastal ecosystems, including coral reefs.
- Works with communities to address critical local and regional coastal challenges.

Acknowledgements

Many people have contributed their knowledge and expertise to the development and evolution of the Shoreline Cleanup Assessment Technique (SCAT) process and this manual. Their contributions are gratefully acknowledged.

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List of Abbreviations

ACP	Area Contingency Plan
BMP	Best Management Practice
cm	centimeter
ESA	Endangered Species Act
ESI	Environmental Sensitivity Index
EU	Environmental Unit
FOSC	Federal On-Scene Coordinator
GIS	Geographic Information Systems
GPS	Global Positioning System
IAP	Incident Action Plan
IC	Incident Command
ICS	Incident Command System
IM	Information Management
km	kilometer
kpa	kilopascals
m	meter
mm	millimeter
MP	megapixel
NFT	No further treatment
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NIMS	National Incident Management System
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOO	No oil observed
OR&R	Office of Response and Restoration
psi	pounds per square inch
QA/QC	quality assurance/quality control
RP	Responsible Party
SCAT	Shoreline Cleanup Assessment Technique
SSC	Scientific Support Coordinator
SHPO	State Historic Preservation Office
SIR	Shoreline Inspection Report
SLR	single lens reflex
SOS	Shoreline Oiling Survey
STR	Shoreline Treatment Recommendation
UC	Unified Command
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Shoreline Assessment Manual

1 An Introduction to the Shoreline Cleanup Assessment Technique (SCAT)

When spilled oil contaminates shoreline habitats, responders must survey the affected areas to determine the appropriate response. Although general approvals or decision tools for using shoreline cleanup methods can be developed during pre-spill planning stages, responders' specific treatment recommendations must integrate field data on shoreline habitats, oil type, degree of shoreline contamination, spill-specific physical processes, and ecological and cultural resource issues. Cleanup endpoints must be established early so that appropriate cleanup methods can be selected to meet the cleanup objectives. Shoreline surveys must be conducted systematically because they are crucial components of effective decisions. Also, repeated surveys are needed to monitor the effectiveness and effects of ongoing treatment methods (changes in shoreline oiling conditions, as well as natural recovery), so that the need for changes in methodology, additional treatment, or constraints can be evaluated. This manual outlines methods for conducting shoreline assessments and incorporating the results into the decision-making process for shoreline cleanup at oil spills, all a part of the Shoreline Cleanup Assessment Technique (SCAT) program.

In spite of the word "shoreline" in SCAT, a SCAT program can be applied to any type of response, be it oil, chemical (depending on the safety issues), or marine debris, and in any type of habitat, be it along shorelines, wetlands, lakes, rivers, streams, or uplands. Thus, everywhere in this manual where the word "shoreline" is used, it could easily be replaced with the appropriate habitat for a specific incident. SCAT was implemented during responses to the 2010 spills into the Kalamazoo River, Michigan and the Yellowstone River, Montana with good results.

The SCAT program has become an integral component of spill response since the *Exxon Valdez* spill, which was the first spill where standard approaches for documentation, terminology, and decision-making were applied (Owens and Teal 1990). Since then, many organizations have developed SCAT programs, manuals, field forms, job-aids, and training courses. In North America, Environment Canada and the National Oceanic and Atmospheric Administration (NOAA) Office of Response & Restoration (OR&R) have developed similar SCAT programs and associated products.

Many improvements to SCAT were developed during the response to the 2004 *Selendang Ayu* spill in Alaska (Crosby et al. 2008; Owens et al. 2008) and the 2007 M/V *Cosco Busan* spill in San Francisco Bay, including the introduction of Shoreline Treatment Recommendation (STR) forms and the proto-type SCAT database. During the *Deepwater Horizon* oil spill, up to 26 SCAT teams, consisting of Federal, State, local, and BP representatives, conducted field surveys to document the location, degree, and character of shoreline oiling using standard methods and terminology for over three years. As of May 2013, this effort involved over 7,100 SCAT team-days during which 7,058 kilometers (km) of shoreline were surveyed; however, over 46,000 km of total shoreline have been surveyed, because of the many repeated surveys of the same sections of shoreline over time. A robust SCAT database and reporting tools were refined and became essential to managing the data from this large SCAT effort.

During a spill response, SCAT is an integral component of the response organization that is conducted as part of the Incident Command System (ICS). Further information regarding ICS, response structures, and roles can be found in the US Coast Guard Incident Management Handbook (USCG 2013). The SCAT function in a typical ICS structure fits into the Planning Section under the Environmental Unit (EU) with strong interaction with the Operations Section (Figure 1). SCAT teams are often made up of representatives from state and federal agencies, the Responsible Party (RP), and the U.S. Coast Guard (USCG) or U.S. Environmental Protection Agency (USEPA) as the Federal On-Scene Coordinator (FOSC). Members of the team should be trained and knowledgeable in their roles, which include 1) SCAT Coordinator, 2) SCAT Team Leader, 3) SCAT Team Member, and 4) SCAT Data Manager. In some cases, there will be a need for a SCAT-Ops Liaison and a SCAT Logistics Coordinator. The NOAA Scientific Support Coordinator (SSC) is a principal advisor to the FOSC, per the National Contingency Plan. The NOAA SSC and Scientific Support Team are trained and experienced in planning, conducting, leading, training, and coordinating all aspects of SCAT.

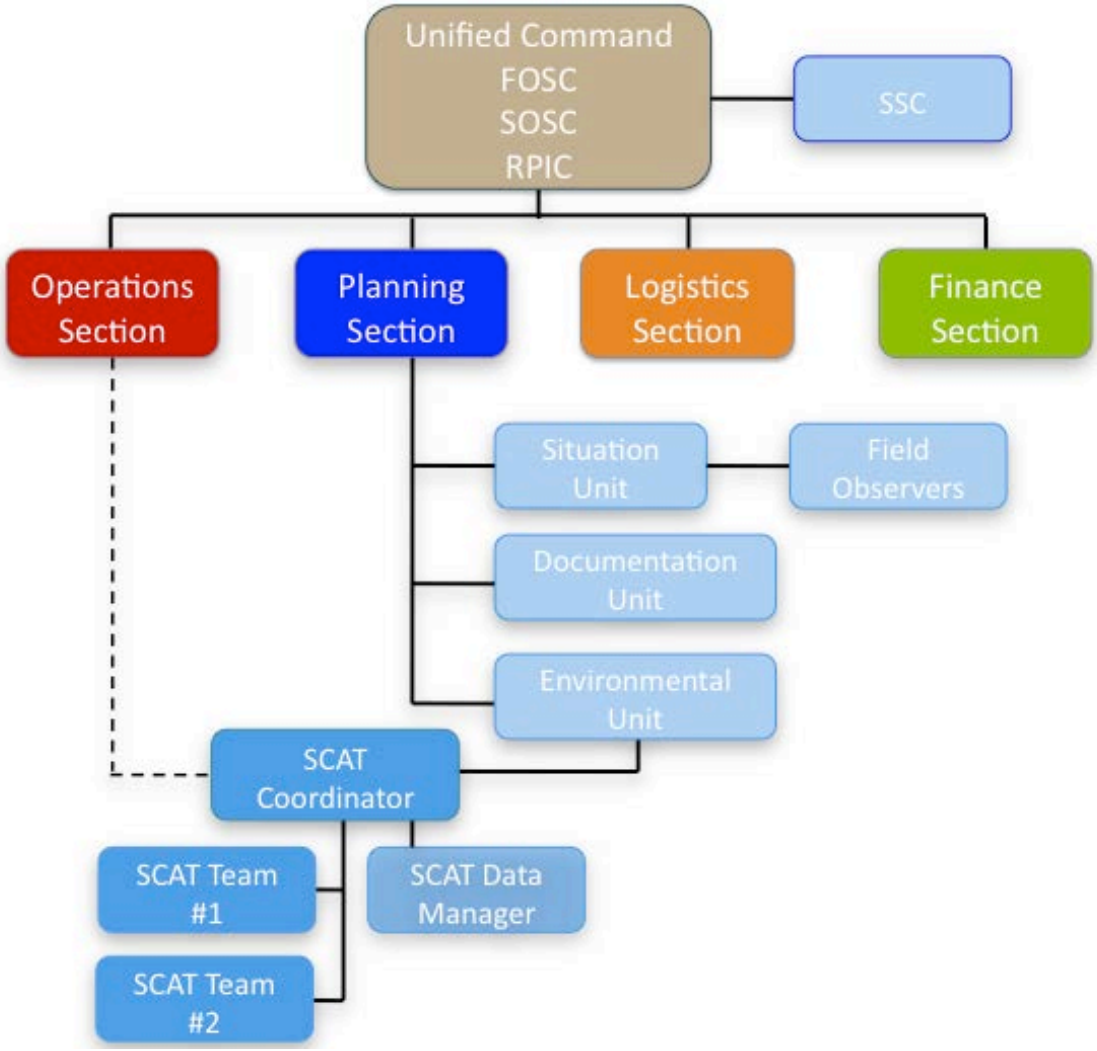


Figure 1. The Unified Command Structure of ICS. SCAT Teams work as part of the Environmental Unit to collect information on shoreline oiling conditions to support cleanup decision-making.

Bringing their organization's expertise, SCAT Team Members collect the data needed to develop a shoreline cleanup plan that maximizes the recovery of oiled habitats and resources, while minimizing the risk of injury from cleanup efforts. Consideration should always be given to:

- Potential for human exposure, by direct contact or by eating contaminated seafood;
- Extent and duration of environmental impacts if the oil is not removed;
- Natural removal rates;
- Potential for remobilized oil to affect other sensitive resources; and
- Likelihood that cleanup could cause greater harm than the oil alone.

Information from these assessments must meet the requirements of the cleanup operation, being both timely and of uniform quality and content. Finally, the teams must coordinate their field activities with the Operations Division supervisors working in the areas being assessed. This ensures that all operations are conducted safely and that important information is exchanged.

Information generated by SCAT is critical to spill response and is used throughout the planning and operational process (Figure 2). The SCAT Coordinator synthesizes field data into reports used by the EU and Planning Section to support the daily Incident Action Plan (IAP). The information and recommendations are reviewed and approved by the Planning Section and implemented by the Operations Section in shoreline cleanup. SCAT supports the response objectives and mandates of the response operations, as directed and managed by the Unified Command (UC). Appropriate representatives from all stakeholders in the response are involved in this activity. Shoreline assessment data must be collected quickly since it is necessary for operational decision making.

The following sections of this manual describe the organizational and technical aspects of conducting shoreline assessments. This manual is designed for use as a field guide as well as a training tool. NOAA has developed training programs for SCAT Team Members and Coordinators/Team Leaders that covers much of the material in this manual, as well as other technical topics that SCAT Team Members need to be able to perform their duties, including introduction to Environmental Sensitivity Index (ESI) maps, coastal processes, oil types and behavior, case studies, oil behavior and cleanup on different shoreline types, and field exercises to practice doing SCAT surveys. NOAA and USEPA have developed a similar three-day training program for Inland SCAT, using examples and case studies from inland spills.

General Process of SCAT Support to Operations

The SCAT Process begins as soon as the threat of shoreline oiling is identified. The following discussion outlines the basic SCAT process (Figure 3), keeping in mind each component is scalable to meet the needs of the incident. Reconnaissance is conducted to identify the shoreline types, extent (both along-shore and cross-shore) of oiling, and logistical requirements for deploying field teams. Teams are organized and trained, maps and spatial data on sensitive resources and shorelines are compiled, and initial cleanup guidelines and endpoints are developed. Based on the priorities to support Planning and Operations Sections, SCAT teams conduct the initial shoreline survey and complete the Shoreline Oiling Survey (SOS) forms. The results are evaluated using the cleanup guidelines (allowable shoreline treatment methods for different shoreline types and degree of oiling) and cleanup

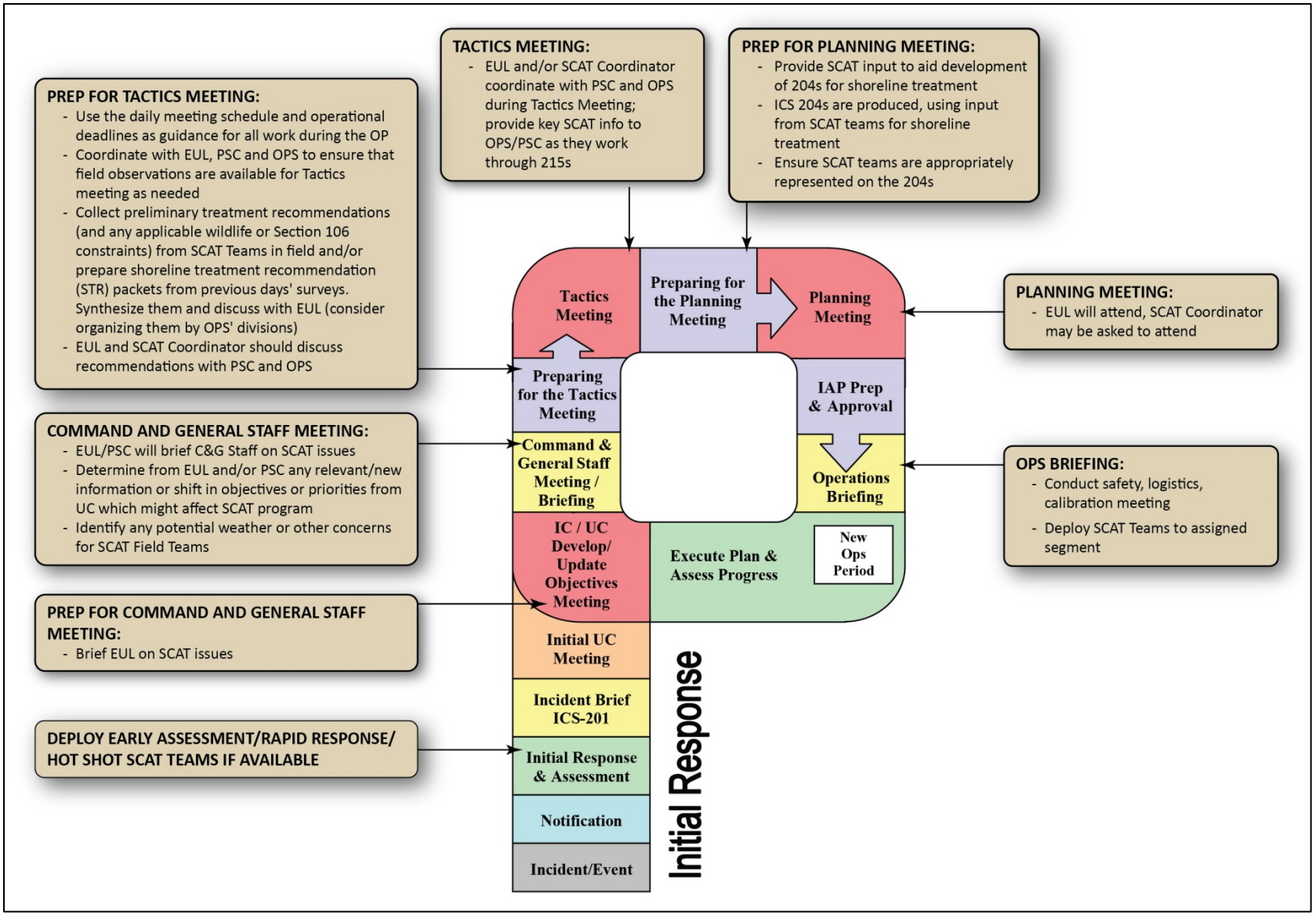


Figure 2. Where SCAT-generated information is used in the "Planning P" process (from Northwest Area Committee, 2013).

endpoints (when treatment operations can be terminated), and each shoreline segment is assigned one of three categories: 1) No oil observed (NOO); 2) No further treatment (NFT) recommended; and 3) Treatment recommended, which results in the preparation of a STR. Cleanup endpoints should be included as part of the STR. The draft STR is reviewed by appropriate agencies and stakeholders, including required consultations under federal regulations, and submitted for final approval by the UC before submittal to the Planning Section for issuance to the Operations Section as part of the Incident Action Plan.

Note that the terms cleanup and treatment are used interchangeably. Shoreline treatment does not always remove all the oil, so that the shoreline is "clean," so sometimes treatment is the preferred term. However, they both mean the same thing.

During cleanup activities, SCAT teams respond to requests from the Operations Section to clarify the STR requirements and provide guidance on best practices. The Operations Section notifies SCAT when a segment is deemed ready for inspection against the current cleanup endpoints. If SCAT determines that the segment does meet the cleanup endpoints, they recommend it for final inspection and signoff. If not, they recommend continued treatment, which can include creation of a new or revised STR. Eventually, all shoreline segments, including those that were initially determined to be NFT, are subject to final inspection or review and signoff. A Shoreline Inspection Report (SIR) can be used to document the oiling conditions prior to moving a segment out of the response.

Information Needs Early in the Response

In the initial phase of a spill, the conditions may require immediate information on shoreline oiling to deploy cleanup contractors for gross oil recovery. The UC can direct Field Observers, who are organized under the Situation Unit (Figure 1), to gather such information. As well as knowing accepted terms and cleanup guidelines, Field Observers must understand the key agency concerns about a spill, such as the shoreline sensitivity or special resource issues, (e.g., protected species or cultural resources), that need to be considered during any type of shoreline cleanup operations.

Companion Job-Aids to this Shoreline Assessment Manual

NOAA has generated a series of job-aids that should be considered companion documents to this manual. These include:

- **Shoreline Assessment Job-Aid:** A pocket-sized, laminated field guide used by members of Shoreline Assessment Teams to assist them in recording accurate field observations in a concise, systematic, and standard format.
- **Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments:** A pocket-sized field guide that summarizes the technical rational for selecting response methods and describes shoreline treatment methods in terms of their objectives, descriptions, applicable habitats, when to use, biological constraints, environmental effects, and waste generation.
- **Characteristic Coastal Habitats: Choosing Spill Response Alternatives:** A pocket-sized guide that illustrates typical physical and biological attributes of coastal habitats.

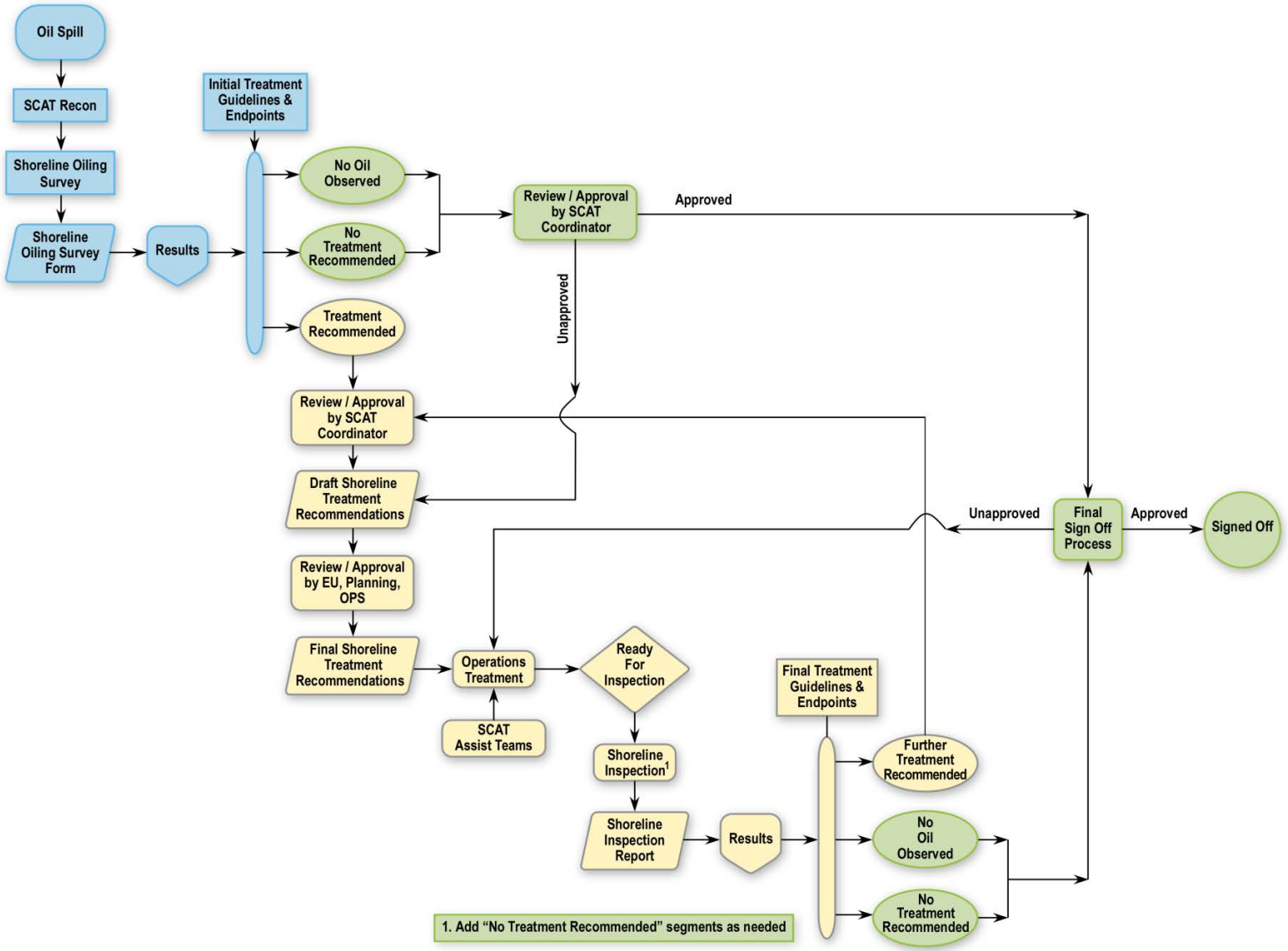


Figure 3. SCAT process flow chart.

2 The Flexibility of Shoreline Assessment Methods

What is a SCAT Program?

- It is a systematic approach that uses standard terminology to collect data on shoreline oiling conditions and support decision-making for shoreline cleanup;
- It is flexible in terms of scale of the survey and detail of the data sets collected;
- It is multi-agency, with trained representatives from all stakeholders, who have authority to make decisions; and
- It provides a clear organizational framework that links the SCAT process to both cleanup decision-making and logistical coordination.

The SCAT process should be easily modified to fit the spill conditions; it should be as simple as possible, yet comprehensive enough to address all of the issues and concerns of shoreline cleanup. It must not be a slow, cumbersome process that keeps decision-makers waiting for key data. Two types of SCAT are outlined below, representing a range of complexity. Many spills will require some elements of both: detailed surveys of specific problem areas, and application of general guidelines for cleanup of shorelines with simple cleanup requirements.

"Geographic" SCAT

This assessment approach generates site-specific recommendations on resource protection and cleanup methodology.

Involves…

- Completing forms, segment maps, and/or sketches for each segment;
- Photodocumenting oiling conditions; and
- Making detailed treatment recommendations unique to each segment, identifying specific locations to be cleaned.

Is used for…

- Very small spills where all sites can be readily inspected by the same team;
- Very large spills where many teams are required;
- Sites where many different shorelines types have been oiled; and
- Areas where full documentation of oiling conditions is required, such as:
  - Spill conditions where cleanup problems are not readily apparent (e.g., buried oil that must be located by digging, or when repeated surveys are needed to ensure that removal is complete); and
  - Areas with resource constraints that need to be specifically identified in the field.

"Topical" or "Hot Spot" SCAT

This assessment approach is appropriate when the degree of oiling is relatively uniform or uncomplicated, or when the shoreline type is not particularly sensitive, such as man-made structures. The cleanup guidelines should be detailed enough to prevent confusion about their use. Terminology

used in the guidelines should reflect local usage (e.g., use "seaweed" rather than "brown algae" or "*Fucus*" if that is what the cleanup workers call it). Box 1 is an example of general cleanup guidelines.

Box 1:
Guidelines for Hot-Water Flushing of Oiled Riprap/Bulkheads

- Water temperature not to exceed 120°F.
- Spray nozzle will be held at a distance of 5 inches or greater from the surface. All spraying/flushing will be into water for collection.
- No attached seaweed will be sprayed with hot water.
- Once the water level reaches the seaweed, hot-water flushing will be terminated.
- Once hot-water washing is terminated, all released oil will be recovered immediately. Cold-water flushing of the seaweed is allowed when oil has accumulated in it.
- Removal of heavily oiled seaweed will be allowed in specific areas identified by SCAT. If seaweed is to be cut, the root attachment and a 30-cm stem will be left.
- Cold-water flushing will be conducted until no more oil is mobilized.
- Hot-water flushing will be repeated until no free oil is released by the hot wash and no more than a stain (cannot be scraped off with a fingernail) remains on the surface.
- Sorbents will be deployed along areas where sheens are being released from the shoreline.

NOTE: *The guidelines will be revised, as needed, in response to changing conditions as the oil weathers.*

Involves…

- Conducting familiarization surveys by the team to identify oiling conditions and cleanup issues for each shoreline type or resource of concern;
- Developing spill-specific cleanup guidelines for each shoreline type, to be implemented in the field;
- Meeting with cleanup supervisors to make sure that the cleanup guidelines are understood, what leeway they have in implementing them, and the key issues of concern to the resource agencies;
- Spot-checking cleanup operations for compliance with cleanup guidelines and effectiveness toward achieving target cleanup endpoints; and
- Responding to requests to resolve "hot spot" problems encountered during cleanup activities.

Is used for…

- Small-volume spills that spread over very large areas (e.g., widespread stranding of tar balls on beaches);
- Man-made shoreline types, such as seawalls, with few site-specific sensitive ecological or cultural resource issues; and
- Cleanup work that continues for a very long time because of chronic re-oiling or seasonal changes in shoreline oiling.

Response Typing as Part of the SCAT Process

Under ICS, the USCG classifies incidents as to their complexity using a 1-5 Type scale, so that their personnel have the appropriate training to handle the responsibilities required of them during an incident (Figure 4). Type 5 is limited to one operational period and one responder; Type 4 is limited to one operational period and multiple responders. SCAT is unlikely to be required for these types of incidents. Types 1-3 may extend into multiple operational periods and involve increasingly complex organizational structures. NOAA has adopted a similar Incident typing approach in its SCAT planning, training, and response. This concept uses the flexibility of the SCAT process to consistently scale SCAT skills, organization, methods, and products appropriately to a specific spill's requirements. The primary objectives are to:

1) Guide procedural SCAT needs for varying response complexity;
2) Specify appropriate tools;
3) Identify useful and/or required products; and
4) Provide the basis for developing guidelines for NOAA SCAT personnel and equipment requirements for on-scene and home team support.

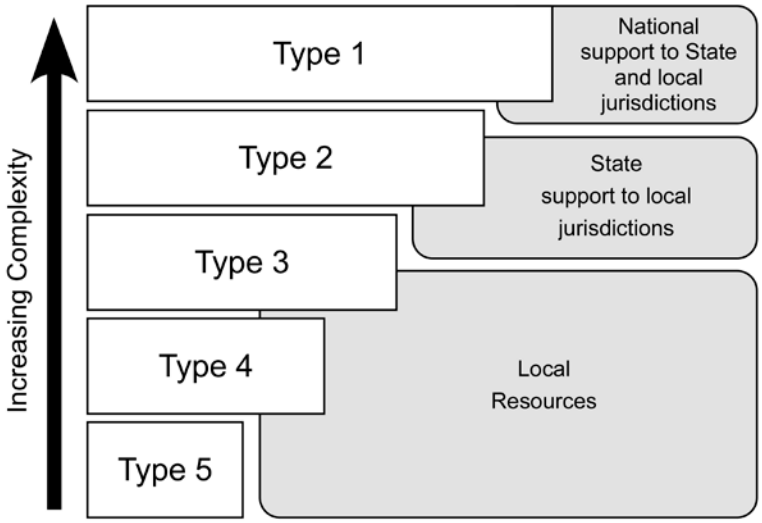


Figure 4. U.S. Coast Guard Response Types.

Factors that NOAA considers when determining spill complexity include:

- Spill volume and type of product released (especially if unusual or dangerous)
- Spatial extent of oiling (e.g., number of miles or acres affected)
- Number, sensitivity, and complexity of shoreline types potentially affected
- Estimate of duration of SCAT surveys needed (days vs. weeks vs. months) and complexity of SCAT data management
- Number of SCAT teams needed or assembled
- Uniformity/complexity of oiling
  - Multiple zones of oiling within segments prevalent vs. one continuous band

    - "3-dimensional" oiling (e.g., oiling on stems or branches of marsh/mangrove/forested wetlands)
- Spill conditions
    - Are oiling conditions difficult to visualize (e.g., buried or sunken oil)?
    - Are oiling conditions rapidly changing?
- Are weather, rough conditions, or other factors a hindrance to the SCAT process?
- Spill source changes, such as acute or chronic re-oiling incident(s), unknown source(s), or oiling changes due to weather (severe weather, extreme heat) or seasonal changes
- Logistical constraints to shoreline access (remoteness, accessibility, tidal range)
- Resource concerns that need to be specifically confirmed in the field
    - Threatened/Endangered species nesting and use of designated critical habitat
    - Migratory/spawning concentrations
    - Cultural resource considerations
- Recreational or industrial use of the oiled shorelines, seasonal use factors
- Commercial, recreational, and/or subsistence consumption of resources
- Degree of cooperation among the RP and Natural Resource Trustee agencies

[1]A **Type 3** SCAT effort is most appropriate when some of the following factors occur:

- The volume of spilled oil is small (e.g., <10,000 gallons)
- The spatial extent of oiled shoreline is small (e.g., <10 miles)
- The majority of shoreline types are not particularly sensitive (e.g., manmade or sand beaches)
- Time required to survey entire impacted area is short (e.g., 3 days)
- Only 1-2 teams are required and assembled
- The degree of oiling is uniform or uncomplicated
- Logistical access for SCAT surveys is simple (e.g., easily accessible by foot or boats)
- Few site-specific sensitive resource issues identified
- SCAT data can be managed by one person
- Cooperation and consensus between Trustees and RP is easily met (or no known RP)

A **Type 2** SCAT effort is most appropriate when some of the following factors occur:

- The volume of spilled oil is moderate (e.g., 10,000-100,000 gallons)
- A small-volume spill spreads over very large areas (e.g., tar balls)
- The spatial extent of oiled shoreline is moderate (e.g., > 10 miles and < 100 miles)
- Time required to initially survey entire impacted area is two weeks or less
- No more than 4 teams are assembled at first; this number may diminish down to 2 as the initial survey is completed
- The degree of oiling is fairly uniform and uncomplicated, but there are some hot spots or problem areas
- Logistical access for SCAT surveys is simple to moderate (e.g., accessible by foot or boat; need for some easily accessible equipment like 4-wheel drive trucks or airboats)

[1] Specifics from a particular event may fall within more than one incident type over space or time.

- There are some sensitive resource issues or shoreline types that can mitigated with moderate effort
- There is recreational (particularly high season) or industrial use of an area that is impacted
- SCAT data are more complex, requiring more than one data manager
- There is reasonable cooperation and consensus amongst and/or between Trustees and RP
- Resource, shoreline, or cleanup issues emerge in a "Type 1" spill that complicate the situation and require additional time and effort

A **Type 1** SCAT effort is likely most appropriate when some of the following factors occur:

- The volume of spilled oil is large (e.g., > 100,000 gallons)
- The product spilled is unusual or dangerous
- The spatial extent of oiled shoreline is large or complex (e.g., over 100 miles, hundreds of acres of broken marsh)
- Time required to initially survey entire impacted area is lengthy (2-4 weeks or longer in some cases)
- Four or more SCAT teams are needed daily for multiple weeks
- The degree of oiling is complicated and lacks uniformity due to multiple shoreline types or other factors
- Spill conditions exist where cleanup problems are not readily apparent (e.g., buried or submerged oil)
- Cleanup work continues for a very long time because of acute or chronic re-oiling or changes in shoreline oiling due to weather or other factors
- Logistical issues for SCAT teams
- Working in remote areas with long daily travel times or strenuous hiking/access (e.g., Aleutian Islands, rocky coasts of California)
- Accessible only by air or sea
- Extensive broken marsh subject to tidal changes making accurate assessment and mapping difficult
- Traveling in urban areas with traffic constraints
- Resource concerns that need to be specifically identified in the field are numerous
- Threatened/Endangered species nesting in impacted areas
- Large numbers of animals congregating seasonally (e.g., wintering waterfowl, fish spawning)
- Cultural resource considerations
- Recreational (particularly high season), industrial, or tourist areas are impacted
- High-value real estate or property are oiled
- Potential degradation of a "pristine" environment or one heavily relied upon for consumptive use (subsistence, commercial, or recreational)
- SCAT data are very complex, requiring a large data management team
- Relationships amongst and/or between Trustees and RP are contentious

3 Responsibilities of the SCAT Team

As SCAT Teams represent the "eyes and ears" of the Unified Command in the field, they have the following responsibilities:

- Describe shoreline types, oiling conditions, and physical setting
- Identify sensitive resources (ecological, recreational, cultural)
- Determine the need for cleanup
- Recommend shoreline cleanup methods and endpoints:
  - Specify generic and site-specific constraints for cleanup activities
  - Determine the need for follow-up surveys if archaeological and cultural resources are present
  - Establish cleanup priorities
  - Identify safety concerns for cleanup operations
  - Monitor cleanup effectiveness and effects, suggesting changes where needed
  - Determine when cleanup operations are no longer effective
  - Conduct post-cleanup inspections before sign-off

Teams must answer these questions:

- Is cleanup necessary at this segment?
- Which cleanup methods are appropriate or recommended?
- Which constraints are needed to protect sensitive resources?
- What is the priority for cleanup at this segment?
- Are cleanup operations being conducted properly?
- Is the cleanup method no longer effective, or causing collateral damage? Do we need to try another method?
- Does the segment meet the cleanup endpoints?

SCAT data need to be collected efficiently and the results provided to the Unified Command in a timely manner.

4 Roles and Responsibilities of the SCAT Program Members

The SCAT Program usually consists of a Coordinator, Team Leaders for each team, Team Members, and Data Managers. For large, complex responses, there may be a need for a SCAT-Ops Liaison and a SCAT Logistics Coordinator. Responsibilities and NOAA's position qualification guidelines for each member are outlined below. Other organizations may have different position qualification guidelines.

SCAT Coordinator

Responsibilities:

ICS Responsibilities

- Serve as the primary point of contact for all SCAT activities, both at the Incident Command Post and in the field
- Participate in Planning Section meetings
- Recommend the need for and number of SCAT Teams
- Participate in development of incident-specific Cleanup Endpoints; Continue to lead evaluation of targeted cleanup endpoints, modifies them as necessary, and coordinate with the Unified Command for approval
- Develop a reporting schedule to produce survey results in time for incorporation into the Incident Action Plan
- Prepare interim daily summaries of SCAT activities and results, for use in briefing during daily Planning Section meetings
- Obtain briefing information and special instructions from Environmental Unit Leader, and/or SCAT Team Leaders and shares information as appropriate
- Brief the response management team on issues raised by the SCAT, particularly where cleanup methods must be modified to increase effectiveness or decrease impacts
- Coordinate with other members of the response effort to optimize data sharing, including the NRDA team, Operations, and Planning
- Integrate cleanup concerns of the various resource agencies and managers into the decision-making process
- Generate and make sure all SCAT team members sign the incident-specific Site Safety Plan

SCAT Team Management Responsibilities

- Conduct reconnaissance survey to scope the shoreline oiling issues
- Oversee the creation of shoreline segments for collection of SCAT data
- Conduct or coordinates refresher training for SCAT teams prior to field deployment
- Ensure that all teams have the necessary expertise and stakeholder representation
- Develop daily assignments for each team and provides a daily safety briefing prior to team deployment
- Ensure that teams use proper terminology and apply guidelines uniformly and are properly calibrated
- Arrange for logistical support for the SCAT Teams

- Possess overall responsibility for ensuring that all members have the necessary training, field gear, and safety equipment
- Ensure availability of critical field information, including weather, tides, and key phone numbers (e.g., safety, wildlife operations, 3rd party claims, Joint Information Center, etc.)
- Ensure that all SCAT field teams are present and accounted for
- Work to achieve consensus among SCAT members on treatment recommendations, priorities, constraints, etc.; reports dissenting opinions when consensus is not reached
- Generate and make sure all SCAT team members sign the incident-specific Site Safety Plan

SCAT Information Management Responsibilities

- Optimize SCAT data collection (forms and process), management, and reporting to support operational decisions
- Identify sensitive resources and shares information with SCAT teams
- Receive reports from field teams and synthesizes them into a daily summary
- Ensure that field-collected data are accurate and appropriately presented for use in the Incident Command Post
- Oversee the generation of all SCAT products, including shoreline oiling and cleanup stage maps and tables, sites of special concern maps and tables, shoreline treatment recommendations and priorities, and shoreline inspection reports
- Monitor effectiveness of cleanup

NOAA Position Qualification Guidelines:

- Has completed the SCAT Team Coordinator/Team Leader training course
- Has current HAZWOPER certification
- Has completed the following NIMS training courses: ICS-100, ICS-200, ICS-300, ICS-700, and ICS-800
- For all NOAA personnel, must have the most current required training dictated by NOAA policies
- Has knowledge of coastal ecology, coastal processes, and/or geology
- Is aware of regional protocols and the Area Contingency Plan
- Has SCAT experience from at least five different spills
- Has experience with weather forecasts to make decisions on team safety while in the field
- Has experience in developing cleanup guidelines and endpoints for different shoreline types
- Is familiar with effective management, facilitation, and conflict resolution skills

Special Considerations:

- NOAA recommends that the SCAT Coordinator role be filled by a public agency representative if possible
- On small spills, the NOAA SSC often fills the role of SCAT Coordinator

SCAT Team Leader

Responsibilities:

- All SCAT Team Member responsibilities
- Ensure that field gear for SCAT teams (maps, photography equipment, GPS, communications, etc.) are adequate and assembled prior to deployment
- Ensure that field gear and safety equipment are maintained by SCAT Team Members and reports any problems to the SCAT Coordinator
- Review each SCAT segment assigned to their team prior to deployment for issues such as access sites (vehicle, boat, helicopter), problematic terrain (streams, cliffs), special safety considerations, communications, limitations, etc.
- Manage the team while it conducts field surveys
- Act as the team Safety Officer
- Make sure that the forms and sketches are 100% completed in the field
- Guide the team toward consensus on treatment recommendations, priorities, special constraints, etc., and notes dissenting opinions
- Brief the SCAT Coordinator and other SCAT Leaders on field survey results
- Aware of Best Management Practices that are inplace
- Record cleanup issues and any other spill-specific issues identified by the team that need to be addressed
- Determine need for additional expertise to address specific sites, i.e., archaeologist, geomorphologist, response cleanup experts, etc.
- Provide quality control of field-collected data for use in the Incident Command Post
- Recommend to SCAT Coordinator modifications to cleanup methods and target cleanup endpoints based on SCAT Team recommendations
- Can serve as Deputy SCAT Coordinator, if required
- Manage and assist with field documentation of observed oiling conditions and/or record photo/waypoint details
- Obtain briefing information and special instructions from Environmental Unit Leader, and/or SCAT Team Coordinator, and shares information as appropriate.
- Read and sign the incident-specific Site Safety Plan
- Perform other tasks as defined by the SCAT Coordinator
- Generate and make sure all SCAT team members sign the incident-specific Site Safety Plan

NOAA Position Qualification Guidelines:

- Has completed SCAT Team Coordinator/Team Leader training course
- Has current HAZWOPER certification
- Has participated as a member on a SCAT in at least two significant responses
- Has completed the following NIMS training courses: ICS-100, ICS-200, ICS-700, and ICS-800
- For NOAA personnel, has the most current required training dictated by NOAA policies
- Has knowledge of the coastal ecology, processes, and/or geology of the affected area

- Has experience in evaluating cleanup methods for different shoreline types
- Is proficient with operating a Global Positioning System (GPS) unit, including collection, upload, and download of waypoints and track lines and selecting datum and coordinate formats (see SCAT GPS Guidelines in Appendix H)
- Is proficient with operating a digital camera, including setting the correct date and time (see SCAT Photography Guidelines in Appendix G)
- Knows proper sampling methods and how to maintain chain of custody of samples
- Has experience conducting field surveys
- Knows how to download images captured in the field and organize them based on standard protocols

SCAT Team Member

Responsibilities:

- Assist in data collection on shoreline types, oiling conditions and special considerations
- Recommend site-specific constraints or precautions to be followed during cleanup
- Recommend need for cleanup, considering cleanup guidelines and endpoints, site safety, and sensitive resources
- Recommend shoreline cleanup methods, priorities, and endpoints considering cleanup guidelines, site safety, and sensitive resources
- Assist with field documentation of observed oiling conditions (e.g., record photos, waypoints and related details)
- Ensure that field gear and safety equipment are maintained and reports any problems to the SCAT Leader
- Monitor effectiveness of cleanup
- Identify and be aware of sensitive resources and shares information with other SCAT members
- Work to achieve consensus among SCAT Team Members on treatment recommendations, priorities, constraints, etc.
- Obtain briefing information and special instructions from SCAT Coordinator and/or SCAT Team Leader
- Read and sign the incident-specific Site Safety Plan
- Is responsible for personal safety

NOAA Position Qualification Guidelines:

- Has current HAZWOPER certification
- Has completed the following NIMS training courses: ICS-100, ICS-200, ICS-700, and ICS-800
- Has completed formal SCAT training, preferably a 3-day course
- For NOAA personnel, has the most current required training dictated by NOAA policies
- Has a general knowledge of the coastal ecology, coastal processes, and/or geology

- Is proficient with operating a GPS, including collection, upload, and download of waypoints and track lines and selecting datum and coordinate formats (see SCAT GPS Guidelines in Appendix H)
- Is proficient with operating a digital camera, including setting the correct date and time (see SCAT Photography Guidelines in Appendix G)
- Is proficient with downloading images captured in the field and organizing/labeling them
- Understand proper sampling methodologies and chain of custody protocols

SCAT Data Manager

Responsibilities (see also Chapter 7):

- Assist the SCAT Coordinator in optimizing SCAT data collection (forms and process), management, and reporting to support operational decisions
- Modify existing SCAT data entry forms as needed (working with SCAT Coordinator)
- Review daily SCAT forms for completeness and consistency
- Enter or supervise the entry of daily SCAT data
- Conduct data quality assurance/quality control (QA/QC); identifies common data problems and trains SCAT members how to prevent future problems
- Generate daily summary reports (database-generated) of shoreline cleanup status, maps (hard copy, KMZ, PDF) of shoreline cleanup status, and specific data summaries determined by the SCAT Coordinator and Incident Command
- Maintain an archive of all SCAT data (e.g., forms, photographs, GPS data, etc.)
- Provide access to all SCAT data entry forms and field manuals to Incident Command
- Is prepared to work odd and extended hours
- Read and sign the incident-specific Site Safety Plan
- Is aware of health and safety issues for a particular work site
- Manage field team photographs using appropriate database and protocols
- Manage field team GPS data using appropriate software

NOAA Position Qualification Guidelines:

- Has the ability to set up and maintain hardware and software needed for response
- Has completed the following NIMS training courses: ICS-100, ICS-200, ICS-700 and ICS-800
- Has completed Introduction to SCAT training course (familiar with SCAT terminology)
- Is proficient in use of commonly used spreadsheet software (e.g., Excel)
- Is proficient in use of database software to manage SCAT data
- Knows how to operate a GPS, including collection of waypoints and track lines, selecting datum and coordinate formats, and download data to computer
- Is proficient in use of commonly used GIS software (e.g., ArcGIS)
- Is skilled in creation of output files in various formats (e.g., Google Earth KMZ files)
- Has general knowledge of relational database structures

- Know how to operate a digital camera, set the correct date/time and organize photos based on SCAT protocols
- Is proficient in use of commonly used photo georeferencing software (e.g., GPS PhotoLink, OziPhoto, OziExplorer)
- Has general knowledge of QA/QC procedures
- Has the ability to diagnose/troubleshoot hardware/software/networking issues
- Is proficient in standard spatial data directory structures, file naming conventions
- Can delegate work to and manage additional SCAT information management team members, if required

SCAT Data Management Team

Responsibilities (see also Chapter 7):

- Assist with producing daily status maps showing current SCAT deployments and assessment activities; maintain archive copies for distribution and reference
- Assist with obtaining weather from NOAA sources and post and print for morning ops briefings
- Assist with managing and QA/QC SCAT Teams' GPS tracklogs and waypoints from GPS units and digital photos; process with appropriate software tools (e.g., OziExplorer, GPS Photo Link, HoudahGeo)
- Assist with making SCAT maps available in all appropriate formats, including hard copies, PDFs, and Google Earth KML/KMZ files

NOAA Position Qualification Guidelines:

- Has the ability to set up and maintain hardware and software needed for response
- Has completed Introduction to SCAT training course (familiar with SCAT terminology)
- Is proficient in use of commonly used spreadsheet software (e.g., Excel)
- Is proficient in use of commonly used database software (e.g., Access)
- Know how to operate a GPS, including collection of waypoints and track lines, selecting datum and coordinate formats, and download data to computer
- Is proficient in use of commonly used GIS software (e.g., ArcGIS)
- Is skilled in creation of output files in various formats (e.g., Google Earth KMZ files)
- Know how to operate a digital camera, including setting the correct date and time and organizing photos based on SCAT protocols
- Is proficient in use of commonly used photo georeferencing software (e.g., GPS PhotoLink, OziPhoto, OziExplorer)
- Has general knowledge of relational database structures
- Has general knowledge of QA/QC procedures
- Has the ability to diagnose/troubleshoot hardware/software/networking issues
- Is proficient in standard spatial data directory structures, file naming conventions

SCAT-Ops Liaison

For large, complex responses, SCAT teams will be very busy conducting surveys and may not have the time to work in the field with Operations Supervisors as shoreline cleanup begins. Under these conditions, a SCAT-Ops Liaison position may be created, particularly during the early phase of the response. This position should be filled by experienced responders who understand both SCAT and shoreline cleanup operations.

Responsibilities:

- Be the link between SCAT and Operations to make sure that Operation Supervisors understand the shoreline treatment recommendations, how they should be interpreted, and best practices for implementation
- Meet with the Operations Supervisors in each Operations Division to discuss the shoreline treatment recommendations and clarify any misunderstandings
- Visit each work crew to observe operations and answer questions about methods
- Discuss with the SCAT Coordinator any issues raised by the Operations Section
- Document daily activities with a daily report that includes photographs of the operations and any issues that need to be addressed

SCAT Logistics Coordinator

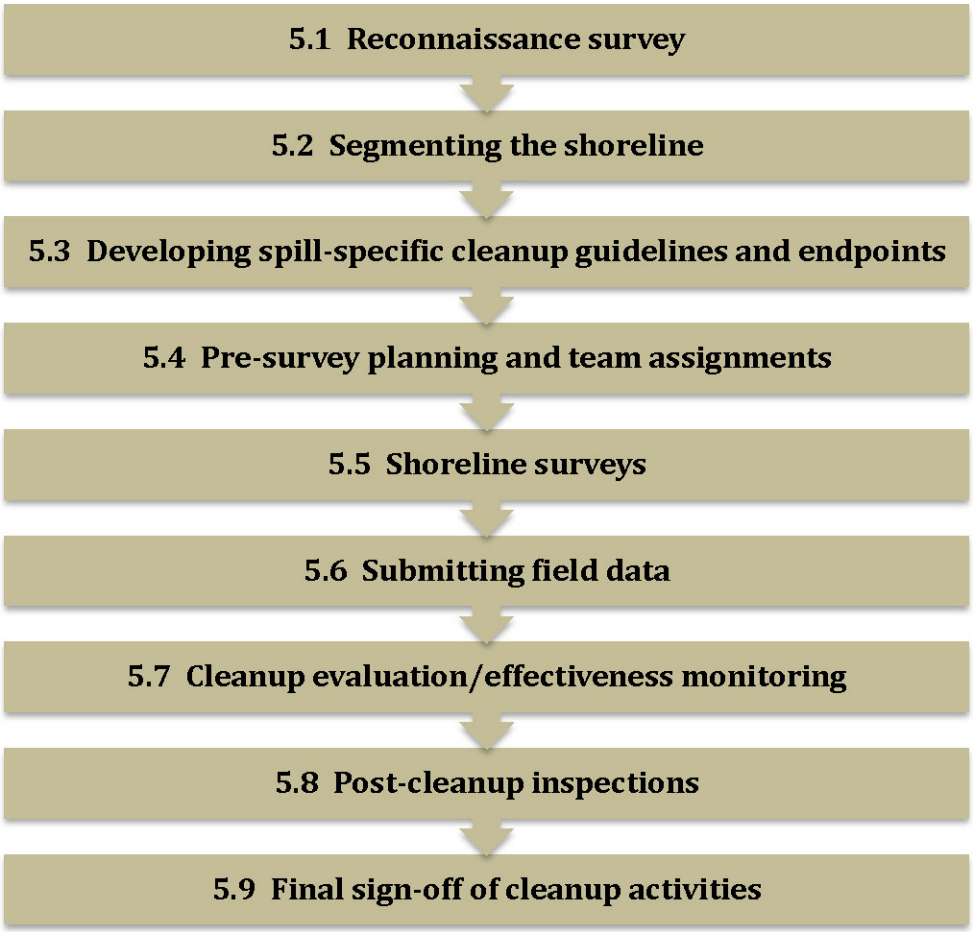
For responses that require complex logistics to get SCAT teams into the field, making all the logistical arrangements is a full-time job. A Logistics Coordinator will be essential to making sure that the teams have the resources needed to get to their assigned segments, including field and safety gear, boats, aircraft, and vehicles.

Responsibilities:

- Develop a daily tasking plan for all SCAT teams. This plan should extend out several days and be posted on white boards for all to review. This information is to include team number, team members by organization, location name and segments to be surveyed, departure time, and any special instructions
- Prepare and submit ICS-213 resource request forms to order any resources needed, such as type of boats or aircraft, vehicles, and field and safety gear, in time for these resources to be ordered to meet the tasking plan
- Track the status reports from the teams in the field, particularly when they depart/arrive back to the deployment area (e.g., marina, airport)
- Repair/replace field and safety gear returned by the teams
- Attend the daily SCAT debrief to learn of any logistical or safety issues so they can be resolved

5 Shoreline Assessment Process and Activities

The following sections describe the full range of activities normally conducted as part of the shoreline assessment process for the steps outlined below.



The degree to which each activity is implemented depends on the complexity of the spill. Flexibility is important; activities should be modified as appropriate to specific spill conditions. Yet every SCAT Program should contain these basic activities.

Various resources and tools have been developed to assist SCAT Coordinators, Team Leaders, and Team Members in conducting each of these activities. These tools and resources are briefly summarized below.

Shoreline Assessment Job-Aid: A pocket-sized, laminated field guide used by members of Shoreline Assessment Teams to assist them in recording accurate field observations in a concise, systematic, and standard format. It consists of color photographic examples of all shoreline assessment terms, shoreline types, and cleanup methods. NOAA produced the Job-Aid in 1998 and updated it in 2007. Laminated hardcopies are available for purchase and electronic copies are available for download at: http://response.restoration.noaa.gov/sites/default/files/jobaid_shore_assess_aug2007.pdf

Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments: A pocket-sized field guide that summarizes the technical rational for selecting response methods and describes shoreline treatment methods in terms of their objectives, descriptions, applicable habitats, when to use, biological constraints, environmental effects, and waste generation.Prepared by NOAA in 2000 and updated in 2010. Hardcopies are available at no costs and electronic copies are available for download at: http://response.restoration.noaa.gov/sites/default/files/Characteristics_Response_Strategies.pdf

Characteristic Coastal Habitats: Choosing Spill Response Alternatives: A pocket-sized guide that illustrates typical physical and biological attributes of coastal habitats at risk from oil spills. For each of 18 shoreline types, it includes a sketch, description, predicted oil behavior, response considerations, and the response method table. It is a useful aid for training people who will be participating in Shoreline Assessment surveys. Prepared by NOAA in 2000 and updated in 2010. Hardcopies are available at no cost and electronic copies are available for download at: http://response.restoration.noaa.gov/sites/default/files/Characteristic_Coastal_Habitats.pdf

Environmental Sensitivity Index (ESI) Maps: Provide detailed data on shoreline habitats, sensitive biological and human-use resources, and life-history data on biological resources. The latest ESI maps can be downloaded at: http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html

Open Water Oil Identification Job Aid for Aerial Observation: Field guide to assess the character and extent of oil spilled on the water. It was updated in 2012. Laminated hardcopies are available for purchase and soft copies are available at: http://response.restoration.noaa.gov/sites/default/files/OWJA_2012.pdf

International Tanker Owners Pollution Federation Limited (ITOPF) Technical Information Papers (TIPs): A series of seventeen papers that describe technological advances and ITOPF's more recent collective experience on a wide range of marine pollution topics. Each paper covers a specific subject in a concise manner, illustrated with photographs and diagrams. Available at: http://www.itopf.com/information-services/publications/

In addition, shoreline assessment manuals have been developed by Environment Canada, CEDRE, and the United Kingdom, as listed in the references cited.

5.1 Reconnaissance Survey

Objectives

- Obtain overall perspective on shoreline types and degree of contamination in the area of impact.
- Determine areal extent of oiling on the shoreline.
- Identify logistical constraints to shoreline access for both shoreline assessment and cleanup teams.

Responsibility

- Usually conducted by the SCAT Coordinator, although someone with local-area knowledge can also be a valuable participant.

Methods

- Should be conducted in the first day or two of the incident and as oil expands into new areas.
- Review maps to become familiar with area and resource concerns.
- It is best to conduct an aerial survey, but it could also be conducted by vessel, vehicle, or foot.
- Develop a flight plan of the area to be surveyed and brief the pilot on the survey objectives, flight line direction (so that the key observers have direct view of the shoreline), likely duration, and special requirements such as flight altitude.
- Fly entire impact area (~400 feet altitude at a maximum of 100 miles per hour) in helicopter or high-wing aircraft. Schedule the flight during low tide to view maximum extent of potentially oiled shoreline.
- Use GPS and topographic maps or nautical charts to record:
    - Flight path, including date and time;
    - Objective descriptors of shoreline oiling conditions[2];
    - Location of floating oil, possibly affecting shoreline oiling conditions;
    - References to photographs/video taken; and
    - Access points for survey teams, especially in remote areas.
- After the aerial survey, compile your observations, tracklines, photographs, etc. into a report to share with other SCAT personnel. Select key photographs, particularly of oiled areas needing immediate response, to brief Operations and Planning.
- Visit representative ground sites to confirm and scale the degree of shoreline impacts and note special problems, such as potential for burial of oil, which could affect cleanup decision planning.

[2] Objective oiling descriptors (Chapter 6, Figure 6) must be modified according to observations made during the reconnaissance survey.

5.2 Segmenting the Shoreline

Objective

- Divide the shoreline into operational working units, called segments, for recording and tracking survey data and making treatment recommendations.

Responsibility

- Can be completed in the command post by the SCAT Coordinator or workgroup using maps, or in the field by SCAT Teams. Local-area knowledge will be valuable.
- Some areas already have pre-segmented shorelines identified in their Area Contingency Plan.

Methods

- Generate base maps from digital databases or aerial imagery.
- Mark segments based on similarity of geomorphology (refer to ESI maps), degree of oiling, or the boundary of an Operations zone; local staff familiar with the area should be involved.
- Segment boundaries should be readily recognizable in the field.
- Size segments appropriate to spill conditions and total area of impact (often 0.2 to 2.0 km long). Because separate forms are completed for each segment, the interval should not be so small that the number of forms required becomes unmanageable for the size of the spill.
- Use divisions or zones already in use by cleanup operations, when possible. Develop the segment-naming scheme with the Operations Section so it is most useful. SCAT segments should not include multiple Operations work zones.
- Consider the logistics for deploying cleanup crews when segmenting the shoreline. For example, segment boundaries along a uniform shoreline (e.g., long sand beach) could be between two access points.
- For long uniform shorelines select a fixed length, such as 500 m, and mark with stakes or flags
- Pre-number segments with alphanumeric code (e.g., BI-9 for segment number 9 on Block Island; or A-1 for the first segment in cleanup zone A). Remember that the spill responders may not be familiar with local geographic names.
- When segmenting a river shoreline, river miles and river bank (e.g., left or right descending) are often used to delineate each segment.

As an example, on the eastern end of Galveston Island, Texas (Figure 5, top), the parks are different segments because of their special management status, the Gulf beaches are segmented based on access routes, and the other segments are based on shoreline type. For inland spills, oil often spreads laterally and contaminates habitats over larger areas, such as in a floodplain, rather than forming a relatively narrow band along a shoreline. In these cases, SCAT teams may define segments as areas or polygons, as shown in Figure 5 (bottom) for the 2010 spill into the Yellowstone River, Montana. It may be difficult to determine appropriate boundaries between segments in areas of thick vegetation. SCAT teams need to be flexible and have more creativity when surveying under these kinds of conditions. Up-to-date aerial photographs will be essential to determine locations and mark boundaries. Use of GPS in track mode will also be essential for documenting the actual areas surveyed.

Figure 5. (top) Example of shoreline segmenting. (bottom) Example SCAT segments for the 2010 Yellowstone River spill; note the need for polygons where the oil spread into the river floodplain.

5.3 Developing Spill-Specific Cleanup Guidelines and Endpoints

Endpoints are selected based on general cleanup objectives, which are to: 1) minimize exposure hazards for human health; 2) speed recovery of impacted areas if possible; and 3) reduce the threat of additional or prolonged natural resource impacts. These objectives lead to developing cleanup strategies that do not cause more harm to the environment than good.

Ideally, cleanup efforts will return the resource to its baseline condition without suffering further impact or affecting other resources. Aggressive and inappropriate cleanup techniques can make matters worse. Less intrusive methods or natural recovery are often preferable. The best cleanup strategy is often not the one that removes the *most oil*; rather, it is the strategy that removes oil that poses a greater risk of injury than would result from cleanup, and allows remaining oil to be removed by natural processes.

Objectives

- Guide the Operations Section in conducting specific *cleanup methods* to minimize adverse environmental impact.
- Provide the Operations Section with environmental and safety constraints on conducting cleanup activities in *specific habitats*.

Responsibility

- SCAT Coordinator, agency staff, major landowners, and Team Leaders.

Methods

- *A more detailed discussion of how to develop cleanup endpoints follows this bulleted list.*
- Develop spill-specific cleanup objectives, guidelines, and target endpoints. Refer to the Characteristics of Response Strategies Job-Aid that describes cleanup methods. Cleanup methods are usually generated for each shoreline type that is oiled. Appendix C describes the ESI shoreline types (see Table 1), expected oil behavior, and general response considerations. Guidelines for shoreline cleanup endpoints that can be used as the basis for developing the spill-specific cleanup endpoints are provided in Table 2.
- Evaluate proposed cleanup methods for potential habitat or resource effects.
- Identify time-critical and degree-of-use issues to be combined with cleanup priorities and endpoints.
- Identify sensitive resources that may be adversely affected by the proposed treatment methods (e.g., rich intertidal biota on rocky shores where low-pressure ambient-water flushing will be used). Consult with the NOAA National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) about compliance with Section 7 of the Endangered Species Act (ESA). See Box 2 for a summary of the process to make this determination during an emergency response.

- Consult with NOAA's National Marine Fisheries Service to comply with regulations to protect Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act.
- Determine if there are Historic Properties (such as archaeological or cultural resources) in the area of operations that could be disturbed by cleanup activities. See Box 3 for the process to make this determination during an emergency response.
- Discuss among stakeholders the trade-off issues between the desire to remove all the oil versus the potential impacts associated with intensive treatments. Consider natural removal processes and the timing of habitat use. Even the presence of cleanup workers can disturb wildlife such as marine mammals at haulout sites and nesting birds and sea turtles.
- Write operational guidelines to minimize adverse impacts (e.g., restrict flushing operations to times when the rich biota zones are underwater). Date the guidelines in order to track revisions.
- Conduct field trials and evaluate new methods or equipment to determine effectiveness and potential adverse effects.
- Observe actual operations to confirm the method's use, i.e., that the cleanup is effective and is not more damaging than the oil alone.
- Modify cleanup guidelines as the oil changes from weathering, rendering the technique ineffective, or when unacceptable impacts occur under actual use.

Table 1. ESI shoreline types for three habitat settings. The color scheme for the ESI classifications is shown in the first column.

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE
1A	Exposed rocky shores	Exposed rocky shores	Exposed rocky banks
1B	Exposed, solid man-made structures	Exposed, solid man-made structures	Exposed, solid man-made structures
1C	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base
2A	Exposed wave-cut platforms in bedrock, mud, or clay	Shelving bedrock shores	Rocky shoals; bedrock ledges
2B	Exposed scarps and steep slopes in clay		
3A	Fine- to medium-grained sand beaches		
3B	Scarps and steep slopes in sand	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
3C	Tundra cliffs		
4	Coarse-grained sand beaches	Sand beaches	Sandy bars and gently sloping banks
5	Mixed sand and gravel beaches	Mixed sand and gravel beaches	Mixed sand and gravel bars and gently sloping banks
6A	Gravel beaches (granules and pebbles)	Gravel beaches	Gravel bars and gently sloping banks
6B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed tidal flats	
8A	Sheltered scarps in bedrock, mud, or clay	Sheltered scarps in bedrock, mud, or clay	
8B	Sheltered, solid man-made structures	Sheltered, solid man-made structures	Sheltered, solid man-made structures
8C	Sheltered riprap	Sheltered riprap	Sheltered riprap
8D	Sheltered rocky rubble shores		
8E	Peat shorelines		
8F			Vegetated, steeply-sloping bluffs
9A	Sheltered tidal flats	Sheltered sand/mud flats	
9B	Vegetated low banks	Vegetated low banks	Vegetated low banks
9C	Hypersaline tidal flats		
10A	Salt- and brackish-water marshes		
10B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10C	Swamps	Swamps	Swamps
10D	Scrub-shrub wetlands; Mangroves	Scrub-shrub wetlands	Scrub-shrub wetlands
10E	Inundated low-lying tundra		

Table 2. Guidelines for development of cleanup endpoints. Use these guidelines to develop spill-specific cleanup endpoints for terminating active cleanup.

No Oil Observed (NOO): Not Detectable by Sight, Smell, Feel	This endpoint is often used for sand beaches where oil removal can be effective without delaying resource recovery. Visual inspections are preferred over chemical analysis of samples because of: difficulty of sampling areas with high variability; time and costs to complete sampling and analysis; and lack of guidelines on what levels are safe.
Visible Oil But No More than Background	This endpoint is often applied where there is a significant background rate of tar ball deposition on the shoreline.
No Longer Generates Sheens that Will Affect Sensitive Areas, Wildlife, or Human Health	This endpoint is used where sheening persists after cleanup efforts become ineffective, or on sensitive habitats where further cleanup efforts will cause more harm than natural removal. Residual sheening should persist over a relatively short time period. Sheen is an oil film ranging from barely visible to dull colors. Sorbents effectiveness is usually limited in recovery of sheens. Consider the amount and duration of sheening, and the distance to sensitive resources, to determine if sheening poses a significant threat. Consider the degree of exposure: high wave/tidal exposure speeds removal and breaks up sheens; sheltered areas will sheen longer and sheens will be more persistent. Consider the degree and timing of use: sheening may be tolerated in areas or during periods of low use; even minor sheens may not be tolerated in areas of high use, such as swimming beaches.
No Longer Rubs Off on Contact	This endpoint is usually defined as oil removal to a stain or coat, or weathering to the point that it is no longer sticky. It is applied to hard substrates (rocky shores, seawalls, riprap, gravel) and vegetation (marshes, mangroves). The objective is to prevent oiling of fur, feathers, and feet of wildlife, and oiling of people and property during contact with oiled surfaces. Consider the degree and timing of use: high-use areas often require higher cleanliness, whereas natural removal is allowed in low-use areas where further cleanup efforts will be disruptive.
Oil Removal to Allow Recovery/ recolonization Without Causing More Harm than Natural Removal of Oil Residues	This endpoint is used where further oil removal will result in excessive habitat disruption (e.g., trampling of soft sediments and plant roots, mixing oil deeper, extensive sediment removal, vegetation cutting) or high biota mortality (e.g., from high-pressure, hot-water washing of intertidal communities). It is also used for areas with difficult access, which limits the type of cleanup that can be conducted along that shoreline segment. Consider the potential for erosion from excessive sediment removal, particularly where erosion/deposition patterns of the beach cycle will re-work and clean sediments within an acceptable time frame.

Box 2:

Complying with Section 7 of the Endangered Species Act (ESA) During Oil Spill Response

- ESA provides protection for listed species and their designated critical habitats (50 CFR 402).
- Section 7 of the ESA prohibits "take" of individual animals or adverse modification or destruction of critical habitat.
- **Take** is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.
- Federal agencies must ensure that their **actions** don't jeopardize the continued existence of listed species or destroy critical habitat.
- The FOSC (either USCG or USEPA), as the Lead Federal Agency, must determine whether or not listed species and/or critical habitats are present within the area of the operation.
- **Action** is defined as "…all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas."
- Federal agencies conduct interagency consultation, (aka Section 7 consultation), with the US Fish and Wildlife Service and National Marine Fisheries Service either formally or informally on any action that may affect listed species.
- The USFWS and/or NMFS generate Best Management Practices (BMPs) for response-related activities to minimize impacts to listed species and critical habitats. These become part of the shoreline treatment recommendations that are issued to the Operations Section.
- Depending on the spill conditions, these recommendations may require special agency field monitors during cleanup operations to **document compliance** with the BMPs
- Furthermore, there may be a need to document SCAT compliance with any BMPs that have been developed for SCAT teams to follow during their field surveys.
- The Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act (dated 2001) is available at: http://www.uscg.mil/npfc/docs/PDFs/urg/App/ESA_MOA_AppA_04.pdf

Box 3:

Complying with Section 106 of the National Historic Preservation Act (NHPA) During Oil Spill Response

- Under Section 106 of 36 CFR 800, Federal agencies are required to take into account the effects of their undertakings on historic properties that are listed in, or eligible for, inclusion in the National Register of Historic Places (NRHP).
- The FOSC (either USCG or USEPA), as the Lead Federal Agency, must determine whether or not NRHP-eligible Historic Properties are present within the area of the operation.
- If Historic Properties are present, the Lead Federal Agency must then determine whether or not the undertaking will have an adverse effect on them.
- This determination is made by consulting with State Historic Preservation Offices (SHPOs), Native American tribes, Federal land managers, and other stakeholders on the presence of and potential adverse effects to Historic Properties prior to the start of cleanup operations.
- After consultations, the FOSC, the SHPO, and other stakeholders reach an agreement on how the adverse effects on Historic Properties will be addressed such as avoidance, monitoring, mitigation, or other procedure.
- A Historic Properties Specialist oversees the Section 106 process during the development of shoreline treatment recommendations and develops recommendations to be implemented by SCAT and Operations during their work. Examples include:
- No Known Cultural Concern – Work can proceed without archaeological monitoring. If cultural concerns are discovered, work must stop and Section 106 Team notified.
- Potential Cultural Concern – Project area requires archaeological survey before work can proceed.
- 250 Meter Sensitivity Zone – Project is within 250 meters of a known cultural resource. Archaeological monitoring required during the undertaking.
- There is a Programmatic Agreement under the National Contingency Plan whereby this process is expedited during oil spill emergencies.
- In some regions of high sensitivity, archaeologists and/or tribal representatives may accompany the SCAT teams to identify unknown historic sites, confirm current condition of known sites, and make sure that SCAT team activities do not disturb such sites.
- The Programmatic Agreement on Protection of Historical Properties During Emergency Response Under the National Oil and Hazardous Substances Pollution Contingency Plan is available at: http://www.achp.gov/NCP-PA.html.

The SCAT Coordinator can form a work group to evaluate cleanup options and make recommendations on other issues that arise. Besides reviewing published studies and case histories, they can consider on-site testing for effectiveness and environmental effects of the proposed method(s) under the spill-specific conditions. The selection of shoreline treatment methods involves choices (aka tradeoffs) between the degree of oil removal and degree of impact associated with the

method as shown in Figure 6. Method 3 was too aggressive; though it removed the most oil, it also had the longest recovery rate. Method 2 removed less oil but had moderate habitat recovery. Method 1 was the best option; it removed the most oil and had the best recovery.

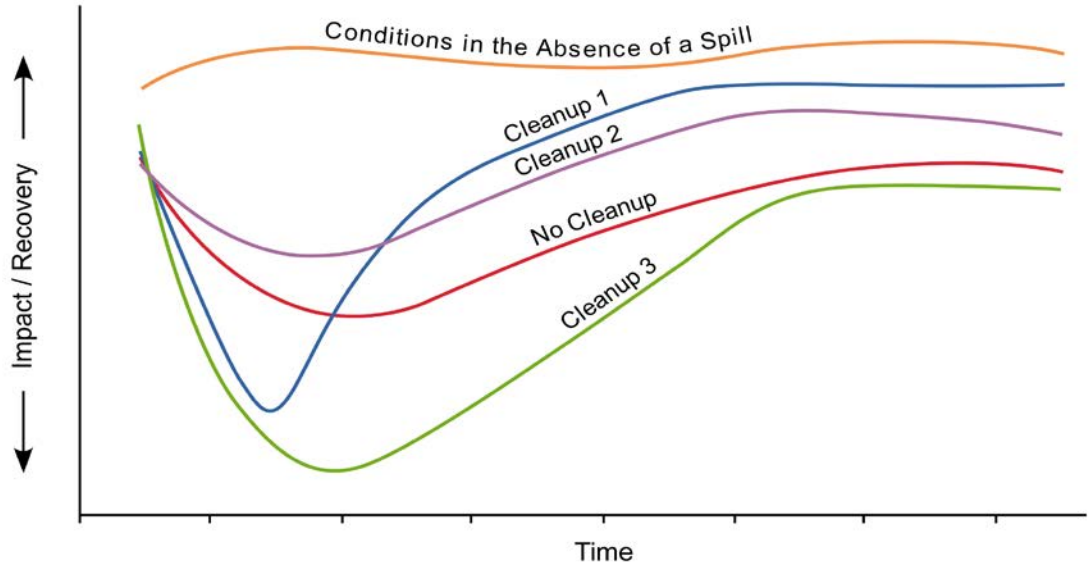


Figure 6. Impact and recovery of various cleanup methods, including natural recovery. Note that Cleanup method 3 removed the most oil but had the longest habitat recovery. Cleanup method 1 was the best option because it removed more oil and had the fastest habitat recovery.

Guidelines for cleanup endpoints that consider this tradeoff concept are outlined in Table 2. Although the highest cleanup endpoint is removal to the point of no observed oil, this is often not possible, particularly if there is a background rate of oil deposition (e.g., natural seeps, shipping traffic). In these cases, a more appropriate endpoint would be cleanup of visible oil, but not exceeding the background amount. Note that "visible" oil applies not only to oil on the surface, but also subsurface oil that must be exposed in trenches dug into the sediments. When shoreline cleanup to achieve these endpoints is likely to cause added harm to the environment, three additional endpoints may be considered:

- Oil removal to the point where the shoreline no longer generates sheens that affect sensitive areas, wildlife, or human health;
- Oil removal to the point where it no longer rubs off (e.g., no longer sticky or tacky or a threat to wildlife); and
- Oil removal to the point that allows recovery/recolonization without causing more harm than leaving the oil in place.

Why Cleanup Endpoints for Inland Spills are Often More Stringent

- Inland habitats often lack some of the physical processes (such as waves and tidal currents) that can speed the rate of natural removal of oil residues after treatment operations are terminated.
- The direct human uses of inland habitats, such as for drinking water, recreation, industrial use, and irrigation, require a higher degree of treatment compared to marine environments to avoid human health and socio-economic impacts.
- Spills in close proximity to where people live, work, or recreate often require treatment to a higher level.
- Inland spills can affect smaller waterbodies where there are slower rates of dilution and degradation.
- There may be large-scale differences in water levels during the response, causing oil to be stranded well above normal levels where it can pose hazards to wildlife as well as humans using these areas.
- Many states have sediment quality guidelines that must be met as part of the remediation phase after the emergency response is completed.

Cleanup Endpoints and Trade-off Issues by ESI Shoreline Type

Examples of cleanup endpoints and trade-off issues used at previous oil spills for different shoreline types are included below, to assist you in developing spill- and site-specific endpoints. Each spill will have a unique combination of oil type, rate of natural removal, biological sensitivity, timing windows (how quickly the cleanup has to be completed), and human use issues that may lead to different endpoints. Note that many of the endpoints incorporate SCAT terms.

Exposed Rocky Shores and Wave-Cut Platforms (ESI = 1A and 2)

<u>Cleanup Trade-off Issues</u>

- Shoreline access is often difficult, dangerous, and limited to low tides and calm wave conditions.
- Rapid natural removal rates are expected, so these shorelines usually have lower priority for cleanup. Thus, cleanup endpoints are seldom an issue because onshore cleanup activities are not initiated.
- High wave energy at these sites usually breaks up sheens, limiting the distance sheens can spread and thus the areal extent of threat to sensitive resources.
- Timing is often a critical component in allowing natural removal to proceed, particularly for the presence of migratory waterfowl, seabird nesting, and breeding activities of marine mammals.
- May consider limited removal of persistent residues that are affecting sensitive resources (e.g., sources of sheens very near active bird nesting colonies).

Example Cleanup Endpoints

- No accessible oiled debris.
- No surface oil greater than Stain or Coat on solid surfaces >20% distribution.
- In inaccessible areas where further oil removal is not possible because of safety restrictions, cleanup can be terminated when the shoreline no longer generates sheens that affect sensitive wildlife.
- On exposed rocky shores used as marine mammal haulouts, persistent oil should be removed until the oil is no longer sticky, unless cleanup is too disruptive to animals at the site.

Solid Man-Made Structures (ESI = 1B and 8B) (e.g., seawalls, pier pilings, bulkheads)

Cleanup Trade-off Issues

- These shoreline types often occur in developed areas with chronic sources of pollutants or habitat degradation, so they usually have low biological sensitivity.
- More intrusive techniques are considered because of their lower biological use and need to minimize human exposure in areas of high public use.
- The lower part of the structure can have rich attached biota that should be protected during manual scraping or high-temperature, high-pressure flushing.

Example Cleanup Endpoints

- No accessible oiled debris.
- In industrial areas, no longer generates oil greater than sheens. In public access areas, no longer generates sheens.
- No surface oil greater than 20% Coat or Stain. In areas of high public use or visibility, no surface oil greater than 10% Coat or Stain.

Sand Beaches (ESI = 3 and 4)

Cleanup Trade-off Issues

- Amenity beaches often require a quick cleanup and high degree of cleanliness.
- The sand beach cycle is usually short, so re-worked and re-located sediments often can be rapidly returned to their normal profile on exposed beaches. Wave action can be an effective final "polishing" process, removing residual stains.
- Oil on the surface of sand beaches is relatively easy to clean; however, difficulties arise when the oil is buried because of the amount of sediment that must be removed.
- Where sand can be replaced by existing nourishment projects, more sediment removal is generally allowed to quickly remove oil from public beaches.

Example Cleanup Endpoints

- No visible oil on the surface.
- No oiled wrack. Wrack that is not oiled should not be removed from the beach.

- All tar balls or tar patties that could be removed by reasonable cleanup techniques should be removed. Remaining tar balls and tar patties should be at or below normal background frequency. Increases in tar ball frequency above background will require further cleanup.
- No subsurface oil layers in pits dug into the beach. Buried tar balls should be at or below background frequency.
- On beaches with high resource value, such as those in Wildlife Refuges, less stringent endpoints can be used to minimize impacts to the habitat that would affect beach use by shorebirds or sea turtles.

Mixed Sand and Gravel Beaches (ESI = 5) and Gravel Beaches (ESI = 6A)

Cleanup Trade-off Issues

- Beaches with a significant amount of gravel are relatively difficult to clean because they have high potential for deep penetration and burial. Deeply penetrated oil can be a chronic source of remobilized oil for months or longer.
- Natural replenishment rates of gravel are slow, so sediment removal is usually minimized and sediment reworking or natural removal considered after gross oil removal is completed.
- The most difficult issue is removal of persistent, deeply penetrated oil because of the degree of physical disruption to both the beach profile and sediment distribution patterns. It is difficult to predict how long natural removal at a specific site will take.
- Gravel is mobilized mostly during storms, so it could take months to years for a coarse gravel beach to return to normal after extensive physical disruption.

Example Cleanup Endpoints

- No surface oil more than 10% Coat or Stain on the gravel-sized sediments.
- No subsurface oil greater than 20% Coat or Stain. Occurrences of buried tar balls should be at or below background frequency.
- In remote, difficult access areas, no more than 20% Coat or Stain on the gravel-sized sediments, and subsurface oil no more than 5% Oil Residue.

Riprap Structures (ESI = 6B)

Cleanup Trade-off Issues

- Riprap often occurs in developed areas with chronic sources of pollutants or habitat degradation nearby.
- More intrusive techniques are considered because of their lower biological use and need to minimize human exposure in high public use and populated areas.
- It is extremely difficult to completely remove oil from crevices and undersides of the riprap because they are inaccessible. It sometimes requires replacing the oiled pieces of riprap, which can be highly intrusive and expensive.
- With higher residues remaining, they can release sheens for weeks or longer.

Example Cleanup Endpoints

- No accessible oiled debris.
- In industrial areas, no longer generates sheens. Sorbents will be deployed to recover sheens.
- No surface oil greater than 20% Coat or Stain. In areas of high public use or visibility, no surface oil greater than 10% Coat or Stain.
- In areas of high public access, no oil on the surface that rubs off on contact.

Exposed and Sheltered Tidal Flats (ESI = 7 and 9)

Cleanup Trade-off Issues

- The risks of physical disruption and mixing of the oil are very high, thus passive cleanup (e.g., deploying sorbents) is often the only activity. Even then, extreme care is needed.
- Since there is usually another shoreline type at the upper intertidal zone, care is needed to prevent impacts to the lower tidal flat during cleanup activities along the shoreline.

Example Cleanup Endpoints

- No longer generates sheens that will affect sensitive areas, wildlife, or human health.
- No oiled wrack. Wrack that is not oiled should not be removed from the flat.
- Oil removal can be terminated when further cleanup efforts will result in excessive habitat disruption that will cause more harm than natural removal of oil residues.

Marshes (ESI = 10A and 10 B)

Cleanup Trade-off Issues

- Natural removal rates are very slow. Thick oil on vegetation is usually removed only when the vegetation dies back and sloughs off.
- Generally efforts focus on recovery of free oil trapped in the marsh and deployment of sorbents to recover sheens. Most types of active cleanup in the marsh can cause significant habitat impact and slow overall recovery.
- Foot traffic on the vegetation should be minimized; use boardwalks, work from boats, or restrict work to the marsh edge.
- Oil on marsh vegetation generally weathers to a dry coat within weeks, after which it is a lower threat of oiling wildlife using the marsh.

Example Cleanup Endpoints

- No oil on vegetation that can rub off on contact.
- No longer generates sheens that will affect sensitive areas, wildlife, or human health.
- No free-floating oil in the marsh.
- No longer generates sheens that will affect sensitive areas, wildlife, or human health.
- As low as reasonably practicable, considering the allowed treatment methods and net environmental benefit

Mangroves (ESI = 10D)

Cleanup Trade-off Issues

- Natural removal rates are very slow. Thick oil on vegetation is usually removed only when the vegetation dies back and sloughs off.
- Generally efforts focus on recovery of free oil trapped in the mangrove fringe and deployment of sorbents to pick up sheens. Most types of active cleanup in the mangrove can cause significant habitat impact and slow recovery.
- Foot traffic into the mangrove forest should be minimized; use boardwalks, work from boats, or restrict work to the mangrove fringe.
- Oil on the prop roots and leaves generally weathers to a dry coat within weeks, after which it is a lower threat of oiling wildlife using the mangrove.

Example Cleanup Endpoints

- No oil on prop roots and leaves that can rub off on contact.
- No longer generates sheens that will affect sensitive areas, wildlife, or human health.
- No accessible free-floating oil in the mangrove forest.
- No accessible oiled wrack. Wrack that is not oiled should not be removed.

Large Debris (e.g., Logs, Abandoned Vessels) Excluding Historic/Cultural Items

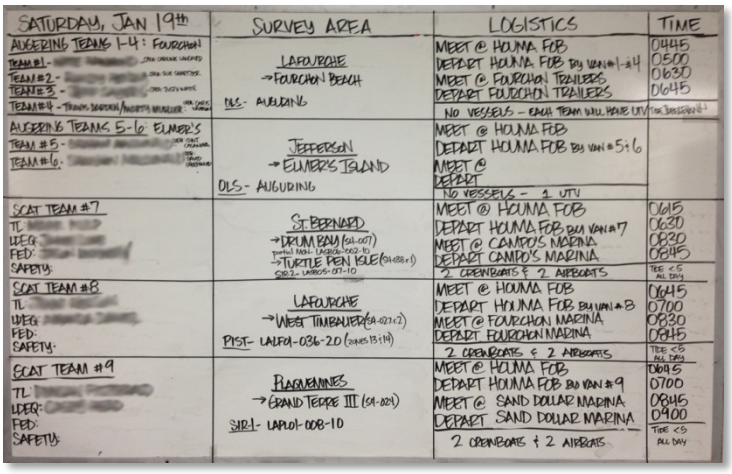
Cleanup Trade-off Issues

- Large pieces of debris are difficult to remove and generate large volumes of waste for transport and disposal.
- Oil on the debris generally weathers to a dry coat within weeks, after which it is a lower threat of oiling wildlife.
- Only the more heavily oiled parts of the debris should be removed (if they can be separated), leaving behind less oiled parts.

Example Cleanup Endpoints

- No surface oil greater than Stain or Coat > 20% distribution.
- No oil on surfaces that can rub off on contact.
- Do not conduct wholesale removal of unoiled natural debris.

5.4 Pre-survey Planning and Daily Team Assignments



Objective

- Based on reconnaissance survey information, determine areas to be surveyed, field logistics, and team assignments.

Responsibility

- SCAT Coordinator, Team Leaders

Methods

- Revise the standard shoreline oiling codes and forms, if needed, to fit spill conditions.
- Form teams with appropriate membership (expertise and affiliation)
- Assign team leaders. Generally they are most experienced person in SCAT. See Chapter 4 for responsibilities and qualifications.
- Ensure that all Team Members have the required safety training.
- Each Team Member must read and sign the Incident Site Safety Plan and the SCAT Field Safety Plan and discuss specific safety concerns related to SCAT activities. The SCAT Field Safety Plan must include a communications plan with set times or events when each team checks in by phone or radio. Appendix F includes the SCAT Field Safety Plan for the MC 252 response as an example.
- Determine logistical requirements for the teams and coordinate requests to the Logistics Section.
- Assign survey areas (primary and backup) for each team, based on priorities, logistics, local expertise, and land management or ownership.
- Generate base maps showing the segment boundaries and names.
- Distribute Operations Division and/or segment maps for primary and backup areas; distribute SOS forms and codes, base maps, and sketch sheets (see Chapter 6 for forms and codes).
- Distribute field equipment (see checklist in Appendix A).
- Brief team on survey objectives, logistics (e.g., transportations, communications, food), and safety issues.
- Discuss cleanup endpoints, guidelines for recommending treatment, and criteria for priorities.
- Discuss reporting requirements and schedules.
- Calibrate on the first field day by having all Team Members visit a segment together and agree on how the oiling descriptions will be applied. This step is essential.
- Schedule a debrief at the end of the day for all SCAT teams to report findings and safety issues, and to plan assignments for the following day.

5.5 Shoreline Surveys

Objectives

- Collect data on shoreline types, oiling conditions, and ecological and human-use resources for each segment.
- Reach agreement on treatment recommendations and priorities for specific segments.
- Confirm that recommendations are effective and beneficial to the environment (refer to list of questions in Chapter 3).

Responsibility

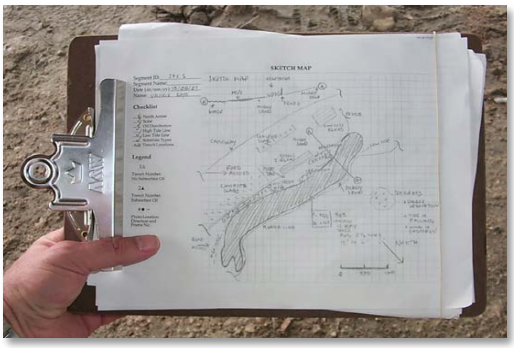
- SCAT Team

Methods

- Comply with the Incident Site Safety Plan and the SCAT Field Safety Plan at all times.
- Confirm segment boundaries upon arrival at the assigned segment, or if not yet determined, delineate segment boundaries during the SCAT survey.
- Conduct survey to identify shoreline types (refer to Table 1) and extent of oiling. The team should spread out so that the entire intertidal and supratidal zones are covered.
- Describe the shoreline characteristics, surface oil conditions, subsurface oil conditions, and special considerations (ecological, recreational, cultural) using standard terms and codes on the Shoreline Oiling Survey (SOS) form. Section 6 provides more details about the forms, terms, and codes. See Appendix I for a step-by-step guidance on completing the SOS form.
- It is important to always dig pits in permeable substrates. Look at the shoreline for clues as to where oil may have become buried by the deposition of clean sediment. Also dig pits to determine the thickness of oil penetration below the surface.
- Sketch the segment, if appropriate, focusing on the oil distribution and special considerations. See Appendix E for a primer on drawing field sketches.
- Delineate the start/end of each oil zone within the segment, by waypoints AND marks on the segment map. Zones can be along shore or cross shore, where the oiling degree and/or shoreline type changes, such as along a sand beach with surface residue that changes to a riprap wall with coat along shore or dunes in the supratidal zone that contains a small number of tarballs.
- Note presence of submerged oil in nearshore zone for spills of heavy oil.
- Log and locate all photographs taken. Use a photo scale (an example is included in Appendix D) for close-up photographs (see photography guidance in Appendix G).
- Collect oil and/or sediment samples based on identified needs. However, sampling should not detract from SCAT's primary mission.
- Discuss and agree on the need for treatment recommendations and priorities.
- Complete the surveys each day in time to meet reporting deadlines.

NOTE: *SCAT teams cannot direct cleanup contractors in the field, though teams can document unapproved cleanup methods or improper techniques. The SCAT Coordinator will communicate with the Planning or Operations Section Chief to rectify the problem.*

5.6 Submitting Field Data



Objective

- Provide data needed to support shoreline treatment decisions and operations.

Responsibility

- SCAT Team, SCAT Coordinator, SCAT Data Managers

Methods

- Check all field maps and forms for accuracy, completeness, and legibility.
- Download digital photographs and GPS tracklines to generate survey maps, if appropriate (SCAT data managers can assist if on scene). See Appendices G and H for more details on these downloads.
- Generate a SCAT data package for each day's surveys that includes the completed forms, sketches, and maps showing the areas surveyed, and representative photographs of the habitats and oiling conditions. Be sure to write notes for each photograph noting its location and explaining what each represents.
- The SCAT Coordinator and/or data manager will review the package and identify missing or incomplete data.
- Copy all forms, sketches, and field notes for the field team as needed; keep originals on file.
- Summarize treatment recommendations by segment.
- Debrief the SCAT Coordinator on special issues, problems, and recommendations.
- Team Leads should call in or send electronically by email or text the results for urgent needs or when the teams are working remotely and unable to return to the Command Post each day.
- Attend end of day SCAT debrief meeting and get next day's assignment.
- Create summary tables and maps identifying segments to be treated, degree-of-oiling categories, or other products as needed (see Chapter 7 for more information on SCAT data management support and products).
- Early in the response, SCAT data must be generated in a timely manner so treatment recommendations get assigned to the Operations Section quickly.

5.7 Cleanup Evaluation/Effectiveness Monitoring

Objectives

- Monitor cleanup operations routinely to evaluate progress of cleanup activities and assess the need for modifying cleanup methods or endpoints.
- Investigate reports of new oiling, changes in erosional/depositional processes that are affecting oil behavior and the response, or other issues.
- Conduct tests to evaluate new treatment methods.

Responsibility

- SCAT Coordinator, Government representatives, major landowners, and SCAT Teams

Methods

- Visit segments where cleanup activities are being conducted to ensure that approved methods are being properly implemented.
- Respond to requests for changes in approved cleanup methods to address specific problems or changes in oiling conditions that render the approved methods ineffective.
- Organize and conduct field-testing and monitoring programs, if needed, during evaluation or use of innovative treatment methods.
- Establish and monitor beach profile transects to document beach erosion and deposition on beaches, which can be very important if there is a risk for deep burial of oil during a depositional period.
- Modify cleanup endpoints, as needed, due to changes in oiling conditions, safety issues or seasonal changes (e.g., winter freeze-up or start of bird-nesting on a segment).
- Produce summary reports and documentation on special issues, problems, and changes in recommendations related to shoreline treatment methods and endpoints.

5.8 Post-Cleanup Inspections

Objective

- Inspect segments that the Operations Section declares ready to determine if they meet endpoints or require further treatment.

Responsibility

- SCAT Team, Land Manager, Land Owner, and Local government representatives (sometimes called a Sign-off Team or a Cleanup Assessment Review Team). Agencies must delegate sign-off authority to their representatives on the team.

Methods

- SCAT Coordinator receives notification from the Operations Section that a segment is ready for inspection.
- Determine additional representatives that need to participate in the inspection, such as the land manager, landowner, or local government representatives. For large spills, it may be appropriate to conduct a pre-inspection with just SCAT to make sure that the segment is ready before involving these others.
- Inspect the segment against the cleanup endpoints (preferably using the same team that did the original survey). The original field sketch/map/ photographs can be very helpful for evaluating effectiveness of the treatment.
- There are three possible outcomes of the inspection (see Figure 3): No Oil Observed, No Further Treatment, or Further Treatment Recommended.
- Determine if further treatment is required using standard shoreline assessment terms, forms, and sketches, or develop special forms for this purpose. If further treatment is recommended, the segment goes back to Operations, with identification of specific areas to be treated.
- Depending on the spill-specific response plan, SCAT can recommend that the segment be moved out of the "active" cleanup phase, to the next phase, such as patrol and monitoring or passive treatment (usually deployment and maintenance of sorbents to recover sheens).
- If the segment meets endpoints or if no further treatment is recommended because of net environmental benefit, the segment can be submitted for final approval by the Unified Command to be moved out of the response.
- Submit the result of the inspection by SCAT to the Planning Section using the required forms, other documentation, and signatures.
- For some responses, a Shoreline Inspection Report (SIR) is used to document agreement among the Team Members of the results of the inspection, with all Team Members signing the form. See Appendix D for two example SIR forms used at past spills. Because this last step can range from simple to complex, there is no one form that would apply to all responses.

5.9 Final Sign-Off of Cleanup Activities

Objective

- Approve the termination of all cleanup activities at each segment.

Responsibility

- Unified Command.

Methods

- Following post-cleanup segment inspections that meet cleanup endpoint criteria, the SCAT Coordinator reviews the results of the SCAT team inspection to make sure that endpoints have been met and the documentation is complete.
- This documentation is turned into the Planning Section who reviews/approves it and forwards the package to the Unified Command for their final review and approval. Note that, for some spills, there may be a need for Section 106 review of and sign off on the package before it goes to the Unified Command.
- The Unified Command or their representatives sign the segment out of the response or to the next phase of the response.

6 Shoreline Survey Terms, Codes, and Forms

Using standard terms and forms to describe and report shoreline-oiling conditions are the basic building blocks of shoreline assessment. Ambiguous words, such as "heavy" oiling, do not provide the necessary detail to document the oiling condition or the need for and type of cleanup to be conducted. The terminology and codes used by SCAT teams for most oil spills are defined in Figures 7-11. SCAT teams need to be trained and calibrated so they can consistently apply these terms to spill-specific conditions. The terminology and codes for spills of light refined products are somewhat different and defined in Table 3. To aid teams in uniformly estimating percent cover, two different types of percent cover estimator charts are included in Appendix D. The *Shoreline Assessment Job-Aid* is a valuable field tool to help teams use proper terminology and protocols in the field.

All Team Members must agree on how they will use these terms and codes for a specific spill. Thus, a calibration field exercise, conducted jointly by all Team Members during the first survey, is always necessary. For responses that extend over months and during rotation of Team Members, re-calibration will be needed.

Various forms have been developed to record the observations of shoreline assessment teams, depending on the oiling conditions, environments, and shoreline types. All of the forms use the standard codes and terms in Figures 7-11. Operations staff will also need training and guidance on how to interpret SCAT data, although they usually see summary reports. Appendix D contains copies of all forms and explanation of terms and codes.

Shoreline Oiling Survey (SOS) form: used for most coastal shoreline oiling conditions. An example for an example segment and accompanying SCAT map is shown in Figures 12 and 13. Section 6 of the form allows recording of surface oiling conditions for tar balls (as # per unit area) when the oiling distribution is less than 1%. Subsurface oiling conditions are documented by digging pits and recording the pit information in Section 7. This form is the most complex and requires a high level of training to complete it properly.

Wetlands SOS form: includes fields to record the oiling characteristics on the marsh soils as well as the height, thickness, and % distribution of oiling of the vegetation.

Tar Ball SOS form: used to record more detailed information for spills with widely scattered tar ball oiling. Figure 14 is a Tar Ball SOS form completed for Zones A-D shown in Figure 11.

River and Stream SOS forms: used on inland spills, notably the 2010 Enbridge spill in the Kalamazoo River in Michigan and the 2011 Silvertip spill in the Yellowstone River in Montana.

Field Observer form: for use for Type 4-5 responses, or during larger responses to quickly get field information back to Operations early in the response.

All forms have fields for entering oiling conditions for the different "zones" within a segment. Each zone represents a unique combination of shoreline/habitat type, oiling conditions, and tidal zone/river bank/stream bank. Zones can be along shore, such as where the shoreline type changes from sand beach to riprap; or cross shore, such as oil in a marsh in the upper intertidal zone as well as on a tidal flat in the middle intertidal zone. Treatment methods and endpoints may vary with each zone.

R Bedrock outcrops
B Boulder (>256 mm in diameter)
C Cobble (64-256 mm)
P Pebble (4-64 mm)
G Granule (2- mm)
S Sand (0.06-2 mm)
M Mud (silt and clay, <0.06 mm)
RR Riprap (man-made permeable rubble)

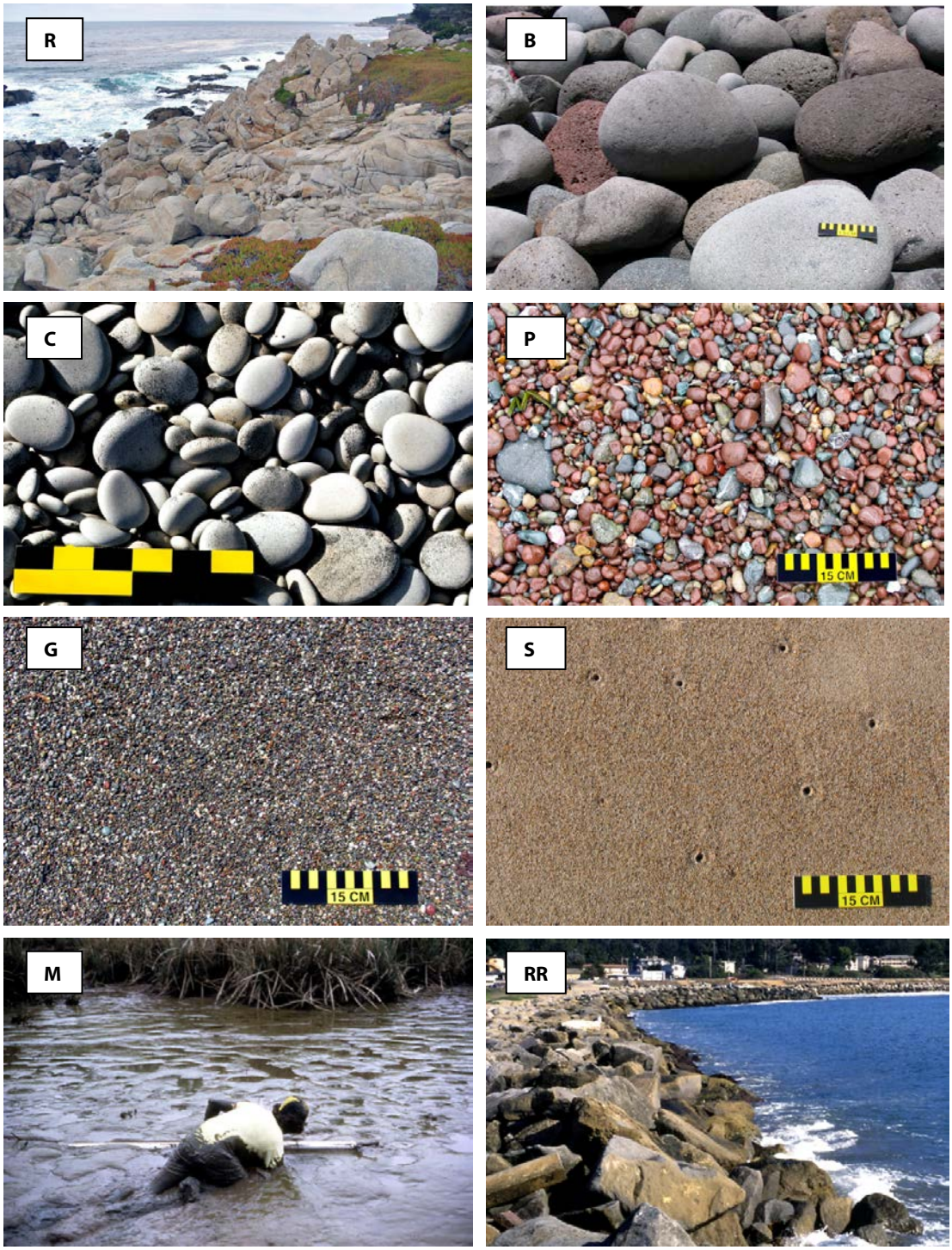


Figure 7. Sediment Types.

C	Continuous 91 - 100%
B	Broken 51 - 90%
P	Patchy 11 - 50%
S	Sporadic 1 - 10%
T	Trace <1%

Figure 8. Oil Distribution.

TO	Thick Oil (fresh oil or mousse >1 cm thick)
CV	Cover (oil or mousse from >0.1 cm to <1 cm on any surface)
CT	Coat (visible oil <0.1 cm, which can be scraped off with fingernail)
ST	Stain (visible oil, which cannot be scraped off with fingernail)
FL	Film (transparent or iridescent sheen, or oily film)

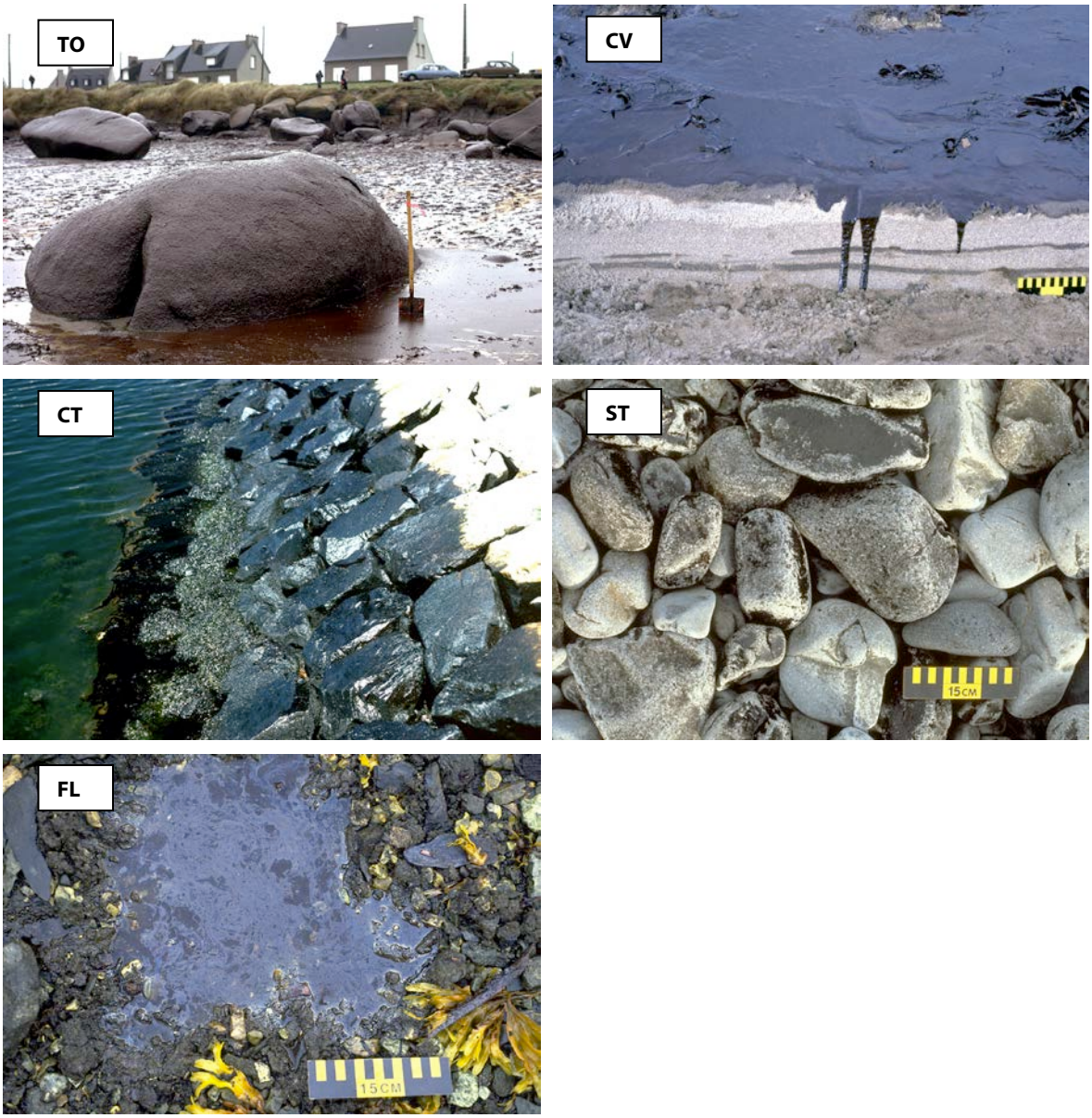


Figure 9. Surface and Subsurface Oiling Descriptors – Thickness.

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tar Balls (discrete accumulations of oil <10 cm in diameter)
PT	Patties (discrete accumulations of oil >10 cm in diameter)
TC	Tar (highly weathered oil, of tarry, nearly solid consistency)
SR	Surface Oil Residue (non-cohesive, heavily oiled surface sediments, characterized as soft, incipient asphalt pavements)
AP	Asphalt Pavement (cohesive, heavily oiled surface sediments)

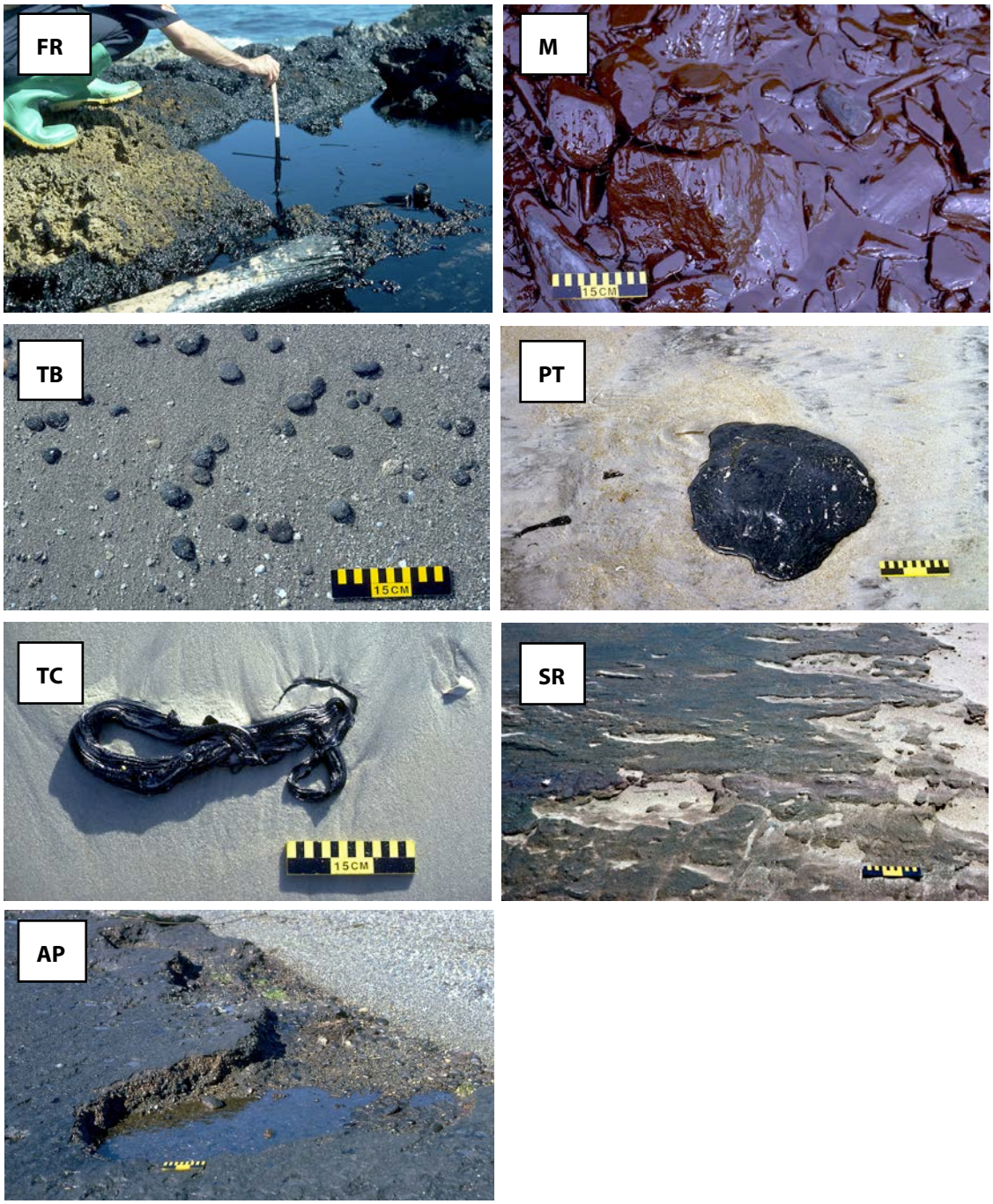


Figure 10. Surface Oiling Descriptors – Type.

OP	Oil-Filled Pores (pore spaces are completely filled with oil to the extent that the oil flows out of the sediments when disturbed). May also consist of weathered oil, such as a buried lens of asphalt pavement
PP	Partially Filled Pores (pore spaces partially filled with oil, but the oil does not flow out of the sediments when disturbed)
OR	Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts (individual sediment particles), but little or no accumulation of oil within the pore spaces). Modifiers can be used, such as heavy oil reside (HOR); moderate oil residue (MOR); and light oil residue (LOR)
OF	Oil Film (sediments are lightly oiled with an oil film, or stain, on the clasts)
TR	Trace (discontinuous film or spots of oil, an odor, or tackiness)

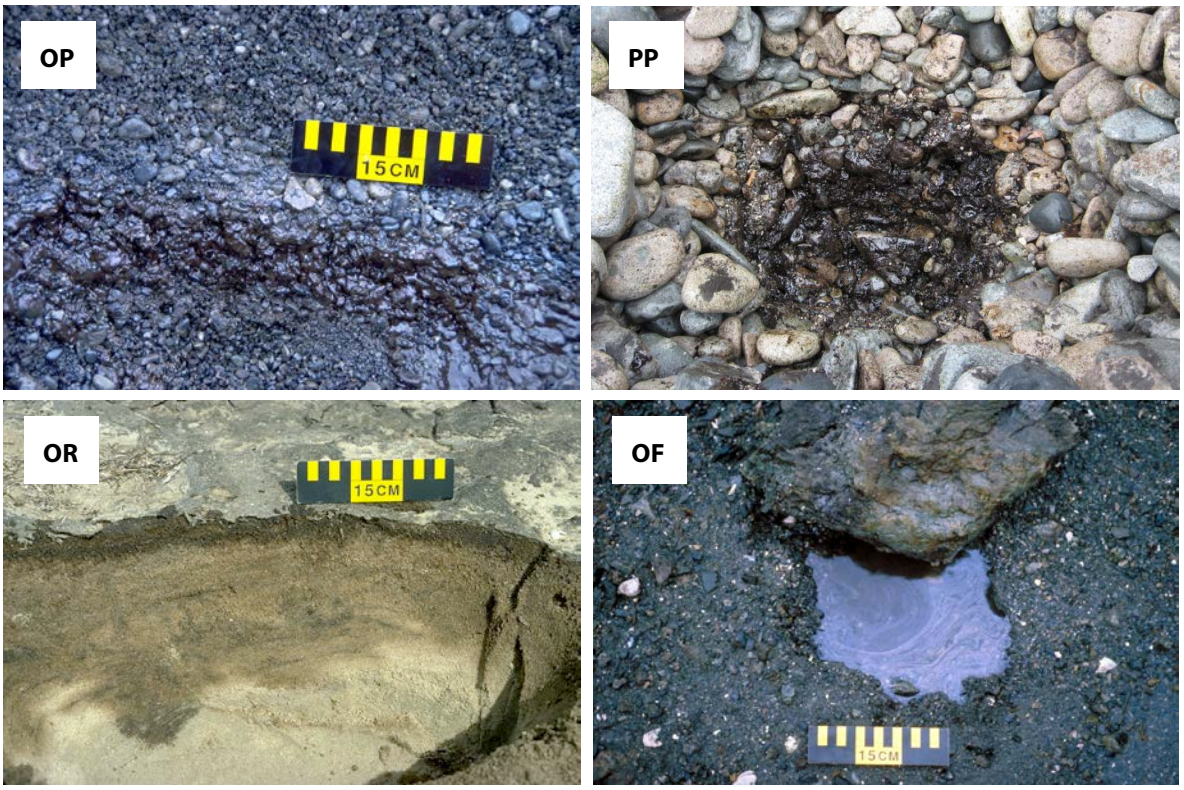


Figure 11. Subsurface Oiling Descriptors.

Table 3. SCAT terms to be used for spills of light, refined products.

<u>Surface and Subsurface Oiling Descriptors – Thickness</u>		
SM	Smell	No visible oil; detectable only by smell
FL	Film	Feels greasy when sediments are rubbed
SH	Sheen	Visible sheen on water surfaces
CT	Coat	Visible coating of oil
PO	Pooled	Liquid oil accumulated on surface
<u>Surface Oiling Descriptors – Color</u>		
None		Brown
Shiny		Yellow
Rainbow		Red

COMBINED SHORELINE OIL SUMMARY (CSOS) FORM: Example **Spill** **Page** 1 **of** 2

1. GENERAL INFORMATION	Date (dd/Month/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)	Tide Height
Segment ID: LALF01-044-30	23/September/2012	09:40 to 11:20	L / (M) / H
Segment Name: CALUMET ISLAND			Rising / (Falling)

Survey By: (Foot) / ATV / Boat / Helicopter / Overlook / Other _____ Weather: (Sun) / Clouds / Fog / Rain / Snow / Windy / Calm

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number 4	J. Smith	NOAA	D. Jones	RP
	B. White	State		
	C. Black	USCG		

3. SEGMENT	Total Length: 5,800 m	Length Surveyed: 5800 m	Datum: WGS84
Survey Start GPS:	WP: 389 LAT: 29 . 10362	LONG: 90 . 36169	
Survey End GPS:	WP: 405 LAT: 29 . 10366	LONG: 90 . 36184	

4a. BACKSHORE CHARACTER: Indicate only ONE Primary type and ALL Secondary types

Cliff/Slope ___ Lowland ___ Beach ___ Dune ___ Wetland P Lagoon ___ Delta ___ Channel ___ Man-Made ___ : _____

4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.

Primary: 10A Secondary: 3A

5. OPERATIONAL FEATURES Oiled Debris? Yes / (No) Type: Amount: (bags)

Direct backshore access? Yes / (No) Alongshore access from next segment? Yes / (No) Suitable for backshore staging? Yes / (No)

Access Description / Restrictions: Access along south-facing shoreline; shallow water - access restricted

6. OILING DESCRIPTION: Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover						Oil Thickness					Oil Character							
								Zone Area		1-100%	<1%	Size														
				LI	MI	UI	SU	Length (m)	Width (m)	Distr. %	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	No
A	10A	389	390			✓		~500	–	–																✓
B	3A	390	391			✓		~220	0.5	<1%	50/m²	0.5	5		✓	✓								B		
C	3A	391	397			✓		~275	2.0	1%					✓	✓								B		
D	3A	394	396				✓	~150	10.	<1%	1/m²	5	10		✓	✓								B		
E	3A	397	399			✓		~400	1.0	<1%	50/m²	0.5	2		✓	✓								B		
F	10A	399	405			✓		~4250	–	–																✓

7. SUBSURFACE OILING CONDITIONS: Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"

Pit #	WP	Substrate Type Surface / Subsurface	Tidal Zone				Trench Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character										Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes / No
			LI	MI	UI	SU			OP	PP	OR	OF	TR	TB	SR	AP	NO	%			
C-1	392	Mud/Mud			✓		10	0									✓		>10	N	Yes

8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

<1% SRBs along majority of south-facing sand beaches and pocket beaches between outcropping relict marsh platforms.
Zone C does not meet endpoints. SRBs highly weathered.
3m oiled sorbent boom recovered
all tidal zones surveyed.

Sketch: (Yes) / No Photos: (Yes) / No Photo Numbers: (21 - 46) Photographer Name: J. Smith

Figure 12. Combined SOS Form completed for an example survey shown in Figure 13.

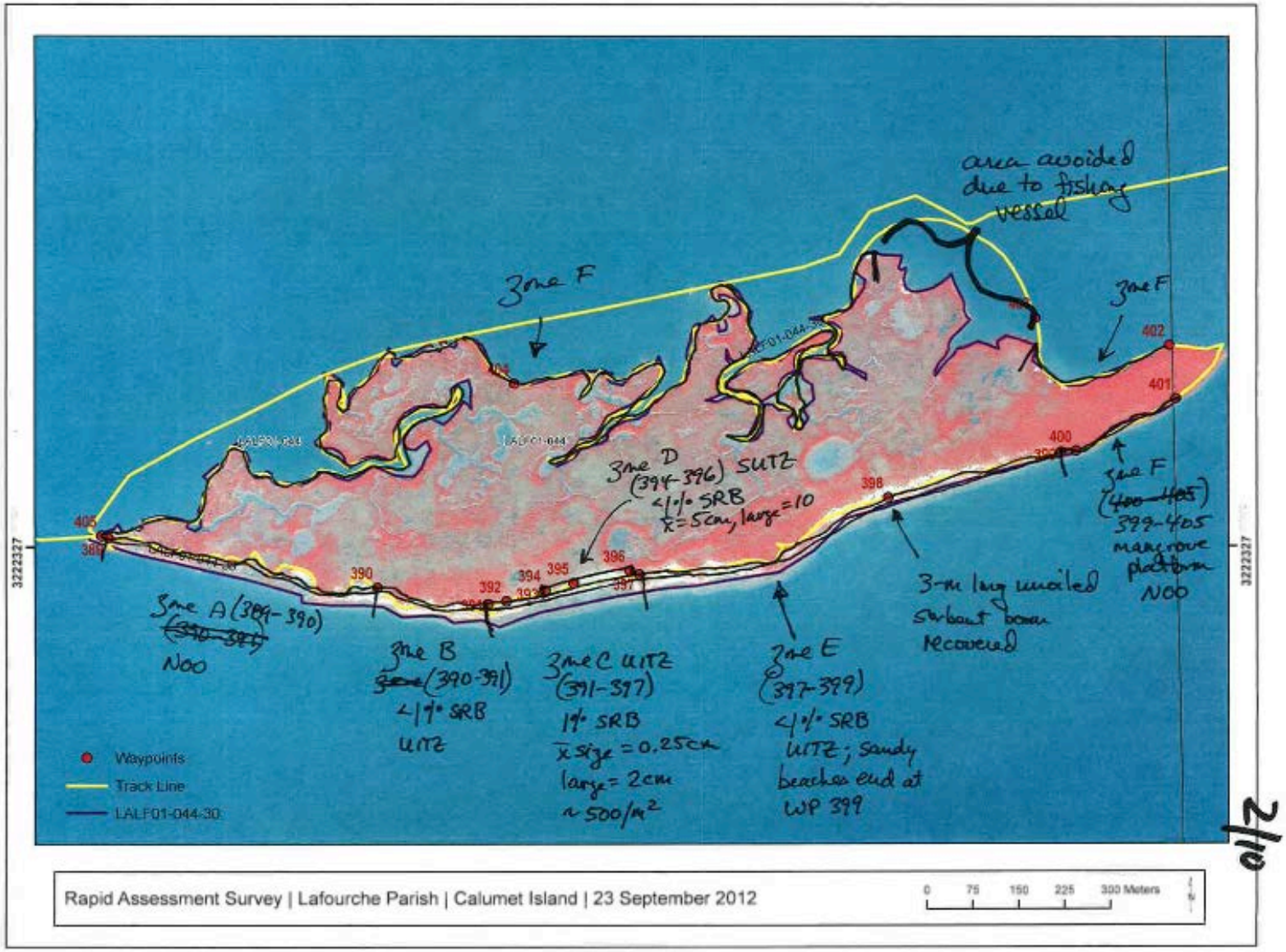


Figure 13. SCAT map for the example survey from the SOS form in Figure 12. Note that way points are used to define the boundaries between SCAT zones A, B, C, etc. and short notes are made about the oiling conditions, matching the data on the SOS form in Figure 12.

TAR BALL SHORELINE OILING SUMMARY FORM for Example **Spill** Page 1 of 2

1. GENERAL INFORMATION	Date (dd/Month/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)	Tide Height
Segment ID: LALF01-044-30	23/September/2012	09:40 to 11:20	L / (M) / H
Segment Name: CALUMET ISLAND			Rising / Falling
Survey By: (Foot) / Boat / Helicopter / Overlook / _____		(Sun) / Clouds / Fog / Rain / Snow / Windy	

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number 4	J. Smith	NOAA	D. Jones	RP
	B. White	State		
	C. Black	USCG		

3. SEGMENT	Total Length: 1,200 (m)/ft	Length Surveyed: 1,200 (m)/ft	Datum: WGS84
Survey Start GPS:	WP: 389 LAT: 29.10362	LONG: 90.36169	
Survey End GPS:	WP: 405 LAT: 29.10364	LONG: 90.36178	

4a. BACKSHORE CHARACTER: Indicate only ONE Primary (P) type and ALL Secondary (S) types

Cliff/Slope ___ Lowland ___ Beach ___ Dune ___ Wetland P Lagoon ___ Delta ___ Channel ___ Man-Made ___

4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.

Primary: 10A Secondary: 3A

5. OPERATIONAL FEATURES | Oiled Debris? Yes / (No) | Type: | Amount: (bags)

Direct backshore access? Yes / (No) | Alongshore access from next segment? Yes / (No) | Suitable for backshore staging? Yes / (No)

Access Description / Restrictions: Access along South-facing shoreline; shallow water access restricted

5. TAR BALL DESCRIPTION	**Zone A**	**Zone B**	**Zone C**	**Zone D**
WP Start/WP End	389 / 390	390 / 391	394 / 396	397 / 399
Shoreline Type(s) Oiled	10A	3A	3A	3A
Tar Balls Observed on Shoreline?	Yes / (No)	(Yes) / No	(Yes) / No	Yes / No
Tar Balls Observed on Water?	Yes / (No)	Yes (No)	Yes / (No)	Yes / No
Oiled Debris Observed? If yes, describe.	Yes / (No)	Yes / (No)	Yes / (No)	Yes / No
Tidal Zone Where the area of tarballs is located.	LI/MI/UI/SU	LI/MI/(UI)/SU	LI/MI/(UI)/SU	LI/MI/UI/SU
Length ((m) / ft) Approximate alongshore length of shore in which tarballs/oiled debris are observed.	-	220m	275m	
Width ((m) / ft) Across-shore width of the band on the shore in which tarballs/oiled debris are observed.	-	0.5m	2.0m	
Average Number of Tar Balls within Area (e.g., 2/m^2 in band; 3 per 100 m along shore; 6 total within area, etc.) Be specific.	-	50/m^2	500/m^2	
Average Size of Tar Balls ((cm) / in)	-	0.5cm	0.25cm	
Size of Largest Tar Ball ((cm) / in)	-	5cm	2cm	
Type of Tar Balls (describe)	Weathered Sticky Other:	(Weathered) Sticky Other:	Weathered Sticky Other:	Weathered Sticky Other:
Tar Balls Collected?	Yes / No	Yes / (No)	Yes / No	Yes / No

6. COMMENTS | **Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations**

Sketch/Map: Yes / No Photos: Yes / No Photographer Name:

June 2009

Figure 14 Tar Ball SOS Form completed for zones A-D in the example survey in Figure 13. Waypoints denote the start and end of the SCAT zones as well as the segment.

Calculating Degree of Oiling

SCAT data are used to generate statistics on the number of shoreline miles by degree-of-oiling categories to the Unified Command. Two matrices that can be used to generate summary oiling descriptors, in terms of what is defined as "heavy," "medium," "light," and "very light" for a specific spill are provided in Figure 15. These oiling categories are defined based on the width of oiling bands on the shoreline (as measured perpendicular to the shoreline), the percent cover of oil within the band, and oil thickness using a two-step process:

- The width of the oil on the shoreline and the percent cover determine an initial oiling degree category using the top matrix;
- The thickness of the oil determines the final oiling degree using the bottom matrix. For example, a shoreline with a >3 m band of oil with 100% coverage is initially classified as Heavy surface cover. However, if the oil thickness is only a stain or film, the final surface oil category is Light; if the oil thickness is >0.1 cm, the final category is defined as Heavy.

The SCAT Data Managers use these matrices to generate statistics and maps. However, SCAT teams should not use these terms during their field surveys. **Terms such as heavy, moderate, light, and very light are only for final summaries and maps.** The matrices in Figure 15 should be modified by consensus for the spill-specific conditions, particularly the width of the oiled band that are defined as Wide, Medium, Narrow, and Very Narrow.

Step 1		Width of Oiled Area			
		Wide >6 m	Medium >3 m to 6 m	Narrow >0.5 m to 3 m	Very Narrow <0.5 m
Oil Distribution	Continuous 91 – 100%	Heavy	Heavy	Moderate	Light
	Broken 51 – 90%	Heavy	Heavy	Moderate	Light
	Patchy 11 – 50%	Moderate	Moderate	Light	Very Light
	Sporadic 1 – 10%	Light	Light	Very Light	Very Light
	Trace < 1%	Very Light	Very Light	Very Light	Very Light

Step 2		Initial Categorization of Surface Oil			
		Heavy	Moderate	Light	Very Light
Average Thickness	Pooled Oil > 1 cm	Heavy	Heavy	Moderate	Light
	Cover 0.1 – 1.0 cm	Heavy	Heavy	Moderate	Light
	Coat 0.01 – 0.1 cm	Moderate	Moderate	Light	Very Light
	Stain/Film < 0.01 cm	Light	Light	Very Light	Very Light

Figure 15. Matrices to be used in the two-step process to assign an oiling category for a segment. In the first step, the surface oiling degree is based on the width and the surface distribution. In the second step, the oiling category from the first matrix is combined with oil thickness in the second matrix to define the final oiling category. From Owens and Sergy (2000). Modify for the spill-specific conditions, particularly the width of Wide, Medium, Narrow, and Very Narrow.

Subsurface Oil…Always a Problem

Subsurface oil is a site-specific problem that must be delineated by labor-intensive digging to determine the areal extent of the subsurface layers. SCAT teams dig a pit using a pointed-edge shovel to at least 50 cm or to the water table. It is difficult to determine the presence or location of oiled sediments when the pit fills with water, and pits in sand tend to slump in when the water table is reached. The team looks for areas that appear depositional, such as at the high-tide berm, the horn of cusps, or updrift of groins or rocky outcrops. It is important to keep track of the changing tide levels between spring and neap tides. Oil may be buried in the high spring tide berm, which could be in the supratidal zone during neap tides.

When digging a pit, the spoils should be placed on the side of the pit that is towards the sun, so that when taking photographs, the sun is behind you, the sediment surface behind the pit is visible, and the light can shine on the side of the pit. The presence of subsurface oil is noted on the shoreline

survey form and delineated on a map. However, cleanup crews may not be able to locate the subsurface oil by reading the forms and maps. One common approach is to provide the survey team with surveyor's flags to mark the location of subsurface oil to be removed.

In fine-grained sediments (mud to small pebbles), if the oil has penetrated from the surface to no more than 5 cm, it is called surface oil (Figure 16A). Any oil that is deeper than 5 cm is called subsurface oil. In coarse-grained sediments (large pebbles to boulders), the subsurface begins at the bottom of the first layer of sediment (Figure 16B). We follow this approach because the first layer of coarse sediment can often be much greater than 5 cm.

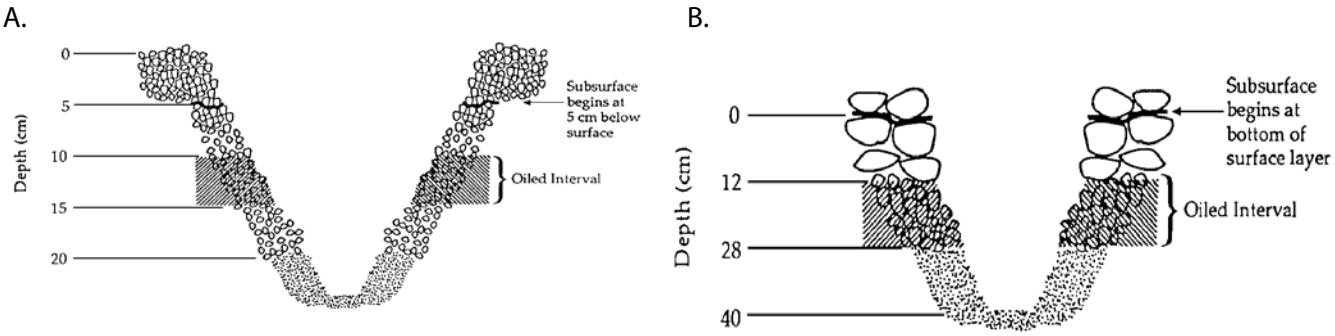


Figure 16. Definition of subsurface oil in fine-grained (A) and coarse-grained (B) sediments. From Owens and Sergy (2000).

Subsurface oiling is recorded in Section 7 of the SOS form using the descriptors and codes in Figure 11 (see completed examples in Figure 12).

Field Sketches are Important!

Sketches are a very important component of the field survey data. Sketches are better than photographs at characterizing overall conditions. Sketches help reviewers put the tabular data on oiled area and type into perspective, which assists decision-making. They document conditions better than photographs, videotapes, or statistics, and they allow better temporal comparisons. The sketches are particularly useful for spills when SCAT teams change over time. They can be used during post-cleanup inspections of segments to identify the locations of oil that were to be removed, and become the blueprint against which the effectiveness of the cleanup can be compared. Appendix E is a primer on drawing field sketches. A blank field sketch form is provided in Appendix D.

The objective of the shoreline surveys should always be remembered: to collect the information needed by decision-makers to formulate and approve shoreline cleanup plans. From these surveys, cleanup officials should be able to use the data to develop a detailed cleanup plan, including equipment and manpower needs. Government agencies should be able to use these data, along with natural resources information, to develop cleanup priorities, identify site-specific or temporal constraints, and understand and approve the proposed cleanup plan.

7 SCAT Data Management and Products

SCAT Data Management

The SCAT data management process should result in efficient and effective management of consistent and high-quality data for the shoreline assessment process, and promote their seamless integration into shoreline cleanup planning and operations.

Many products and tools are produced and developed by the SCAT Coordinator, Teams, and Data Managers that vary by spill Type as outlined in Chapter 2 (Type 3 is simple, Type 1 is very complex). Table 4 provides a short description of these products and tools for each spill Type.

SCAT Data Manager

The SCAT Data Manager is the on-scene lead for the management of data and production of materials to convey shoreline conditions and other information collected as part of SCAT activities. The SCAT Data Manager establishes and implements protocols for the documentation, processing, display, and archiving of the shoreline oiling data collected during an incident. The SCAT Data Manager works closely with the SCAT Coordinator and the EU within the Unified Command to design and manage an effective data management system for the shoreline assessment component of the response. See Chapter 4 for more on responsibilities and qualifications.

First 24-48 hrs into response

- Meet with SCAT Coordinator and the EU to establish general expectations, procedures, and accountability for SCAT data management tasks; review division and segment designations; and select and (if necessary modify) SCAT forms and associated documents.
- Evaluate personnel and equipment requirements for data management with SCAT Coordinator.
- Meet with SCAT teams prior to field mobilization to instruct/review field documentation protocols and data forms.
- Provide daily SCAT Data Management reports to SCAT Coordinator and (as appropriate) other members of the EU and Unified Command.
- Ensure that selected SCAT data are made available for response agencies' internal use and to support public affairs products and events.

48 – 72 hrs into response

- With SCAT Coordinator, review data management performance after first SCAT field mobilization; modify forms and protocols as necessary.

Daily Expectations

- Attend daily Unified Command briefings and support the SCAT Coordinator during assignments and updates.

Table 4. List of the types of SCAT data products created during spills of different degrees of complexity. Continued on the next page.

Type of Product	Products/ Tools	Type 3	Type 2	Type 1	Where It Goes	How It's Created
Primary Data Products	**SCAT Field Data Collection**	Paper forms filled out in the field; includes notes and field sketches	Paper forms filled out in the field; includes notes, field sketches or maps, may include tracklines/WPs	Paper forms filled out in the field; or eSCAT if available; includes notes and survey specific field maps with tracklines/WPs	SCAT Coordinator; SCAT Data Manager	Forms filled out in the field by SCAT teams/Data Team generates maps with tracklines/WPs for teams to use as base maps
	SCAT Photographs	Each team organizes their photos into daily folders, includes key photos with their daily report	Each team georeferences and organizes their photos into daily folders on a server	Teams turn in their camera/GPS for Data Team to organize into folders and georeference	SCAT Data Manager	Taken in the field by SCAT Team Members
	Special Field Requests (subsurface oiling data, beach profiles)	None	None	Subsurface oiling and/or beach profiles recorded on response specific forms	SCAT Data Manager	Collected by SCAT teams or Operations
Derived Data Products	**Interim SCAT Daily Summary**	Written summary of segments surveyed and recommendations for treatment	Written summary of segments surveyed and recommendations for treatment	Written summary of segments surveyed and recommendations for treatment	For SCAT Coordinator for discussion at the afternoon Planning Meeting	SCAT Coordinator compiles verbal reports from the Teams
	Shoreline Oiling Maps	Digitize shoreline oiling degrees on digital base map and/or other products (e.g. KMZ)	Digitize shoreline oiling degrees on digital base map and/or other products (e.g. KMZ)	Shoreline oiling map production/tracking by GIS, exported in various formats for distribution	Situation Unit, Documentation, Planning, Operations	Digitize shoreline w/oiling extents either from SCAT database, field notes/sketch maps, spreadsheet
	Shoreline Treatment Recommendation/ Priorities	Map showing segments and attached table with treatment recommendations and priorities	General STRs for different habitats /conditions; detailed maps of treatment segments	STR written for each segment, with consults and approvals at many levels	To EU, then Planning, then IAP	SCAT Coordinator generates this daily
	Shoreline Operational Stage Map	Digitize operational stage on digital base map and/or other products (e.g. KMZ)	Digitize operational stage on digital base map and/or other products (e.g. KMZ)	Operational stage map production/tracking by GIS, exported in various formats for distribution	Situation Unit, Documentation, Planning, Operations	Designation from Operations and SCAT (Stage 1, 2, passive, etc.); database updated; GIS maps created
	Shoreline Oiling & Stage Table	Calcs of shoreline lengths by shoreline type and oiling degree; operational stage	Spreadsheet calcs of shoreline lengths by type and oiling degree; operational stage	GIS calcs of shoreline lengths by type and oiling degree; operational stage	Situation Unit, Documentation, Planning, Operations	Export from database or spreadsheet, then tabulation

Table 4.Cont. List of the types of SCAT data products created during spills of different degrees of complexity.

Type of Product	Products/ Tools	Type 3	Type 2	Type 1	Where It Goes	How It's Created
Planning and Organizational Products	**Shoreline Treatment Guidelines/ Endpoints**	Written document (short)	Written document (long)	Written document (longest)	For UC sign-off (through the EU)	Multi-agency group through consensus
	Shoreline Inspection Form	Paper form per segment with check-offs against cleanup endpoints	Paper form per segment with check-offs against cleanup endpoints	Paper form per segment with check-offs against cleanup endpoints	SCAT Team Sign-off	SCAT Coordinator generates specific form based on cleanup plan/process
	Shoreline Inspection Report	Typed list of sign-off status by segment	Printout of updated spreadsheet list with sign-off status by segment	Printout of updates database and maps with sign-off status	EU then Planning	SCAT Teams
Derived Data Products Data Management Tools	**Sites of Special Concern Maps/Lists**	List/map showing sites of concern/ constraints ID'ed by SCAT/EU	Annotate base map with sites of special concern; use symbols for each type	GIS entry of sites of special concern for maps/export as KMZ file; use symbols for each type	Situation Unit, Documentation, Planning, Operations	ICS 232 and 232a form from EU; digitized in GIS; tracked in Access database
	SCAT Segment/ Division Base Maps	Photocopies of topo maps, Google maps, aerial photos, etc. for SCAT teams to mark on	Computer-generated maps at different scales (graphics computer programs)	Computer-generated maps at different scales with predefined segments (GIS)	SCAT Teams; Planning; Situation Unit	SCAT/Operations designate boundaries; Digitized in GIS; Base maps created
	SCAT Assignment Tracking	Lists of # of teams, members, contact info, assignments	ICS 204 for SCAT Team	ICS 204 for SCAT Team	Planning for input to IAP	SCAT Coordinator generates this daily
	SCAT Equipment Tracking Form	Log of equipment issued to SCAT Teams, with accountable person contact info	Log of equipment issued to SCAT Teams, with accountable person contact info	Log of equipment issued to SCAT Teams, with accountable person contact info	SCAT Coordinator	Simple spreadsheet
	SCAT Data Entry	None; Manual calculations of degree of oiling from SCAT data for each segment	Data entered and manipulated in spreadsheet; calc of oiling degree	Data entered daily into response-specific database; calc of oiling degree; update of GIS data	SCAT Coordinator	SCAT Data Management

- Re-examine staffing requirements and inform the SCAT Coordinator when the data management workload will exceed current staffing levels.
- Provide and receive feedback on data management performance at SCAT and other Unified Command briefings.

SCAT Data Management Team

The SCAT Data Management Team is an on-scene group (with off-site support as needed) of technical experts that assists the SCAT Data Manager with the management of data and production of materials to convey shoreline conditions and other information collected as part of SCAT activities. The SCAT Data Management Team implements protocols for the processing, display, and archiving of the shoreline assessment data collected during an incident and helps to design and implement an effective data management system for the shoreline assessment component of the response. See Chapter 4 for more on responsibilities and qualifications.

First 24 – 48 hrs into response

- Establish file directory structure and file naming conventions for managing documents, data, and photos.
- Coordinate with Situation and Environmental Units for relevant spill response data and map transfers (e.g., high resolution base maps, overflight maps, other data) by email or FTP or manual.
- Inventory locally-available spatial data and maps to provide high-resolution guidance for field teams; identify shoreline access points, restricted areas, and hazards that affect SCAT activities and ensure this information is communicated to appropriate SCAT team leaders.
- Create base maps for field planning & use, including laminated or other weather-resistant versions.
- Establish both on-site backup and off-site, secure FTP repository for all data.
- Develop and maintain Contact List for SCAT Team Members .

48 – 72 hrs into response

- Develop data archival strategy (e.g., offsite external drives/FTP/server, used for ongoing reference and long-term documentation).

Daily Expectations

- Produce daily status maps showing current SCAT deployments and assessment activities; maintain archive copies for distribution and reference.
- Obtain weather from the NOAA National Weather Service and post for morning briefings.
- Manage and QA/QC SCAT teams' GPS tracklogs and waypoints from GPS units and digital photos; process with appropriate software tools (e.g., OziExplorer, GPS Photo Link, HoudahGeo).
- SCAT maps made available in all appropriate formats, including hard copies, PDFs and Google Earth KML/KMZ files.

Shoreline Assessment Summaries

Note that SCAT forms are not always included in the report generated for the Planning and Operations Sections. They need the final products of the survey: the shoreline types and oiling conditions; the treatment methods to be applied; and any ecological or cultural resource concerns. Often two types of data summaries are needed: a tabular summary by cleanup zones; and maps for display. Box 4 is an example SCAT summary report for a simple spill. The types of data that should be included in any tabular summary are:

Date: For some spills, changing conditions will require repeat surveys, so the date of the survey is very important.

Segment Number(s), Name, Division Number, Operations Zone: Use the shoreline segment name. Group segments by Operations Division.

Summary of Oiling Conditions: The oiling condition can rapidly change. You need to describe the oiling condition when the treatment recommendation was made.

Treatment Recommendations: Use standard terms, as listed in the cleanup descriptions in Appendix B.

Site-specific Constraints: Clearly identify these as to location and activity in the field (e.g., do not allow cleanup crews to enter marshes).

Box 4:
Simple SCAT Daily Summary for [date]

Shoreline segments requiring cleanup action. See attached reports for more detail.

BR1 - Re-oiled, mousse and tar balls with 10-15% coverage, no subsurface oil. No cleanup activity present.
RECOMMENDATION: Revisit by cleanup crew doing manual recovery, revisit daily.

BR2 - Re-oiled, 10% coverage of film, mousse, and tar balls, no subsurface oil. No cleanup activity present.
RECOMMENDATION: Revisit by cleanup crew doing manual recovery, revisit daily.

BR3 - 20% tar balls more evenly dispersed as compared to yesterday, no subsurface oil. Small cleanup crew (15 people) present. **RECOMMENDATION:** Continue cleanup.

BR4 - 10-15% tar balls, no subsurface oil. Cleanup activity in progress. **RECOMMENDATION:** Continue cleanup operations.

BR5 - Oil still leaching from South Jetty, snare being deployed and tended. **RECOMMENDATION:** Maintain snare on both south and north side of South Jetty with frequent tending to ensure effective capture of oil leaching from riprap.

EB - No oil observed. Snare is stranded on East Beach near the jetty. **RECOMMENDATION:** Manual recovery of snare and other oily debris washing up.

Aerial photography can be used as a basemap for displaying SCAT data by segment. Oblique photographs of oiled shorelines under their current conditions can be readily obtained during aerial surveys. Figure 17 is an example using oblique photography to delineate cleanup areas and recommendations, from the M/V *Selendang Ayu* spill in Alaska. In this case, available imagery was too coarse in scale or had too much cloud cover, which are issues for much of the remote areas of the Alaska coastline. Figure 18 is an example using vertical imagery, from the T/V *Athos* spill in the Delaware River, November 2004. Although eye-catching and immediately informative, these types of reporting require Team Members with the time and skill to produce them.

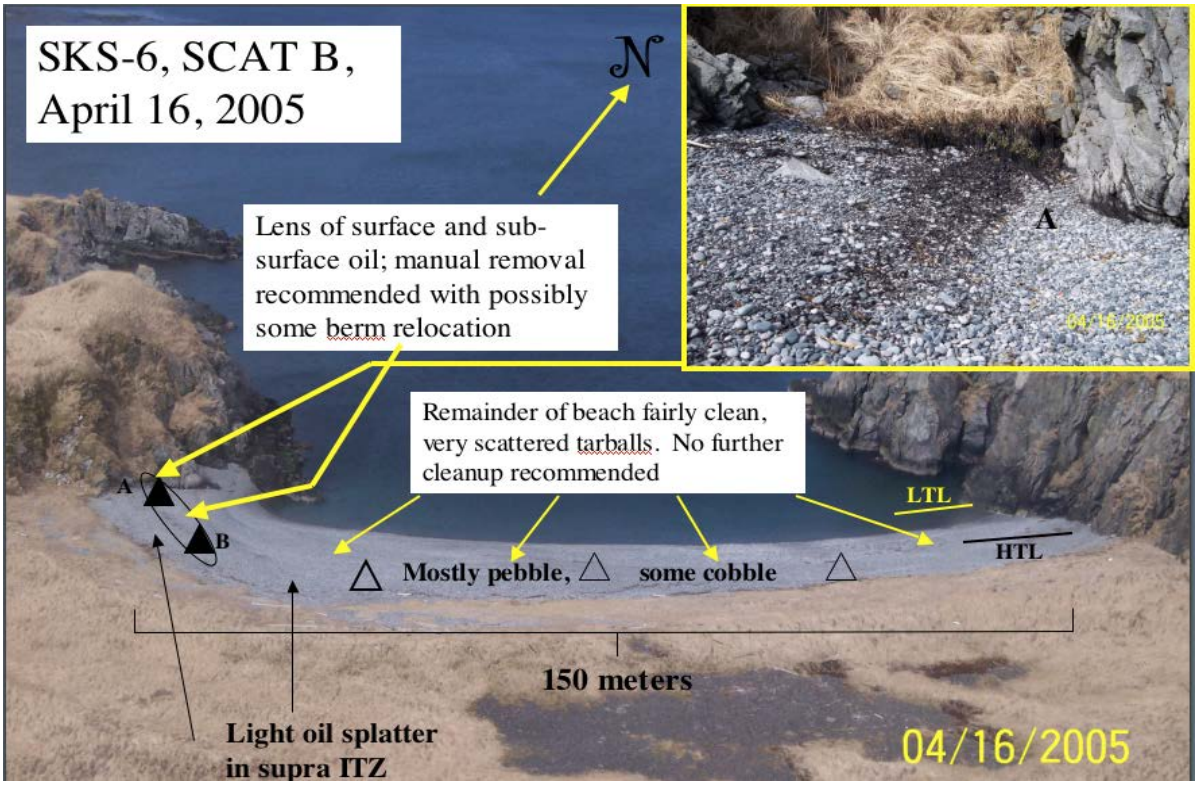


Figure 17. Example of using oblique aerial photographs as the basemap for presenting the results of the SCAT survey at the *M/V Selendang Ayu* spill in Alaska, USA.

You can graphically represent SCAT data on maps and as statistical summaries. Use maps to show the distribution of oiled shoreline and the degrees of oiling. Use computer-mapping software to tabulate the number of miles of shoreline by oiling degree and cleanup status (Table 5). Figure 19 shows an example shoreline oiling map for East San Francisco Bay, CA from the M/V *Cosco Busan* spill in 2006. Standardize definitions for the shoreline oiling categories (modify your definitions using the process outlined in Figure 15). These are important measures for reporting the progress of the cleanup.

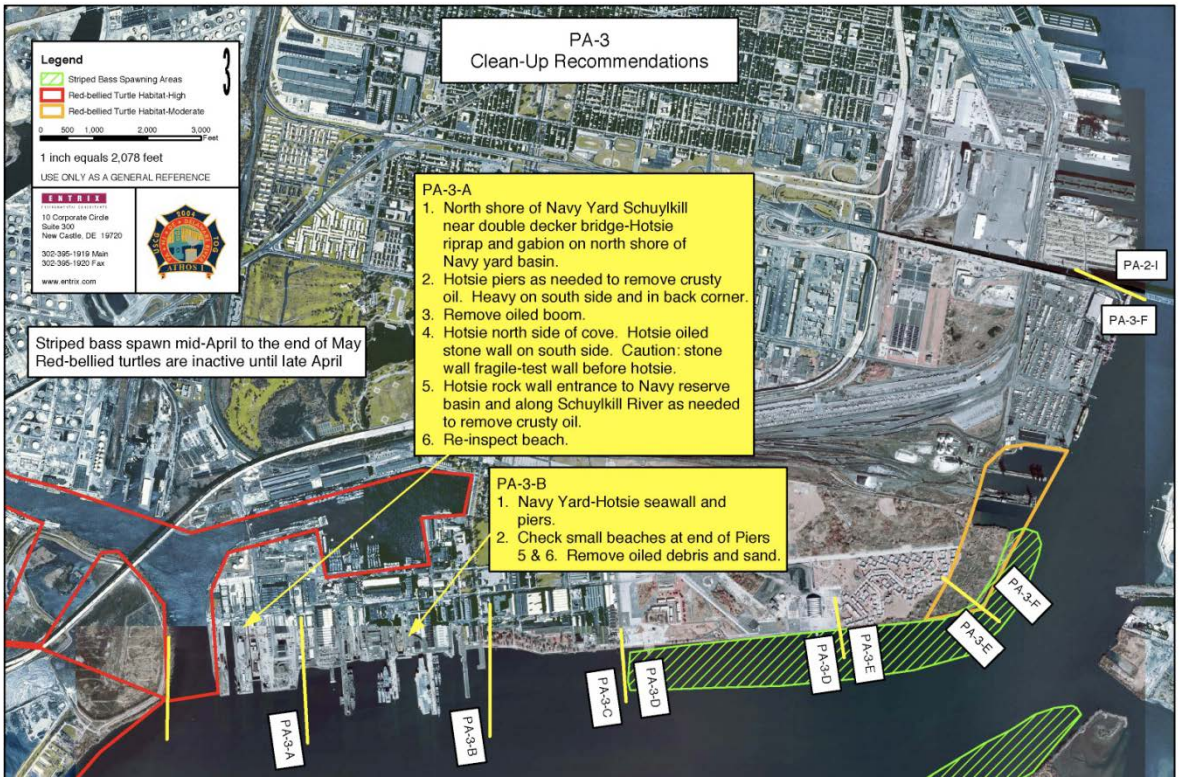


Figure 18. Example of using vertical aerial imagery as the basemap for presenting the results of the SCAT survey at the M/V *Athos 1* oil spill in the Delaware River near Philadelphia, PA.

Table 5. Tabular summary of the miles of shoreline by state and status within the Shoreline Cleanup Completion Plan process for the *Deepwater Horizon* oil spill.

State	Total Segment Length Surveyed	Length of Shoreline by Segments within Status Category (miles)				
		STR Process	SIR1 Process	(Pending Approval) Removal Actions Deemed Complete	Removal Actions Deemed Complete	Operational Pause
Louisiana	3191	105	97	11	2977	0
Mississippi	228	26	5	19	176	2
Alabama	238	41	5	15	177	0
Florida	480	28	10	1	441	0
DOI	239	65	7	2	152	14
All States*	**4375**	**265**	**123**	**48**	**3924**	**16**

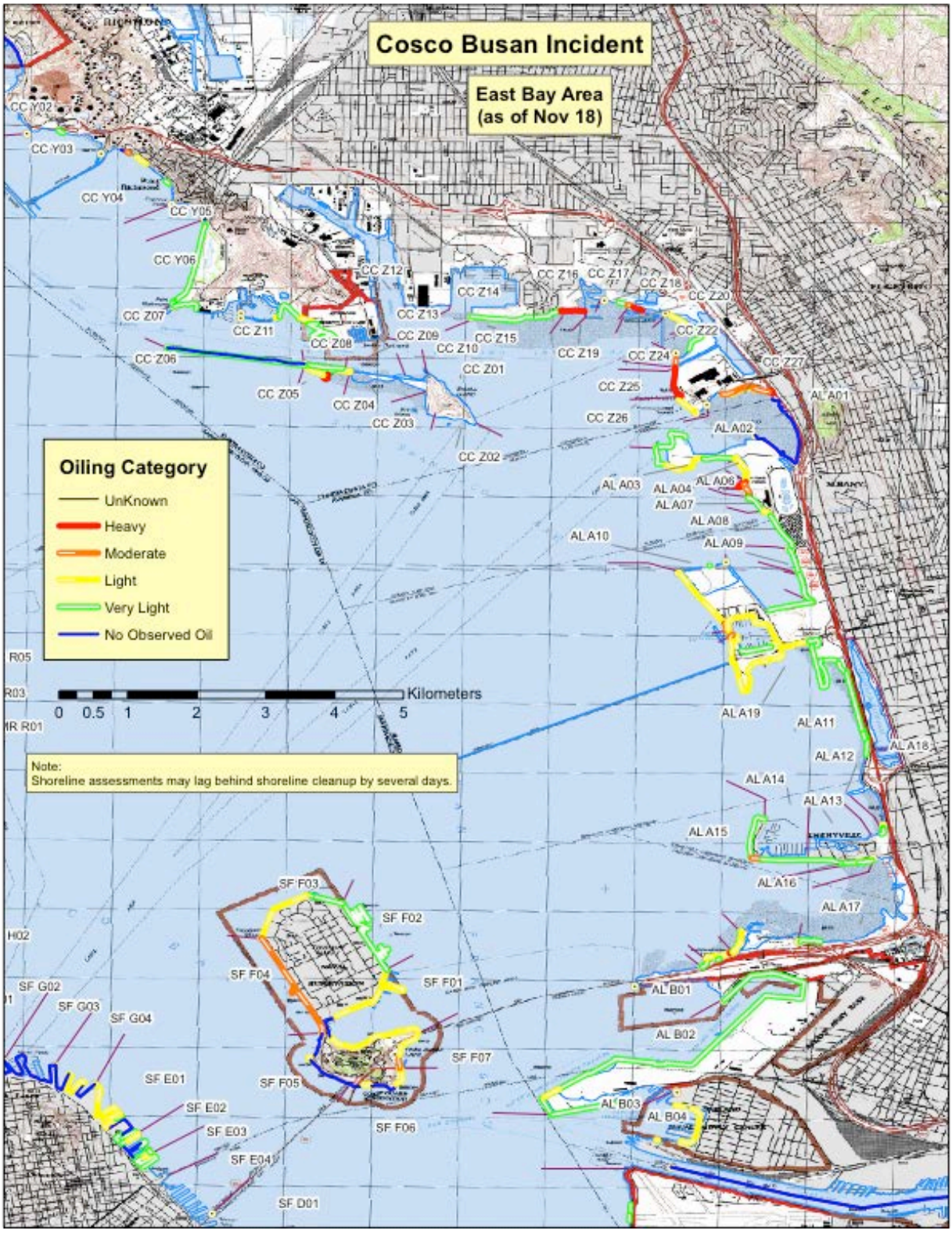


Figure 19. Example of shoreline oiling summary map from the 2006 M/V *Cosco Busan* spill in San Francisco Bay, CA.

8 Planning for Shoreline Assessments

Define the Roles in the Area Contingency Plan

You are encouraged to plan ahead for shoreline assessments through the Area Committee. The Area Contingency Plan can identify the personnel, process, and logistics to be used for shoreline assessments before a spill occurs. It can also pre-approve the use of cleanup methods for special problem areas. This kind of pre-planning should include:

- Identifying staff who are qualified as a SCAT Coordinator; and
- Identifying a pool of government personnel who can represent their agencies' concerns and be available to do shoreline assessments for the duration of a spill. *These personnel must be trained in shoreline processes, SCAT terms, and cleanup methods.*

Process

- Develop a strategy for establishing Operational Divisions and/or segmenting shorelines in your area.
- Pre-approve the use of treatment methods for each shoreline type. Form workgroups to identify special cleanup concerns (e.g., cutting of oiled seaweeds, use of shoreline cleaning agents, recovery of submerged oil), research the cleanup options, and make recommendations on their use for inclusion in planning documents.
- Develop general guidelines for cleanup endpoints.
- Decide how to transition SCAT Teams into Sign-off Teams.

Logistics

- Identify and acquire SCAT equipment.
- Identify the need for air boats, shallow-draft boats, or special vehicles, particularly in remote areas.
- Identify the types of communications needed by field teams (e.g., radios, cellular phones).

9 References and Further Reading

CEDRE, 2006. Surveying Sites Polluted by Oil. An Operational Guide for Conducting an Assessment. Centre de documentation, de recherche et d'experimentations sur les pollutions accidentelles dex eaux, Brest, France, 41 pp.

Crosby, C., J. Bauer, and D. Gardner. 2008. The Alaska shoreline cleanup and guidance manual. *In* Proceedings of the 2008 International Oil Spill Conference, Washington, DC: American Petroleum Institute, pp. 1209-1214.

International Tanker Owners Pollution Federation Limited (ITOPF). Technical Information Papers (TIPs). Available at: http://www.itopf.com/information-services/publications/

Lamarche A. and E.H. Owens. 1997. Integrated SCAT data and geographical information systems to support shoreline cleanup operators. *In* Proceedings of the 1997 International Oil Spill Conference, Washington, DC: American Petroleum Institute, pp. 499-506.

Lamarche A., D. Reimer, E.H. Owens, S. Laforest, A. Laflamme and S. Clement. 2004. A Personal Digital Assistant (PDA) system for data acquisition during shoreline assessment field surveys. *In* Proceedings of the 27th Arctic and Marine Oils Spill Program (AMOP) Technical Seminar, Ottawa, Ontario, Canada: Emergency Sciences Division, Environment Canada, pp. 245-259.

Lankford, J.F, I. Zelo, and M.R. Stumbaugh. 2008. A system for integrated SCAT data collection and management: eSCAT, SCATDB, and Photologger. *In* Proceedings of the 2008 International Oil Spill Conference, Washington, DC: American Petroleum Institute, pp. 481-484.

Michel, J., R. Yender, G.A. Sergy, E.H. Owens, R.D. Martin, and J.A. Tarpley, 2001. Improving the shoreline assessment process with new SCAT forms. *In* Proceedings of the 2001 International Oil Spill Conference, Washington, DC: American Petroleum Institute, pp. 1515-1522.

International Maritime Organization (IMO). 2205. Manual on Oil Pollution. Section IV –

Combatting Oil Spills. IMO Report No. IA569. London, UK.

International Petroleum Industry Environmental Conservation Association (IPIECA). 2007. Oil Spill Preparedness and Response. Report Series Summary 1990-2007. London, UK. 42 pp.

MCA, 2007. The UK SCAT Manual. A Field Guide to the Documentation of Oiled Shorelines in the UK. UK Maritime & Coastguard Agency, Southampton, UK. 47 pp. + vi.

National Oceanic and Atmospheric Administration (NOAA) & American Petroleum Institute. 1994. Options for Minimizing Environmental Impacts of Freshwater Spill Response. Seattle, WA: Hazardous Materials Response and Assessment Division, National Oceanic and Atmospheric Administration. 130 pp. + appendices.

National Oceanic and Atmospheric Administration (NOAA) and American Petroleum Institute. 2001. Environmental Considerations for Oil Spill Response. Seattle, WA: Hazardous Materials Response and Assessment Division, National Oceanic and Atmospheric Administration.

Northwest Area Committee. 2013. Setting up a Shoreline Assessment Program. 58 pp.

Owens, E., and A. Teal. 1990. Shoreline cleanup following the *Exxon Valdez* oil spill: Field data collection within the S.C.A.T. program. *In* Proceedings of the 13th Arctic and Marine Oil Spill Program Technical Seminar, Ottawa, Ontario, Canada: Emergency Sciences Division, Environment Canada, pp. 411-421.

Owens, E.H., and G.A. Sergy. 2000. The SCAT Manual – A Field Guide to the Documentation and Description of Oiled Shorelines. Second Edition. Edmonton, Alberta: Environment Canada. 108 pp.

Owens, E.H., and G.A. Sergy. 2004. The Arctic SCAT Manual – A Field Guide to the Documentation and Description of Oiled Shorelines in Arctic Environments. Edmonton, Alberta: Environment Canada. 172 pp.

Owens, E.H., J.W. Engles, S. Lehmann, H.A. Parker-Hall, P.D. Reimer, and J. Whitney. 2008. M/V *Selendang Ayu* response: Shoreline surveys and data management; treatment recommendations; and the completion inspection process. *In* Proceedings of the 2008 International Oil Spill Conference, Washington, DC: American Petroleum Institute, pp. 1193-1199.

USCG (U.S. Coast Guard). 2013. Coast Guard Incident Management Handbook, COMDTPUB P3120.17 (series). Washington, DC: Office of Response, U.S. Coast Guard.

Appendices

Appendix A: SCAT Equipment Checklist
Appendix B: Brief Descriptions of Shoreline Cleanup Methods
Appendix C: Shoreline Descriptors, Including Oil Behavior and Response Considerations
Appendix D: Examples of SCAT Forms and Guides
Appendix E: A Primer on Drawing Field Sketches
Appendix F: Example SCAT Field Safety Plan
Appendix G: SCAT Photography Guidelines
Appendix H: SCAT GPS Guidelines
Appendix I: Step-by-Step Guidelines for Filling out the SOS Form

Appendix A: SCAT Equipment Checklist

Shoreline Survey Gear

- Maps or charts of the survey area
- Clipboards and rubber bands
- Pencils, erasers, waterproof markers
- Field forms (code sheets, SOS forms, sketch sheets, photo logs)
- Field estimation charts (sand size, gravel size, percent cover)
- Field notebooks (SCAT write-in-the rain notebooks are best)
- Segment map sheets
- Base sketch maps, if available
- Shovels – long-handled spades for digging pits
- Digital camera; extra batteries
- Photo scale (15 cm)
- Tape measure (30 m)
- Range finder
- Hand-held GPS
- Compass
- Field pack
- Communication device (e.g., radio or cell phone)
- First-aid kit

Personal Gear

- Good rain gear
- Knee-high, rubber boots or hip waders
- Work gloves
- "Tar-off" towelettes or similar hand cleaner
- Hat
- Sunscreen
- Drinking water
- Personal Flotation Device if traveling by water/helicopter
- Personal day pack
- Bug repellent
- Energy bar (nourishment)
- Appropriate cold-weather clothing (as necessary)
- Nitrile gloves

Appendix B: Brief Descriptions of Shoreline Cleanup Methods

Introduction

This section describes methods currently in use during cleanup of oil spills in marine environments and habitats. For each method the following is provided: a summary of the objective in using the method, a general description of the method, applicable habitat types, conditions under which the methods should be used (constraints commonly applied to the use of the method to protect sensitive biological resources), and the environmental effects expected from the proper use of the method. Some of the methods listed require special authorization for use during a spill; appropriate agencies must be contacted about the need for special approvals.

A problem which occurs after all major oil spills is that there is a large quantity of oily wastes and debris that is generated and must be dealt with as part of the response action. A cleanup strategy that minimizes the impact to all sensitive aspects of the environment and minimizes the amount of oily wastes is the most optimal. Each cleanup option should be examined with the problem of waste generation and disposal in mind.

Additional guidance for the application of shoreline cleanup methods appropriate for each shoreline type can be found in oil spill manuals and guidance documents by the International Maritime Organization, International Petroleum Industry Environmental Conservation Association, and NOAA (listed in the references section). Methods listed are:

- ❑ Natural Recovery
- ❑ Barriers/Berms
- ❑ Physical Herding
- ❑ Manual Oil Removal
- ❑ Mechanical Oil Removal
- ❑ Sorbents
- ❑ Vacuum
- ❑ Debris Removal
- ❑ Sediment Reworking/Tilling
- ❑ Vegetation Cutting/Removal
- ❑ Flooding
- ❑ Low-Pressure, Ambient-Water Flushing
- ❑ High-Pressure, Ambient-Water Flushing
- ❑ Low-Pressure, Hot-Water Flushing
- ❑ High-Pressure, Hot-Water Flushing
- ❑ Steam Cleaning
- ❑ Sand Blasting
- ❑ Elasticity Modifiers
- ❑ Herding Agents
- ❑ Solidifiers
- ❑ Surface Washing Agents
- ❑ Nutrient Enrichment (Biostimulation)
- ❑ Natural Microbe Seeding (Bioaugmentation)
- ❑ In-situ Burning

Natural Recovery

Objective
No attempt to remove any stranded oil in order to minimize impact to the environment, or because there is no effective method for cleanup. Oil is left in place to degrade naturally.

Description
No action is taken, although monitoring of contaminated areas may be required.

Applicable Habitat Types
All habitat types.

When to Use
When natural removal rates are fast (e.g., gasoline evaporation, high energy coastlines), when the degree of oiling is light, or when cleanup actions will do more harm than natural recovery.

Biological Constraints
This method may be inappropriate for areas used by high numbers of mobile animals (birds, marine mammals) or endangered species.

Environmental Effects
Same as from the oil alone.

Waste Generation
None.

Barriers/Berms

Objective

To prevent entry of oil into a sensitive area or to divert oil to a collection area.

Description

A physical barrier (other than a boom) is placed across an area to prevent oil from passing. Barriers can consist of earthen berms, trenches, sand bags, wood/metal sheets, Hesco baskets, or filter fences. When it is necessary for water to pass because of water volume, underflow or overflow dams are used.

Applicable Habitat Types

At the mouths of creeks or streams to prevent oil from entering, or to prevent oil in the creek from being released into offshore waters. Also, on beaches where a berm can be built above the high tide line to prevent oil from overwashing the beach and entering a sensitive back-beach habitat (e.g., lagoon).

When to Use

When the oil threatens sensitive habitats and other barrier options are not feasible. However, where they are placed on shorelines exposed to wave action, they should be removed prior to storm activity.

Biological Constraints

Responders must minimize disturbance to bird and sea turtle nesting areas, beaver dams, or other sensitive areas. Placement of dams and filter fences could cause excessive physical disruptions, particularly in wetlands.

Environmental Effects

May disrupt or contaminate sediments and adjacent vegetation. The natural beach (or shore) profile should be restored (may take weeks to months on gravel beaches). Trenching may enhance penetration of oil and quantity of contaminated sediments. May require a permit from the U.S. Army Corps of Engineers.

Waste Generation

Sediment barriers will become contaminated on the oil side and filter fence materials will have to be disposed of as oily wastes.

Physical Herding

Objective

To free any oil trapped in debris or vegetation on water; to direct floating oil towards containment and recovery devices; or to divert oil from sensitive areas.

Description

Plunging water jets, water or air hoses, and propeller wash can be used to dislodge trapped oil and divert or herd it to containment and recovery areas. May emulsify the oil. Mostly conducted from small boats, although larger boats such as tugs can be used to generate stronger currents or influence larger areas (such as oil trapped deep under piers).

Applicable Habitat Types

In nearshore areas where there are little or no currents, and in and around man-made structures such as wharves and piers.

When to Use

In low-current or stagnant water bodies, to herd oil toward recovery devices. In high-current situations, used to divert floating oil away from sensitive areas.

Biological Constraints

When used near shore and in shallow water, must be careful not to disrupt bottom sediments or submerged aquatic vegetation.

Environmental Effects

May generate high levels of suspended sediments and mix them with the oil, resulting in deposition of contaminated sediments in benthic habitats.

Waste Generation

None.

Manual Oil Removal/Cleaning

Objective
To remove oil with hand tools and manual labor.

Description
Removal of surface oil using hands, rakes, shovels, buckets, scrapers, sorbents, pitch forks, etc., and placing in containers. No mechanized equipment is used except for transport of workers and collected oil and debris. Includes underwater recovery of submerged oil by divers, for example, with hand tools.

Applicable Habitat Types
Can be used on all habitat types.

When to Use
Light to moderate oiling conditions for stranded oil, or heavy oils on water or submerged on the bottom, that have formed semi-solid or solid masses and that can be picked up manually.

Biological Constraints
Foot traffic over sensitive areas (wetlands, tidal pools, etc.) should be restricted or prevented. There may be periods when shoreline access should be avoided, such as during bird nesting. Special permission or archaeological monitoring will be needed to dig in areas with known cultural resources

Environmental Effects
Minimal, if surface disturbance by responders and waste generation is controlled.

Waste Generation
May generate significant quantities of oil mixed with sediment and debris which must be properly disposed of or treated. Decontamination of hand tools may produce oily wastewater that must be treated properly. Worker personal protective gear is usually disposed of daily or decontaminated and the resulting oily wastewater treated properly.

Mechanical Oil Removal

Objective

To remove oil from shorelines, and bottom sediments using mechanical equipment.

Description

Oil and oiled materials are collected and removed using mechanical equipment not specifically designed for pollution response, such as backhoes, graders, bulldozers, dredges, draglines, beach cleaners, etc. Requires systems for temporary storage, transportation, and final treatment and disposal of collected material.

Applicable Habitat Types

On land, possible wherever surface sediments are both amenable to, and accessible by, heavy equipment. For submerged oil, used in sheltered areas where oil accumulates. On water, used on viscous or solid contained oil.

When to Use

When large amounts of oiled materials must be removed. Care should be taken to remove sediments only to the depth of oil penetration, which can be difficult with heavy equipment. Should be used carefully where excessive sediment removal may erode the beach or shore. Mechanical removal of buried oil consists of the removal and sidecasting of clean overburden, removal of oiled sediments by either manual or mechanical methods, and the replacement of the clean overburden. Care is also needed to minimize further oil penetration from uncontrolled vehicle traffic.

Biological Constraints

Heavy equipment use may be restricted in sensitive habitats (e.g., wetlands, soft substrates) or areas used by protected species. Special permission or archaeological monitoring will be needed to use equipment to excavate in areas with known cultural resources. Generation of high suspended sediment concentrations adjacent to seagrass beds or coral reef habitats may be prohibited. Access and work areas may be restricted, or traffic corridors designated, to prevent physical disturbance to adjacent, unoiled areas. The noise generated by the mechanical equipment may present a constraint as well.

Environmental Effects

The equipment is heavy, with many support personnel required. May be detrimental if excessive sediments are removed without replacement. All organisms in the sediments will be affected, although the need to remove the oil may make this response method the best overall alternative. Resuspension of exposed oil and fine-grained, oily sediments can affect adjacent bodies of water.

Waste Generation

Can generate large quantities of contaminated sediment and debris that must be treated or landfilled. The amount of waste generated by this cleanup option should be given careful consideration by response planners when reviewing potential environmental impacts of the oily wastes, debris, and residues.

Sorbents

Objective

To remove surface oil by absorption by oleophilic (oil-attracting) material placed at the waterline or on treated surfaces. This method can also include use of loose, organic sorbents on oiled vegetated surfaces to reduce the risk of wildlife oiling.

Description

Sorbent material is placed on the floating oil or water surface, allowing it to sorb oil or is used to wipe or dab stranded oil. Forms include sausage boom, pads, rolls, sweeps, snares, and loose granules or particles. These products can be synthetically produced or be natural substances. Efficacy depends on the capacity of the particular sorbent, wave or tidal energy available for lifting the oil off the substrate, and oil type and stickiness. Recovery of all sorbent material is mandatory. Loose, organic sorbents may be applied to the oil surface and lightly raked into the oil, then removed.

Applicable Habitat Types

Can be used on any habitat or environment type. However, when deployed in areas exposed to wave action, they need to be firmly anchored or removed during storms, to prevent stranding on the shoreline, particularly along wetlands.

When to Use

When oil is free-floating close to shore or stranded on shore. The oil must be able to be released from the substrate and sorbed by the sorbent. As a secondary treatment method after gross oil removal, and in sensitive areas where access is restricted. Selection of sorbent varies by oil type: heavy oils only coat surfaces, requiring a high surface area to be effective, whereas lighter oils can penetrate sorbent material.

Biological Constraints

Access for deploying and retrieving sorbents should not adversely affect wildlife. Application in soft or sensitive habitats will require use of walking boards. Sorbents should not be used in a fashion that would endanger or trap wildlife. Sorbents left in place too long can break apart and present an ingestion hazard to wildlife.

Environmental Effects

Physical disturbance of habitat during deployment and retrieval. Improperly deployed or tended sorbent material can crush or smother sensitive organisms.

Waste Generation

Must be regularly collected for proper disposal, so care should be taken to select and use sorbents effectively. Prevent overuse and generation of large amounts of lightly oiled sorbents. Waste-to-energy should be emphasized rather than disposal.

Vacuum

Objective

To remove oil pooled on a shoreline substrate or subtidal sediments.

Description

A vacuum unit is attached via a flexible hose to a suction head that recovers free oil. The equipment can range from small, portable units that fill individual 55-gallon drums to large supersuckers that are truck- or vessel-mounted and can generate enough suction to lift large rocks. Removal rates from substrates can be extremely slow.

Applicable Habitat Types

Any accessible habitat type. May be mounted on vessels (including airboats) for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites.

When to Use

When oil is stranded on the substrate, pooled against a shoreline, concentrated in trenches or trapped in vegetation. Usually requires shoreline access points.

Biological Constraints

Special restrictions should be established for areas where foot traffic and equipment operation may be damaging, such as soft substrates. Operations in wetlands must be very closely monitored, and a site-specific list of procedures and restrictions developed to prevent damage to vegetation, such as use of walking boards, monitoring to prevent excessive damage to vegetation and soils, and use in combination was low-pressure flushing to lift the oil off the substrate and vegetation.

Environmental Effects

Minimal, if foot and vehicular traffic are controlled and minimal substrate/vegetation is damaged or removed.

Waste Generation

Collected oil and or oil/water mix will need to be stored temporarily prior to recycling or disposal. Oil may be recyclable; if not, it will require disposal in accordance with local regulations. Large amounts of water are often recovered, requiring separation and treatment.

Debris Removal

Objective

To remove debris in path of spill prior to oiling, and to remove contaminated debris from the shoreline and water surface.

Description

Manual or mechanical removal of debris (driftwood, seaweed, trash, wreckage) from the shore or water surface. Can include cutting and removal of oiled logs.

Applicable Habitat Types

Can be used on any habitat or environment type where access is safe.

When to Use

When debris is heavily contaminated and provides a potential source of secondary oil release; an aesthetic problem; a source of contamination for other resources that use the area such as birds and small mammals; likely to clog skimmers; or likely to cause safety problems for responders. Used in areas of wrack accumulation on beaches prior to oiling to minimize the amount of oiled debris to be handled.

Biological Constraints

Foot traffic over sensitive areas (wetlands, spawning grounds) must be restricted. May be periods when entry should be denied (spawning periods, influx of large numbers of migratory waterfowl). Debris may also be a habitat and an important source of prey (for example, shorebirds feeding in wrack on beaches). Unoiled or lightly oiled debris should not be removed.

Environmental Effects

Physical disruption of substrate, especially when mechanized equipment must be deployed to recover a large quantity of debris.

Waste Generation

Will generate contaminated debris (volume depends on what, and how much, is collected, e.g., logs, brush). Unless there is an approved hazardous waste incinerator that will take oily debris, burning will seldom be allowed, especially on-site burning. However, this option should still be explored, especially for remote locations, with the appropriate state or federal agencies that must give approvals for burning.

The advantage of pre-spill debris collections is that waste disposal requirements will likely be less restrictive than if the debris is oiled. Once oiled, the debris is likely to be handled as a hazardous waste.

Sediment Reworking/Tilling

Objective

To break up oily sediments and surface oil deposits, increasing their surface area, and bringing deeper subsurface oil layers to the surface, thus enhancing the rate of degradation through aeration. Also, to increase the rate of sediment re-working by wave action.

Description

The oiled sediments are roto-tilled, disked, or otherwise mixed using mechanical equipment or manual tools. Along beaches, oiled sediments may also be pushed to the lower intertidal zone to enhance natural cleanup by wave activity (surf washing). On gravel beaches, the process may be aided with high-volume flushing.

Applicable Habitat Types

On any sedimentary substrate that can support mechanical equipment or foot traffic and hand tilling.

When to Use

On sand to gravel beaches with subsurface oil, where sediment removal is not feasible (due to erosion or transportation and disposal problems). On sand beaches where the sediment is stained or lightly oiled. Also appropriate for sites where the oil is stranded above the normal high waterline, so that the sediments can be reworked by wave action.

Biological Constraints

Avoid use on shores near sensitive wildlife habitats, such as fish-spawning areas or bird-nesting or concentration areas because of the potential for release of oil and oiled sediments into adjacent bodies of water. Should not be used adjacent to sensitive subtidal habitats such as shellfish beds, seagrass, or coral reefs.

Environmental Effects

Mixing of oil into sediments could further expose organisms that live below the original layer of oil. Repeated reworking could delay re-establishing of these organisms. Refloated oil and oily suspended sediments from treated sites could contaminate adjacent waterbodies and shorelines.

Waste Generation

None.

Vegetation Cutting/Removal

Objective

To remove portions of oiled vegetation or oil trapped in vegetation to prevent oiling of wildlife or secondary oil releases.

Description

Oiled vegetation is cut with weed trimmers, blades, etc., and picked or raked up and bagged for disposal. May require use of loose, organic sorbents to recover oil that is exposed and poses contact hazards to wildlife.

Applicable Habitat Types

Habitats composed of vegetation, such as wetlands, seagrass beds, and kelp beds that contain emergent, herbaceous vegetation or floating, aquatic vegetation.

When to Use

When the risk of oiled vegetation contaminating wildlife is greater than the value of the vegetation that is to be cut, and there is no less-destructive method that removes or reduces the risk to acceptable levels. Also, to remove thick oil residues under the oiled vegetation.

Biological Constraints

Operations must be strictly monitored to minimize the degree of root destruction and mixing of oil deeper into the sediments. Any foot traffic on sensitive substrates will require use of walking boards. Access in bird-nesting areas should be restricted during nesting seasons. Cutting only the oiled portions of the plants and leaving roots and as much of the stem as possible minimizes impact to plants.

Environmental Effects

Vegetation removal will destroy habitat for many animals. Cut areas will have reduced plant growth and, in some instances, plants may be killed. Cutting at the base of the plant stem may allow oil to penetrate the substrate, causing subsurface contamination. Along exposed sections of shoreline, the vegetation may not recover, resulting in erosion and habitat loss. Trampled areas will recover much more slowly.

Waste Generation

Cut portions of oiled plants must be collected and disposed of properly.

Flooding/Deluge

Objective

To lift and wash oil stranded on land to the water's edge for collection.

Description

A perforated header pipe or hose is placed above the oiled shore or bank. Ambient-temperature water is pumped through the header pipe at low pressure and flows downslope to the water where any released oil is trapped by booms and recovered by skimmers or other suitable equipment. On porous sediments, water flows through the substrate, pushing loose oil ahead of it. On saturated, fine-grained sediments, the technique becomes more of a surface oil lifting and flushing.

Applicable Habitat Types

All shoreline types where the equipment can be effectively deployed. Not effective in steep intertidal areas.

When to Use

In heavily oiled areas when the oil is still fluid and adheres loosely to the substrate, and where oil has penetrated into gravel sediments. This method is frequently used with other washing techniques (low- or high-pressure, cold-to-hot-water flushing).

Biological Constraints

Special care should be taken to recover oil where nearshore habitats contain rich biological communities. Not appropriate for soft, muddy substrates.

Environmental Effects

Habitat may be physically disturbed by foot traffic during operations and smothered by sediments washed down the slope. If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Oiled sediment may be transported to nearshore areas, contaminating them and burying benthic organisms.

Waste Generation

Depends on the effectiveness of the collection method.

Low-Pressure, Ambient-Water Flushing

Objective

To remove fluid oil that has adhered to the substrate or man-made structures, pooled on the surface, or become trapped in vegetation.

Description

Ambient-temperature water is sprayed at low pressures (<10 pounds per square inch [psi] or <72 kilopascals [kpa]), usually from hand-held hoses, to lift oil from the substrate and float it to the water's edge for recovery by skimmers, vacuum, or sorbents. Can be conducted from barges with long-reach spray systems. Usually used with a flooding system to prevent released oil from re-adhering to the substrate downstream of the treatment area.

Applicable Habitat Types

On sediment substrates, riprap, and solid, man-made structures, where the oil is still fluid. In wetlands and along vegetated banks where oil is trapped in vegetation.

When to Use

Where fluid oil is stranded onshore or floating on shallow intertidal areas.

Biological Constraints

May need to restrict use so that the oil/water effluent does not drain across sensitive intertidal habitats, and that mobilized sediments do not affect rich subtidal communities. Use from boats will reduce the need for foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.

Environmental Effects

If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Some trampling of substrate and attached biota may occur.

Waste Generation

Depends on the effectiveness of the collection method.

High-Pressure, Ambient-Water Flushing

Objective

To remove oil that has adhered to hard substrates or man-made structures.

Description

Similar to low-pressure flushing, except that water pressure is 100-1,000 psi (720-7,200 kpa). High-pressure spray will more effectively remove sticky or viscous oils. If low water volumes are used, sorbents are placed directly below the treatment area to recover the oil.

Applicable Habitat Types

On bedrock, man-made structures, and gravel substrates.

When to Use

When low-pressure flushing is not effective at removing adhered oil, which must be removed to prevent continued oil release or for aesthetic reasons. When a directed water jet can remove oil from hard-to-reach sites.

Biological Constraints

May need to restrict flushing so that the oil does not drain across sensitive habitats. Flushed oil must be recovered to prevent further oiling of adjacent areas. Should not be used directly on attached algae nor rich, intertidal areas.

Environmental Effects

All attached animals and plants in the direct spray zone will be removed, even when used properly. May drive oil deeper into the substrate or erode fine sediments from shorelines if water jet is improperly applied. If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas. Some trampling of substrate and attached biota will occur.

Waste Generation

Depends on the effectiveness of the collection method.

Low-Pressure, Hot-Water Flushing

Objective

To remove non-liquid/non-fluid oil that has adhered to the substrate or man-made structures, or pooled on the surface.

Description

Hot water (90°F [32°C] up to 170°F [75°C]) is sprayed with hoses at low pressures (<10 psi [<72 kpa]) to liquefy and lift oil from the substrate and float it to the water's edge for recovery by skimmers, vacuums, or sorbents. Used with flooding to prevent released oil from re-adhering to the substrate.

Applicable Habitat Types

On bedrock, sand to gravel substrates, and man-made structures.

When to Use

Where heavy, but relatively fresh, oil is stranded onshore. The oil must be heated above its pour point so it will flow. Less effective on sticky oils.

Biological Constraints

Avoid wetlands or rich intertidal communities so that the hot oil/water effluent does not contact sensitive habitats. Operations from boats will help reduce foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas. Should not be used directly on attached algae or in rich, intertidal areas.

Environmental Effects

Hot water contact can kill attached animals and plants. If containment methods are not sufficient, oil may be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Some trampling of substrate and biota will occur.

Waste Generation

Depends on the effectiveness of the collection method.

High-Pressure, Hot-Water Flushing

Objective

To mobilize weathered and viscous oil strongly adhered to surfaces.

Description

Hot water (32°C up to 77°C) is sprayed with hand-held wands at pressures greater than 720 kpa. If used without water flooding, this procedure requires immediate use of vacuum or sorbents to recover the oil/water runoff. When used with a flooding system, the oil is flushed to the water surface for collection by skimmers, vacuum, or sorbents.

Applicable Habitat Types

Gravel substrates, bedrock, and man-made structures.

When to Use

When oil has weathered to the point that warm water at low pressure no longer effectively removes oil. To remove viscous oil from man-made structures for aesthetic reasons.

Biological Constraints

Use should be restricted so that the oil/water effluent does not drain across sensitive habitats (damage can result from exposure to oil, oiled sediments, and hot water). Should not be used directly on attached algae nor rich intertidal areas. Released oil must be recovered to prevent further oiling of adjacent habitats.

Environmental Effects

All attached animals and plants in the direct spray zone will be removed or killed, even when used properly. Oiled sediment may be transported to shallow nearshore areas, contaminating them and burying benthic organisms.

Waste Generation

Depends on the effectiveness of the collection method.

Steam Cleaning

Objective
To remove heavy residual oil from solid substrates or man-made structures.

Description
Steam or very hot water (171°F [77°C] to 212°F [100°C]) is sprayed with hand-held wands at high pressure (2,000 psi [14,400 kpa]). Water volumes are very low compared to flushing methods.

Applicable Habitat Types
Man-made structures such as seawalls and riprap.

When to Use
When heavy oil residue must be removed for aesthetic reasons, and when hot-water flushing is not effective, and limited biota are present on the treatment area.

Biological Constraints
Not to be used in areas of soft substrates, vegetation, nor high biological abundance directly on, or below, the structure.

Environmental Effects
Complete destruction of all organisms in the spray zone. Difficult to recover all released oil. If containment methods are not sufficient, oil may be flushed into nearshore areas.

Waste Generation
Depends on the effectiveness of the collection method. Usually sorbents are used, generating significant waste volumes.

Sand Blasting

Objective

To remove heavy residual oil from solid substrates or man-made structures.

Description

Use of sandblasting equipment to remove oil from the substrate. May include recovery of used (oiled) sand.

Applicable Habitat Types

On heavily oiled bedrock and artificial structures such as seawalls and riprap.

When to Use

When heavy oil residue must be cleaned for aesthetic reasons, and even steam cleaning is not effective.

Biological Constraints

Not to be used in areas of soft substrates, vegetation, nor high biological abundance directly below, or adjacent to, the structures.

Environmental Effects

Complete destruction of all organisms in the blast zone. Possible smothering of organisms by sand in adjacent areas. Unrecovered, used sand will introduce oiled sediments into the adjacent habitat. Oiled sediment may be transported to shallow nearshore areas, contaminating them and burying benthic organisms.

Waste Generation

Will need to recover and dispose of oiled sand used in blasting.

Elasticity Modifiers

Objective

To impart visco-elastic properties to floating oil, thereby increasing skimming rates.

Description

The liquid product is applied at a rate of 1:13 to 1:150 product:oil ratio, depending on the oil type. Some mixing is required and is usually provided by the water spray during application. Treated oil is gelatinous, or semi-solid, but still fluid; there is no chemical change in the oil. The primary purpose is to increase skimmer efficiency removal rates while minimizing water recovery amounts. Increases the efficiency of some skimmers, but may clog other skimmers, pumps, and storage containers.

Applicable Habitat Types

On all water environments where oil can be contained for skimming. Not for use on wetlands nor debris because of increased adhesive properties of the treated oil.

When to Use

When skimmer efficiency is low. Must be used with booming or other physical containment. Ideal for use on this slicks of light refined oils that are very difficult to recover with mechanical equipment or sorbents. Requires RRT approval for use.

Biological Constraints

Not suitable for vegetated shores or where there is extensive debris mixed in the oil. Should be avoided when birds or other wildlife cannot be kept away from the treated oil.

Environmental Effects

May increase the smothering effect of oil on organisms; therefore, the treatment should be considered only where recovery of the treated oil is likely.

Waste Generation

If skimming efficiency is increased, will reduce the volume of water in oil/water collections. Effects on recycling of oil treated with elasticity modifiers is unknown.

Surface Collecting Agents

Objective

To collect or herd oil into a smaller area and thicker slick in order to increase recovery. Can be used to herd oil away from sensitive areas or to help keep oil contained when it is necessary to move a boom.

Description

These agents, which are insoluble surfactants and have a high spreading pressure, are applied in small quantities (1-2 gallons per lineal mile [2.5-5 liters per lineal kilometer]) to the clean water surrounding the edge of a fresh oil slick. They contain the oil, prevent spreading, but do not hold the spill in place. Hand-held or vessel-mounted systems can be used. Must be applied early in spill, when oil is still fluid.

Applicable Habitat Types

On all still water environments.

When to Use

Potential use for collection and protection. For collection, used to push slicks out from under docks and piers where it has become trapped, or in harbors where the equipment is readily accessible for use early in the spill. For protection in low-current areas, used to push slicks away from sensitive resources such as wetlands. Also used in ice environments to thicken oil. Not effective in fast currents, rough seas, or rainfall.

Biological Constraints

Not suitable for use in very shallow water or fish-spawning areas.

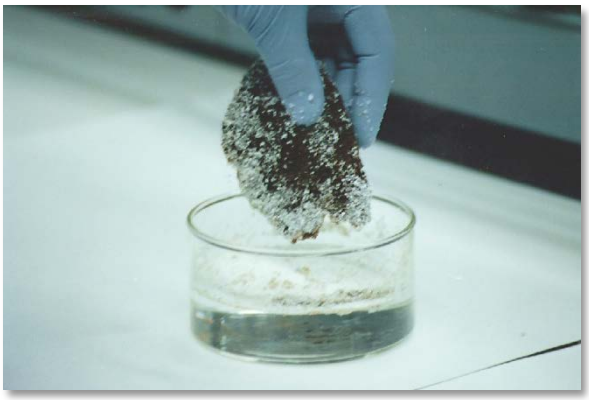
Environmental Effects

Direct acute toxicity to surface-layer organisms possible, though available products vary greatly in their aquatic toxicity.

Waste Generation

Same as for manual oil recovery.

Solidifiers



Objective

To change the physical state of spilled oil from a liquid to a solid to increase recovery rates.

Description

Chemical agents (polymers) are applied to oil at rates of 10-50 percent or more, solidifying the oil in minutes to hours. Various broadcast systems, such as leaf blowers, water cannons, or fire suppression systems, can be modified to apply the product over large areas. Can be applied to both floating and stranded oil. Mixing is usually needed and can be done with a strong water spray. Can be placed in booms, pads, pillows, and socks and used like a sorbent.

Applicable Habitat Types

All water environments, bedrock, sediments, and artificial structures.

When to Use

To immobilize the oil prevent refloating from a shoreline, penetration into the substrate, or further spreading. However, the oil may not fully solidify unless the product is well mixed with the oil, and may result in a mix of solid and untreated oil. Generally not used on heavy oil spills that are already viscous. Requires RRT approval.

Biological Constraints

Must be able to recover all treated material.

Environmental Effects

Available products are insoluble and have very low aquatic toxicity. Unrecovered solidified oil may have longer impact because of slow weathering rates. Physical disturbance of habitat may occur during application and recovery in soft sediments where foot traffic is used.

Waste Generation

If skimming efficiency is increased, solidifiers may reduce the volume of water collected during oil recovery. Oil treated with solidifiers is typically disposed of in landfills.

Surface Washing Agents

Objective

To increase the efficiency of oil removal from contaminated substrates.

Description

Special formulations are applied to the substrate, as a presoak and/or flushing solution, to soften or lift weathered or heavy oils from the substrate to enhance flushing methods. The intent is to lower the water temperature and pressure required to mobilize the oil from the substrate during flushing. Some agents will disperse the oil as it is washed off the beach, others will not.

Applicable Habitat Types

On any habitat where water flooding and flushing procedures are applicable. Has been used to increase the removal of oil adhered to vegetation.

When to Use

When the oil has weathered to the point where it cannot be removed using ambient water temperatures and low pressures. This approach may be most applicable where flushing effectiveness decreases as the oil weathers. Requires RRT approval for use.

Biological Constraints

When the product does not disperse the oil into the water column, the released oil must be recovered from the water surface. Use should be restricted so that the oil/water effluent does not drain across sensitive habitats. Other concerns are where suspended sediment concentrations are high, near wetlands, and near sensitive nearshore resources.

Environmental Effects

The toxicity and effects on dispersability of treated oil vary widely among products. Selection of a product should take into consideration the toxicity of the product.

Waste Generation

Because treated oil must be recovered, waste generation is a function of recovery method, which often includes sorbents.

Nutrient Enrichment (Biostimulation)

Objective

To accelerate the rate of oil degradation due to natural microbial processes by adding nutrients (generally nitrogen and phosphorus) that stimulate microbial growth.

Description

Liquid products are diluted in water and applied with spray or injection systems. Dry products may be applied by hand or spray systems. Oleophilic fertilizers are sprayed neat directly on the oiled surface. The frequency of nutrient addition is determined by monitoring pore water so that the nitrate-N concentration are in the range of 2-10 milligrams per liter. Regular tilling or other means of aeration may be needed to maintain minimum oxygen levels, break up the oil residues, and mix the nutrients with the oiled sediments.

Applicable Habitat Types

On any shoreline habitat type where access is allowed and nutrients are deficient.

When to Use

Only when nutrients are limiting the rates of natural microbial degradation. On moderately to heavily oiled substrates, after other techniques have been used to remove free product; on lightly oiled shorelines, where other techniques are destructive or ineffective; and where nutrients limit natural attenuation. Most effective on light to medium crude oils and fuel oils. Less effective where oil residues are thick. Not considered for gasoline spills, which evaporate rapidly. Fertilizers can increase the growth of vegetation, which could speed the oil degradation by phyto-remediation. Biodegradation of hydrocarbons requires: oil-degrading microbes (which naturally occur in the coastal and marine environment), nutrients (nitrogen and phosphorus), oxygen, moisture, and time, any of which can be limiting. Requires RRT approval for use.

Biological Constraints

Avoid using ammonia-based fertilizers at highly elevated concentrations because un-ionized ammonia is toxic to aquatic life at very low levels. Nitrate is an equally good nitrogen source, minus the ecotoxicity. If nutrients are applied properly with monitoring, eutrophication should not be a problem. Only nutrient additives proven to be nontoxic and effective in either the lab or the field should be used. Check fertilizers for their metal content because some common products contain relatively high levels of metals. Contact toxicity of oleophilic nutrients may restrict their use, as other chemicals in the product could be more toxic to aquatic organisms in the presence of oil.

Environmental Effects

Detrimental effects to shoreline from foot or vehicle traffic caused by workers applying nutrients (unless nutrients are sprayed from a vessel or aircraft). No wastes generated.

Natural Microbe Seeding (Bioaugmentation)

Objective

A form of bioremediation used to accelerate natural microbial degradation of oil by adding high numbers of oil-degrading microorganisms.

Description

Formulations containing specific hydrocarbon-degrading microbes are added to the oiled area because indigenous hydrocarbon degraders are low in number, or those that are present cannot degrade the oil effectively. Because microbes require nitrogen and phosphorus to convert hydrocarbons to biomass, formulations containing these oil degraders must also contain adequate nutrients. Bioaugmentation has not been demonstrated in the scientific literature to be effective on marine and coastal oil spills.

Bioaugmentation appears less effective than biostimulation because: 1) hydrocarbon degraders are ubiquitous in nature and, when an oil spill occurs at a given site, the influx of oil will cause an immediate increased response in the hydrocarbon degrading populations; but, 2) if nutrients are in limited supply, the rate of oil biodegradation will be less than optimal; thus, 3) supplying nutrients will enhance the process initiated by the spill, but adding microorganisms will not, because they still lack the necessary nitrogen and phosphorus to support growth.

Applicable Habitat Types

Insufficient information on impacts or effectiveness to make a judgment on habitat.

When to Use

There is insufficient information on impact or effectiveness of this method to make a judgment on when to use it. Requires RRT approval for use.

Biological Constraints

Avoid using ammonia-based fertilizers adjacent to water bodies because un-ionized ammonia is toxic to aquatic life at very low levels. Nitrate is an equally good nitrogen source, minus the ecotoxicity. If the product containing nutrients is applied properly with adequate monitoring, eutrophication should not be a problem; however, toxicity tests should be evaluated carefully, as other chemicals in the product would be toxic to aquatic organisms.

Environmental Effects

Detrimental physical effects to shoreline from foot or vehicle traffic cause by workers applying bioaugmentation product (unless nutrients are applied from a vessel or aircraft). No wastes generated.

In-situ Burning

Objective

To remove oil from the water surface or habitat by burning the oil in place.

Description

Oil floating on the water surface is collected into slicks at least 2-3 mm thick and ignited. The oil can be contained in fire-resistant booms, or by natural barriers such as ice or the shoreline. On land, oil can be burned when it is on a combustible substrate such as vegetation, logs, or other debris. Oil can be burned from non-flammable substrates using a burn promoter. On sedimentary substrates, it may be necessary to dig trenches for oil to accumulate in pools to a thickness that will sustain burning. Heavy oils are more difficult to ignite but can sustain a burn once ignited. Emulsified oils may not ignite or sustain a burn when the water content is great than about 25%. Where sinking of the burn residue is of concern, it may be possible to collect the burn residues while they are still hot and buoyant.

Applicable Habitat Types

On most habitats except dry, muddy substrates where heat may impact the biological productivity of the habitat. May increase oil penetration into permeable substrate. Generally not suitable for woody vegetation such as mangroves and hardwood swamps.

When to Use

On floating slicks, early in the spill event when the oil can be kept thick enough to sustain the burn. Removal rates of 50,000 gallons per hour can be achieved for a burn area of 10,000 square feet (930 square meters). On land, where there is heavy oil in areas neither amendable nor accessible to physical removal, and the oil must be removed quickly. Under ideal condition, removal efficiencies can exceed 90%. There are many potential applications for spills in ice. Requires RRT approval for use during coastal and marine spills.

Biological Constraints

Most biota in the burn area will be impacted. The possible effects of smoke on wildlife and populated areas should be evaluated. In vegetated and mud habitats, a water layer will minimize impacts to sediments and roots

Environmental Effects

Temperature and air quality effects are likely to be localized and short-lived. Toxicological impact from burn residues may be of concern, depending on the oil type and amount of residue. On-water, burn residues are likely to sink. Studies have predicted that ~50% of international crudes would sink in seawater after cooling. On land, removal of residues and unburned oil is often necessary for crude and heavy oils. The success of the burn in vegetated habitats is a function of the season of the burn, vegetation type, and water level at the time of the burn.

Waste Generation

Any residues remaining after burning will need to be collected and landfilled, but with an efficient burn will be a small fraction of the original oil volume.

Appendix C: Shoreline Descriptors, Including Oil Behavior and Response Considerations

EXPOSED ROCKY SHORES — ESI =1A

Description

- The intertidal zone is steep (greater than 30 degree slope) and narrow with very little width
- Sediment accumulations are uncommon and usually ephemeral, because waves remove the debris that has slumped from the eroding cliffs
- There is strong vertical zonation of intertidal biological communities
- Species density and diversity vary greatly, but barnacles, snails, mussels, seastars, limpets, sea anemones, shore crabs, polychaetes, and macroalgae can be abundant

Predicted Oil Behavior

- Oil is held offshore by waves reflecting off the steep, hard surfaces
- Any oil that is deposited is rapidly removed from exposed faces
- The most resistant oil would remain as a patchy band at or above the high tide line
- Impacts to intertidal communities are expected to be short-term; an exception would be where heavy concentrations of a light refined product came ashore very quickly

Response Considerations

- Cleanup is usually not required
- Access can be difficult and dangerous

EXPOSED, SOLID MAN-MADE STRUCTURES — ESI =1B

Description

- These are solid, man-made structures such as seawalls, groins, revetments, piers, and port facilities
- Many structures are constructed of concrete, wood, or metal
- They are built to protect the shore from erosion by waves, boat wakes, and currents, and thus are exposed to rapid natural removal processes
- Often there is no exposed substrate at low tide, but multiple habitats are indicated if present
- Attached animals and plants are sparse to common

Predicted Oil Behavior

- Oil is held offshore by waves reflecting off the steep, hard surface in exposed settings
- Oil readily adheres to the dry, rough surfaces, but it does not adhere to wet substrates
- The most resistant oil would remain as a patchy band at or above the high tide line

Response Considerations

- Cleanup is usually not required
- High-pressure water spraying may be conducted to remove risk of contamination of people or vessels, or to improve aesthetics

EXPOSED WAVE-CUT PLATFORMS IN BEDROCK — ESI = 2A

Description

- These shores consist of a bedrock shelf or platform of highly variable width and very gentle slope
- The surface of the platform is irregular; tidal pools are common
- The shoreline may be backed by a steep scarp or low bluff
- There may be a perched beach of sand- to boulder-sized sediments at the base of the scarp
- Small accumulations of gravel can be found in the tidal pools and crevices in the platform
- These habitats can support large populations of encrusting animals and plants, with rich tidal pool communities; barnacles, snails, mussels, and macroalgae are often abundant

Predicted Oil Behavior

- Oil will not adhere to the rock platform, but rather be transported across the platform and accumulate along the high tide line
- Persistence of oiled sediments is usually short-term, except in wave shadows or where the oil was deposited high above normal wave activity

Response Considerations

- Cleanup is usually not required
- Where the high tide area is accessible, it may be feasible to remove heavy oil accumulations and oiled debris

EXPOSED SCARPS AND STEEP SLOPES IN CLAY — ESI = 2B

Description

- These habitats generally occur along exposed wetlands and major river tributaries in the marsh where the currents cut a steep bank into the marsh soils
- Scarp heights vary from about 0.3 to 1 m and usually consist of a heavily rooted, peaty soil
- May be fronted by a narrow beach of fine to medium-grained sand and/or shell fragments
- Low biological utilization because of eroding banks
- Typically backed by wetland vegetation

Predicted Oil Behavior

- Oil is not expected to adhere to the wet, impermeable clay surface
- There may be a thin band of oil left at or above the high water line

Response Considerations

- Cleanup is usually not required, because any stranded oil is quickly removed by wave action
- Access may be difficult

FINE- TO MEDIUM-GRAINED SAND BEACHES ESI = 3A

Description

- These beaches are flat to moderately sloping and relatively hard packed
- There can be heavy accumulations of wrack present
- They are utilized by birds and sea turtles for nesting
- Upper beach fauna include ghost crabs and amphipods; lower beach fauna can be moderate, but highly variable

Predicted Oil Behavior

- Light oil accumulations will be deposited as oily swashes or bands along the upper intertidal zone
- Heavy oil accumulations will cover the entire beach surface; oil will be lifted off the lower beach with the rising tide
- Maximum penetration of oil into fine- to medium-grained sand is about 10-15 cm
- Burial of oiled layers by clean sand within the first week after a spill typically will be less than 30 cm along the upper beach face
- Organisms living in the beach sediment may be killed by smothering or lethal oil concentrations in the interstitial water
- Biological impacts include temporary declines in infauna, which can affect shorebird foraging areas

Response Considerations

- These beaches are among the easiest shoreline types to clean
- Cleanup should concentrate on removing oil and oily debris from the upper swash zone once oil has come ashore
- Manual cleanup, rather than road graders and front-end loaders, is advised to minimize the volume of sand removed from the shore and requiring disposal
- All efforts should focus on preventing the mixing of oil deeper into the sediments by vehicular and foot traffic
- Mechanical reworking of lightly oiled sediments from the high tide line to the middle intertidal zone can be effective along beaches

SCARPS AND STEEP SLOPES IN SAND — ESI = 3B

Description

- Occurs where sandy bluffs are undercut by waves or currents and slump
- Some scarps are fronted by narrow beaches, if the erosion rates are moderate and episodic
- Trees growing at the top of these slopes are eventually undercut and the logs can accumulate at the base of the scarp
- Biological utilization by birds and infauna is low

Predicted Oil Behavior

- Any stranded oil will concentrate at the high-water line and may penetrate sandy sediments
- Oil will also adhere to the dry surfaces of any logs that have accumulated at the base of the scarp
- There is little potential for burial except when major slumping of the bluff occurs

Response Considerations

- In many cases, cleanup is not necessary because of the short residence time of the oil
- The need for removal of oiled sediments and debris should be carefully evaluated because of the potential for increased erosion
- Closely supervised manual labor should be used so that the minimal amount of material is removed during cleanup

COARSE-GRAINED SAND BEACHES — ESI = 4

Description

- These beaches are moderate sloping, of variable width, and have soft sediments. These characteristics combine to lower their trafficability
- Generally species density and diversity is lower than on fine-grained sand beaches

Predicted Oil Behavior

- During small spills, oil will be deposited primarily as a band along the high tide line
- Under very heavy accumulations, oil may spread across the entire beach face, though the oil will be lifted off the lower beach with the rising tide
- Penetration of oil into coarse-grained sand can reach 25 cm
- Burial of oiled layers by clean sand can be as rapid as one tidal cycle and to depths of 60 cm or more
- Burial to depths over 1m is possible if the oil comes ashore at the start of a depositional period
- Biological impacts include temporary declines in infaunal populations, which can also affect important shorebird foraging areas

Response Considerations

- Cleanup should concentrate on removing oil and oily debris from the upper swash zone once oil has come ashore

- Manual cleanup, rather than road graders and front-end loaders, is advised to minimize the volume of sand removed from the shore and requiring disposal
- Efforts should focus on preventing mixing of oil deeper into the sediments by vehicular and foot traffic
- Mechanical reworking of lightly oiled sediments from the high tide line to the middle intertidal zone can be effective along beaches

MIXED SAND AND GRAVEL BEACHES ESI = 5

Description

- Because of the mixed sediment sizes, there may be zones of pure sand, pebbles, or cobbles
- There can be large-scale changes in the sediment distribution patterns depending upon season, because of the transport of the sand offshore during storms
- Because of sediment mobility and desiccation, exposed beaches tend to have low densities of attached animals and plants
- Presence of attached algae, mussels, and barnacles indicates beaches that are relatively sheltered, with the more stable substrate supporting a richer biota

Predicted Oil Behavior

- During small spills, oil will be deposited along and above the high-tide swash
- Large spills will spread across the entire intertidal area
- Oil penetration into the beach sediments may be up to 50 cm; however, the sand fraction can be quite mobile, and oil behavior is much like on a sand beach if the sand fraction exceeds about 40 percent
- Burial of oil may be deep at and above the high tide line, where oil tends to persist, particularly where beaches are only intermittently exposed to waves
- In sheltered pockets on the beach, pavements of asphalted sediments can form if there is no removal of heavy oil accumulations because most of the oil remains on the surface

Response Considerations

- Remove heavy accumulations of pooled oil from the upper beach
- All oiled debris should be removed; sediment removal should be limited as much as possible
- Sediment removal should be limited as much as possible
- Low-pressure flushing can be used to float oil away from the sediment for recovery by skimmers or sorbents. High-pressures should be avoided because of potential for transporting contaminated finer sediment (sand) to the lower intertidal or subtidal zones.
- Mechanical reworking of oiled sediments from the high tide zone to the middle intertidal zone can be effective in areas regularly exposed to wave activity. Oiled sediments should not be relocated below the mid-tide zone
- In-place tilling may be used to reach deeply buried oil layers on exposed beaches

GRAVEL BEACHES — ESI = 6A

Description

- Gravel beaches are composed of sediments ranging in size from pebbles to boulders
- They can be very steep, with multiple, wave-built berms forming the upper beach
- Attached biota are usually restricted to the lowest parts of the beach, where the sediments are less mobile
- The presence of attached biota indicates beaches that are relatively sheltered, with the more stable substrate supporting richer biological communities

Predicted Oil Behavior

- Stranded oil is likely penetrate deeply into gravel beaches because of their high permeability
- On exposed beaches, oil can be pushed over the high tide and storm berms, pooling and persisting above the normal zone of wave wash
- Long-term persistence will be controlled by the depth of penetration versus the depth of routine reworking by storm waves
- On sheltered portions of beaches, chronic sheening and formation of asphalt pavements is likely where accumulations are heavy

Response Considerations

- Heavy accumulations of pooled oil should be removed quickly from the upper beach
- All oiled debris should be remove
- Sediment removal should be limited as much as possible
- Low- to high-pressure flushing can be used to lift oil from the sediments for recovery by skimmers or sorbents
- Mechanical reworking of oiled sediments from the high tide zone to the middle intertidal zone can be effective in areas regularly exposed to wave activity (as evidenced by storm berms). Oiled sediments should not be relocated below the mid-tide zone
- In-place tilling may be used to reach deeply buried oil layers on exposed beaches

RIPRAP — ESI = 6B

Description

- Riprap structures are composed of cobble- to boulder-sized blocks of rock, concrete, etc.
- Riprap structures are used as revetments and groins for shoreline protection and breakwaters and jetties around inlets and marinas
- Attached biota are sparse at the upper intertidal zone, but more common in the lower intertidal
- They are common in highly developed waterfront areas

Predicted Oil Behavior

- Deep penetration of oil between the blocks is likely, with oiling of trapped debris
- Oil adheres readily to the rough surfaces of the blocks
- Uncleaned oil can cause chronic leaching until the oil hardens

Response Considerations

- When the oil is fresh and liquid, high-pressure spraying and/or water flooding may be effective if all liberated oil is recovered
- Heavy and weathered oils are more difficult to remove, requiring scraping and/or hot-water spraying
- Removal of oiled debris deep in the crevices will be difficult

EXPOSED TIDAL FLATS — ESI = 7

Description

- Exposed tidal flats are broad, flat intertidal areas composed primarily of sand and minor amounts of shell, gravel, or mud
- The presence of sand indicates that tidal currents and waves are strong enough to mobilize the sediments
- They are usually associated with another shoreline type on the landward side of the flat, though they can occur as separate shoals; they are commonly associated with tidal inlets
- The sediments are water saturated, with only the higher ridges drying out during low tide
- Biological utilization can be very high, with large numbers of infauna, heavy use by birds for roosting and foraging, and use by foraging fish

Predicted Oil Behavior

- Oil does not usually adhere to the surface of exposed tidal flats, but rather moves across the flat and accumulates at the high-tide line
- Deposition of oil on the flat may occur on a falling tide if concentrations are heavy
- Oil does not penetrate water-saturated sediments, but may penetrate the tops of the ridges and coat gravel/shell
- Biological damage may be severe, primarily to infauna, reducing food sources for birds and fish

Response Considerations

- Currents and waves can be very effective in natural removal of the oil
- Cleanup can be done only during low tide, thus there is a narrow window of opportunity
- Use of machinery should be restricted to prevent mixing of oil into the sediments
- Manual removal methods are preferred, though worker access may be difficult

SHELTERED ROCKY SHORES — ESI = 8A

Description

- These shores are characterized by a rocky substrate that can vary widely in permeability. Of particular concern are rocky shores that have a semi-permeable veneer of angular rubble overlying the bedrock
- The wider shores may have some surface sediments, but the bedrock is the dominant substrate type
- Species density and diversity vary greatly, but attached biota may be present at high densities at lower tidal elevations

Predicted Oil Behavior

- Oil will adhere readily to the rough rocky surface, forming a distinct oil band along the high tide line
- Even on wide ledges, the lower intertidal zone usually stays wet (particularly when algae covered), preventing oil from adhering to the rock surface
- Heavy and weathered oils can cover the upper zone with little impacts to the rich biological communities of the lower zone
- Where the rubble is loosely packed, oil will penetrate deeply, causing long-term contamination of the subsurface sediments

Response Considerations

- Low- to high-pressure spraying at ambient water temperatures is most effective when the oil is fresh
- Extreme care must be taken not to spray in the biologically rich lower intertidal zone or when the tidal level reaches that zone
- Do not cut oiled, attached algae; use sorbents to recover oil as it is remobilized by tidal action

SHELTERED, SOLID MAN-MADE STRUCTURES — ESI = 8B

Description

- These are structures such as seawalls, groins, revetments, piers, and port facilities, constructed of concrete, wood, or metal
- Most of the structures are designed to protect a single lot, thus their composition, design, and condition are highly variable
- Often there is no exposed shore at low tide
- There can be dense attachments of animal and plant life

Predicted Oil Behavior

- Oil will adhere readily to rough surfaces, particularly along the high tide line, forming a distinct oil band
- The lower intertidal zone usually stays wet (particularly if algae covered), preventing oil from adhering to the surface

Response Considerations

- Cleanup of seawalls is usually conducted for aesthetic reasons or to prevent leaching of oil
- Low- to high-pressure spraying at ambient water temperatures is most effective when the oil is fresh

SHELTERED TIDAL FLATS — ESI = 9A

Description

- Sheltered tidal flats are composed of mud with minor amounts of sand and shell
- They are present in calm-water habitats, sheltered from major wave activity, and frequently backed by marshes
- The sediments are very soft and cannot support even light foot traffic in many areas
- Large concentrations of bivalves, worms, and other invertebrates are in the sediments
- They are heavily utilized by birds for feeding

Predicted Oil Behavior

- Oil does not usually adhere to the surface of sheltered tidal flats, but rather moves across the flat and accumulates at the high-tide line
- Oil can strand on the flat during a falling tide if concentrations are heavy
- Oil will not penetrate the water-saturated sediments, but could penetrate burrows or other crevices in muddy sediments
- In areas of high suspended sediments, sorption of oil can result in deposition of contaminated sediments on the flats
- Biological impacts may be severe

Response Considerations

- These are high-priority areas because cleanup options are limited
- Cleanup of the flat surface is very difficult because of the soft substrate; many methods may be restricted
- Low-pressure flushing and deployment of sorbents from shallow-draft boats may be attempted

SHELTERED, VEGETATED LOW BANKS — ESI = 9B

Description

- These habitats are either low banks with grasses or trees and tree roots exposed to the water
- They are flooded occasionally by high water

Predicted Oil Behavior

- During low-water conditions there is little impact, with the oil coating a narrow band of sediment at the water level
- During high-water conditions, the oil will cover and coat the grasses and base of trees
- May cause loss of the grasses, but the trees should survive unless oil penetrates and persists in the substrate

Response Considerations

- Low-pressure flushing of oiled areas is effective in removing moderate to heavy accumulations of oil from along the banks
- Sorbent and containment boom should be placed on the water side of the cleanup operations to contain and collect oil outflow
- Low- to high-pressure flushing can be used to remove oil from tree roots and trunks, if deemed necessary in high-use areas

SALT-AND BRACKISH-WATER MARSHES ESI = 10A

Description

- These are intertidal wetlands that consist of emergent, herbaceous vegetation. Depending on location and inter-annual variations in rainfall and runoff, associated vegetation may include species tolerant of or adapted to salt, brackish, or tidal freshwater conditions
- The marsh width may vary widely, from a narrow fringe to extensive areas
- Sediments are composed of organic-rich mud except on the margins of islands or along rivers where sand is abundant
- Exposed areas are located along bays with wide fetches and along heavily trafficked waterways
- Sheltered areas are not exposed to significant wave or boat wake activity
- Resident flora and fauna are abundant with numerous species with high utilization by birds, fish, and shellfish

Predicted Oil Behavior

- Oil adheres readily to the vegetation of most species
- The band of coating will vary widely, depending upon the water level at the time oil slicks are in the vegetation; there may be multiple bands
- Large slicks will persist through multiple tidal cycles and coat the entire stem from the high tide line to the base
- Heavy oil coating will be restricted to the outer fringe of thick vegetation, although lighter oils can penetrate deeper, to the limit of tidal influence
- Medium to heavy oils do not readily adhere to or penetrate the fine sediments, but can pool on the surface or in burrows
- Light oils can penetrate the top few centimeters of sediment; under some circumstances oil can penetrate burrows and cracks up to 1 m

Response Considerations

- Under light oiling, the best practice is natural recovery
- Natural removal processes and rates should be evaluated prior to conducting cleanup
- Heavily pooled oil can be removed by vacuum, sorbents, or low-pressure flushing
- Cleanup activities should be carefully supervised to avoid vegetation damage
- Any cleanup activity must not mix the oil deeper into the sediments; trampling of the roots must be minimized

- Aggressive cleanup methods should only be considered when other resources present (migratory birds, listed species) are at great risk from leaving the oiled vegetation in place

FRESHWATER MARSHES — ESI = 10B

Description

- These are grassy wetlands composed of emergent herbaceous vegetation
- They occur upstream of brackish vegetation in the upper estuary and along creeks and rivers
- Those along major channels are exposed to strong currents and boat wakes; smaller channels tend to be sheltered
- Resident flora and fauna are abundant

Predicted Oil Behavior

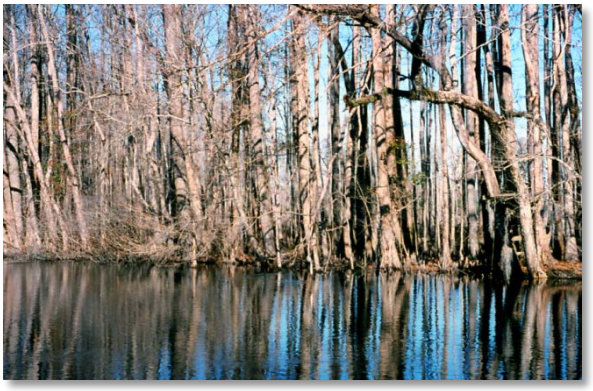
- Oil adheres readily to the vegetation
- The band of coating will vary widely, depending upon the water level at the time oil slicks are in the vegetation; there may be multiple bands
- Most of the time, there will be a narrow band because of the small changes in water levels; the band can be very large during high-water events
- Heavy oil coating will be restricted to the outer fringe of thick vegetation, although lighter oils can penetrate deeper

Response Considerations

- Under light oiling, the best practice is natural recovery
- Natural removal processes and rates should be evaluated prior to conducting cleanup
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing
- Cleanup activities should be carefully supervised to avoid vegetation damage
- Any cleanup activity must not mix the oil deeper into the sediments. Trampling of the roots must be minimized
- Aggressive cleanup methods should be considered only when other resources present (listed species, nesting birds) are at great risk from leaving the oiled vegetation in place

SWAMPS — ESI = 10C

Description



- Swamps consist of shrubs and hardwood forested wetlands, essentially flooded forests Vegetation is taller, on average, than 6 m
- The sediment tends to be silty clay with large amounts of organic debris
- They are seasonally flooded, though there are many low, permanently flooded areas
- Resident flora and fauna are abundant with numerous species

Predicted Oil Behavior

- Oil behavior depends on whether the swamp is flooded or not

- During floods, most of the oil passes through the forest, coating the vegetation at the waterline, which changes levels throughout the flood event
- Oiled woody vegetation is less sensitive than grasses to oil coating
- Some oil can be trapped and pooled on the swamp flood plain as water levels drop
- Penetration into the floodplain soils is usually limited because of high water, saturated soils, muddy composition, surface organic debris, and vegetation cover
- Large amounts of oily debris can remain
- During dry periods, terrestrial spills flow downhill and accumulate in depressions or reach waterbodies

Response Considerations

- Under light oiling, the best practice is to let the area recover naturally
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing
- Under stagnant water conditions, herding of oil with water spray may be needed to push and thicken oil to collection areas
- Oily debris can be removed where there is access
- Any cleanup activity must not mix the oil deeper into the sediments

MANGROVES (SCRUB-SHRUB WETLANDS) ESI = 10D

Description

- Roots and trunks are typically intertidal; the lower leaves are flooded at high tide
- The width of the forest can vary from one tree, to many kilometers
- The substrate types can include mud, sand, leaf letter, or peat, often as a veneer over bedrock
- Wrack accumulations can be very heavy
- They are highly productive, serve as nursery habitat, and support a great diversity of animal and plant species

Predicted Oil Behavior

- Oil can wash through mangroves if the oil comes ashore at high tide
- If there is a berm or shoreline present, oil tends to concentrate and penetrate into the sediments or accumulated wrack/litter
- Heavy and emulsified oil can be trapped in thickets of mangrove prop roots or dense young trees
- Oil readily adheres to prop roots, tree trunks, and pneumatophores
- Re-oiling from resuspended or released oil residues may cause additional injury over time
- Oiled trees may start to show evidence of effects (leaf yellowing) days to weeks after oiling; tree mortality may take months, especially for heavy oils

Response Considerations

- Oiled wrack can be removed once the threat of oiling has passed. Wrack can actually protect the trees from direct oil contact
- Sorbent boom can be placed in front of oiled forests to recover released oil
- In most cases, no other cleanup activities are recommended
- Where thick oil accumulations are not being naturally removed, low-pressure flushing or vacuum may be attempted at the outer fringe

- No attempt should be made to clean interior mangroves, except where access to the oil is possible from terrestrial areas
- It is extremely important to prevent disturbance of soft substrates by foot traffic; thus most activities should be conducted from boats

Appendix D: Examples of SCAT Forms and Guides

Shoreline Oiling Summary (SOS) Forms/Explanations and Codes

- Combined
- Tar Ball
- Wetland
- River
- Stream
- Field Observer

Shoreline Treatment Recommendation (STR) Form Example

Shoreline Inspection Report (SIR) Examples

Sketch Map Form

% Oil Distribution Estimators

Grain Size Estimator

Photo Scale and Photography Guidelines Using the Scale

SHORELINE OIL SUMMARY (SOS) FORM: _____ **Page**____ **of**_____

1. GENERAL INFORMATION	Date (dd/Month/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)	Tide Height
Segment ID:			L / M / H
Segment Name:		____:____ to____:____	Rising / Falling
Survey By: Foot /ATV/ Boat / Helicopter / Overlook / Other _____		Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm	

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number				

3. SEGMENT	Total Length: m	Length Surveyed: m	Datum: WGS84

Survey Start GPS:	WP:	LAT: .	LONG: .
Survey End GPS:	WP:	LAT: .	LONG: .

4a. BACKSHORE CHARACTER: Indicate only ONE Primary type and ALL Secondary types

Cliff/Slope___ Lowland___ Beach___ Dune___ Wetland___ Lagoon___ Delta___ Channel___ Man-Made___:_____

4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.

Primary: Secondary:

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type:	Amount: (bags)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No	Suitable for backshore staging? Yes / No	
Access Description / Restrictions:			

6. OILING DESCRIPTION: Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover						Oil Thickness					Oil Character							
								Zone Area		1-100%	<1%	Size														
				LI	MI	UI	SU	Length (m)	Width (m)	Distr. %	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	No

7. SUBSURFACE OILING CONDITIONS: Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"

Pit #	WP	Substrate Type Surface / Subsurface	Tidal Zone				Pit Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character										Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes / No
			LI	MI	UI	SU			OP	PP	OR	OF	TR	TB	SR	AP	NO	%			

8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

Sketch: Yes / No Photos: Yes / No Photo Numbers: (-) Photographer Name:

July 2013

SHORELINE OILING SUMMARY (SOS) FORM EXPLANATIONS

Calibration IS VERY IMPORTANT! Do a calibration exercise to make sure that all teams are consistently using the same terms and estimations.

Units: Use of metric units is preferred. However, if you must use English units, be consistent and note which are used (feet, inches).

Tide Height: Circle the tidal elevation during the survey, and if the tide was rising or falling during the survey.

Segment/Survey Length: Always record both segment and survey lengths on the first survey, especially where the team creates the segments in the field. On repeat surveys, always enter in the Survey Length, especially if only part of the segment is surveyed.

Start/End GPS: The preferred format for latitude and longitude is decimal degrees, but be consistent among teams. Record the datum if different than WGS84.

SURFACE OILING CONDITIONS

Zone ID: Use a different ID for each oil occurrence, e.g., two distinct bands of oil at mid-tide and high-tide levels, or alongshore where the oil distribution changes from 10 % to 50%. Describe each oil occurrence on a separate line.

Tidal Zone: Use the codes to indicate the location of the oil being described, as in the lower (LI), mid (MI), or upper (UI) intertidal zone, or in the supra (SU) tidal zone (above the normal high tide level).

Distribution: Enter the estimated percent of oil on the surface (preferred), or codes for the following intervals:

C	Continuous	91-100% cover
B	Broken	51-90%
P	Patchy	11-50%
S	Sporadic	<1-10%
T	Trace	<1%

Surface Oiling Descriptors - Thickness: Use the following codes:

TO	Thick Oil (fresh oil or mousse > 1 cm thick)
CV	Cover (oil or mousse from >0.1 cm to <1 cm on any surface)
CT	Coat (visible oil <0.1 cm, which can be scraped off with fingernail)
ST	Stain (visible oil, which cannot be scraped off with fingernail)
FL	Film (transparent or iridescent sheen or oily film)

Surface Oiling Descriptors - Type

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tar Balls (discrete accumulations of oil <10 cm in diameter)
PT	Patties (discrete accumulations of oil >10 cm in diameter)
TC	Tar (highly weathered oil, of tarry, nearly solid consistency)
SR	Surface Oil Residue (non-cohesive, oiled surface sediments)
AP	Asphalt Pavements (cohesive, heavily oiled surface sediments)
No	No oil (no evidence of any type of oil)

SUBSURFACE OILING CONDITIONS

Oiled Interval: Measure the depths from the sediment surface to top/bottom of subsurface oiled layer. Enter multiple oil layers on separate lines.

Subsurface Oiling Descriptors: Use the following codes:

OP	Oil-Filled Pores (pore spaces are completely filled with oil)
PP	Partially Filled Pores (the oil does not flow out of the sediments when disturbed)
OR	Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts, but little or no accumulation of oil within the pore spaces)
OF	Oil Film (sediments are lightly oiled with an oil film, or stain on the clasts)
TR	Trace (discontinuous film or spots of oil, or an odor or tackiness)

Sheen Color: Describe sheen on the water table as brown (B), rainbow (R), silver (S), or none (N)

TAR BALL SHORELINE OILING SUMMARY FORM_____Page __of _____

1. GENERAL INFORMATION	Date (dd/Month/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)	Tide Height
Segment ID:			L / M / H
Segment Name:		____:____ to ____:____	Rising / Falling
Survey By: Foot / Boat / Helicopter / Overlook / _____		Sun / Clouds / Fog / Rain / Snow / Windy	

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number				

3. SEGMENT	Total Length: m/ft	Length Surveyed: m/ft	Datum: WGS84

Survey Start GPS:	WP:	LAT:	LONG:
Survey End GPS:	WP:	LAT:	LONG:

4a. BACKSHORE CHARACTER: Indicate only ONE Primary (P) type and ALL Secondary (S) types

Cliff/Slope___ Lowland ___ Beach____ Dune___ Wetland___ Lagoon___ Delta___ Channel___ Man-Made____

4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.

Primary:	Secondary:

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type:	Amount: (bags)
Direct backshore access? Yes/No	Alongshore access from next segment? Yes/No	Suitable for backshore staging? Yes/No	
Access Description / Restrictions:			

5. TAR BALL DESCRIPTION	**Zone A**	**Zone B**	**Zone C**	**Zone D**
WP Start/WP End	/	/	/	/
Shoreline Type(s) Oiled				
Tar Balls Observed on Shoreline? **Tar Balls Observed on Water?**	Yes / No Yes / No	Yes / No Yes / No	Yes / No Yes / No	Yes / No Yes / No
Oiled Debris Observed? If yes, describe.	Yes / No	Yes / No	Yes / No	Yes / No
Tidal Zone Where the area of tar balls is located.	LI/MI/UI/SU	LI/MI/UI/SU	LI/MI/UI/SU	LI/MI/UI/SU
Length (m / ft) Approximate alongshore length of shore in which tar balls/oiled debris are observed.				
Width (m / ft) Across-shore width of the band on the shore in which tar balls/oiled debris are observed.				
Average Number of Tar Balls within Area (e.g., 2/m^2 in band; 3 per 100 m along shore; 6 total within area, etc.) Be specific.				
Average Size of Tar Balls (cm / in)				
Size of Largest Tar Ball (cm / in)				
Type of Tar Balls (describe)	Weathered Sticky Other:	Weathered Sticky Other:	Weathered Sticky Other:	Weathered Sticky Other:
Tar Balls Collected?	Yes / No	Yes / No	Yes / No	Yes / No

6. COMMENTS	**Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations**

Sketch/Map: Yes / No Photos: Yes / No Photo Numbers: (-) Photographer Name:

TAR BALL SHORELINE OILING SUMMARY FORM EXPLANATIONS

Calibration IS VERY IMPORTANT! Do a calibration exercise to make sure that all teams are consistently using the same terminology and estimations.

Units: Use of metric units is preferred. However, if you must use English units, be consistent and note which are used (feet, inches).

Tide Height: Circle the tidal elevation during the survey, and if the tide was rising or falling during the survey.

Segment/Surveyed Length: Always record both segment and survey lengths on the first survey, especially where the SCAT team creates the segments in the field. On repeat surveys, always enter in the Length Surveyed, especially if only part of the segment is surveyed.

Start/End GPS: The preferred format for latitude and longitude is decimal degrees, but be consistent among teams. Record the datum if different than WGS84.

Shoreline Type: Indicate the primary and secondary shoreline types (use the ESI number codes) for the entire segment or sub-segment being surveyed.

TAR BALL DESCRIPTION
This section is divided into "Zones." Use a different Zone to describe changes in: presence/absence, size, or concentration of tar balls, or different shoreline types.

Start/End WP: Record the way point (WP) for the start and end of each Area.

Shoreline Type: Record the shoreline type(s) present in each oiled zone using the ESI code.

Tar Balls Observed on Shoreline? It is important to indicate if no tar balls are observed.

Tar Balls Observed on Water? It is important to indicate if tar balls are still coming ashore or mobile.

Oiled Debris Observed? If yes, describe type, location, and degree oiling for oiled debris under Comments. Use the following descriptors for type:

Wrack	unattached vegetation that can be important feeding areas for shorebirds
Logs	large pieces of wood that cannot be readily removed by hand
Trash	man-made materials (e.g., plastic, glass, paper) that can be removed by hand
Sorbents	sorbent pads, rolls, boom, etc. used during the spill response
Peat	degraded organic material that has been eroded; includes coffee grounds

Tidal Zone: Check off the location of the tar balls being described, as in the lower (LI), mid (MI), upper (UI), or supra (SU) tidal zone (above the normal high tide level).

Length and Width: Enter the dimensions where tar balls of uniform average size and density are observed. If no tar balls are observed, enter the dimensions of the area surveyed.

Average Number of Tar Balls within Area: Enter the estimate of the number of tar balls in the surveyed area. Options include:

Total number - use where so few tar balls are present that they can be readily counted

Concentration - enter as an average, range, or max per unit area (e.g., 1-2/yd^2, 3-5 max)

Average Size of Tar Balls: Visually estimate the most common or frequent size of tar balls in the surveyed area. Enter a range if tar ball sizes are not uniform. Indicate units by circling.

Tar Balls Collected? Provide details in the Comments Section. Indicate if all or only part of the observed tar balls were collected.

WETLAND OILING SUMMARY FORM _____ Page _____ of ___

1. GENERAL INFORMATION	Date (dd/Month/yyyy)	**Time** (24h standard/daylight) ____:____ to ____:____	Tide Height
Segment ID:	**Segment Name:**		L / M / H
Ops Zone:	**Survey Type:**		Rising / Falling
Survey By: Foot /ATV/ Boat / Helicopter / Overlook / Other _____		Weather: Sun / Clouds / Fog / Rain / Snow / Windy/ Calm	

Name	Name	Organization	Name	Organization
Team Number				

3. SEGMENT		Total Length: m	Length Surveyed: m	Datum: WGS84
Survey Start GPS:	WP:	LAT: .	LONG: .	
Survey End GPS:	WP:	LAT: .	LONG: .	

4a. WETLAND CHARACTER circle appropriate

Physical Setting: *Fringing Marsh / Tidal Channel / Marsh interior / Mud Flat / Lagoon/* Other:

Wetland Type: *Salt Marsh / Brackish Marsh / Mangrove /* Other :

Dominant Vegetation Type: *Reeds / Grasses / Mangrove* Other:

4b. BACKSHORE CHARACTER *Indicate only ONE Primary (P) and ANY Secondary (S)*

Unconsolidated Bluff/Bank _____ Flat/Lowland _____ Beach _____ Marsh/Wetland _____ Tidal Channel _____ Delta _____ Man Made _____:

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type:	Amount: (bags)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No	Suitable for backshore staging? Yes / No	

Surface bearing capacity suitable for: Personnel / Marsh Vehicles; Access description / restrictions:

6. SURFACE OILING CONDITIONS: Identify oil on vegetation vs. substrate by adding a V (for Vegetation) or an S (for sediment) after the Zone ID (e.g. AV, BV). Indicate **100%** overlapping zones in different tidal zones by numbering them (e.g. AV1, AV2)

Zone ID	WP zone start	WP zone stop	Tidal Zone				Oil Cover						Oil Thickness					Oil Character								Height of Oil on Plants (cm)
							Area		Distribution		Size																
			LI	MI	UI	SU	Length (m)	Width (m)	Dist % (>1)	Number per unit or area	Avg Size (cm)	Large Size (cm)	PO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	No	
A																										

7. SUBSURFACE OILING CONDITIONS: Use Comments Section and indicate on the cross-section below.

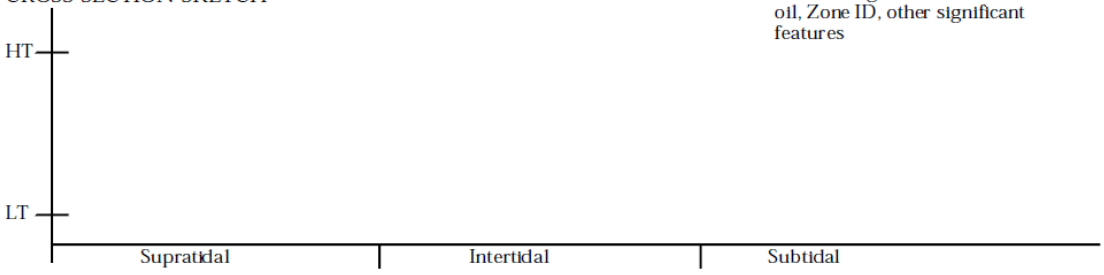
8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

**Use supplemental marine wetland SOS form for additional oiling zones, pits, and comments/sketches.*

Sketch: Yes No Photos: Yes No Photo Numbers: (-) Photographer Name:

CROSS-SECTION SKETCH

SHOW: high tide, low tide, buried oil, Zone ID, other significant features



WETLAND OILING SUMMARY FORM EXPLANATIONS

Calibration is VERY IMPORTANT! Make sure that all teams are consistently using the same terminology and estimations.

Units: Use metric (m, cm) units. Record Latitude and Longitude in decimal degrees. Set datum on GPS units to WGS84.

Tide Height: Circle the tidal elevation during the survey, and if the tide was rising or falling during the survey.

Segment/Survey Length: Always record both segment and survey lengths on the first survey, especially where the SCAT team creates the segments in the field. On repeat surveys, always enter in the Survey Length, especially if only part of the segment is surveyed.

Start/End GPS: Record the GPS Way Point and the Lat/Long of the start and end of the survey.

SURFACE OILING CONDITIONS

Zone ID: Identify Zones sequentially by letter (A to Z) along a Segment and describe each oil occurrence on a separate line. Indicate oiling on the vegetation by adding a V to the Zone ID (e.g. AV, If different oiling conditions exist along the same length of beach (e.g., two distinct bands of oil at mid-tide and high-tide levels) identify them by their letter code followed by a number (e.g. A1 & A2). Change to a new letter (zone) when alongshore oil distribution changes (e.g. from 10 % to 50%).

Zone ID: Use a different ID for each different oil occurrence and differentiate between oil on the substrate (S) and vegetation (V). Describe each different occurrence on a separate line.

Shoreline Type: Record the shoreline type(s) present in each oiled zone using the ESI code.

Way Points: Record GPS Way Points (WP) for start and end of each zone.

Tidal Zone: Use the codes to indicate the location of the oil being described, as in the lower (LI), mid (MI), or upper (UI) intertidal zone, or in the supra (SU) tidal zone (above the normal high tide level).

Distribution: Enter the estimated percent of oil on the surface (preferred), or codes for the following intervals:

C	Continuous	91-100%
B	Broken	51-90%
P	Patchy	11-50%
S	Sporadic	<1-10%
T	Trace	<1%

Surface Oiling Descriptors - Thickness:

TO	Thick Oil (fresh oil or mousse > 1 cm thick)
CV	Cover (oil or mousse from >0.1 cm to <1 cm on any surface)
CT	Coat (visible oil <0.1 cm, which can be scraped off with fingernail)
ST	Stain (visible oil, which cannot be scraped off with fingernail)
FL	Film (transparent or iridescent sheen or oily film)

Surface Oiling Descriptors – Type:

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tar Balls (discrete accumulations of oil <10 cm in diameter)
TC	Tar (highly weathered oil, of tarry, nearly solid consistency)
SR	Surface Oil Residue (non-cohesive, oiled surface sediments)
AP	Asphalt Pavements (cohesive, heavily oiled surface sediments)
No	No oil (no evidence of any oil)

Oil on Plants: Indicate the width of the band of oiling on the plants in the Zone information**.** Describe what part of the vegetation is oiled in the Comments. Terms will vary depending on vegetation type (e.g., stems for marshes, trunks for trees).

Cross-Section Sketch: Draw entire intertidal and supra-tidal zone, showing the oil relative to normal high tide (important to determine re-mobilization and potential for natural removal).

RIVER BANK (SOS) FORM _____ **Page**_____ **of** _____

1.GENERAL INFORMATION		**Date** (dd/Month/yyyy)	**Time** (24h standard/daylight) _____:_____ to _____:_____	**Water Level** Low / Mean / Bankfull / Overbank Falling / Steady / Rising
Segment ID:	**Bank:** L / R	**Segment Name:**		
Ops Zone:		**Survey Type:**	**STR:**	
Survey By: Foot __ ATV__ Boat__ Helicopter__ Other _____		Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm		

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number				

3. SEGMENT	Total Length: meters	Length Surveyed: meters	Datum:
Survey Start GPS: WP:	LAT: .	LONG: .	
Survey End GPS: WP:	LAT: .	LONG: .	

4a. RIVER BANK TYPE : *Indicate only ONE Primary(dominant) type and ALL Secondary types. CIRCLE those OILED*

BEDROCK: Cliff_____ Ramp_____ Shelf_____	UNCONSOLIDATED: Clay____ Mud____ Sand____ Mixed Fine____ Shell ____
MAN-MADE: Solid_____ Permeable_____	Mixed Coarse ____ Pebble-Cobble____ Boulder ___ Rubble____
Description:_____	Marsh/Swamp____ Peat/Organics _____ Wooded ____ Vegetated ____
ESI Code (primary) _____ (secondary) _____	Other: _____ Undercut Bank (Y / N)

4b. OVERBANK / BACKSHORE TYPE : *Indicate only ONE Primary (P) and ANY Secondary (S) types.*

Cliff/Bluff:____ ht._____ m.	Flat/Lowland/Field_____ Dune_____ Inlet/Channel____ Delta____ Lagoon____ Marsh/Wetland____
Sloped: > (5°) (15°) (30°)	Man-Made____:_____ Other:_____ Wooded / Vegetated?

4c. RIVER VALLEY CHARACTER : *Circle or select as appropriate.*

Channel Width: < 10 m 10-100 m >100 m estimate _____ m	Shoal(s) Present: Y / N Point Bar Present: Y / N
Water Depth: < 1 m 1-5 m >5 m estimate _____ m	Bar-Shoal substrate: silt /sand/mixed/cobble/boulder/bedrock/debris

CHANNEL FORM: Cascade ____ Rapids ____ Pool ____ Riffle ____ Glide ____ Jam ____ Other:_____
RIVER FORM: Straight ____ Meander _____ Anastamosed _____ Braided _____ Other: _____
VALLEY FORM: Canyon _____ Confined or Leveed Channel _____ Flood Plain Valley ____ Other: _____

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type:	Amount: (bags/trucks)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No		Suitable for backshore staging? Yes / No
Access Description / Restrictions:			Current Dominated Channel? Yes / No

6. OILING DESCRIPTION: *Indicate 100% overlapping oil zones in different river bank zones by numbering them (e.g. A1, A2)*

Zone ID	WP # Start	WP # End	Substrate Type(s) or ESI Code	River Bank Zone				Oil Cover						Oil Thickness					Oil Character							
								Area		Distribution		Size														
				MS	LB	UB	OB	Length (m)	Width (m)	Dist % (> 1) or	Number per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	NO

7. SUBSURFACE OILING CONDITIONS: *Format: Indicate Zone ID in Pit #, e.g., A-1, B-2, B-3, (use only number if not in zone e.g. 4 , 5)*

Pit #	WP #	Substrate Type Surface/Subsurface	River Bank Zone				Pit Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character								Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes / No
			MS	LB	UB	OB			AP	OP	PP	OR	OF	TR	NO	%			
		/						-											
		/						-											
		/						-											
		/						-											

8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural/Economic Issues; Wildlife Observations; Other Descriptions

Sketch / Map: Yes / No Photos/Video: Yes / No Numbers: (-) Photographer Name:

RIVER BANK SHORELINE OILING SUMMARY FORM EXPLANATIONS

Calibration IS VERY IMPORTANT! Do a calibration exercise to make sure that all teams are consistently using the same terms and estimations.

Units: Use of metric units is preferred. However, if you must use English units, be consistent.

Water Level: Circle the water level during the survey, and if the water level was rising or falling during the survey.

Segment/Survey Length: Always record both segment and survey lengths on the first survey, especially where the team creates the segments in the field. On repeat surveys, always enter in the Survey Length, especially if only part of the segment is surveyed.

Start/End GPS: The preferred format for latitude and longitude is decimal degrees, but be consistent among teams. Record the datum if different than WGS84.

SURFACE OILING CONDITIONS

Zone ID: Use a different ID for each oil occurrence, e.g., two distinct bands of oil on the upper bank and in overbank areas, or along the bank where the oil distribution changes from 10 % to 50%. Describe each oil zone on a separate line.

River Bank Zone: Use the codes to indicate the location of the oil being described, as in the midstream (MS), lower bank (LB), upper bank (UB), or overbank (OB) zone above the normal water level.

Distribution: Enter the percent of oil on the surface (preferred), or codes for the following intervals:

C	Continuous	91-100% cover
B	Broken	51-90%
P	Patchy	11-50%
S	Sporadic	<1-10%
T	Trace	<1%

Surface Oiling Descriptors - Thickness: Use the following codes:

TO	Thick Oil (fresh oil or mousse > 1 cm thick)
CV	Cover (oil or mousse from >0.1 cm to <1 cm on any surface)
CT	Coat (visible oil <0.1 cm, which can be scraped off with fingernail)
ST	Stain (visible oil, which cannot be scraped off with fingernail)
FL	Film (transparent or iridescent sheen or oily film)

Surface Oiling Descriptors - Type

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tar Balls (discrete accumulations of oil <10 cm in diameter)
PT	Patties (discrete accumulations of oil >10 cm in diameter)
TC	Tar (highly weathered oil, of tarry, nearly solid consistency)
SR	Surface Oil Residue (non-cohesive, oiled surface sediments)
AP	Asphalt Pavements (cohesive, heavily oiled surface sediments)
No	No oil (no evidence of any type of oil)

SUBSURFACE OILING CONDITIONS

Oiled Interval: Measure the depths from the sediment surface to top/bottom of subsurface oiled layer. Enter multiple oil layers on separate lines.

Subsurface Oiling Descriptors: Use the following codes:

OP	Oil-Filled Pores (pore spaces are completely filled with oil)
PP	Partially Filled Pores (the oil does not flow out of the sediments when disturbed)
OR	Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts, but little or no accumulation of oil within the pore spaces)
OF	Oil Film (sediments are lightly oiled with an oil film, or stain on the clasts)
TR	Trace (discontinuous film or spots of oil, or an odor or tackiness)

Sheen Color: Describe sheen on the water table as brown (B), rainbow (R), silver (S), or none (N)

STREAM BANK (SOS) FORM :_____ **Page**_____ **of**_____

1.GENERAL INFORMATION	**Date** (dd/mmm/yyyy)	**Time** (24h standard/daylight) _____:_____ to _____:_____	**Water Level** Low / Mean / Bankfull / Overbank Falling / Steady / Rising
Segment ID:	**Segment Name:**		
Ops Zone:	**Survey Type:**	**STR:**	
Survey By: Foot __ ATV__ Boat__ Helicopter__ Other _____	Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm		

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number				

3. SEGMENT	Total Length: meters	Length Surveyed: meters	Datum:
Survey Start GPS: WP:	LAT: .	LONG: .	
Survey End GPS: WP:	LAT: .	LONG: .	

4a. RIVER BANK TYPE : *Indicate only ONE Primary(dominant) type and ALL Secondary types. CIRCLE those OILED*

BEDROCK: Cliff_____ Ramp_____ Platform_____ MAN-MADE: Solid_____ Permeable_____ Description:_____	UNCONSOLIDATED: Clay____ Mud____ Sand____ Mixed Fine____ Mixed Coarse ____ Pebble-Cobble____ Boulder ___ Rubble____ Marsh/Swamp____ Peat _____ Vegetated ____ Shell Hash _____
ESI Shoreline Type (primary) _____ (secondary) _____	Other: _____

4b. OVERBANK TYPE : *Indicate only ONE Primary (P) and ANY Secondary (S) types.*

Cliff/Bluff:____ ht._____ m. Sloped: > (5°) (15°) (30°)	Flat/Lowland/Field_____ Dune_____ Inlet/Channel____ Delta____ Lagoon____ Marsh/Wetland____ Man-Made____ Description/Other:_____ Forested / Vegetated

4c. STREAM - VALLEY CHARACTER : *Circle or select as appropriate.*

Channel Width: < 1 m 1-10 m >10 m _____m Water Depth: < 1 m 1-3 m >3 m _____ m	Shoal(s) Present: Y / N Point Bar Present: Y / N Bar-Shoal substrate: silt /sand/mixed/cobble/boulder/bedrock/debris

CHANNEL FORM: Cascade _____ Rapids ____ Pool ____ Riffle ____ Glide ____ Jam ____ Other:_____
STREAM FORM: Straight _____ Meander _____ Anastamosed _____ Braided _____ Other: _____
VALLEY FORM: Canyon _____ Confined or Leveed Channel _____ Flood Plain Valley ____ Other: _____

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type:	Amount: (bags/trucks)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No		Suitable for backshore staging? Yes / No
Access Description / Restrictions:			Current Dominated Channel? Yes / No

6-L. LEFT BANK (facing downstream) SURFACE OILING DESCRIPTION: *Indicate 100% overlapping oil zones by numbering them (e.g. L-A1, L-A2).*

Zone ID	WP # Start	WP # End	Substrate Type(s) or ESI Code	Stream Bank Zone				Oil Cover						Oil Thickness					Oil Character							
								Area		Distribution		Size														
				MS	LB	UB	OB	Length (m)	Width (m)	Dist % (> 1) or	Number per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	NO

6-R. RIGHT BANK (facing downstream) SURFACE OILING DESCRIPTION: *Indicate 100% overlapping oil zones in by numbering them (e.g. R-A1, R-A2).*

Zone ID	WP # Start	WP # End	Substrate Type(s) or ESI Code	River Bank Zone				Oil Cover						Oil Thickness					Oil Character							
								Area		Distribution		Size														
				MS	LB	UB	OB	Length (m)	Width (m)	Dist % (> 1) or	Number per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	NO

8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural/Economic Issues; Wildlife Observations; Other Descriptions

**Use supplemental river SOS form for additional oiling zones, pits, and comments/sketches.*

Sketch / Map: Yes / No Photos/Video: Yes / No Numbers: (-) Photographer Name:

STREAM BANK SHORELINE OILING SUMMARY FORM EXPLANATIONS

Calibration IS VERY IMPORTANT! Do a calibration exercise to make sure that all teams are consistently using the same terms and estimations.

Units: Use of metric units is preferred. However, if you must use English units, be consistent and note which are used (feet, inches).

Water Level: Circle the water level during the survey, and if the water level was rising or falling during the survey.

Segment/Survey Length: Always record both segment and survey lengths on the first survey, especially where the team creates the segments in the field. On repeat surveys, always enter in the Survey Length, especially if only part of the segment is surveyed.

Start/End GPS: The preferred format for latitude and longitude is decimal degrees, but be consistent among teams. Record the datum if different than WGS84.

SURFACE OILING CONDITIONS: Record the following for each bank of the stream, left and right, facing downstream

Zone ID: Use a different ID for each oil occurrence, e.g., two distinct bands of oil on the upper bank and in overbank areas, or along the bank where the oil distribution changes from 10 % to 50%. Describe each oil occurrence on a separate line.

Stream Bank Zone: Use the codes to indicate the location of the oil being described, as in the midstream (MS), lower bank (LB), upper bank (UB), or overbank (OB) zone above the normal water level.

Distribution: Enter the estimated percent of oil on the surface (preferred), or codes for the following intervals:

C	Continuous	91-100% cover
B	Broken	51-90%
P	Patchy	11-50%
S	Sporadic	<1-10%
T	Trace	<1%

Surface Oiling Descriptors - Thickness: Use the following codes:

TO	Thick Oil (fresh oil or mousse > 1 cm thick)
CV	Cover (oil or mousse from >0.1 cm to <1 cm on any surface)
CT	Coat (visible oil <0.1 cm, which can be scraped off with fingernail)
ST	Stain (visible oil, which cannot be scraped off with fingernail)
FL	Film (transparent or iridescent sheen or oily film)

Surface Oiling Descriptors - Type

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tar Balls (discrete accumulations of oil <10 cm in diameter)
PT	Patties (discrete accumulations of oil >10 cm in diameter)
TC	Tar (highly weathered oil, of tarry, nearly solid consistency)
SR	Surface Oil Residue (non-cohesive, oiled surface sediments)
AP	Asphalt Pavements (cohesive, heavily oiled surface sediments)
No	No oil (no evidence of any type of oil)

SUBSURFACE OILING CONDITIONS

Oiled Interval: Measure the depths from the sediment surface to top/bottom of subsurface oiled layer. Enter multiple oil layers on separate lines.

Subsurface Oiling Descriptors: Use the following codes:

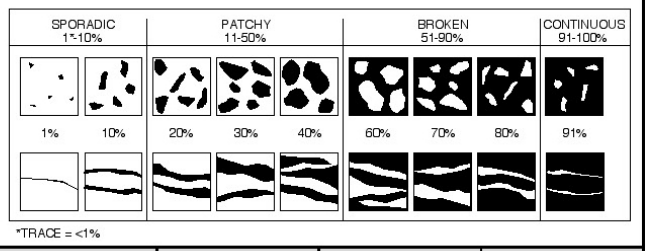
OP	Oil-Filled Pores (pore spaces are completely filled with oil)
PP	Partially Filled Pores (the oil does not flow out of the sediments when disturbed)
OR	Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts, but little or no accumulation of oil within the pore spaces)
OF	Oil Film (sediments are lightly oiled with an oil film, or stain on the clasts)
TR	Trace (discontinuous film or spots of oil, or an odor or tackiness)

Sheen Color: Describe sheen on the water table as brown (B), rainbow (R), silver (S), or none (N)

Field Observer Form for Quick Shoreline Assessment

1.	Shoreline Area Name:	Division	Zone	Date: (dd/month/year)	Time:
Segment ID or location description:			Tidal Conditions (e.g.: high, falling)		
GPS Coordinates (if available)			Surveyed by: ____Foot ____Boat ____Vehicle ____Aircraft		
Team I.D.	Name: for:		Name: for:		

2. Any shoreline impact observed? (circle) Yes No
3. If "Yes", provided approximate length & width of impact. Length _____ Width _____
4. Was oil observed in the nearby water? (circle) Yes No
If 2 and 4 are "No", **STOP HERE.**

5. Impacted Shoretypes & Materials	Check boxes below for all shore-types and materials present	OIL COVER ESTIMATION CHART  				
Marsh/swamp						
Tidal flat						
Riprap						
Sand or shell beach						
Clay bluff						
Dune						
Bulkhead, manmade structures						
Debris (trash, driftwood, etc.)						
Other vegetation						

6. Oil Condition ____Fresh Oil ____Mousse ____Tarballs ____Tarpatties ____Tarmats ____Tar ____Asphalt
(Check all oil types present) (<10cm) (10-50cm) (>50cm)

7. Oiled Wildlife Check any observed impacted wildlife _____ birds ____ fish ___invertebrates _____other? (crabs, etc.)

8. Access Restrictions:
9. Cleanup Recommendations & Other Comments (make flagging notes here):

Report your observations to the Field Observer Coordinator in the Situation Unit.

Incident Name:

Shoreline Treatment Recommendation **Operational Permit to Work**

Local Name: STR#: Survey Date:

Segment Name:

Location:

Shoreline Type(s):

Treatment Type: ☐ Surface ☐ Subsurface ☐ Submerged ☐ Manual ☐ Mechanical

Oiled Areas for Treatment:

Cleanup Recommendations:

Staging and Logistics Constraints/Waste Issues:

Ecological Concerns:

Cultural / Historical Concerns:

Safety Concerns:

Attachments: ☐ Segment Map ☐ Sketch ☐ SCAT Form ☐ Fact Sheet ☐ Other:_____

Prepared by: _____ Date Prepared: _____

Final Approval: *Print* _____ _____ _____ Submitted to Ops:

Sign _____ _____ _____ _____

SOSC FOSC EUL

****When Treatment is Completed, send a Segment Completion Report to SCAT****

Segment Inspection Report for _____

Segment ID: _____ **Segment Name** _____

Survey Date: _____ **Survey Time:** _____

Tides: _____ **Weather:** _____

Inspection Completed Along Entire Segment: Yes / No

Result/Recommendation:

□ No oil observed.
□ Meets cleanup endpoints.
□ No further treatment recommended.
□ Further treatment recommended.

(Provide written details of issues and required actions.)

□ Continued monitoring required.

(Provide written details of frequency and schedule.)

SCAT Team Members:

	Name	Signature
FOSC Rep	_____	_____
SOSC Rep	_____	_____
RP Rep	_____	_____
Landowner/Other Rep	_____	_____

Segment Inspection Report Example 2

1. GENERAL INFORMATION	Date (dd/month/yy)	Time (24 h standard/daylight	Tide Height
Site Name:			L / M / H
Division/Segment:		☐☐☐ ☐☐☐ hr to hr	Rising / Falling
Inspection by: Foot / Boat / Helicopter / Overlook / _____		Weather: Sun / Clouds / Fog / Rain / Snow / Windy	

2. INSPECTION TEAM ☐	Name	Organization	Signature

3. SEGMENT	Description of Shoreline Surveyed:

4a. BACKSHORE CHARACTER: Indicate only ONE Primary (P) type and ALL Secondary (S) types

Cliff/Slope ___ Lowland ___ Beach ___ Dune ___ Wetland ___ Lagoon ___ Delta ___ Channel ___ Man-Made ___

4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.

Primary:	Secondary:

5. CLEANUP ENDPOINTS	**LIST SPILL-SPECIFIC ENDPOINTS HERE**

☐ Yes ☐ No Floating or potentially mobile oil that is a substantial secondary pollution threat? If yes, describe:

☐ Yes ☐ No Oily debris present that is a pollution risk and should be removed? If yes, describe:

☐ Yes ☐ No Oil coat or stain present that is a substantial risk to the public or wildlife? If yes, describe:

☐ Yes ☐ No Observed sheening that is a source of secondary pollution and a risk to wildlife? If yes, describe:

Other oiling conditions or observations:

6. ☐☐ RECOMMENDATIONS

☐ Yes ☐ No Recommend further cleanup, as follows:

☐ Yes ☐ No Recommend continued maintenance of passive sorbent recovery for sheens, as follows:

☐ Yes ☐ No Does not meet the cleanup endpoints. No further cleanup recommended. Comments:

☐ Yes ☐ No Meets cleanup endpoints. No further cleanup recommended.

Attachments: Sketch Map: Yes / No Photos: Yes / No Additional Comments: Yes / No

SKETCH MAP

Segment ID:_____
Segment Name:_____
Date (dd/mm/yy)_____
SCAT Team/Name:_____

Checklist

_____ North Arrow
_____ Scale
_____ Oil Distribution
_____ High Tide Line
_____ Low Tide Line
_____ Substrate Types
_____ Trench Locations

Legend

1△

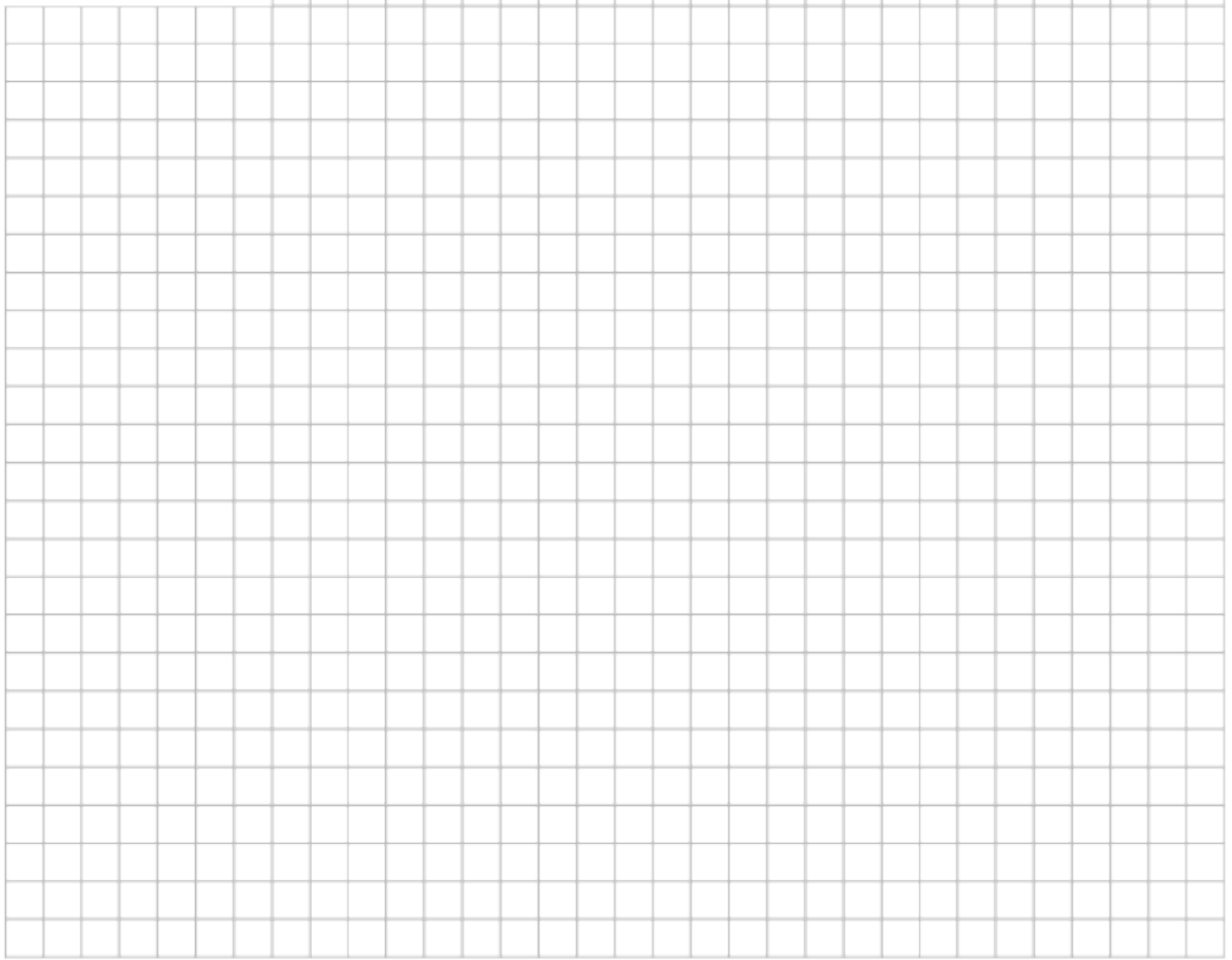
Trench Number.
No Subsurface Oil

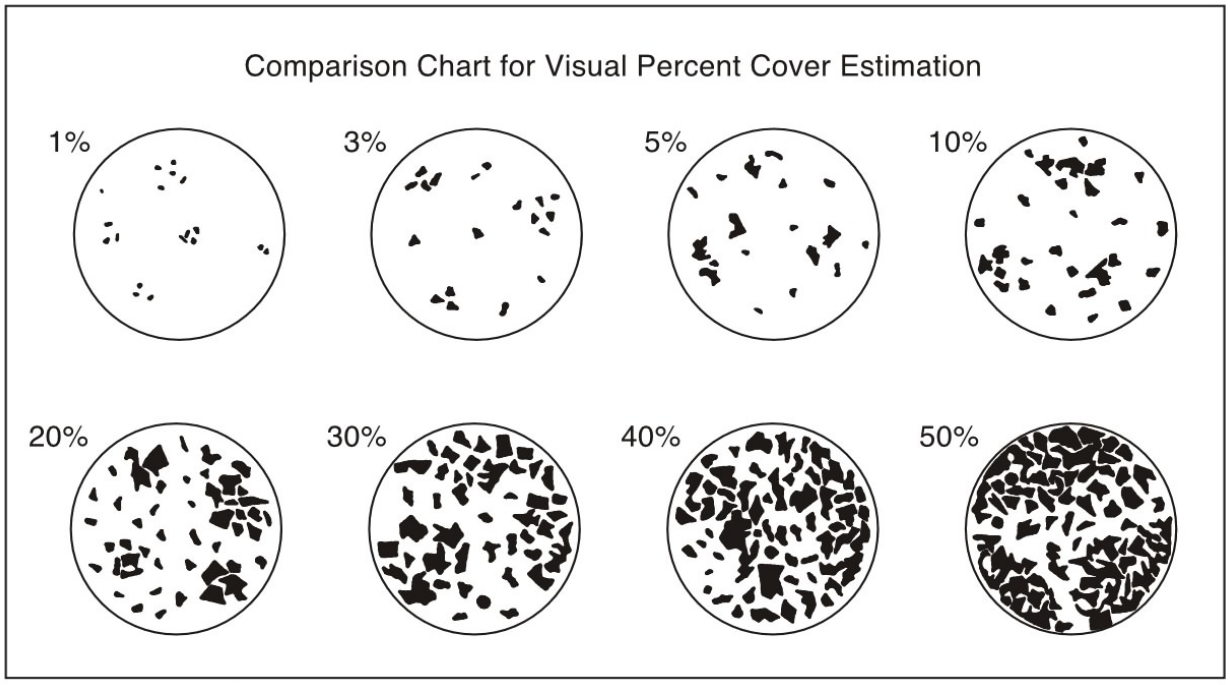
2▲

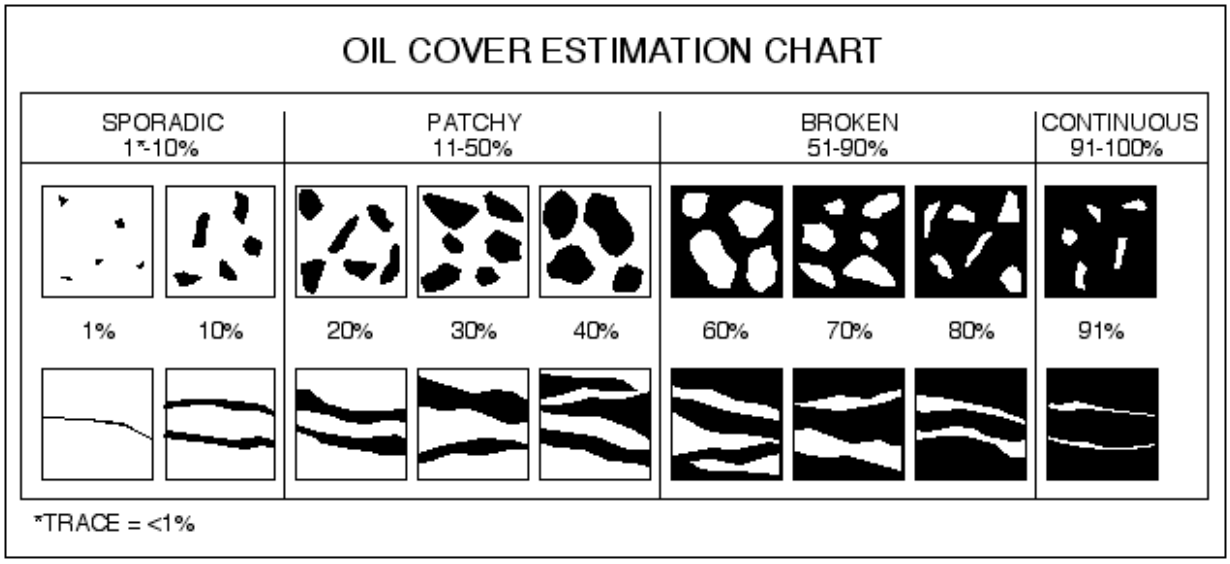
Trench Number.
Subsurface Oil

#●→

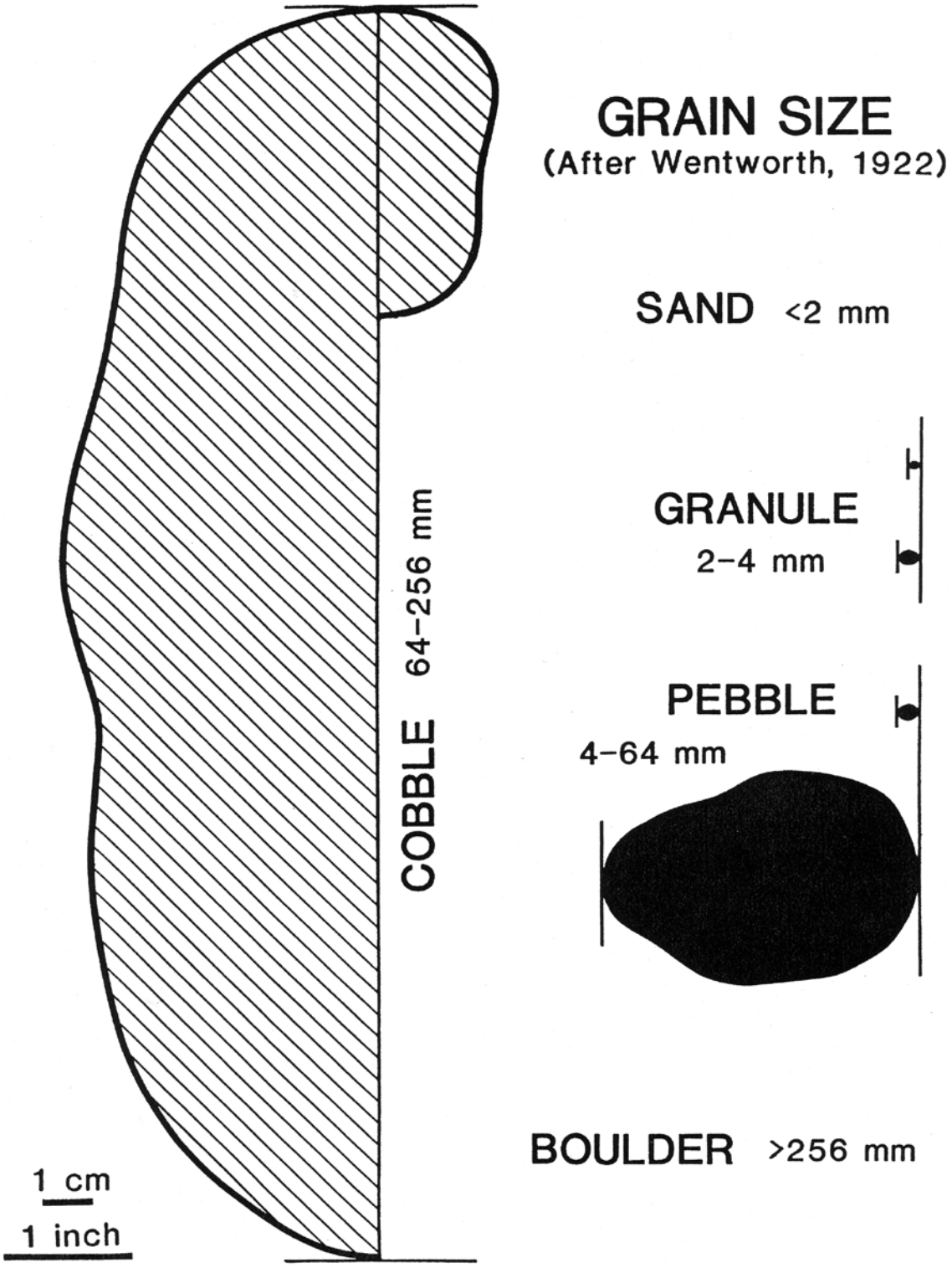
Photo Location
Direction and
Frame No.





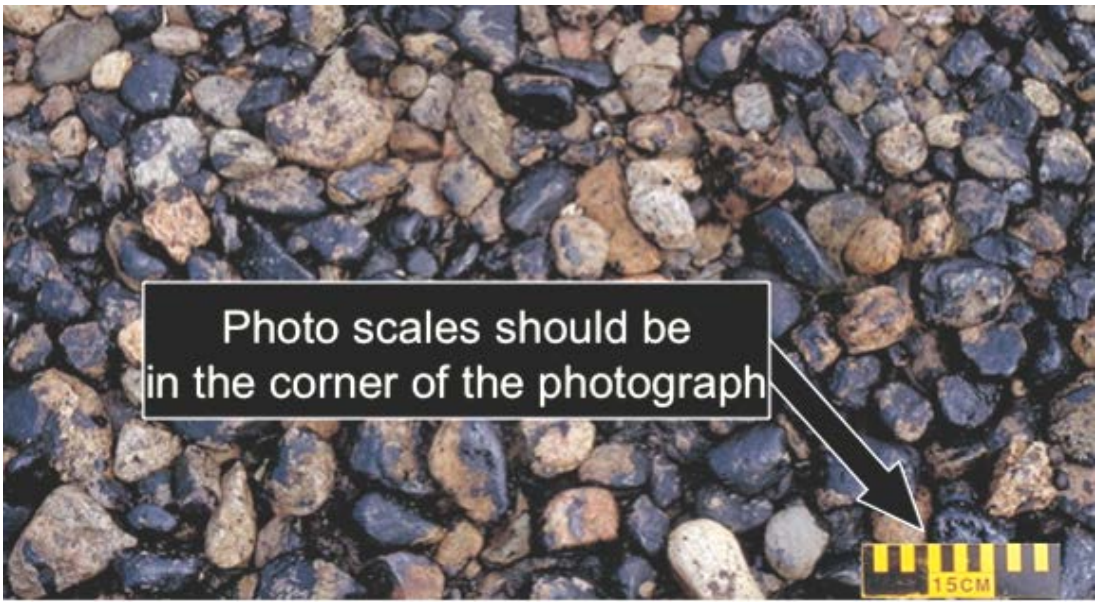


Source: Owens E.H., and G.A. Sergy. 2000. The SCAT Manual – A Field Guide to the Documentation and Description of Oiled Shorelines. Second Edition. Environmental Canada, Edmonton, Alberta. 108 pp.



Grain-size estimator chart for the different types of gravel. Diagram shown is smaller than actual size.

Photo scale to be used for close-up photographs.



Where to put the photo scale when taking a photograph of the ground surface.

Where to put the photo scale when taking a photograph of a pit.

Appendix E: A Primer on Drawing Field Sketches

The field sketch is an important component of the shoreline assessment process for two principal reasons: (1) it provides a focused picture of the oil distribution within the entire segment, or sub-segment, on a single piece of paper (or image); and (2) it adds discipline to the field observation process, because it forces the person doing the sketch to make detailed mental notes of all the relevant features.

Step 1

Once you arrive at the segment, imagine yourself held aloft 150 feet by a balloon as you quickly walk around the entire segment. This will give you a mental overview of the spatial distribution of all the relevant features in the segment that should be included in the sketch.

Step 2

Determine the dimensions of the segment and dig trenches to look for subsurface oil. Divide the duties among Team Members (e.g., one to sketch, one or two to pace or tape distances). Pace (or tape) the length and width of the intertidal zone and the size of some of the more conspicuous features, such as groins or seawall segments. Using a pencil, lightly sketch these measurements on the field sheet in Figure E-1 below. Orient the longest dimension along the long axis of the paper. Add scale and north arrow (use English or metric units, as dictated by the situation).

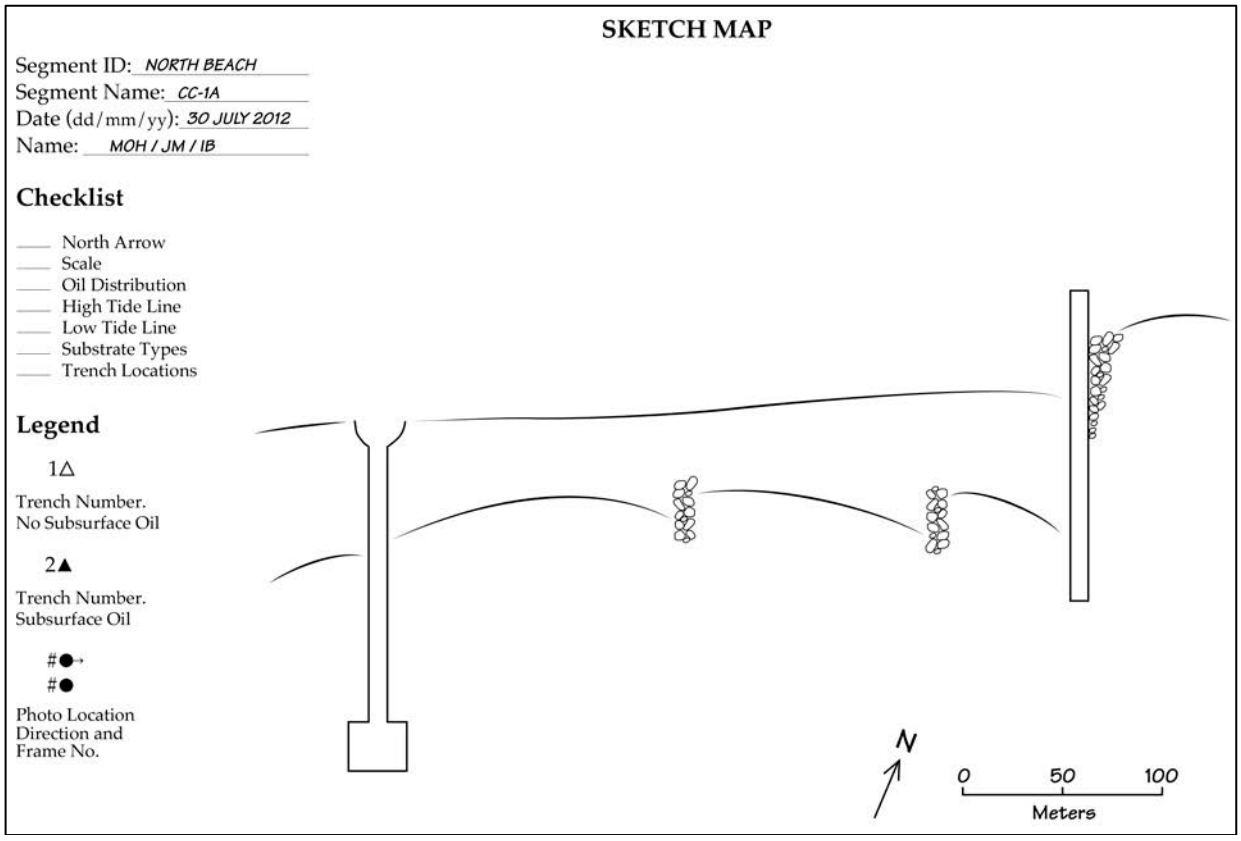


Figure E-1. Example of field sketch map dimensions and scale.

Step 3

Lightly sketch in the outline of the intertidal zone or habitat being surveyed. Show in final form (i.e., heavy pencil marks) the areal distribution of the oil, using a hatched pattern. The oil distribution should be the most conspicuous feature on the sketch, as shown in Figure E-2.

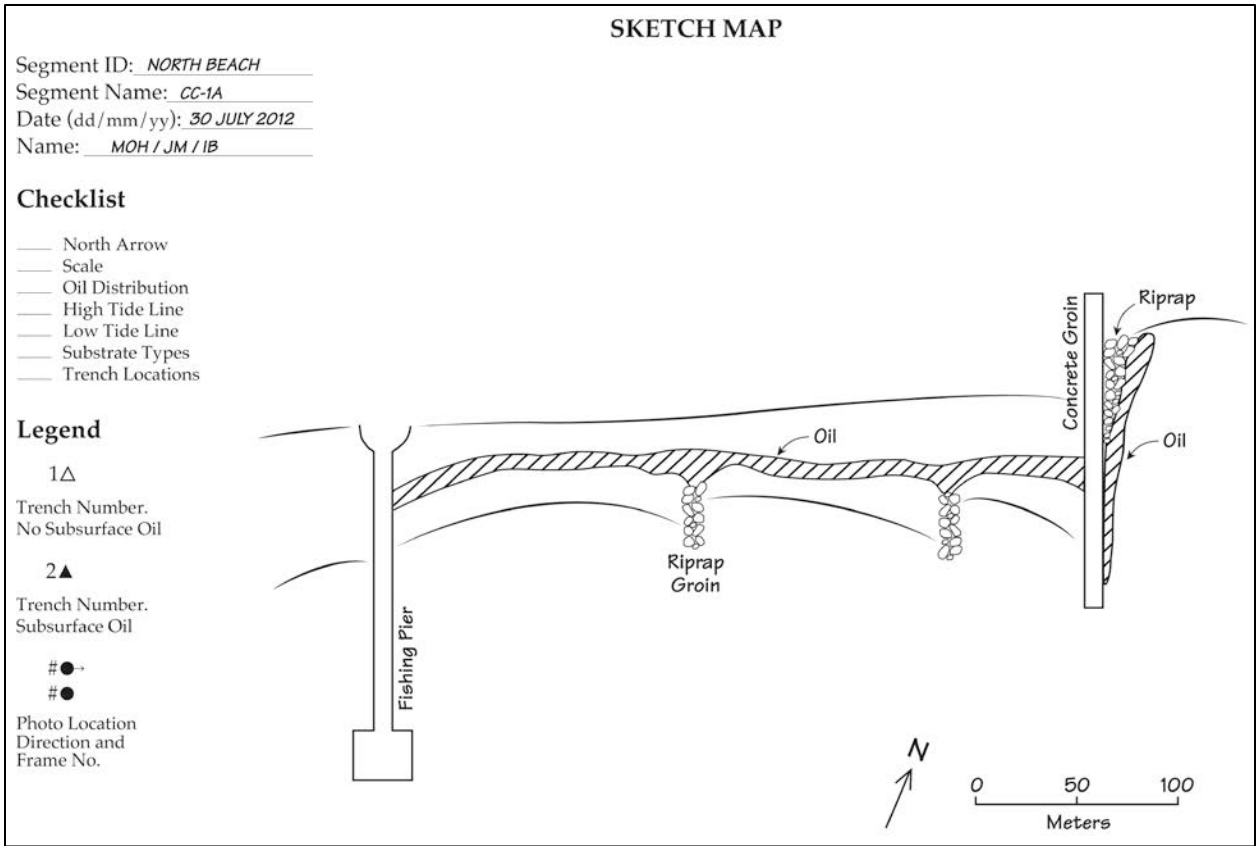
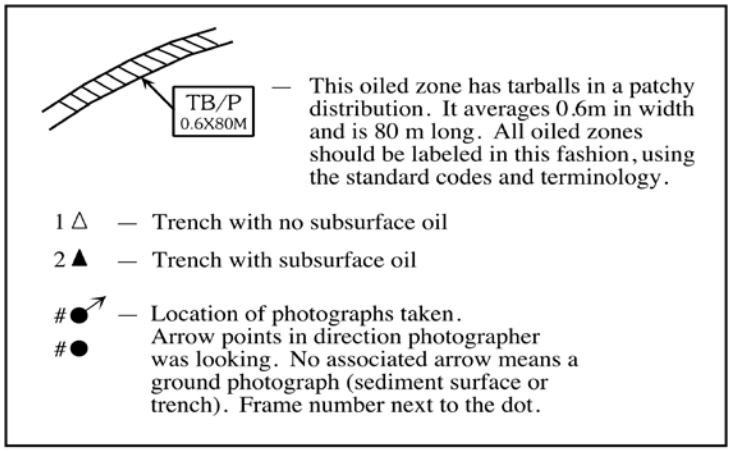


Figure E-2. Example of a field sketch map with outline of surveyed area.

Step 4

Identify critical elements of the sketch, using the following symbology:



Step 5

Fill in the rest of the details of the sketch, showing highlights of the morphology (e.g., beach berms, tidal channels); conspicuous features, such as fences, large logs, and seawalls that would help identify the site; zones of vegetation; and access points, such as roads and parking areas.

Step 6

(Optional) Where appropriate, draw a topographic cross-chapter of the intertidal zone, showing significant topographic breaks (e.g., beach berm crests) and oiled zones.

Step 7

Make sure that the form is completely filled in with site location, date and time of survey, and names of survey Team Members. Review the checklist on the left side of form.

Figure E-3 is an example of a completed beach sketch.

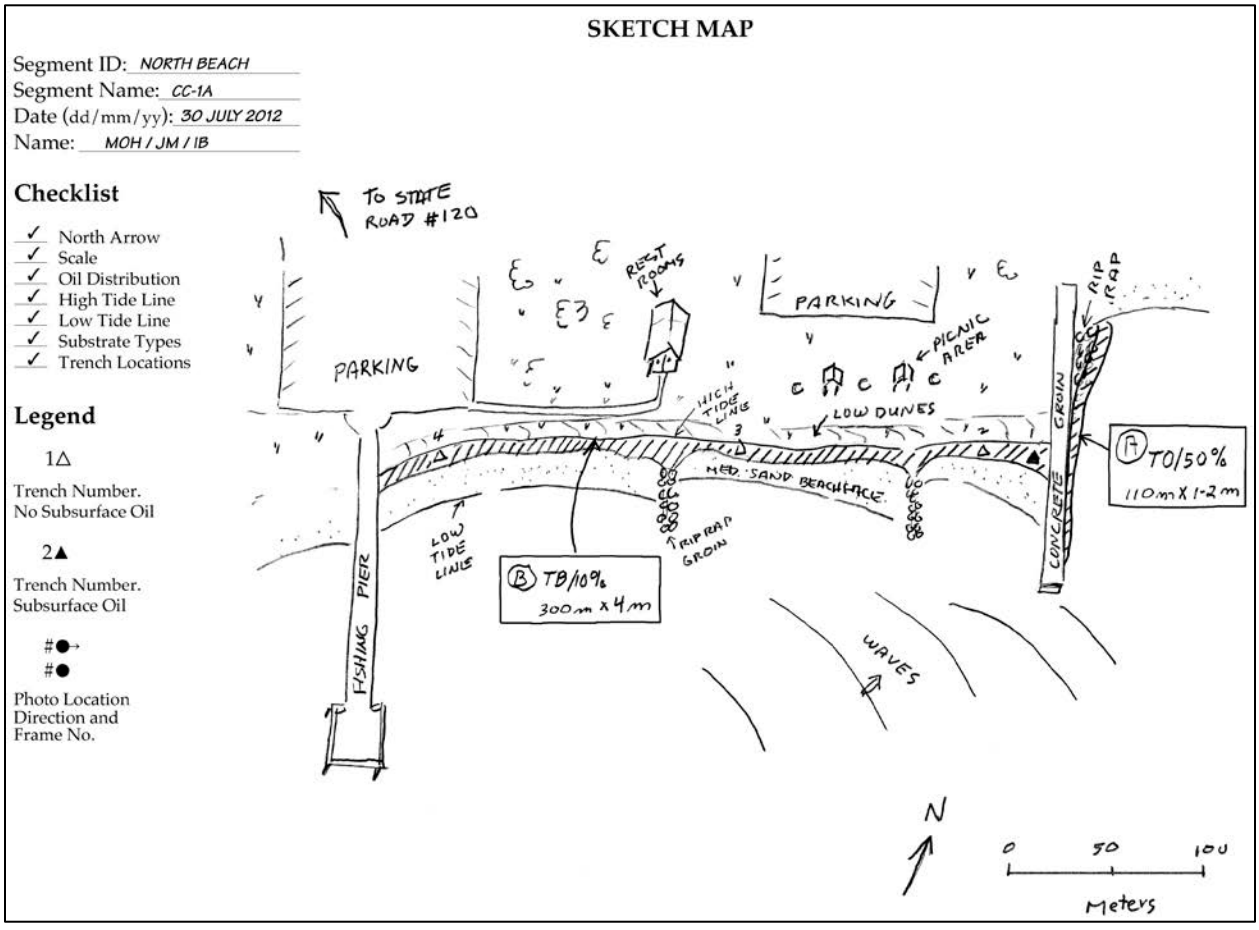


Figure E-3. Example of a completed beach sketch.

Appendix F: Example SCAT Field Safety Plan

1. Intent

The intent of this Field Safety Plan is to establish a structured process and disciplined approach to the mitigation of health, safety and environmental risks associated with our operations and activities and to share our learning with the Incident Management Team. This safety plan applies to the Houma Shoreline Cleanup Assessment Technique (SCAT) Team.

2. Communications

2.1. Daily Pre-Mission Safety Meetings will be conducted at site with each team. Sample Job Hazard Analyses are located at the end of this document. Specific topics to include:

- Lessons learned from the prior day's mission
- Current weather
- PPE requirements
- Food and Water
- Communications
  - check comms on LWIN radio (GCI-5) or Green Sticker depending where the team is surveying
  - confirm handheld VHF radio on same channel as boat/aircraft pilot
- Review boat/flight plan with boat or aircraft pilot
- Training requirements
- Check with each Team Member if they have safety concerns that need to be mitigated before leaving

2.2. Each team is equipped with a

- Cell Phone and/or Motorola XTS 2500i handheld – for contact between field team and base
- Uniden VHF handheld radio – for contact between field team and boat/aircraft pilot
- Satellite Telephone – backup in case cell and Motorola handheld fail (dial country code 001 + 10 digit phone number)
-

2.3 The Field Team Lead shall call in when departing or arriving a location via boat, helicopter or vehicle. The SCAT desk phone numbers are: xxx-xxx-xxxx.

2.4. SCAT Team Logistics at the Command Post must update the SCAT Status Board upon notification from any SCAT Field Team.

2.5. Each SCAT Field Team will be provided with a copy of this safety plan, the medical plan, and at least one set of area maps.

3. Vehicle Safety

3.1. Pre-Trip Plan (Maps, directions)
3.2. Seat Belt use is mandatory
3.3. Observe all posted speed limits
3.4. No use of cell phones by driver unless car is stopped and in Park position

4. Accidents – Injuries – Spills – Near Misses

4.1. Any accidents, injuries, spills or near misses must be reported to the SCAT Field Coordinators as soon as possible. The SCAT Coordinator will report the incident to the Safety Officer within two hours of the incident by calling xxx-xxx-xxxx**.**

4.2. Reporting of the incident or near miss on the "Preliminary HSSE Incident Report –short form" will be initiated by the SCAT Field Coordinators with the assistance of the injured person or SCAT Field Team. It is the responsibility of the SCAT Field Coordinators to notify the appropriate personnel within the Incident Management Team.

4.3. Any accidents, spills or near-misses will be discussed at the daily SCAT Field Report meeting to identify appropriate mitigation, ensure reporting is completed, and to share lessons learned.

5. Training

5.1. Any member of a SCAT Field Team is required to have the following Safety Training.

- Level I and II BP Safety Induction
- 40 hour Hazwoper Certification – or accompanied by someone with 40 hour Hazwoper
- PHI Helicopter Pre-Flight Safety Briefing
- Vessel/Air-boat Safety Briefing
- Inclement Weather Training and Heat Stress training
- ATV Training

5.2. The Team Lead must have current 40 hour Hazwoper training. The preferred number of people on a SCAT team is three. A minimum of two people is required.

6. Personal Protective Equipment

6.1. Each SCAT Field Team Member is expected to don the following Personal Protection Equipment while on a boat or in a helicopter.

- First Aid Kit
- Hearing Protection – **Double Hearing Protection for Airboats**
- Personal Floatation Devices
  - USCG Type 1 floatation devices for use in open ocean offshore situations and within 50/50 weather rule.
  - USCG Type 2 floatation device for use in calm inland waters with good chance of rapid rescue response
  - USCG Type 3 floatation device also for use in calm inland waters with good chance of rapid rescue response
- Eye Protection on boats (Sunglasses or Safety Glasses)
- Hand Protection (nitrile) if handling oil – (as needed)
- Mosquito Repellant (as needed)
- Sunscreen and hat (as needed)
- Waterproof boots (as needed)

- If working in cleanup operational area, abide by site Personal Protection Equipment requirements (i.e. hard hats, chicken feet etc.)

7. Weather

7.1. SCAT Logistics and Safety personnel will monitor the Daily regional and local weather
7.2. SCAT Field Teams will be given weather updates when they call in to the Command Post
7.3. If the SCAT Logistics and Safety personnel identify a serious weather risk, the affected SCAT Field Teams will be notified by cell phone and/or VHF radio as possible
7.4. On days where there is a threat of thunderstorms or rain, use lightning detectors that are in place on all lead crew boats.

8. Emergency Notification

8.1. On Water Emergencies -Coast Guard – VHF GCI-5
8.2. Land Emergencies, Fire and Ambulance – phone 911
8.3. Water Patrol: xxx-xxx-xxxx

9. Leadership

9.1. While on an aircraft, boat or airboat, SCAT Team Members will follow pilot/skipper instructions at all times. The SCAT Team Leader is responsible for the following:
- Bring Safety Plan and Medical Plan on each mission
- Conduct Pre-Mission Safety Meeting
- Report all accidents, spills or near-misses to SCAT Coordinator
- Ensure all Team Members can operate communications
- Ensure all Team Members know Safety Training and Personal Protection Equipment requirements
- If any Team Member believes there are safety risks that must be mitigated prior to starting the mission, resolve issue or call off mission.

10. Reviewing and Updating

Changing conditions may occur which wil require review and revision of the Field Safety Plan. Triggers for review of the plan may include grounding of much larger quanities of oil, stranding of fresher oil (more volatiles), proximity to cleanup operations and Team memner reports of safety violations or safety concerns.

Appendix G: SCAT Photography Guidelines

PURPOSE

There are several reasons to take photos in the field. In the end though the goal of SCAT photos is to tell a story about what happened. Each photo should tell a specific part. Before taking a photo you should consider what critical information you are trying to convey. Did the photo capture the details you need? Are there key images (data) that you have missed? In the first case you should reframe or retake the photo. In the second you should look for photos that will fill in the gaps. So remember – Make your photos tell the story of oiling conditions, including wildlife, important shoreline features, access points and other useful operational items.

BEFORE GOING IN THE FIELD

Preparing Gear

Make sure you have assembled a full photography kit appropriate for SCAT field work. Refer to the reference section of this document for the Full SCAT Gear checklist and the Field SCAT Gear checklist.

- Charge batteries (Generally every evening during a response.) Have at least one spare battery or extra sets of AA or AAA batteries if that is what your camera uses.
- Format memory cards (Be sure to save all images to a computer and/or the SCAT data managers, as all data will be lost during formatting. Also, formatting must be done with the camera they are to be used with, not the computer or other camera.)
- Check lens for dirt (Clean with special paper or cleaning cloth for that purpose to avoid damaging the lens coating.)
- Camera settings:
  - Resolution – High Quality (should generate a photo file size of 5 to 10 MB), assuming you have an adequate memory card for the whole day.
  - ISO – Is a measure of how sensitive the camera light sensor is. Use "Auto" and the camera will use the optimal ISO for the conditions.
  - Mode – Program (P) if you have any doubt. "Auto" may prevent using many of the recommended settings for SCAT.
  - Time stamp – OFF! Especially if you or the data managers are using GPS-Photo Link (NOAA does). Unlike film, there is no need to clutter your photo and use up pixel space with a time stamp. That information is automatically recorded in “EXIF” data–which is part of your image file.
  - Time – Local time. Avoid using the "GMT offset" feature as that can prevent proper import into some software
  - Continuous picture numbering – Set to use a running count for file names even after changing or formatting memory cards. You don’t want the camera to start from 1 each time.
  - Daily folders – Set camera to create a new folder each day. This helps with organization if you don’t download daily.
  - Advanced settings – Reset. If you use advanced settings like spot metering, custom white balance, etc. it’s a good idea to return these to auto or a general setting before you go into the field.
  - Camera reset – Most cameras have a way to return all settings to the factory default values. This is useful if images are poor or you’ve been experimenting with different camera settings and you can’t determine what setting may be causing the problem.

Learn Basic Camera Functions

It is absolutely critical that you know how to use the camera you will be using before you go into the field. With digital cameras, the photos are free; the basic advice for learning is practice, practice, practice. Note that during SCAT surveys, you will want to limit your photos to those useful to Planning and Operations, to avoid having to sort through them later. Remember, your photos should tell the story of what the SCAT team is finding.

The following are some basic camera functions that everyone should know. Many cameras require you to be in "P" (program) mode, not "A" (auto) to use these.

- Light metering: Spot. At this setting the camera meters the exposure at a designated spot in the photo frame. For most cameras the spot is shown as a box or circle in the center of the viewfinder. Spot metering is helpful if your priority subject is much darker or lighter than the rest of the frame.
- Light metering: Exposure compensation (+/-) adjustment. This lets you manually tell the camera to make the photo lighter or darker. It works like the lighter-darker adjustment on most copy machines.
- White balance adjustments: White balance settings help the camera adjust the colors in the photos based on the type of light (fluorescent, incandescent, sunny, cloudy, etc.) Most of the time Auto White Balance works fine, but sometimes the camera does not adjust correctly. Manually choosing the type of light can fix the problem.
- Review photos: Know how to use your camera display to review a photo. Know how to zoom in on the photo in the display screen to check focus, exposure, and other key details. The Tele – Wide buttons usually allow you to zoom once the camera is in review mode.
- Forced flash: In dim light or harsh shadows you may need to force the camera to use the flash to avoid losing details. If so, use the "Flash On" rather than the "Auto Flash" setting.
- Continuous shooting: Most cameras will shoot consecutive photos while you hold down the shutter, having the potential to generate many extra photos. Only use it if you have a need to record fast moving wildlife.

Learn Basic GPS Functions

Basic GPS capability is essential for all field work, including photography. After the field work, all photos can be geo-referenced using software such as GPS Photolink. There are a number of key functions you need to set including: local time zone, datum, track (wrap, interval), WAAS (on), etc. Refer to the companion "Basic SCAT GPS Management & Standards" guide for more detail.

Regarding Cameras with Built-in GPS – Most built-in GPS units in cameras don't provide the same functionality as good separate units, and they can use up batteries fast. On built-in GPS, it may not be possible to change the settings as recommended in our GPS user guidelines. Also, downloading the GPS files to the GPS-photo linking software generally used by the information management team does not work properly. **Bottom Line: Turn off the built-in GPS and use a separate GPS receiver!**

<u>In the Field</u>

What Photos to Take on a SCAT Survey

It is important to take a basic set of photographs of every segment during every survey, including:

- Overview photographs of the habitat: For coastal segments, it is best to stand just above the high-tide line and aim across the intertidal zone to the water line, to show shoreline type, slope, and oil location.

- Close-up photographs of all types of oil in each zone: Use a photo scale. Take photographs looking alongshore to show the width of the oil and vertically to show more detail.
- Photograph every pit: Use a photo scale on the sediment surface in the upper right side of the pit, if possible. Be sure that the pit wall is not covered by a shadow, that any oiled layers are clearly visible. Take a photo of the pit location on the shoreline.
- Oiled/dead wildlife: Use a photo scale and get as close as needed to be able to identify the species and the presence/absence of oiling.

Basic Photo Technique

Photos with scales

- 15 cm scales are standard. Be sure the scale is labeled. Commonly available scales use alternating yellow and black 1 cm bands.
- For oily conditions, use disposable scales of standard length, such as 15 cm long wooden sticks. (Use a photograph to document the length in relation to a printed scale).
- Scales should have intermediate reflectance, not all bright white. A bright scale can cause the camera to underexpose the rest of the photo.
- Try to place the scale consistently in one location. The lower right of the frame is recommended. NEVER place the scale near the center of the photo!
- The scale must be the same distance from the lens as the target object. Otherwise, the scale does not accurately reflect the target's size. A scale cannot be used for distant targets, but sometimes an object near the target can be helpful if its size is known or can be estimated.

Avoid harsh shadows

- Use spot metering or camera flash to eliminate harsh shadows that can obscure details. Use one of each if you're not sure which is better. Remember that setting the exposure for shadows may wash out and lose detail in bright areas of the photo.

Review critical photos

- Use the review feature to ensure that your photos show what you need.
- Use zoom-in function (often the "Tele-Wide" buttons) on the camera display to see if you captured necessary details.

Adjust camera if needed

- It is critical to make adjustments if photos are not coming out well.

Put every photo in perspective

Every close-up should be followed by one or more wider-angle shots that will show the close-up in the context of the rest of the environment. The closer the initial shot the more perspective shots are needed.

Consistent, repetitive photo process

Taking photos in the same order will help to ensure that you don't miss important photos and will help keep things organized so it's easier to review your photos later. The following are examples of how you might do this:

- Start each new location with panorama shots and maybe a narrative video.
- Always shoot your subjects from the most close-up to the most zoomed out.

Notes

- Note key photos and important details in field notes.

- Record basic information - locations, times, photographer, team members.
- Descriptions of GPS locations or waypoints. As backup, write down the Lat/Longs.

GPS Check

- Take waypoints for photos occasionally (good check later for GPS-photo synchronization)
- To document GPS accuracy, take photos at (not of) landmark locations shown on commercial maps. Note photo number and location.
    - Examples of landmarks: road intersections, coastal promontories, stream outlets, shore access locations, lighthouses, etc.

Flying

Taking photos from a plane or helicopter can be difficult and requires additional skills. Point and shoot cameras can take good photos from the air but SLRs typically perform much better.

- Use manual focus to set cameras to infinity (∞). This avoids accidentally auto focusing on the window.
- Image stabilized cameras or lenses will help.
- To prevent transmitting aircraft vibration to the camera, do not rest the camera on an aircraft window frame or other part of the aircraft structure. Instead, hold the camera with your arms braced against your legs or torso, or the camera held against your face.
- Avoid shooting through a bubble window. They can distort the image.
- Smaller aircraft often have sliding windows, or easily removable windows or doors. Make arrangements with your pilot before take-off.
- Consider using one zoom level. Survey flights often are directed to maintain a specific altitude. By maintaining a constant zoom level you will be able to compare items in successive photos. Remember, you can't use the small photo scales in aerial photos. However, if an object of known (or an estimated) size is near the target, it can provide a size reference or perspective.
- Notes to record: Capture the basic flight plan including altitude and distance from shore. Aircraft type. Pilot and passenger names. Where you are sitting, port or starboard.

Special Requirements for Litigation or Enforcement Photos

If you know or suspect that your photos may be evidence in a civil or enforcement case, then additional steps are needed, beyond what is provided in this guidance, to ensure the photos are litigation quality and have been handled, transferred, and archived using proper chain of custody procedures SPECIFIC TO DIGITAL PHOTOGRAPHY. Basic guidance includes taking high quality and useful photos for SCAT purposes. Save all raw images before manipulating or deleting. Make a copy set for photo editing or file naming. Seek specific guidance from your organization for protocols involving chain of custody of digital photography.

Secondary, but Useful, Reasons to take Photos: To Document the Incident, the Location, overall response efforts, and personnel.

SCAT photos are primarily used to document the team's findings for the response. However, the USCG and other federal and state agencies always have need of photos to communicate, in broad strokes, what happened. The audience may be upper level management, Congressional hearings, court, the USCG National Pollution Fund Center, public hearings, training talks, outreach events, etc. If time permits, try to capture the photos needed for all these audiences while in the field. You may not get a second chance. The following is a partial list of subjects to try to document:

- How the spill happened – including source

- Cleanup/remedial efforts
- Personnel working/sampling
- Direct observations of resource exposure or injuries
- Wildlife
- Survey platforms: boats, aircraft, trucks
- Vistas and scenery shots

In locations where a time series would be helpful, compose the photo so it will be easy to repeat. It is easy to repeat photos for a time series by standing in the same spot, centering the view on a permanent object, and using the same focal length ("zoom" setting). Take notes and bring a marked print when you return to take subsequent photos to help match the images.

Process: Logging photos

Locating photos in space and time is necessary to ensure that your photos are useful SCAT data and not useless files. In the field, record all photos in either your field logbook or a photo log form. After returning from the field, follow the "downloading" procedure established by the SCAT Coordinator and/or SCAT Team Leader. This will frequently involve bringing your camera and GPS unit to one of the Information Management (IM) Team assigned this function in the command or forward operations post. The IM member is usually located with the SCAT Coordinator. The IM Team may set up a database system for logging photos. If so, know what data and format is needed for that system.

A photo log or field notes should include:

Photographer
Date and Time
Note/Caption
Incident Name

Photography - Full gear list

☐	Camera	With neck strap
☐	Case – large	Sized to hold all your camera gear
☐	Case – small	Sized to hold and protect your camera and gear in the field
☐	Memory cards	1-2 extra depending on size – 200-300 full resolution photos on each is good
☐	Rechargeable batteries	Proprietary battery: 2 is OK, 3 is better AA: two sets of rechargeables are OK – you'll have extra alkaline or lithium in your kit for GPS, etc.
☐	Battery charger	One for each type of rechargeable you carry
☐	Lens cleaning kit	
☐	Card reader	Get one that accepts many card types so you can get photos from others.
☐	Cable – Camera to PC	Should come with the camera
☐	Camera manual	Paper and pdf
☐	Underwater housing or rain shield / kit	Optional - useful in rough weather and small boat ops. A few cameras are waterproof or have a compact underwater housing that only fits that model. These are not too heavy. Flexible vinyl underwater cases or rain shields can be folded up and are easier to take in the field if you need them.
☐	Photo scale	15 cm waterproof, 15 cm disposable. Not white or light colored. Grey or yellow and black are best
☐	Image viewing software	All computers have decent software for reviewing photos. Many cameras also have good viewing software.
☐	Image editing software	Optional. Good for processing photos for presentations etc.
☐	External hard drives	For storing and archiving lots of photos and backing up the computer hard drive.
☐	Photo logging database	Usually the Information Management team will have this.
☐	GPS-photo linking software	Usually the Information Management team will have this.
☐	DVD-Rs – NOT RWs	Primarily for litigation quality archiving. Usually the Information Management team will have this.
☐	Waterproof bag	Dry sack or heavy duty Ziplock bags
☐	Polarizing lens	Optional – reduces glare and reflections. They may interfere with recording oil sheens, so use caution.
☐	GPS	
☐	Field notebook	

Photography - Field gear list

☐	Camera	With neck strap
☐	Case – small	Sized to hold and protect your camera and gear in the field
☐	Memory cards	1-2 extra depending on size – 2-300 full resolution photos on each is good
☐	Rechargeable batteries	Proprietary battery: 2 is OK, 3 is better AA two sets are OK – you'll have extra alkaline batteries in your kit for GPS, etc.
☐	Lens cleaning kit	
☐	Underwater housing / kit	Optional - useful in rough weather and small boat ops. A few cameras are waterproof or have a compact underwater housing that only fits that model. These are not too heavy. Flexible vinyl underwater cases or rain shields can be folded up and are easier to take in the field if you need them.
☐	Photo scale	15 cm waterproof, 15 cm disposable. Not white or light colored. Grey or yellow & black are best
☐	Waterproof bag	Dry sack or heavy duty Ziplock bags
☐	Polarizing lens	Optional – reduces glare and reflections
☐	GPS	With a remote antenna if using in aircraft.
☐	Field notebook	

Appendix H: SCAT GPS Guidelines

PURPOSE

The use of modern Global Positioning Satellite receivers (GPS) allows very precise location information to be acquired by SCAT teams using small hand held GPS receivers. The team members can track and record their path, waypoints and other data for later download directly to a computer, to be linked with various GIS programs (including Google Earth).

Additionally, by taking certain steps prior to (or during, and sometimes after) field use, the GPS data can be linked to digital photos taken during the same time period by using software designed for this purpose (such as GeoJot Core by Geospatial Experts, used by NOAA). This allows the photos to be linked to a specific time and location.

This guide provides the appropriate GPS unit settings and actions for SCAT team use. In the event you are using a camera with built in GPS, these guidelines also apply to setting and using the GPS feature.

BEFORE GOING IN THE FIELD OR STARTING TRAINING

The following are basic GPS practices that SCAT field team members should follow. Specific GPS devices are not covered in this document since operation can vary from brand to brand or year to year. For more information please see your device's manual. **SCAT members for an actual response** are expected to become as familiar as possible with how their device works prior to actual response use. **Prior to SCAT training**, students should become familiar with these GPS procedures and the specific units they will use during training.

GPS Data Definitions

- Track or Trackline or Track Log: The "breadcrumb trail"; a stream of continuous data points recorded when the unit's Track Log is turned on, saved to the GPS memory (*ex. overflight path, extent of assessed shoreline*).
    - Active Track Log – Currently being recorded into the GPS' memory. The GPS-photo linking software (such as GeoJot) will only read an Active Track Log so we encourage keeping this file until everything has been processed for the day.
    - Saved Track Log – An Active Track Log compressed, named and saved in the GPS device. The GPS discards the time data track to save space. **You cannot geo-reference photos with a named track; we discourage using them**.
    - ***Important Note***: Do not save your track log as this will strip off important date/time information that is necessary for GPS-photo linking operations
- Waypoints: A specific location manually captured by the user and saved to GPS' memory (*ex. location of marine debris object, location of sample*). Enter specific names into unit or accept the default waypoint names and record them in your field notes.

GPS Setup

- Set time zone and/or GMT offset for the current field location *(see table below)*
- Set time format to 24 hour clock
- Set datum to WGS84 (make default if possible). It is **critical** to make sure the datum is set correctly. Coordinates are downloaded using the datum setting on the GPS. Conversion later can be difficult.
- Check battery levels before use each day. A fresh set or fresh charge is recommended every day. Carry extra batteries

- Adjust screen visibility if operating in bright sunlight or overcast skies (typically under the Setup menu)
- Set your GPS to provide coordinates in Decimal Degrees (e.g. 48.408) unless you have a specific need for coordinates in degrees minutes seconds (e.g. 48° 24' 30") or degrees decimal minutes (e.g. 48° 24.5"). This will make it easier for writing down coordinates in your Photo Log or notebook and using them in the future.
- Set Track options:
    - Choose an appropriate sampling rate *(5 seconds is good for driving or flying, 15 is more appropriate for walking)*. If you don't have time options, choose more often or most often
    - Set track to wrap when full (keeps the newest data)
- Begin each incident with a clean GPS clear of previous tracks or waypoints to avoid conflicting or confusing information.
- Download waypoints and tracks each day after field work and process accordingly *(see Data Management Plan, OziExplorer, or consult with data management team).* Refer to "Data Download" later in this guide for file formats to use.
- If you have an older GPS or are having problems with running out of memory, you can clear the day's track log but only after downloading AND processing your GPS data and photos. Waypoints typically do not need to be cleared as they may be used as reference on other days.

GPS Accessories (include in GPS kit)

- Data cable for downloading your unit to a computer (including adapters if needed)
- Waterproof bag or dry bag to protect unit and clip to a pack for easy access and consistent reception. Handheld units are generally waterproof, but extra protection helps, plus they generally don't float.
- External antenna if you plan to fly. You may need to position the antennae around the platform to get good reception. A suction cup mount is best to stick to windows. Most aircraft have very few magnetic surfaces.

Data Collection (Check device manual for specific instructions)

- Unit should be able to locate and track at least 3 satellites to provide precise location data.
- Waypoints – Click the MARK option or hold down Enter to capture a point location. Select OK to save the waypoint. Use a field data sheet or notebook to write down waypoint ID and notes. If time permits, recording the Lat/Lon manually is also a good idea.
- Track Log – Ensure the GPS is recording a track. ***DO NOT SAVE your track file in the GPS***.

Field Use

- Leave GPS on while in the field for the day. This will ensure that it is recording a track log for all of your photos. Most GPS units will have plenty of memory and power to handle a full day – see above about checking battery levels!

If you plan to use your GPS data to sync up with photos that are being taken in the field (such as with GeoJot software used by NOAA):

- Take a photo of GPS showing its date and time stamp with seconds designation each day before heading out. Immediately review photo in your camera for glare and blurriness problems and retake if necessary. It's important that this photo is clear and easily legible.
- It is not necessary to take waypoints of photo locations while simultaneously shooting photos. The track line and photos will sync up later.

- Check GPS batteries every evening. Charge or replace them as needed. It's important to carry spare GPS and camera batteries when in the field.

Data Download

Your GPS data can be downloaded in a variety of ways using different applications. The most important step to remember is downloading the original data in a format so it can be uploaded again, used in other applications, or saved for long-term data management. MapSource by Garmin or OziExplorer on your computer are suitable for managing the original data.

- **MapSource Garmin** – Full GPS data management. Can create waypoints and tracks, shapefiles and KML/KMZ files. Has worldwide coverage of roads. Navigation charts for Garmin can be purchased. Save data as both Garmin Database (.gdb) and GPS Exchange (.gpx) formats.
- **OziExplorer** – Full GPS data management. Can upload data, nautical charts, etc., and download tracks and waypoints. Creates ArcGIS shapefiles and Google Earth KML/KMZ files. Works with almost all GPS devices. License and software installation required for use.
- **MN DNR Garmin** – Free download from Minnesota Department of Natural Resources that manages GPS data and also creates a toolbar for use in ArcView. Can export waypoints and tracks to Google Earth or ArcGIS and perform basic hot-linking. Supports only Garmin GPS devices. ***Do not use this software to download a GPS Track Log as the .gpx format is incompatible with some GPS-photo linking software, and you will not be able to link photos with GPS locations.***

If you need to import your GPS data for visualization, but not GPS management, then you can use the following tools:

- **GeoJot Core by Geospatial Experts** – Can import Garmin tracks and waypoints or Magellan tracks and sync them to digital photos. License and software installation required for use.
- **Google Earth** – Can import waypoints and tracks directly from Garmin or Magellan devices and save them as KML files. This is not recommended for long-term data management.

GMT Reference

Time Zone	GMT Standard Time	GMT Daylight Savings
Puerto Rico & USVI	-4	-4
Eastern	-5	-4
Central	-6	-5
Mountain	-7	-6
Pacific	-8	-7
Alaska	-9	-8
Hawaii & Guam	-10	-10
Am. Samoa	-11	-11

There are some idiosyncrasies in the U.S. but this is a general reference.

Appendix I: Step-by-Step Guidelines for Filling out the Shoreline Oiling Summary (SOS) Form

Section 1

Section 1 includes general information about the segment, date and time of the survey, etc. You will be given the segment ID on a base map, or you will be generating them in the field for the first survey of the segment. The tide height during the survey is very important to record. In the example below, the survey was started about mid-tide when the tide was falling.

1. GENERAL INFORMATION	Date (dd/mm/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)	Tide Height
Segment ID: GI-01	20 Jun 2014	10:15 to 13:00	L / M / H
Segment Name: Grand Isle			Rising / Falling
Survey By: Foot / ATV / Boat / Helicopter / Overlook / Other ____		Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm	

Section 2

The names and organization of each member of the team must be recorded in Section 2, along with the Team Number.

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number	John Smith	USCG	Tom Brown	RP
	Mary Jones	NOAA Smith	Beth Young	Arch
2	Bill White	State		

Section 3

This is where you record the total length of the segment (it can be estimated in the field or generated later using the waypoints). If you were not able to complete the segment, record the length that you were able to survey (and be sure to note that on the map as well). Everyone on a SCAT team should know how to use a GPS and set waypoints (see guidelines in Appendix H). Waypoints are a very efficient way to accurately record the locations of the segment boundaries (as well as other features in the segment such as pits). Before you go out into the field, make sure that the GPS you are using has the Datum set to WGS84 and the coordinates set to Decimal Degrees (e.g., 48.408). When you start a segment, locate the starting point and collect a waypoint and write down the coordinates. When you decide to end this segment and start a new one, repeat this process.

3. SEGMENT	Total Length: 300 m		Length Surveyed: 300 m		Datum: WGS84
Survey Start GPS:	WP: 111	LAT: 29.10362		LONG: 90.36169	
Survey End GPS:	WP: 120	LAT: 29.10364		LONG: 90.36178	

Section 4

The **BACKSHORE Character** refers to the shore zone as a whole and includes the area inland and landward of the intertidal zone. This is the area where operational activities to implement the treatment recommendations take place. It defines access constraints to the intertidal zone as well as the potential for staging areas adjacent to the segment to be treated. In the example below, the backshore consisted of a beach with some riprap in front of a structure.

The **ESI Shoreline Type** refers to the intertidal habitat (between low and high tides). Refer to Table 1 in the Shoreline Assessment Manual for the ESI shoreline types and numbers. The Primary shoreline type is the one that is most common within the segment. The Secondary shoreline type(s) are all the other shoreline types that are present within the segment. You should circle all the shoreline types that are oiled. In the example below, a fine-grained sand beach (ESI = 3) is the Primary shoreline type; there are also riprap (ESI = 6B) and salt marshes (ESI = 10A) present. All the shoreline types have some oiling.

4a. BACKSHORE CHARACTER: Indicate only ONE Primary type and ALL Secondary types	
Cliff/Slope ___ Lowland ___ Beach P Dune ___ Wetland ___ Lagoon ___ Delta ___ Channel ___ Man-Made S: _____	
4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.	
Primary: 3	Secondary: 6B 10A

Section 5

The **Operational Features** provide information on the presence, type, and amount of oiled debris. Note that bags generally are filled to 20 pounds, to make them easier to handle by workers. It is important to provide information on access to the segment, from either the immediate backshore or from adjacent segments, and if the backshore area is suitable as a staging area for equipment, worker deployment, and waste handling. Describe in as much detail as possible about the backshore access. Make additional notes under Section 8 (Comments) as necessary.

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type: Wrack	Amount: 10 (bags)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No		Suitable for backshore staging? Yes / No
Access Description / Restrictions: Road/parking lot with good access to shoreline			

Section 6

The **Surface Oiling Description** section applies to oil on the surface (defined as oil on the shoreline surface and down to 5 cm in the surface sediments). You assess the oiling by walking the entire segment.

If no surface oil is present, mark the NO box under Oil Character

If surface oil is present:

STEP 1: Decide if the oiling in the segment is relatively uniform in terms of the shoreline type, tidal zone location, width, % distribution, oil thickness, and oil character.

- If **Yes**, there is only 1 zone to be described in STEP 2.
- In **No**, then you need to break the segment into multiple zones, each with it's own descriptors. These zones can be alongshore (e.g., one end of the segment has much higher oil accumulated against a riprap groin) or cross-shore (e.g., most of the oil is located in the upper intertidal zone, but there is a small amount of oiled debris in the supratidal zone).

STEP 2: For each zone, decide the start and end of the zone and record the waypoints. Enter the Environmental Sensitivity Index (ESI) shoreline type, tidal zone, length and width of the oiled zone, the average % distribution of oil within that length and width, the oil thickness, and oil character. In the example below, the oil occurs in 2 zones: A = the sand beach along the entire segment where the oil occurs in the upper intertidal zone and is 3 m wide, 15% distribution, 0.5 cm thick (=cover), and fresh oil; and B = a riprap revetment in front of a structure where the oil occurs in both the upper intertidal and supratidal zones and is 2 m wide and 25% distribution of fresh oil that is thicker than 1 cm (=thick oil or TO) in places (so both TO and CV are marked).
There is also a small marsh (ESI = 10A) in the segment that had 2 patches of thick oil in the entire marsh, so this was recorded in the column under <1% as 2/20 m^2 with the average and largest size of the patches being 2 cm.

STEP 3: Mark each zone on a map or make a sketch of the segment showing the locations of the zones.

6. SURFACE OILING DESCRIPTION: Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover						Oil Thickness					Oil Character							
								Zone Area		1-100%	<1%	Size														
				LI	MI	UI	SU	Length (m)	Width (m)	Distr. %	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	No
A	3	111	118			X		300	3	15					X				X							
B	6B	112	113			X	X	50	2	25				X	X				X							
C	10A	113	114				X	10	2		2/20m^2	2	2	X					X							

Section 7

The **Subsurface Oiling Description** section applies to oil below the surface. Dig pits in areas with surface oil and in depositional areas to look for oil that may be buried. In the example below, 5 pits were dug into the sand beach (Zone A), so they were numbered A-1, A-2, etc. Record the waypoint for each pit (or locate it on your base map or sketch), the substrate type (e.g., pebble, sand, mud, etc.) both at the surface and with depth, and the location of the pit in the intertidal zone. Try to dig pits to at least 50 cm, or to the water table, and record the pit depth. The oiled interval is the depth below the surface where the oiled sediment occurs. In the example below, pit A-1 had oil from the surface to 6 cm; pit B had clean sand from the surface to 5 cm, and oiled sand from 5 to 10 cm, and clean below that to a depth of 45 cm. Both pits were dug to 45 cm because that is where the water table was encountered. Note that when water accumulates in the pit, you need to record if there is a sheen (and it's color as brown, rainbow, silver, or none) on the water surface. Pits A- 3 and A-4 (dug in the upper intertidal zone) and Pit A-5 (dug in the middle intertidal zone) had no subsurface oil.

7. **SUBSURFACE OILING CONDITIONS**: Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"																					
Pit #	WP	Substrate Type Surface / Subsurface	Tidal Zone				Pit Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character											Water Table (cm)	Sheen Color B,R,S, N	Clean Below Yes / No
			LI	MI	UI	SU			OP	PP	OR	OF	TR	TB	SR	AP	NO	%			
A-1	115	sand/sand			X		45	0-6			X								45	N	Yes
A-2	116	sand/sand			X		45	5-10			X								45	N	Yes
A-3	117	sand/sand			X		50										X				Yes
A-4	118	sand/sand			X		50										X				Yes
A-5	119	sand/sand		X			25										X				Yes

Section 8

The **Comments** section is where you summarize the oiling conditions and make recommendations for treatment, record observations on wildlife, and other comments. You also note photographs and if there is a sketch or map attached.

8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions
Recommend manual removal of oil from sand beaches. Attached map/sketch shows small area adjacent to the riprap where there is some subsurface oil. The riprap revetment has both oil coating on the surface of the blocks, and some thick oil and oiled debris inside the crevices. Recommend manual removal of the thicker oil, followed by high-pressure, hot-water flushing of the remaining thinner oil. This is a public beach, with good access and staging areas. Observed and reported to the Wildlife Hotline one oiled gull.
Sketch: Yes (No) Photos: Yes (No) Photo Numbers: (Team 2: 1-14) Photographer Name: Jones

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Tidal Inlet Protection Strategies

Tidal Inlet Protection Strategies (TIPS)

Phase 1—Final Report

API TECHNICAL REPORT 1153-1
JANUARY 2014

AMERICAN PETROLEUM INSTITUTE

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Executive Summary

- Response operations in tidal inlets face numerous challenges: the most important of which are the constantly changing water depths and current patterns.

- Recognition of the typical morphological features of an inlet system enables planners and responders to understand how water depth and current pattern change through the tidal cycle.

- This understanding should form the basis for the selection of realistic and practical response strategies to minimize the transport of oil through an inlet on a flooding tide toward vulnerable back-bay environments.

- In reality, there are a number of positive strategies and tactics that can be implemented to control the potential movement of oil through an inlet and the purpose of this study is to identify those opportunities for planners and responders.

Tidal inlets are complex and dynamic systems that include ebb and flood tidal deltas on either side of an inlet throat between barrier islands. These systems provide pathways for oil to enter sheltered back-bay tidal flats, marshes and mangroves (bay-lagoon complex) and are critical control points for protection of these sensitive and vulnerable environments. The key challenges that planners and responders face include:

- constantly changing patterns of shoals and channels that are controlled by the balance between wave and tidal forces and bay geometry;

- intertidal areas that are often wide and alternately exposed and submerged during each tidal cycle;

- current reversals approximately every 6 or 12 hours, depending on the type of tide; and

- high current velocities in channels and wave-induced currents across ocean-side shoals.

This report addresses these challenges and provides guidance to understand the morphology and processes within tidal inlets so that locations can be identified where protective operations are feasible and strategic approaches can be developed.

The results of this study are intended for use by planners and responders and can form part of response plans, Area Contingency Plans, or Geographic Response Plans. The process of identifying practical strategic and tactical options can help ensure that expectations are realistic and that appropriate types of equipment are available for inlet protection at specific locations. During a response operation, the Guide can be used to ensure that available resources are put to best use and that decision makers select practical strategies based on the environmental conditions at the time. The Guide provides separate stepwise approaches for preplanning activities and for response decisions.

Development of potential response strategies is directly linked to the characteristics of the tidal inlet system. These characteristics can be used to indicate locations where general strategies (such as exclusion, deflection, diversion to shore, containment and recovery) may be feasible. Guidance is also provided to assess the practicality of candidate strategies in terms of limits and conditions associated with

supporting tactics and equipment. Non-conventional tactics and equipment may be required in many situations.

Response operations at a tidal inlet become necessary if open-water strategies cannot prevent oil from approaching an inlet on a flooding tide (i.e. with inflow to the back-bay environment). The favorable opportunities (green boxes) and the least practical situations (red boxes) for response strategies during a flooding tide, when oil is most likely to be transported into a back bay through an inlet system, are illustrated in Figure E.1. For most inlet systems, response strategies during a flooding tide are limited to the marginal channels of both the ebb- and flood-tidal delta areas. Within these areas of opportunity, the preferred options are to divert oil towards on-water or shoreline recovery areas. Protective strategies are limited primarily to flood tide conditions as an ebbing tide typically holds oil offshore.

LOCATION	Inlet Feature	STRATEGY (Flood Tide)				
		Open Water Containment	Exclusion / Deflection	Divert to Shore	Recovery	
					On Water	Shoreline
Back Bay (Lagoon)						
Bay-Side (Flood Delta)	1. Flood Ramp					
	2. Flood Channels					
	3. Ebb Shield					
	4. Ebb Spits					
	5. Spillover Lobes					
	6. Marginal Channels					
Inlet Throat						
Ocean Side (Ebb Delta)	1. Main Ebb Channel					
	2. Marginal Flood Channels					
	3. Swash Platform					
	4. Terminal Lobes					
	5. Swash Bars					
	6. Channel Margin Bars					
Coastal (Ocean)						

Figure E.1. Tidal Inlet Protection Strategies (TIPS) by Location During a Flooding Tide

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Tidal Inlet Protection Strategies (TIPS)
Final Report

1 Introduction

Tidal inlets are found on barrier beaches worldwide and form a connection between the open-ocean and environmentally vulnerable sheltered bays, lagoons, marshes and tidal creeks. Inlets can be complex, variable, and challenging environments for oil spill control. The development of successful protective strategies requires:

a. basic understanding of the morphology and processes of the tidal system; and

b. knowledge of feasible and specialized tactics and equipment (including limitations and operating requirements) for operation in tidal environments.

1.1 Purpose of the Study

This report presents an approach for the development of Tidal Inlet Protective Strategies (TIPS) which are based on knowledge of the physical systems involved and feasibility of tactical options. Strategies and tactics identified using the results of this study are subject to real-time conditions and pre-spill planned strategies should be re-evaluated during a response. The report considers potential tactics at a level appropriate for strategic planning, but is not intended to provide instructions for the implementation of those tactics. The Guide is intended to be used by strategic planners and responders, and may be appropriate for inclusion in an Area Contingency Plan (ACP) or a Geographic Response Plan (GRP).

1.2 Scope

The Scope of the Report is divided into three major components:

- INLET CHARACTER AND DYNAMICS—Section 2 provides an understanding of the physical dynamics of tidal inlet systems, which include Ocean side and Bay-Lagoon side tidal deltas as well as the inlet or tidal throat itself.

- PLANNING—Section 3 focuses on planning considerations, such as oil transport and operational opportunities and constraints.

- RESPONSE—Section 4 describes generic response strategies, provides a guide for the selection of tactical options, and presents the special requirements and limitations of tactics and associated equipment, which may be feasible for operation in the unique tidal inlet environment.

Strategies to prevent oil from reaching sheltered bays and lagoon can involve a range of offshore and nearshore options that include mechanical recovery, controlled burning, and dispersants, although it is unlikely that burning or dispersant application would be used in the immediate proximity of a tidal inlet. The response options in and around inlets focus primarily on mechanical recovery and booming strategies for a variety of practical reasons and environmental concerns. Physical solid barriers, such as dams, have been used historically with mixed results and may cause environmental impacts by cutting off the water exchange between the ocean and back bays. In addition, the effort required for the construction of dams and other engineering options, such as pilings, in tidal channels can be time consuming and may preclude their use when immediate action is required.

As the focus of the report is on providing guidance for the selection of appropriate strategies within a tidal inlet system, minimal attention is given to more conventional interior containment and control actions in back bay or lagoon areas. A range of tactical implementation manuals provide detailed information on equipment types or specifications and how they can be deployed effectively (e.g. ExxonMobil 2008: Hansen and Coe 2001).

The report focuses on floating oil from offshore sources rather than oil that may sink, submerge or be neutrally buoyant and is intended for use at larger inlets. Protection strategies and response guidelines for small tidal channels or ephemeral inlets, that are typically less than 200 m (220 yards) wide and 1 m (3 feet) deep on sand beaches, are the subject of a separate report and field guide: API Technical Reports 1150-1 and 1150-2 respectively (API 2013 a and b)

1.3 Organization and Content

Section 2 describes and explains the key physical features of inlet systems:

- Section 2.2 provides a summary description of the MORPHOLOGY, or form, and character of inlets and the physical PROCESSES that operate in an inlet system.

- Section 2.3 presents a methodology to RECOGNIZE KEY COMPONENTS and PATTERNS for response planning and provides a TEMPLATE to summarize the physical character of an inlet.

- Section 2.4 describes the manner in which water depth and current patterns constantly change through the tidal cycle, so that the challenges associated with operations in an inlet system can be understood.

Section 3 considers strategic planning for practical response options in a tidal inlet system in the context of typical floating oil transport pathways (Section 3.1) and inlet dynamics (Section 3.2). Two key factors in the development of strategic decisions are understanding (a) where and when OPPORTUNITIES may exist for effective, diversion and/or containment and recovery (Section 3.3), and (b) typical operational, logistics and access CONSTRAINTS (Section 3.4).

Section 4 applies the knowledge of the dynamics of inlet systems and of the changing pattern of opportunities and constraints to enable the development of OBJECTIVES and STRATEGIES that may effectively control oil transport and protect sensitive back-bay environments.

- Section 4.1 describes the generic protection strategic options (Table 4.1) and discusses key information requirements for response planning.

- Section 4.2 provides a guide to the selection of Tidal Inlet Protections Strategies (TIPS). RESPONSE GUIDELINES are presented in the context of MORPHOLOGY and GEOGRAPHIC LOCATION and in terms of different STAGES of the TIDAL CYCLE (Figure 4.1).

- Section 4.3 provides brief discussions of limitations and requirements of individual RESPONSE TACTICS and associated equipment necessary to implement proposed protection strategies. This section includes a set of “RULES OF THUMB” (Section 4.3.2) related to practical considerations based on operational experience to assist in the strategy/tactics selection process. Tactical guidance for fourteen options is presented in Section 4.3.3.

Appendix A provides two USER GUIDES for pre-spill planning (Section A.1) and for guidance during a response operation for which there has been no pre-spill development of inlet protective strategies (Section A.2).

Appendix B provides a working example of the method presented in Section 2.3.1 to recognize inlet components from charts.

Appendix C provides an interpretation of the tidal delta components from a satellite image based on the methodology described in Section 2.3.3.

2 Key Physical Features of Tidal Inlets

2.1 Introduction

Tidal inlets are commonly created either through storm-generated scour channels or by spit growth across an open bay or estuary (Hayes 1991). Currents generated by the tidal exchange between the ocean and bay or lagoon maintain the main channel of a tidal inlet. The currents slow as the main channel (the “inlet throat”) widens on either side of the inlet and deposit sediment to form shoals or underwater deltas.

Inlets are most frequent in coastal environments with a mesotidal range (2-4 m: 6-12 feet). Sediment transport and inlet morphology are dominated by wave processes in coastal environments with a low tidal range (<2 m: <6 feet). As tidal range increases, the role of waves diminishes whereby inlets are rarely found on coasts with ranges greater than 4 m (12 feet), because wave energy is insufficient to form a barrier coast.

The importance of selecting protective strategies to match the physical character of an inlet and the associated current patterns has been recognized for many years (e.g. Hayes and Montello 1995: NOAA 1994: Owens *et al*. 1985) and this report builds on these studies to provide a summary of the relevant factors that should be considered by regional and local planners. Inlets can be viewed as complex and dynamic physical features of a coast, but at the same time all inlets have common features that are relatively simple to understand and that are relatively straightforward in terms of oil spill response options.

This section of the report provides an understanding of the physical character of tidal inlet systems that can be used for pre-spill planning and during response operations.

2.2 Generic Model for Oil Spill Response

The character of a tidal inlet results from a combination of geologic and oceanographic factors that include wave action, tidal range, the tidal prism in the bay or lagoon, freshwater input to the bay or lagoon, sediment availability, and alongshore sediment transport. These factors combine in a dynamic setting to create site-specific and unique current patterns and morphologies that vary depending on short-term or seasonal changes in wind and wave processes and changes in water levels associated with wind-driven (meteorological) tides, predicted astronomical tides, and seasonal river run-off.

Despite the complexity and dynamic character of tidal inlets, a number of parameters are relatively constant in the short term (weeks to months). The parameters include:

- sheltered versus open coast wave environments;

- predicted tidal water level changes;
- tidal current patterns;
- the overall morphology or shape of the tidal deltas on either side of the inlet throat; and
- the location, character and function of the channels through which tidal currents flow.

As these parameters are relatively constant, a generic inlet model has been developed that can be the basis for understanding how oil might be transported through an inlet and the response constraints that result from water depths, water level changes, and current flow directions and velocities.

The dominant feature of an inlet is the INLET THROAT. This is a narrow and relatively deep channel that is formed between two sand barriers (Figure 2.1). Within the channel, current speeds are high as water flow is constricted and sediment is transported on or near the sea bed into a bay or lagoon by flood currents or seaward toward the open ocean by ebb currents.

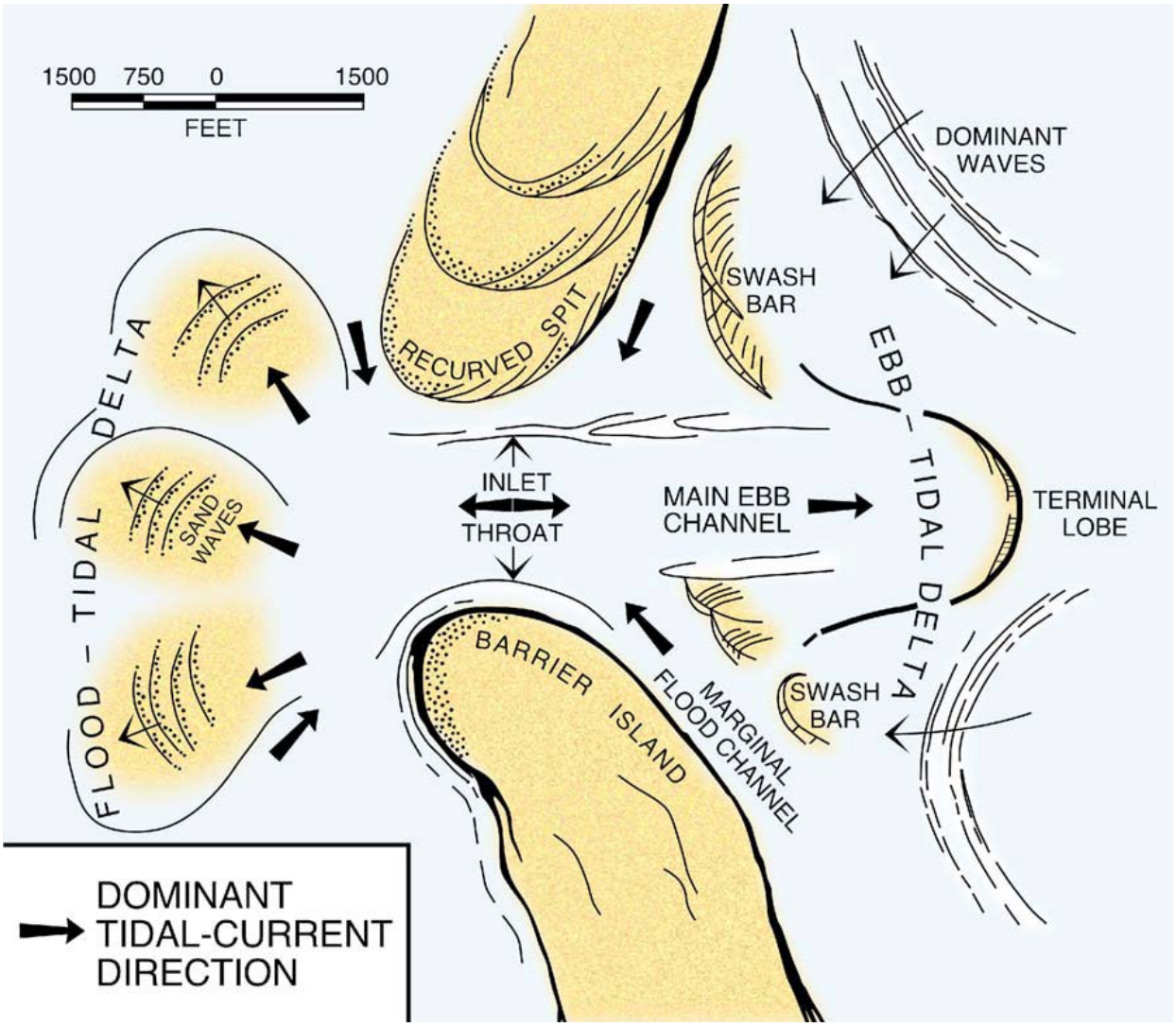


Figure 2.1. Key Features of a Tidal Inlet System (Hayes 1991)

The generic model is based on two primary environmental settings: the ocean side of the inlet system which is dominated by an EBB-TIDAL DELTA (Section 2.2.1), and the sheltered bay-side or lagoon environment which is dominated by a FLOOD-TIDAL DELTA (Section 2.2.2).

The symmetry of shoals and channels depicted in Figure 2.1 is rare, as inlet morphology is controlled by the relative magnitude of tidal and wave energy as well as the confines of bay geometry (Hayes 1975, 1991). Variations related to offset or overlapping inlets are discussed in Section 2.2.3 and to man-modified inlets in Section 2.2.4.

2.2.1 Ocean-Side Ebb Tidal Delta

The ebb tidal delta is a shoal built seaward by sand deposition as ebbing tidal waters slow and expand after passing through the constricted inlet throat (Figures 2.1, 2.2 and 2.3). The sediment at the terminus of the main ebb channel is reworked by wave action typically to create a rounded or arcuate form (#4 in Figure 2.2). Wave action moves sediment landward on the swash platform in the form of landward migrating swash bars (#5).

The ebb deltas can be intertidal or subtidal and breaking waves across shoals may limit boat or boom deployment operations. Adjacent to the inlet throat, the main ebb channel (#1) is flanked by marginal flood channels that are close to the shoreline (#2). These channels are significant in terms of oil transport as these are the first tidal waters to enter the inlet even as flow continues to ebb in the main channel, which may occur after low slack water in the bay.

The general shape of an ebb-tidal delta and the distribution of its sand bodies are determined by the relative magnitude of different sand transport processes operating at a tidal inlet. At tide-dominated inlets, the ebb-tidal deltas tend to be elongate having a main ebb channel and channel margin linear bars that extend far offshore (Figure 2.3). Wave-dominated inlet systems tend to be small relative to tide-dominated inlets. Their sediment shoals are driven onshore, close to the inlet mouth by the dominant wave processes. In many cases the ebb-tidal delta of these inlets is entirely subtidal. In other instances, sand bodies clog the entrance to the inlet leading to the formation of several major and minor tidal channels.

Mixed energy tidal inlets typically have a well-formed main ebb channel boarded by a broad swash platform and sand bodies that widely overlap the adjacent inlet shoreline. The example in Figure 2.4 is in a sheltered wave environment (Cape Cod Bay) with a 3 m (9 foot) tidal range.

Ebb-tidal deltas may also be highly asymmetric such that the main ebb channel and its associated sand bodies are positioned primarily along one of the inlet shorelines. This configuration normally occurs when the major back barrier channel approaches the inlet at an oblique angle or when a preferential accumulation of sand on the updrift side of the ebb delta causes a deflection of the main ebb channel along the down drift barrier shoreline. In the example shown in Figure 2.5 the construction of a spit platform (updrift sand accumulation) caused by a dominant wave approach direction has resulted in a deflected main ebb channel. Small marginal flood channels border the sides of the inlet.

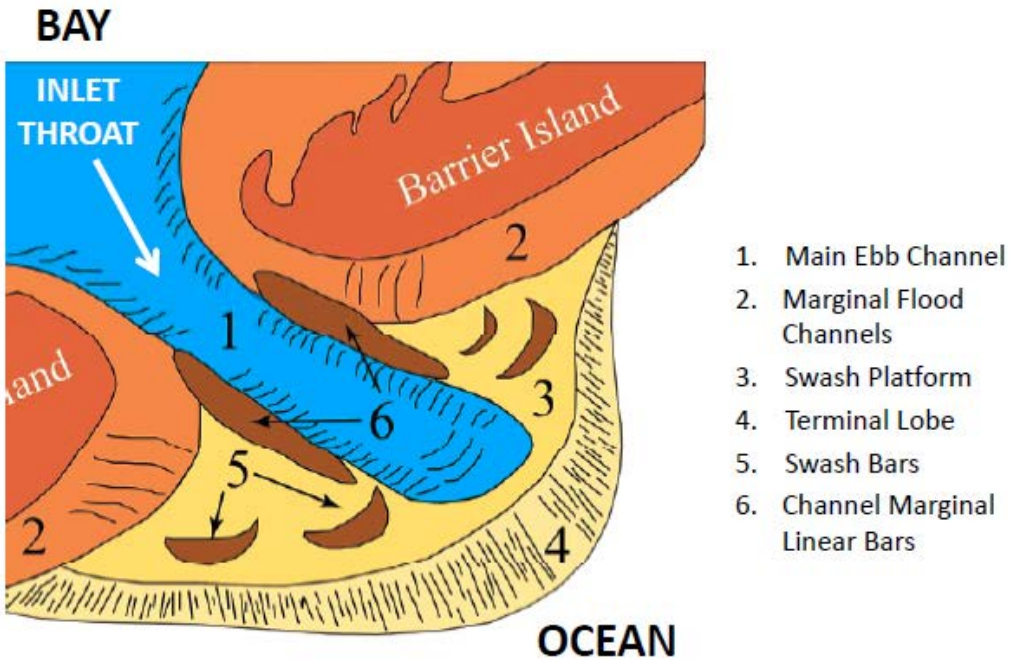


Figure 2.2. Morphological Components of a Generic Ebb-Tidal Delta

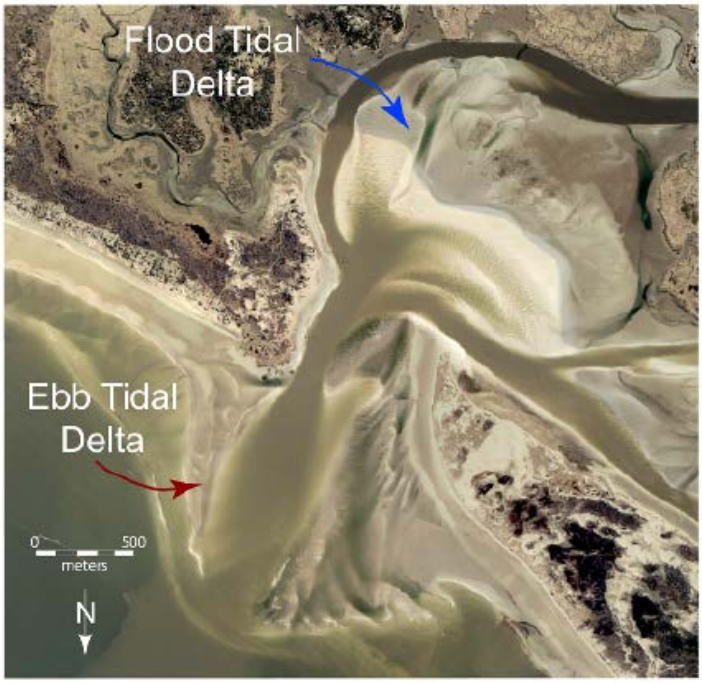


Figure 2.3. Satellite Image of Essex River Inlet (See Figure C.1)

Figure 2.4. Vertical Image of a Mixed-Energy Inlet, Sandy Neck, MA (See Appendix B)

Figure 2.5. Oblique Photograph of a Mixed-Energy Inlet

2.2.2 Bay-Side Flood Tidal Delta

The flood tidal delta forms in sheltered waters as sediment being carried into a bay or lagoon by the flooding tides is deposited (Figures 2.1, 2.3 and 2.6). This deposition results from the slowing of the current as the channel widens and flow expands once the water has passed through the narrow inlet throat.

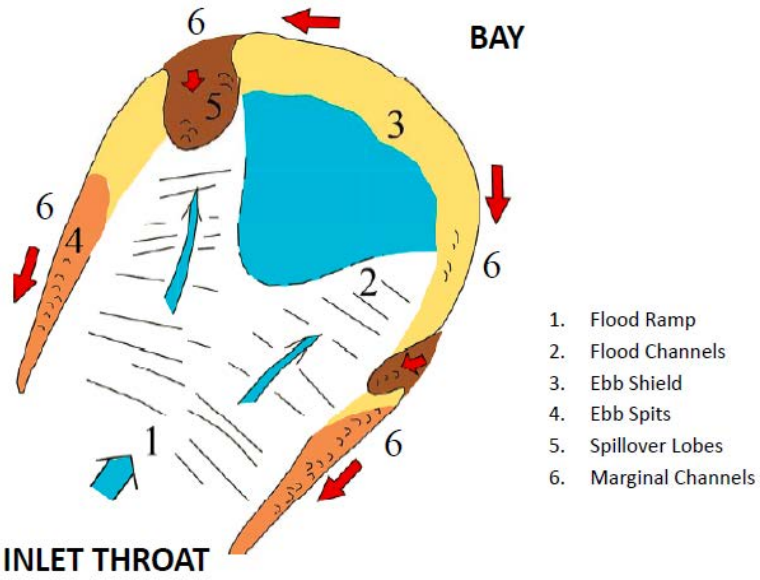


Figure 2.6. Morphological Components of Generic Flood-Tidal Delta

The flood delta contains exposed shoals at low tide so that water moves into the bay or lagoon through marginal channels (#6 in Figure 2.6) during the early and mid-flood stages. In the late-flood stage, the delta is largely or completely submerged as water then also flows through the flood channels (#2) across the flood ramp (#1) (Figure 2.7). The sand deposits are typically composed of sheet-like lobes of sand with landward-sloping ramps on their seaward sides covered by landward migrating waves of sand.

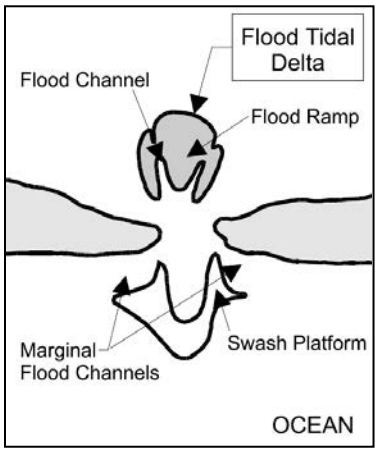


Figure 2.7. Key Depositional Features During a Flood Tide

After high tide, ebb flow is deflected by the ebb shield (#3) to marginal channels on both sides of the delta (#6) as the delta is slowly exposed by the falling water level. These currents carry sediment seaward, creating ebb spits (#4) on the flanks of the delta, which in turn help define the marginal channels (#6) that constrict both the late ebbing and the early flooding tidal waters.

Tidal inlets that are backed by a system of tidal channels, tidal flats, and salt marsh usually contain a single horseshoe-shaped flood-tidal delta (i.e., Figure 2.3). Contrastingly, inlets that are backed by large shallow bays may contain multiple flood-tidal deltas. Along some microtidal coasts, such as Rhode Island, flood deltas form at the end of narrow inlet channels cut through the barrier. Changes in the locus of deposition at these deltas produce a multi-lobate morphology (e.g. Figure 2.1) resembling a lobate river delta (Boothroyd 1978). Flood delta size commonly increases as the tidal prism increases and as the amount of open water area in the back barrier increases. In some regions, flood deltas have become colonized and altered by marsh growth, and are no longer recognizable as former flood-tidal deltas (Table 2.1). At other sites, portions of flood-tidal deltas are dredged to provide navigable waterways and thus, are highly modified.

Flood-tidal deltas are best developed in areas with moderate to large tidal ranges (1.5 to 3.0 m) because in these regions they are well exposed at low tide. As tidal range decreases, flood deltas become largely sub-tidal shoals.

Table 2.1. Summary of Inlet Morphology Variations (Modified From Hubbard *et al*. 1979 and Hayes 1991)

	INLET ENVIRONMENT		
VARIABLES	**WAVE DOMINATED**	**TRANSITIONAL**	**TIDE DOMINATED**
Primary Depositional Area	**Bay Side**: Small to large lobate or multi-lobate flood delta **Ocean Side**: Small ebb delta located close to shore	**Throat**: Wide with one or more tidal channels and sand shoals	**Ocean Side**: Well developed ebb delta that may be partly submerged. Contains small shoals and channel margin linear bars.
Secondary Depositional Area	**Ocean Side**: Small sand shoals located close to shore	Individual sand shoals or islands with one main channel	**Bay Side**: Flood delta well developed or colonized by marsh grass
Main Channel (Throat) Character	Small with one or more shallow channels and shifting sand shoals	Variable and changes during storms	Deep: narrow: stable: ebb dominated
Width/Depth Ratio	Variable: mostly high	Large but channels may be deep	Small
Channel Margin Bars	Absent	Variable	Large

2.2.3 Overlapping and Offset Inlets

- Overlaps can develop where there is a sufficient sand supply and a strongly dominant direction of wave approach and longshore transport.
- At stable inlets, the tidal prism maintains a permanent main channel, forcing sand to bypass the inlet along the ebb-tidal delta shoals.
- Although overlapping inlets are stable in the short term (months to years), the up-drift barrier spit may be breached during storms to create a new inlet; the original inlet may close as the tidal prism is reduced by this new exchange pattern; the new inlet may migrate along shore as part of a long-term (decades) cycle of breaching and inlet migration.

- A prevailing or dominant wave approach direction frequently creates an offset as waves refract around the delta: this results in a down-drift offset as the beach progrades seaward (Figure 2.8).

The inlet illustrated in Figure 2.8 has a plentiful sediment supply and a dominant alongshore transport direction to the south. This is a microtidal coast with a tide-dominated inlet having a low tidal range (1.0-1.5 m) but the inlet system has a large bay area and large tidal prism.

Figure 2.8. Vertical Image of Overlapping Inlet: Eastern Sakhalin Island, Russia

2.2.4 Man-Modified Tidal Inlets

- On the ocean coasts the primary human impact is associated with jetty construction, or dredging, or a combination of both.
- This type of coastal engineering work is intended to enhance navigation by stabilizing the inlet shoals or maintaining a specific channel depth.
- Most of these changes are long-term (years) and can result in alteration of both the ebb and flood-tidal delta components.
- Typically a jetty interrupts the alongshore transport of sand to the inlet channel—the result is a buildup of sand on the up-drift beach and coincident erosion on the down-drift beach where the sand supply is reduced or cut off.
- Typically the construction of jetties results in more concentrated tidal flow that moves the ebb-tidal delta seaward.
- In some instances the interruption of natural sand bypassing has been offset by pumping sand from the prograding up-drift to the eroding down-drift beach.
- In back-bay environments the construction of barriers, such as causeways, and filling or dredging can significantly alter the tidal prism and natural sand transport system.
- Again, increases or decreases in the tidal prism result in long-term changes that can involve an enlargement or the closure of an inlet, respectively.

2.3 Recognizing the Components of a Tidal Inlet

The purpose of this Section is to enable planners and responders to recognize typical changes in depth and current patterns at an inlet through a tidal cycle. The method follows a step-wise process by which nautical charts provide depth data and oblique aerial photographs, videos, vertical photographs and satellite images (e.g. Google) assist in the identification and definition of the different components of the inlet system (Figures 2.1, 2.2 and 2.6).

A template (Table 2.2) is used to summarize the overall character of the inlet and the adjacent ebb- and flood-tidal deltas. Ideally a combination of information from a range of sources would be available for this component analysis.

This information then is used in Section 2.4 to link these physical components to the changes in water depth, shoal areas, and currents during the different stages of the tide. The results are summarized in Table 2.3 and Figure 2.9 (which uses a generic inlet system diagram) and can be used to identify appropriate locations within the inlet system where boom and recovery systems can be deployed most effectively.

2.3.1 Charts

1. Use the most detailed scale recent chart that is available to analyze water depth data.

2. To define the morphology of the shoreline and sea bed, draw in black on the chart:

    - the High Water (HW) shoreline: the area above the HW is light yellow on most charts: see Figures B.1, B3 and B.4;

    - the Low Water (LW) shoreline: this is the chart datum: the zone between HW and LW is colored green on most charts (Figure B.1): chart datum in the US is defined as the “mean lower low water” which is typically the Spring Low Tide water level that occurs during the full and new moons ; and

    - any depth contours marked below LW: the contours typically are given in feet, fathoms (1 fathom = 6 feet) or meters, but the unit of depth measurement is in itself not important: on many charts the area between LW and the first depth contour is colored light blue (Figure B.1), but this can vary and there can be more than one shade of blue depending on the scale of the chart.

3. If a graphic scale is not provided on the chart, use the latitude scale on the right or left chart margin.

    - One (1) minute of latitude = 1 nautical mile = 6,076 feet = 1.15 miles = 1852 meters = 1.852 kilometers

    - 10 seconds of latitude = 308 meters or 1013 feet

4. Locate and mark on the chart the six ebb and the six flood tidal delta components shown in Figures 2.2 and 2.6.

5. Document the presence or absence of these components in the template provided below (Section 2.3.4, Table 2.2).

6. Locate and highlight on the chart access or staging areas (e.g. roads, tracks or parking lots).

7. Look up the average and spring tidal range for the location from published tidal predictions ("large" or "spring" tides occur at time of a full and new moon: "average" tides occur 7 days after the full and new moon).

8. If you need to look up the meaning of symbols or abbreviations on a chart refer to: http://www.nauticalcharts.noaa.gov/mcd/chart1/ChartNo1.pdf

9. Review information in the Coastal Pilots: http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm

Appendix B provides a working example of steps 1 and 4 to define the HW and LW shorelines and the morphological components of an inlet system.

2.3.2 Oblique Aerial Photographs or Video Frames

1. Oblique aerial photographs are sometimes the least valuable images because light reflectance from the water surface can obscure underwater features (see cover photo).

2. Take or use photos during the low tide slack with the sun behind the observer. Figure 2.5 is an oblique photograph taken at low tide so that shoals and channels are easily identified.

3. Try to identify the time the photo or video was taken and compare to the nearest predicted tidal elevation at that time.

4. Locate and mark on the chart the six ebb and the six flood tidal delta features shown in Figures 2.2 and 2.6. Document the presence or absence of these components in the template provided below (Section 2.3.4, Table 2.2).

5. Breaking waves or lines of white caps are a good indicator of shoal patterns (see cover photo and Figures 2.5 and 2.8).

2.3.3 Vertical Photographs or Satellite Images

1. View at the best resolution possible.

2. Try to identify the time the photo or image was taken and compare to the nearest predicted tidal elevation at that time.

3. Locate and mark on the chart the six ebb and the six flood tidal delta features shown in Figures 2.2 and 2.6. See Figure C.1 for an example. Document the presence or absence of these components in the template provided below (Section 2.3.4, Table 2.2).

4. Breaking waves or lines of white caps are a good indicator of shoal patterns (see Figures 2.5 and 2.8).

2.3.4 Template to Define the Physical Character of a Tidal Inlet

Following the steps described above, Table 2.2 may be used as a template to identify which of the physical components are present at an individual inlet. This template is designed as a checklist to provide the basic information to define and describe the physical character of an inlet system. As noted above, not every inlet has the symmetry and character of the generic model shown in Figure 2.1, however, most inlets have most if not all of these components.

The first boxes in the template (A, B and C) are completed based on readily available information on location and tides. The inlet character (Box D) is based on the discussion in Sections 2.2.3 and 2.2.4 and would be entered as a straightforward YES / NO. Similarly the availability of current data would be entered with a reference to the source of that information. "Operational Difficulty" is discussed in Section 3.2 and can be referenced to Table 3.1.

Inlet throat width and depth data (Box E) typically can be measured from nautical charts or estimated from oblique/vertical images. The individual ebb- and flood-tidal delta features listed in Box E are based upon the morphological components defined in Figures 2.2 and 2.6, respectively, and a YES / NO would indicate that component is present/absent and has been identified for the inlet. This identification process is important as changes in water depth and current patterns during the different stages of the tide are closely linked to the morphological features. These schematics indicate the relative location and size of each of the ebb- and flood-tidal delta features, although the actual locations and sizes of these components may vary considerably from one inlet to another, in particular between wave- and tide-dominated environments (see discussion in Sections 2.2.1 and 2.2.2).

Table 2.2. Template to Summarize the Physical Character of a Tidal Inlet

A. Inlet Name					
B. Tidal Range: *(from tidal predictions)*			Average Range	Spring Range	
			m	m	
Tidal Period: Diurnal Tide _____ Semidiurnal Tide _____ Mixed Diurnal/Semidiurnal Tide _____					
C. Location of Inlet Throat					
Latitude:			Longitude:		
D. Inlet Character *(circle as appropriate)*					
Straight beach	Offset	Overlap	Jetty(ies)	Rip Rap Armor	Bridges
Current Data	Available	Y / N	Source:		
Operational Difficulty (Table 3.1)					
E. Inlet Components					
INLET THROAT	Width m		Depth m		
EBB-TIDAL DELTA SYSTEM			**FLOOD-TIDAL DELTA SYSTEM**		
1. Main Ebb Channel			1. Flood Ramp		
2. Marginal Flood Channels			2. Flood Channel(s)		
3. Swash Platform			3. Ebb Shield		
4. Terminal Lobe			4. Ebb Spit(s)		
5. Swash Bars			5. Spillover Lobes		
6. Channel Margin Linear Bars			6. Marginal Channels		

2.4 Inlet Features, Water Depth and Currents

One of the most challenging operational aspects of spill response activities at a tidal inlet is to plan for the constant changes in water depth and current flow intensity and direction. Table 2.3 links the morphological components of an inlet system illustrated in Figures 2.2 and 2.6 to typical water depths and current patterns during different stages of the tidal cycle.

The information in Table 2.3 is presented in Figure 2.9 as a set of color-coded schematics using the Legend below. This set of schematics provides critical guidelines for planners and responders in the selection of appropriate locations within the inlet system where boom and recovery systems can be effectively deployed (see Section 4). Operational practicality and feasibility depend to a large degree on water depths and current velocities. Ideally, the water depth would be Moderate or Deep (>1 m or 3 feet) and currents would be Weak or Slack (<0.5 m/s: <1 knot). In the four "Currents" schematics, the presence of breaking waves is considered an overriding factor and this is indicated by the red color code. In this context, the following terms apply for water depth and current patterns during the four primary tidal stages:

Legend for Color Codes in Figure 2.9

DEPTH—Typical Least Water Depth

Deep water: depths typically greater than 2 m (>6 feet)	
Moderate water: depths typically 1-2 m (3-6 feet)	
Shallow water: depths typically less than 1 m (<3 feet)	
Exposed: above the water level (intertidal)	

CURRENTS—Typical Maximum Current

Slack water: little or no current	
Weak: tidal current typically less than 0.5 meter/second (<1 knot)	
Moderate: tidal current typically 0.5 to 1 meter/second (1-2 knots)	
Strong: tidal current typically greater than 1 meter/second (>2 knots)	

WAVES

Zone of breaking waves	

The terms "low tide" and "high tide" refer to the slack-water periods that occur immediately before and after the tide reverses. Each "low" and "high" tide slack-water period lasts for approximately 2 hours. Typical semi-diurnal tides have ebb and flood tide periods on the order of 3 hours, though diurnal tides will run for a 9-hour period. Water depth and current velocity are not the only variables to consider in planning and deployment of equipment, as flow directions also change with the tidal stages, as indicated in Table 2.3.

Table 2.3. Typical Water Depths and Current Patterns at Different Tide Stages

INLET FEATURE	LOW TIDE	FLOODING	HIGH TIDE	EBBING
BAY SIDE: FLOOD DELTA AREA				
1 Flood Ramp	• Shallow to deep water • Slack or weak ebb	• Shallow to deep water • Moderate flood	• Moderate to deep water • Slack or weak flood	• Shallow to deep water • Slack or weak ebb
2 Flood Channels	• Exposed to shallow water • Slack	• Shallow water • Moderate flood	• Moderate water • Slack or weak flood	• Shallow water • Slack or weak ebb
3 Ebb Shield	• Exposed • Slack or weak ebb	• Exposed to shallow water • Slack or weak flood	• Moderate water • Slack or weak flood	• Exposed to shallow water • Strong ebb
4 Ebb Spits	• Exposed to shallow water • Slack or weak ebb	• Shallow water • Moderate or weak flood	• Moderate water • Slack or weak flood	• Shallow water • Strong ebb
5 Spillover Lobes	• Exposed to shallow water • Slack	• Shallow water • Weak flood	• Moderate water • Slack or weak wind-driven flow	• Shallow water • Strong or moderate ebb
6 Marginal Channels	• Moderate to deep water • Slack or weak ebb	• Deep water • Strong or moderate flood	• Deep water • Slack or weak wind-driven flow	• Deep water • Strong ebb
INLET THROAT AREA				
Main Channel	• Deep water • Slack or weak ebb	• Deep water • Strong or moderate flood	• Deep water • Slack or weak flood	• Deep water • Strong ebb
OCEAN SIDE: EBB DELTA AREA				
1 Main Ebb Channel	• Deep water • Moderate ebb or slack	• Deep water • Moderate flood	• Deep water • Slack or weak flood	• Deep water • Strong ebb
2 Marginal Flood Channels	• Shallow water • Slack or weak ebb	• Shallow water • Moderate flood or weak wave-driven flow	• Moderate water • Slack or weak wind-driven flow	• Shallow water • Weak ebb or flood current*
3 Swash Platform	• Shallow water • Slack or weak ebb	• Shallow water • Moderate flood	• Moderate water • Slack or weak wave-driven flood	• Shallow water • Moderate or weak ebb
4 Terminal Lobe	• Moderate to deep water • Slack or weak ebb • Zone of breaking wave action	• Deep water • Moderate flood • Zone of breaking wave action	• Deep water • Slack • Zone of breaking wave action	• Deep water • Moderate ebb • Zone of breaking wave action
5 Swash Bars	• Exposed to shallow water • Slack or weak wave-driven flow	• Shallow water • Moderate or weak flood	• Moderate water • Slack or weak wave-driven flow	• Shallow water • Weak ebb
6 Channel Margin Bars	• Exposed to shallow water • Slack or weak ebb	• Shallow water • Moderate flood	• Moderate water • Slack or weak wave-driven flow	• Shallow water • Moderate ebb

NOTE: During the ebbing tide, flow in the ebb delta marginal flood channels (*) may be towards the inlet if there is a strong outflow through the main channel.

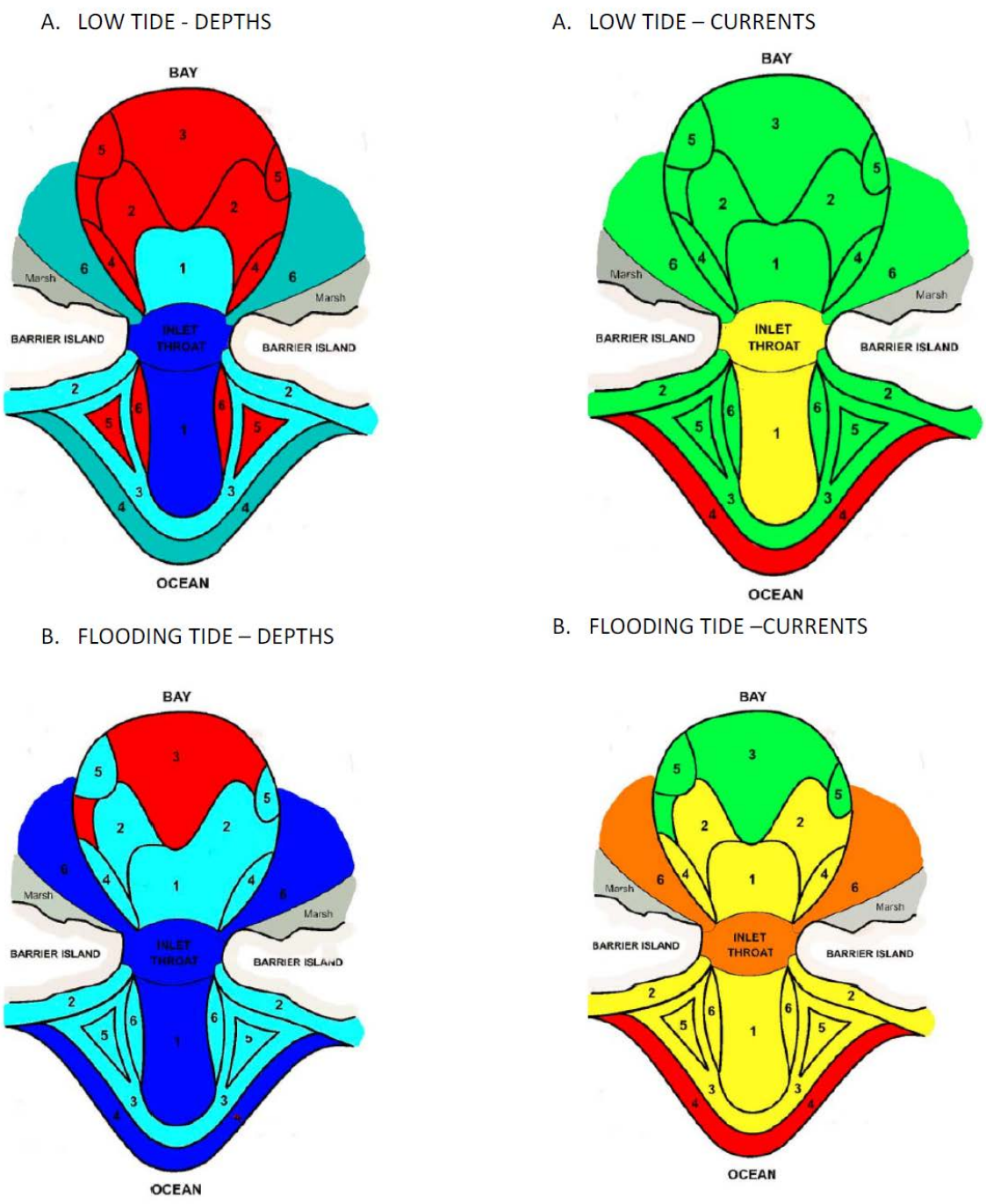
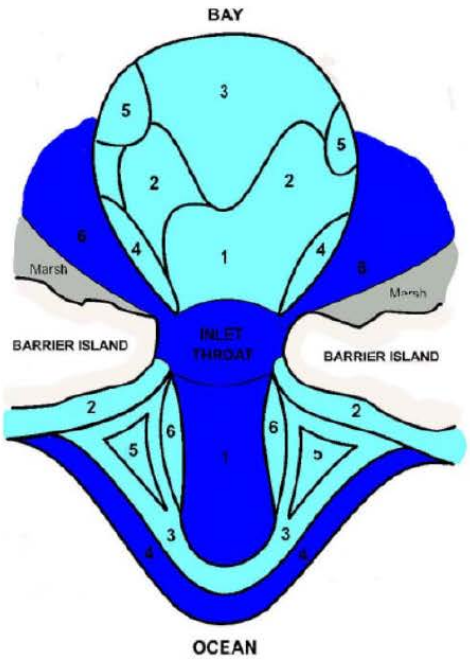
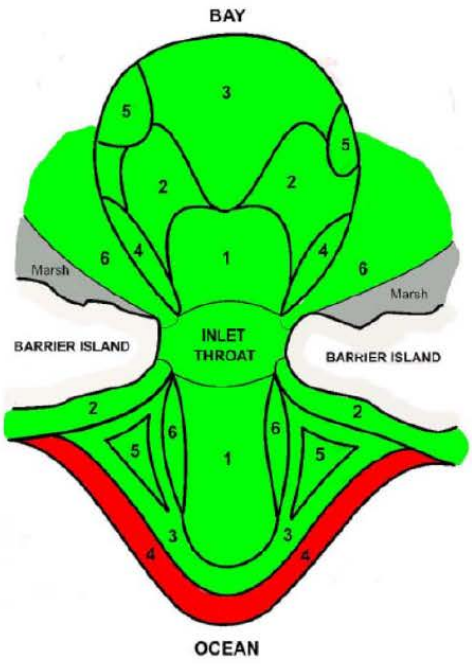


Figure 2.9. Set of Schematic Diagrams to Show Typical Water Depths and Current Patterns at Different Tide Stages (Based on Table 2.3)

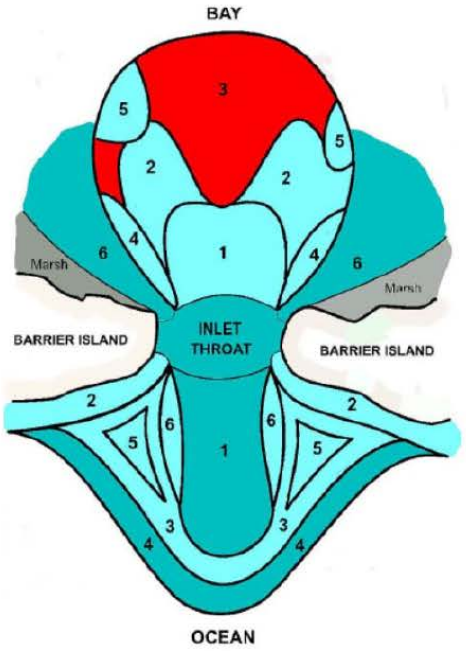
C. HIGH TIDE - DEPTHS



C. HIGH TIDE – CURRENTS



D. EBBING TIDE – DEPTHS



D. EBBING TIDE –CURRENTS

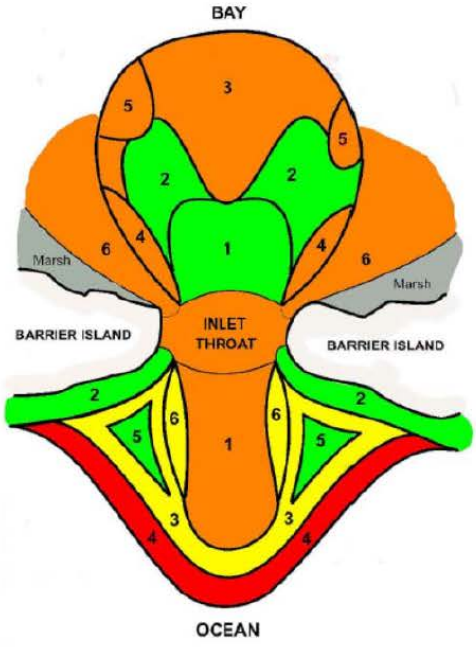


Figure 2.9. (continued)

3 Planning Considerations for Oil and Tidal Inlet Systems

Tidal inlets are critical pathways for oil to potentially enter coastal bays and lagoons and to impact tidal flats, wetlands, marshes and mangroves so they are key intercept points to protect these sensitive and vulnerable habitats. Typical oil transport pathways are summarized in Section 3.1. Two key factors in the development of strategic decisions include understanding (a) where and when OPPORTUNITIES may exist for effective, diversion and/or containment and recovery (Section 3.3), and (b) typical operational, logistics and access CONSTRAINTS (Section 3.4).

3.1 Oil Transport Considerations

Three stages of the tide are important for considering OIL TRANSPORT from a slick approaching an inlet:

A. EBB TIDE AND LOW TIDE SLACK.

- During the ebb tide stage, water flows out of the inlet throat until the water levels on the ocean and the lagoon or bay sides are the same.

- This outflow may continue after the low-tide is reached in the ocean, a period lasting for 1 to 2 hours into the early stages of the rising flood tide, and delaying the movement of water into the bay or lagoon.

B. EARLY AND MID FLOODING TIDE.

- During the first half of the flood tide stage, flow into the bay or lagoon is confined to marginal flood channels on both sides of the ebb-tidal delta. Water entering the bay flows around the flood delta shoal (Figure 3.1).

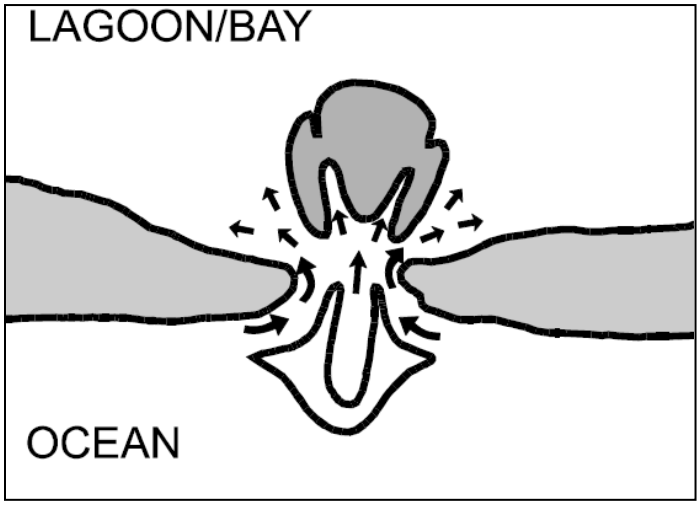


Figure 3.1. Tidal Currents During the Early and Mid-Flood Stage

C. LATE FLOODING TIDE.

- During the second half of the flood tide stage, water levels rise and water flows through the channels and across the ebb-tidal shoal into the inlet. Water entering the bay flows around and over the flood-tidal delta.

- Flood currents are likely to be strongest during the 2-hour period around mid-tide when water levels are still relatively low and flow is largely confined to the marginal channels.

3.2 Inlet Dynamics and Oil Spill Planning

Tidal inlet dynamics present key planning challenges including:

- complex patterns of shoals and channels that are controlled by the balance between wave and tidal forces and bay geometry,

- constantly changing water levels and shoal exposures,

- intertidal areas that are often wide and are alternately exposed and submerged during each tidal cycle,

- potentially high current velocities in channels,

- a reversal of current direction approximately every 6 hours, or every 12 hours if the tides are diurnal, and

- wave-induced currents and breaking waves on ocean-side shoals.

Despite this complexity, most inlets have a similar pattern of shoals and channels that is reflected in the current patterns. Identification of the pattern of the shoals and channels is a key to understanding changes in water depths and flow pattern during different stages of the tide. This does not necessarily make planning or response any easier but provides for understanding when and where (a) opportunities may exist to intercept or control surface oil moving into a bay through an inlet (Section 3.3) and (b) depth and water flow present constraints to effective equipment deployment (Section 3.4).

In general terms, operational difficulty (effectiveness) increases with:

- inlet throat channel width,

- channel depth,

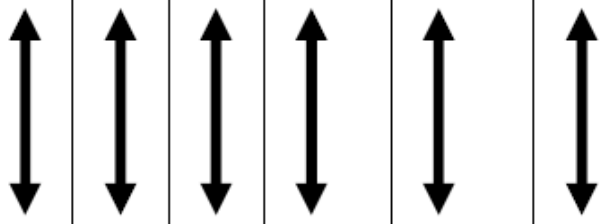
- tidal prism,

- tidal current velocity,

- wave exposure.

These features are listed in Table 3.1, which identifies some of the key overriding regional factors that influence operational difficulty for diversion, containment and recovery systems at inlets.

Table 3.1. Summary of Factors that Affect Operational Difficulty at Tidal Inlets

OPERATIONAL DIFFICULTY	INLET WIDTH	INLET DEPTH	TIDAL PRISM	TIDAL CURRENTS	BACK BAY CHARACTER	WAVE EXPOSURE	PREFERRED FLOOD TIDE TACTICS
Very Difficult: limited potential for success	Wide	Shallow	Large	Strong (>1 knot: 0.5 m/s)	Wetlands	Exposed ocean shore	• Open-water deflection with ocean boom • Bay-side containment or deflection and recovery
Difficult: some potential for success							• Open-water deflection with ocean boom • Bay-side containment or deflection and recovery
Little Difficulty: good potential for success							• Bay-side containment and deflection boom with on water and/or shoreside recovery in channel
Not Difficult: very good potential for success	Narrow	Deep	Small	Weak (<0.5 knot: 0.25 m/s)	Sand beaches	Sheltered ocean shore	• Bay-side containment and deflection boom with on water and/or shoreside recovery in channel • Dams, solid barriers

Difficulty increases as:

- Width
- Depth
- Tidal current
- Tidal prism
- Wave exposure

In the development of a response strategy for oil that threatens an inlet the following are important considerations in the planning and decision process:

- NEARSHORE EXCLUSION STRATEGY.
    - Exclusion strategies are probably impractical and rarely successful once oil reaches an inlet. Dams may be an option for small inlets, time permitting.
    - If the objective is to prevent oil from entering a back bay are then the only likely successful strategy is to prevent oil from approaching and entering the inlet by on-water strategies, such as containment and recovery, diversion, dispersion or controlled burn.
    - The only locations where an exclusion strategy may be effective would be for a narrow inlet with a small tidal prism (the tidal prism is defined “the open-water area of the bay, lagoon or marsh and tidal creek system times the tidal range”) (Table 3.1).
- TIMING.
    - The key periods when response actions potentially can minimize the volume of oil that is transported into a back-bay environment are the Low Tide through High Tide window. In areas with semi-diurnal tides this window may vary from as little as a 6-hour to as much as a 9-hour period, depending on winds and on the size of the tidal prism that has to drain from the bay. With diurnal tides, the window may as much as 12 or 15 hours.
    - The drainage of water from bays with large tidal prisms often continues through the low-tide slack period until the water levels on both sides of the inlet are the same and may delay the onset of the flooding tide for several hours.
    - An ebbing tide will keep oil out of the inlet.

- PRACTICALITY.

    - Flow reversal and the effects that this condition has on anchoring systems is a critical factor in any inlet response. Current reversals typically require redeployment every tidal change, which makes cascading tactics problematic.

    - Two primary variables that affect practicality and effectiveness are water depth and current speed (Section 2.4).

    - Understanding these two latter variables in time and space, as summarized in Figure 2.9), enables planners and responders to avoid locations where depth and current would be constraining factors and to focus attempts to divert, contain or recover surface oil where condition might be more favorable.

3.3 Operational Opportunities: Morphology, Currents and Natural Collection Areas

In terms of OPPORTUNITES for equipment deployment, the locations where exists a combination of depths >1 m (3 feet) and weak or slack currents (<0.5 m/s: <1 knot) typically would be:

- LOW TIDE.

  The main channel in the ebb tidal delta (#1 in Figure 2.2) and the inlet throat have moderate to deep water and the currents are slack (after the outflow from the bay is completed).

- FLOODING TIDE.

  The inlet throat and the marginal channels in the flood tidal delta (#6 in Figure 2.6) have moderate or deep waters, although the currents may be moderate; elsewhere the waters typically are shallow until mid-tide or late in the flood cycle.

- HIGH TIDE.

  Many areas have moderate to deep waters with slack currents, though the bay side usually would be more sheltered from wave action than the ocean side.

Planning for suitable diversion or collection locations involves considering the different spatial features described above within the inlet system as well as looking for quiet or slack water areas along the bay shores. A good example in Figure B.4 (Appendix B) would be The Cove, located behind Beach Point and outlined by the green circle. This area would be a sheltered, slack-water environment with water depths up to 2 m (6 feet) at low tide and at least 1.5 m (5 feet) at all locations at high tide, as this is the mean tide range, with up to 3.5 m (11 feet) in other areas.

Natural collection areas can be identified in the field by debris accumulations. Assuming that floating oil would follow a path similar to floating debris, these zones typically are good indicators of where oil might accumulate naturally and may be useful as collection and recovery sites for oil diverted out of the adjacent channels.

3.4 Operational Constraints: Water Depths, Channels and Accessibility

Understanding changes in water depth, current velocity and flow direction as presented in Figure 2.9 identify “areas of opportunity” but also identify where specific tactics would be CONSTRAINED.

Typically areas to avoid for conventional floating booms and recovery system, in terms of water depth, and therefore access and deployment practicality, and of high current strength, and therefore boom or skimmer effectiveness, would be:

- LOW TIDE.

  Access could be limited and boom deployment, other than shore-seal booms, constrained on the shallow or exposed swash bars and the shallow swash platform on the ebb delta and most of the flood channel, ebb shield and ebb spits on the flood-tidal delta. Breaking waves could limit practicality on the terminal lobe of the ebb delta.

- FLOODING TIDE.

  Shallow areas on the flood channels, ebb shield and ebb spits on the flood-tidal delta could limit access during the first half of the flood. Currents typically are strongest in the inlet throat and the marginal channels of the flood-tidal delta, particularly around mid-tide.

- HIGH TIDE.

  This is the period when access or deployment constraints would at a minimum. Breaking waves could limit practicality on the terminal lobe of the ebb delta.

Notwithstanding these constraints, tactics designed for use in fast currents (see Hanson and Coe, 2001) and equipment such as shore-seal boom can overcome some of these limitations.

3.5 Summary for Planning and Response

The important factor in planning is recognizing where and when opportunities and constraints exist so that decisions can be developed that are realistic and practical. Strategies, such as the diversion of oil from channels into natural collections areas for recovery, or tactics that employ equipment designed for fast-currents, can be developed in the context of understanding changes in water depths, current velocity and flow direction.

From a **tidal cycle perspective**, the main considerations are:

A. LOW TIDE.

   - Sufficient water depth for boom and /or skimmer deployment.

   - Even though water flow may be slack, many areas are shallow or, particularly in the flood tidal delta area, exposed.

   - Flow may continue out of the inlet throat and through the main ebb channel after the predicted low tide until the water levels on the bay and ocean sides are the same.

B. FLOODING TIDE.

- Depths remain shallow in many areas until mid-tide or late in the flood.
- Depth typically should be several times the draft of the equipment.
- Fast-water tactics and equipment should be used in fast currents.
- Flood currents are likely to be strongest during the 2-hour period around mid-tide when water levels are still relatively low and flow is largely confined to the marginal channels.

C. HIGH TIDE.

- Water depths may allow unrestricted access in most area, though some may remain shallow, such as the ebb shield.

D. EBBING TIDE.

- Oil on the water would be carried seawards out of the inlet system.

From a **geographic perspective**, there are three key physical environments of a tidal inlet in terms of OIL SPILL RESPONSE:

1. The WAVE-DOMINATED open ocean waters and shorelines.

   - Primary limitations on oil containment and recovery are related to a combination of breaking waves in shallow waters around the ebb tidal delta and tide currents in the channels.
   - During the initial stage of a flooding tide, oil on the ocean side of an inlet only would be transported into the inlet throat through one or both of the marginal flood channels until the bay has fully drained.
   - Strategic options include:
     - deflecting oil away from the inlet throat for on-water recover, and/or
     - diversion booming to direct oil to a beach for recovery (Figure 3.2).
   - Flood currents are likely to be strongest during the 2-hour period around mid-tide when water levels are still relatively low and flow is largely confined to the marginal channels.
   - During a flood tide, after the ebb flow ceases, *control and recovery of oil is more likely to be successful on the bay side of an inlet* where the waters are sheltered from wave action (see below).

2. The CURRENT-DOMINATED inlet throat.

   - As the water level in the ocean rises, flood waters enter the inlet along the marginal channels even as ebb currents continue to flow in the center of the channel.

- As soon as the outflow from the ebbing tide ceases, oil could be transported into the bay or lagoon by the relatively strong flood tide.

- Diversion to shore may be possible but *control and recovery of oil is more likely to be successful on the bay side of an inlet* where the current velocities are lower.

3. The WAVE-SHELTERED waters and shorelines of the bay or lagoon.

    - Primary limitations are strong flood tide currents in channels.

    - During the first stages of a flood tide, after the ebb drainage ceases in the inlet throat, the flood tide would carry oil in the channels around the flood tidal delta.

    - Flood currents are likely to be strongest during the 2-hour period after mid tide when flow is largely confined to the marginal channels.

    - During the late stages of a flooding tide the incoming waters would flow over most of the flood tidal delta.

    - Strategic options include:

        o Diversion booming to direct oil to a beach for recovery in the flood channels in the sheltered side of the inlet (Figure 3.2).

(a) (b)

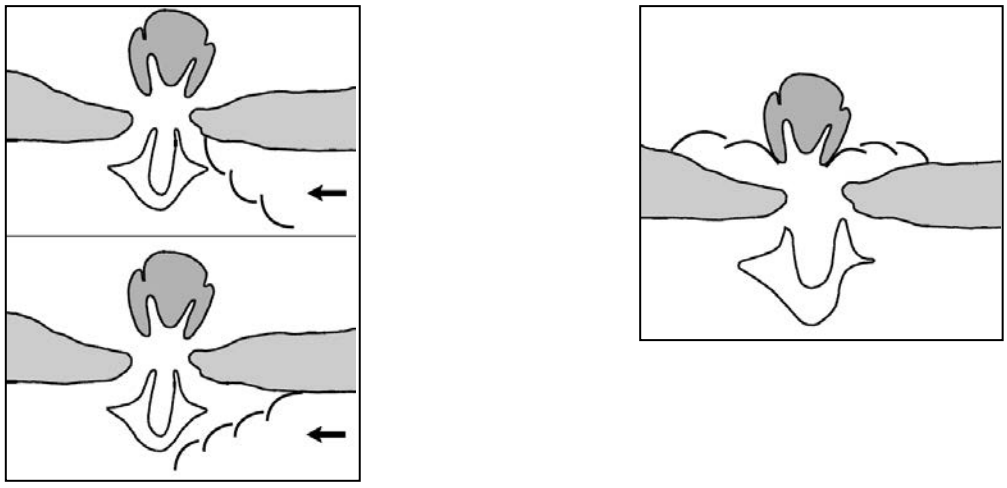


Figure 3.2. Booming Options During a Flooding Tide: (a) Diversion Towards Shore Updrift of the Inlet with Recovery on the Beach (top) or Deflection Away from the Inlet with On-Water Recovery (bottom); (b) Diversion Towards Shore in the Flood Channels and Recovery on the Beach

4 Tidal Inlet Protection Strategy ("TIPS") Selection Guide

4.1 Generic Strategies

Tidal Inlets present complex, dynamic and challenging environments for oil spill control. Challenges include high current velocities, changing tidal directions, shallow (or no water), swells, surges and breaking waves, and restricted shoreline access. As a result of these and other factors, attempts to protect tidal Inlets commonly have met with marginal success. This lack of success may have been influenced by a lack of understanding of inlet dynamics and lack of equipment suited to conditions prevalent in tidal inlets. HOWEVER, with an understanding of tidal inlet characteristics and processes AND an understanding of the applications and limitations of oil spill control technology, strategies CAN BE SUCCESSFULLY IMPLEMENTED within inlet systems in many cases to protect sensitive back-bay resources.

Conventional strategies for protection and control of oil spills threatening tidal inlets include:

- Prevention of Oil from entering the Inlet.
    - Physical treatment or containment/recovery of floating oil offshore before it reaches the tidal inlet (Note: offshore mechanical recovery, dispersant application and burning strategies are outside the scope of this study.
    - Physical exclusion of oil from the inlet by exclusion booming.
    - Redirection of oil moving alongshore by deflection booming around the inlet.
    - Closure of the inlet by construction of temporary dams or other physical barriers.
- Control Actions Within the Tidal Inlet System (Inlet Throat, Ebb and Flood Deltas).
    - Exclusion and deflection away from sensitive features or toward locations where control and recovery is feasible.
    - Diversion of oil to shorelines where control and recovery is feasible.
    - On water oil recovery.
- Control Actions within the Interior Back Bay and Lagoon.
    - Exclusion of floating oil from sensitive areas by booming.
    - Containment and recovery of oil in quiet water.

The selection and implementation of response strategies must recognize that the characteristics of tidal Inlets are highly variable and that the generic strategies are subject to inclement weather and oceanographic conditions, availability of appropriate equipment and trained response personnel, and other often unknown factors, and may not always be effective, practical, or safe. The strategic options, including advantages and limitations, are summarized in Table 4.1. Because of the complexity and variability of tidal inlets, the strategies presented may not include all possible options. Guidance provided herein should not preclude consideration of other options and should not replace the use of common sense.

Table 4.1. Summary of Strategic Options

STRATEGY	ADVANTAGES	LIMITATIONS	COMMENTS
Offshore on-water mechanical recovery, controlled burning, and dispersant application	Prevents oil reaching an inlet	Typically cannot recover or eliminate 100% of the oil	Guidance regarding offshore mechanical recovery, controlled burning and dispersant application are outside the scope of this study
Ocean-side exclusion booming	Prevents oil reaching an inlet	Feasibility and practicality decrease as inlet size, wave height and current velocity increase	Potential option for small inlets in relatively calm conditions
Ocean-side booms redirect oil toward the shore and/or away from the inlet for recovery	Prevents oil entering the main channel	Strong currents and/or breaking waves	Would likely require cascading booms in a difficult operating environment
Inshore mechanical recovery	Removes oil from further penetration into tidal inlet	Strong currents, tidally varying depths, and breaking waves	Fast water and underway skimmer required
Bay-side booms redirect oil toward the shore and/or away from the inlet for recovery	Sheltered wave environments	Strong current in inlet throat could entrain oil so some portion may enter bay subsurface	Potential effectiveness decreases with rising tide as oil can flow over central shoal
Dams to close surface flow through an inlet	Effective barrier	Window of opportunity before oil reaches inlet	Potential option for small inlets in relatively calm conditions. Would require underflow pipes to maintain circulation
Protection and containment booms and barriers	Prevents oil from reaching sensitive areas	Limited to low current velocity areas , water depth requirements	Anchoring may be critical. Consider use of driven piles for anchoring.
Pile driven boom anchoring system	Provides stable anchoring in high current flow	Window of opportunity. Would require sliding bridles to adjust to changing water levels and maintenance for reversing currents	Little flexibility
Air bubble barriers	Effective for surface and submerged oil. Unaffected by changes in flow direction of water level changes	Window of opportunity for installation	

Prespill field examination of specific tidal inlets is highly recommended for development of planning strategies. Field observations should include:

- Observations during low tide, and high flow conditions;
- Identification of (a) shoreline access points (preferably vehicular) to facilitate deployment, oil recovery and storage, and demobilization, (b) limitations to access, and (c) potential access improvements;
- Visual verification of current velocities and direction (at peak flood). Flow direction can be identified by tracking floating objects, such as oranges, and velocity by measuring the time required for a floating object to traverse a measured distance (these procedures have been used successfully for tidal inlet planning since at least the early 1970's);
- Locations of shoreline debris accumulations as these are representative of natural floating debris accumulation and are likely points of accumulation for spilled oil; and
- Types and locations of existing anchoring points. Shoreline anchor points include any large fixed objects to which booms can be attached. In water anchoring points include bridges, pilings and other rigid structures. Existing anchoring points can be critical in tidal inlets for fast deployment and positive anchoring.

These observations should be noted on charts, satellite photos, etc. and evaluated spatially in conjunction with tactical guidance (following discussion). Overlaps are usually indicative of preferred strategic and tactical action sites.

Drills, exercises and verification of Geographic Response Plans (GRPs) that test response strategies and tactics are useful to verify the feasibility and effectiveness of the selected option(s).

4.2 Candidate TIPS Selection Guide

A Guide for the selection of candidate strategies based on the components of a generic tidal inlet during a flooding tide, when oil would be moving through the system towards a back-bay or lagoon environment, is presented in Figure 4.1. This Selection Guide is designed for the identification of those tidal inlet system components where various strategies may be feasible, based in part on the water depths and current characteristics as described in Table 2.3 and Figure 2.9. The Guide is organized by tidal system component features and provides summary information on minimum water depths, maximum current velocities, and probable presence of breaking waves. The Guide also identifies potential strategic options where appropriate for generic types of actions (on-water containment, exclusion/deflection booming, deflection to shorelines (for recovery), on water recovery, and shoreline recovery. Strategies are intended for the control and recovery of surface oil and do not address subsequent cleanup at the shoreline.

Multiple strategic options are identified for basic tidal inlet features. It is important to note that no strategic options are identified for a number of features which are located over most of the in the ebb delta (ocean side) as no functional tactics exist or are considered safe for these areas.

It is recommended that field observations accompany the use of this table in response planning. Testing of candidate strategies/tactics through drills and exercises is also recommended. Ultimately, however, successful implementation of each strategy/tactic is dependent on case-specific conditions.

Location	Inlet Feature	Water Depth Minimum (m)		Current Velocity Maximum (knot)		Breaking Waves	Strategy (Flood Tide)				
							Open Water Containment	Exclusion / Deflection	Divert to Shore	Recovery	
		Ebb Tide	Flood Tide	Ebb Tide	Flood Tide					On Water	Shoreline
Back Bay (Lagoon)		Shallow	Moderate	Weak	Weak	N	X	X	X	X	X
Bay-Side (Flood Delta)	1. Flood Ramp	Shallow	Moderate	Weak	Moderate	Y		X			
	2. Flood Channels	Exposed	Moderate	Weak	Moderate	Y		X			
	3. Ebb Shield	Exposed	Moderate	Strong	Weak	N		X			
	4. Ebb Spits	Exposed	Moderate	Strong	Moderate	N		X		-	
	5. Spillover Lobes	Exposed	Moderate	Strong	Moderate	N		X		-	
	6. Marginal Channels	Moderate	Deep	Strong	Strong	N		X	X	X	X
Inlet Throat		Deep	Deep	Strong	Strong	N		X	X	X	X
Ocean Side (Ebb Delta)	1. Main Ebb Channel	Deep	Deep	Strong	Moderate	N			X	X	
	2. Marginal Flood Channels	Shallow	Moderate	Weak	Moderate	Y			X	X	X
	3. Swash Platform	Shallow	Moderate	Weak	Moderate	Y					
	4. Terminal Lobes	Deep	Deep	Moderate	Moderate	Y					
	5. Swash Bars	Shallow	Moderate	Moderate	Moderate	Y					
	6. Channel Margin Bars	Exposed	Moderate	Moderate	Moderate	Y					
Coastal (Ocean)		Deep	Deep	Weak	Weak	N	X	X	X	X	X

Figure 4.1. Tidal Inlet Protection Strategy (TIPS) Candidate Selection Guide for All Tide Stages

X — Strategy may be feasible, depending on site conditions

Strategy unlikely to be feasible

4.3 Strategies and Tactical Options

4.3.1 Strategies versus Tactics

The strategies identified in Figure 4.1 cannot be implemented without workable tactics and appropriate equipment. It is essential for planners to understand that, due to the complexity and variability of oil spill threatening tidal inlets, strategies and respective tactics may be difficult or impractical to implement in many cases. In addition, specialized equipment, such as “fast-water” booms and skimmers may be required. (Note: It is not the intention of this report to provide instructions on tactical deployment and equipment operation).

4.3.2 Tactical “Rules of Thumb”

Selection of practical TIPS should include an evaluation of whether tactics and equipment are appropriate and available for their implementation. Failure to consider to these rules is likely to contribute to an unsuccessful protection operation. The following Rules of Thumb are based on past field experience and should always be considered in evaluating the practicality of candidate TIPS:

a) **Not all conventional response equipment may perform adequately in the open coastline / tidal inlet environments**. The implementation of TIPS strategies and tactics may require specialized equipment (i.e. fast-current equipment) and highly trained or experienced responders;

b) **Tactics which rely on equipment which must float require a minimum water depth greater than the draft of the equipment**. Some equipment, particularly booms, require additional depth to relieve the excess pressure built up by the presence in the water of the device itself;

c) **Tactics and equipment must be suitable for reversing flow (tidal) environments**. Typically, setting anchors and maintaining their position is difficult in reversing flow situations, and in many situations complete redeployment and/or continual readjustment every tidal cycle is necessary. The use of existing fixed anchoring points is recommended, where practical, such as may be available on bridge supports or other man-made structures;

d) **Strategies involving on-water containment or diversion to a containment area MUST include provisions to recover the impounded oil**. Oil not collected immediately is subject to re-mobilization associated with high flow entrainment or other forms of containment failure, or by tidal reversals;

e) **Diversion strategies require precise boom configurations**. If configurations are allowed to bow, they become containments which are likely to fail in high flow situations. Diversion strategies typically require continual monitoring and adjustment;

f) **Recovery operations require on-water or shoreline storage capable of accommodating the combined output from all concurrent skimming operations**. Skimmers cannot continue to operate if there is insufficient storage capacity for the recovered fluids, that is, both oil AND entrained water;

g) **Implementation of most TIPS may be constrained by time and manpower requirements**. The ability to deploy/redeploy equipment must match the tidal windows. Sufficient manpower (sometimes dedicated) must be available;

h) **Responders should be familiar with each inlet.** Tactics are best conducted by responders familiar with the area and trained specifically in the implementation of the planned strategies. Drills and exercises for individual inlets are recommended.

4.3.3 Tactical Guidance Summaries

The following fourteen Tactical Guidance Summaries provide a variety of guidance information to assist in the planning and selection of strategic/tactical options. These guidelines are based in part on the water depths and currents presented in Figure 2.9.

Tactical Guidance Summaries (*with appropriate operating locations in italics*) include:

On-Water Containment

- Containment Booming (Figure 4.3.1): *Open Ocean, Back Bay, Lagoon*

Exclusion / Deflection

- Exclusion and Deflection Booming (Figure 4.3.2): *Ocean, Ebb Delta, Inlet Throat*
- Tidal System Exclusion (Dams, Tide Gates, and Weirs) (Figure 4.3.3): *Inlet Throat, Back Bay*

- Deflection Around Man-made Structures (Figure 4.3.4*): Inlet Throat, Flood Delta, Back Bay*
- Exclusion Booming (Figure 4.3.5): *Flood Delta, Back Bay*
- Deflection (Figure 4.3.6): *Flood Delta, Back Bay*

Divert To Shore

- Diversion Booming (Figure 4.3.7): *Flood and Ebb Deltas, Inlet Throat*
- Chevron Diversion Booming (Figure 4.3.8): *Ebb Delta. Inlet Throat*
- Cascading Diversion Booming (Figure 4.3.9): *Flood and Ebb Deltas, Inlet Throat*
- Boom Vanes and Rudders (Figure 4.3.10): *Flood and Ebb Deltas, Inlet Throat*
- Air Curtain Diversion (Figure 4.3.11): *Flood Delta, Inlet Throat, Back Bay*

Recovery

- On-Water Recovery (Figure 4.3.12): *Ocean, Flood and Ebb Deltas, Inlet Throat, Back Bay*
- Berms, Trenches, Pump/Vacuum (Figure 4.3.13): *Flood and Ebb Deltas, Back Bay*
- Sorbents (Figure 4.3.14): *Flood and Ebb Deltas, Inlet Throat, Back Bay*

The Tactical Guidance Summaries include the following information:

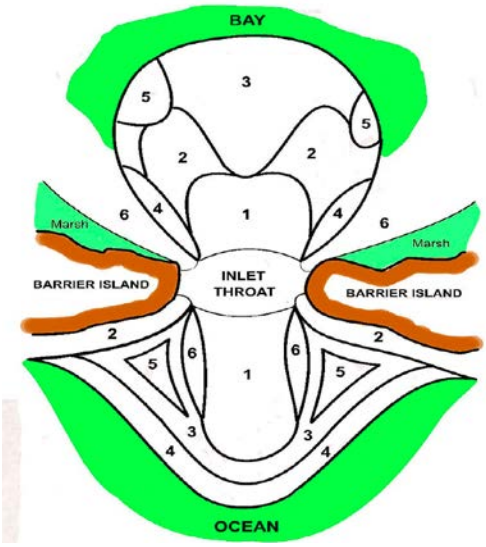
- A Generic Tidal Inlet System schematic showing locations where tactical operations for specific inlet components are typically feasible (**green shading**) and where tactics may be feasible under special circumstances (**yellow shading**). The morphological components follow those defined in Figures 2.2 and 2.6 and Table 2.3. Appendix A provides instructions on how to locate inlet-specific morphologic features.
- Objective of the Tactic.
- Representative photographs for typical deployments.
- Specialized equipment requirements as appropriate.
- Limitations on the implementation of the tactic.
- General operating requirements.

4.3.1	**ON WATER CONTAINMENT**
	CONTAINMENT BOOMING: *OCEAN, BACK BAY, LAGOON*

Open Ocean

Back Bay

Location



Equipment:

- High freeboard boom (Offshore).
- Smaller boom (Inshore).
- Boom handling vessels.
- Oil recovery capability.

Objective

- Deploy (1) open water boom on the seaward side of the Ocean-Side Ebb Delta to contain oil and prevent it from entering the Tidal Inlet System; (2) inshore boom for back bay / lagoon containment.

Limitations:

- High winds, swell, and breaking waves may preclude use of this tactic from safety as well as operational aspects.
- Complete containment unlikely in either case.

Operating Requirements

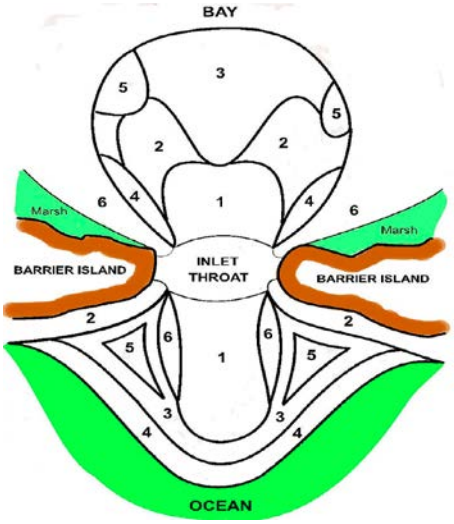
- Manned deployment—extensive marine resources may be required offshore.
- Oil impounded must be recovered immediately—skimming and offloading resources required.

4.3.2	EXCLUSION and DEFLECTION
	EXCLUSION and DEFLECTION BOOMING: *OCEAN, EBB DELTA, INLET THROAT*

Exclusion Boom

Deflection Boom

Location



Equipment

- Offshore skirt boom.
- Tidal seal boom.
- Offshore anchoring systems.
- Deployment vessels.
- Warning markers/lights.

Objectives

- Exclusion: Completely boom off tidal Inlet (seaward of ebb delta). Shore termination required on both sides of boom.
- Diversion (For oil moving inshore and along coastline); Deflect oil moving along the shoreline seaward allowing it to pass inlet flood tide zone.

Limitations

- Inclement weather and sea conditions; operational and safety issues.
- Booming is likely to be ineffective with breaking waves.
- Contained oil must be removed immediately to prevent loss.
- May interfere with inlet navigation.

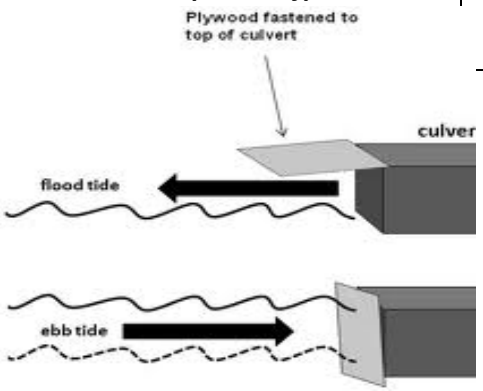
Operating Requirements

- Full time monitoring / boom adjustment team required.
- Oil recovery and storage resources required (on water and onshore).
- Booms and anchors may require removal during inclement weather.

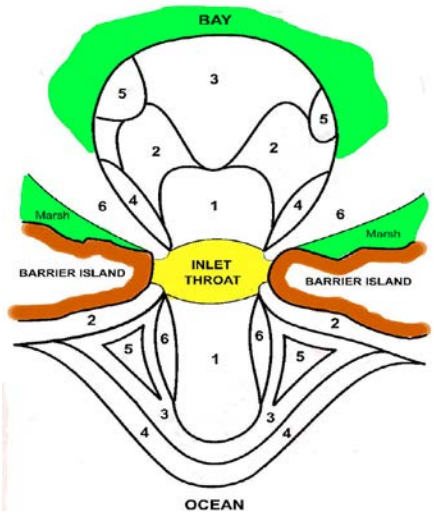
4.3.3	EXCLUSION and DEFLECTION
	TIDAL SYSTEM EXCLUSION (Dams, Tide Gates, Weirs): *INLET THROAT, BACK BAY*

Exclusion Dam (Tidal Inlet)

Exclusion Barrier with Weir or Tidal Gate (Back Bay)



Location



Equipment:

- Tracked earthmoving equipment.
- Tidal Gates / materials.
- Warning buoys / lights.

Objectives

- Construct physical barrier to prevent oil from entering (1) inlet or (2) back bay or lagoon channels.

Limitations

- May be difficult to construct in inlets having large tidal prism.
- Permitting/Construction may require extended (and unacceptable) periods of time.
- May result in unacceptable interference with tidal flushing or other environmental problems.
- May interfere with navigation.

Operating Requirements

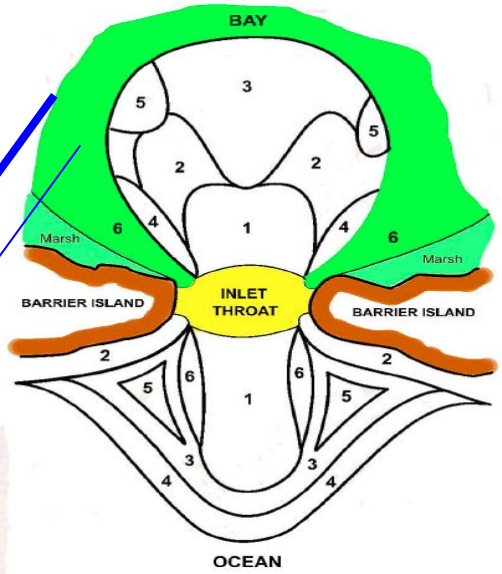
- Minimal once constructed; Weirs / tide gates may require operation if so equipped.
- Construct will require removal and restoration on completion of use.

4.3.4	EXCLUSION and DEFLECTION
	DEFLECTION BOOMING AROUND MANMADE STRUCTURES: *INLET THROAT, FLOOD DELTA, BACK BAY*

(a) Boom along armored tidal inlet

(b) Inlet deflection

Location



Equipment

- Most boom types can be used.
- Fenders to hold boom off shore.
- Flow reversing anchor systems or driven piles.

Objectives

- Install boom along rip rap or bulkhead face to bypass oil to quieter area for control and recovery (oil in rip rap or behind bulkheads is difficult to remove and can result in long term discharge.

Limitations

- Boom should be installed to stay seaward and as parallel to current flow/shoreline as possible.
- Sufficient minimum water depth to float boom.

Operating Requirements

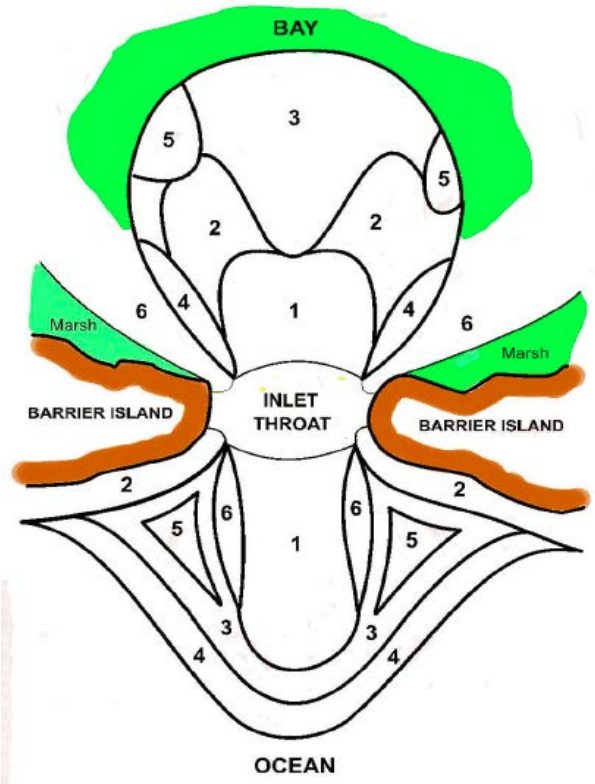
- Periodic monitoring and maintenance required.
- Sorbent (boom or snare sweep) can be placed between boom and feature.

4.3.5	**EXCLUSION and DEFLECTION**
	EXCLUSION BOOMING: *FLOOD DELTA, BACK BAY*

(a) Creek mouth exclusion

(b) Back bay wetland exclusion

Location



Equipment:

- Most inshore boom suitable.
- Reversing flow anchoring system or driven piles may be required.

Objectives

- Prevent oil from entering bay and lagoon side channels.

Limitations

- Minimum water depth should be several times the draft of the boom used.

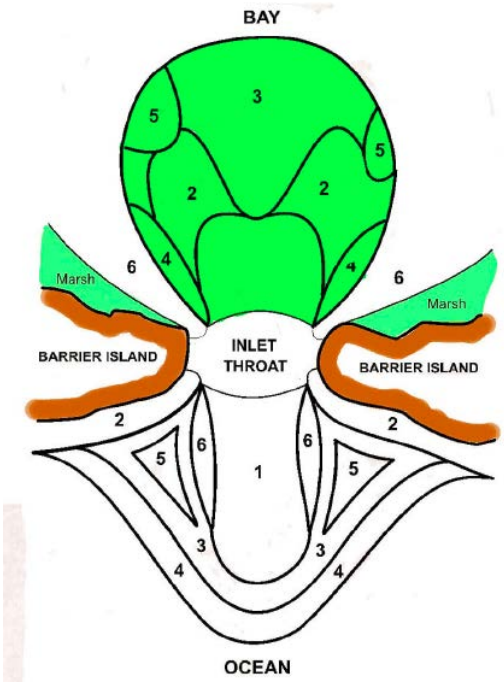
Operating Requirements

- Periodic monitoring and maintenance required.
- Periodic removal of any impounded oil and debris required.
- Boom will require demobilization in the event of deteriorating weather and sea conditions.

4.3.6	EXCLUSION and DEFLECTION
	DEFLECTION BOOMING: *FLOOD DELTA, BACK BAY*

Tidal Boom flood shield deflection

Location



Equipment

- Tidal seal boom.
- Multi-directional anchors, driven piles or screw anchors.

Objectives

- Deflect oil reaching ebb delta ramp and shield away from bay back and lagoon and toward marginal side channels for control and recovery.

Limitations

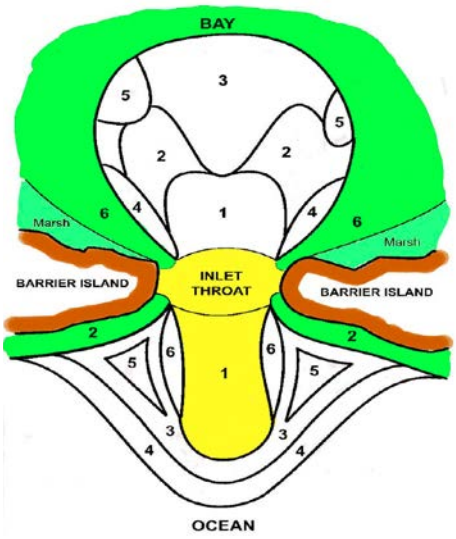
- Booms are difficult to move once deployed.

Operating Requirements

- Booms should be placed to direct floating oil away from back bay / lagoon and toward marginal channels.
- Maintenance of boom position may be difficult. Monitoring and redeployment may be required in response to any changes in local conditions.
- Boom may require demobilization in the event of deteriorating weather and sea conditions.

4.3.7	**DIVERT TO SHORE**
	DIVERSION BOOMING: *FLOOD and EBB DELTAS, INLET THROAT*

Location



Equipment

- Interior Shorelines: Fast Water class boom preferred (shallow weighted skirt, bottom tensioned).
- Fast water multidirectional anchor systems or driven piles.
- Deployment boats.

Objectives

- Deploy fast water class boom in single catenary to divert oil to shoreline for recovery.

Limitations

- Minimum water depth should be deeper than draft of boom (suggest at least 3x).
- Anchors may drag on sand bottoms in high flow areas or when tides reverse, requiring redeployment.
- Provisions must be included to remove any oil impounded as it is collected. Vehicle access to boom apex recommended.

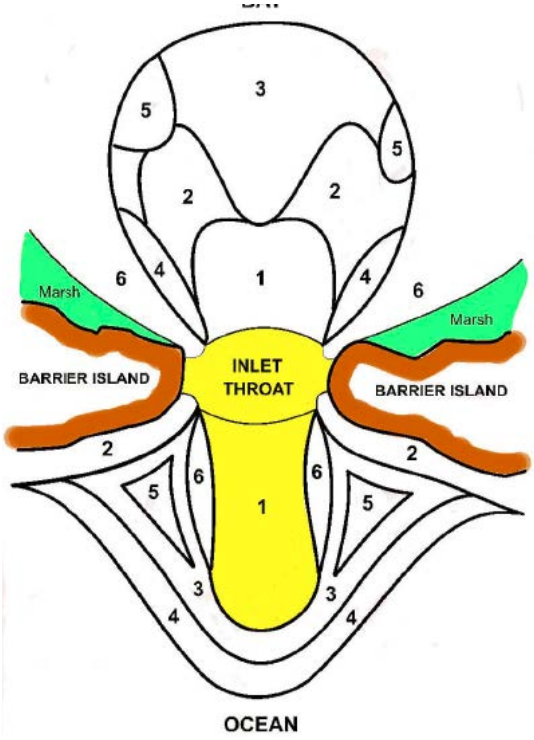
Operating Requirements

- Fast water and tidal anchoring tactics required (high maintenance and manpower requirement) High deployment angles are typically necessary and installation must be tight enough to direct oil all the way to the shoreline (Oil caught in bows in boom will be subject loss by entrainment under boom).
- Multiple (redundant) deployments generally recommended.
- Can be deployed using boom vanes (Fig. 4.3.10). Boom will require demobilization in the event of deteriorating weather and sea conditions.

4.3.8	DIVERT TO SHORE
	CHEVRON DIVERSION BOOMING: *EBB DELTA, INLET THROAT*

Closed chevron

Location



Equipment

- Fast water boom.
- Fast water multidirectional anchor systems or driven piles.
- Deployment Vessels.
- Warning/Navigation Lights.

Objectives

- Deploy boom in the inlet throat to direct floating oil toward Barrier Islands or fast water skimmers for recovery.

Limitations

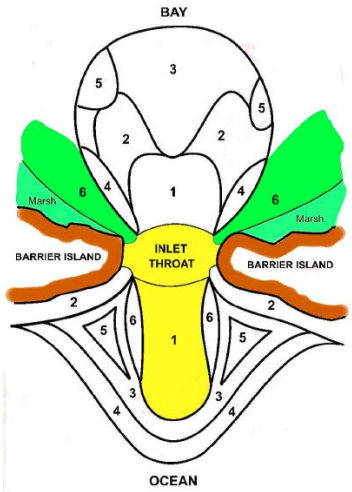
- Minimum water depth should be deeper than draft of boom (suggest at least 3x).
- Anchors may drag on sand bottoms in high flow areas or when tides reverse, requiring redeployment.
- Boom may fail in presence of breaking waves.
- Deployment may interfere with navigation.

Operating Requirements

- Monitoring and redeployment may be required.
- Deployment is for deflection. Boom should not be allowed to impound oil.
- Boom will require demobilization in the event of deteriorating weather and sea conditions.

4.3.9	**DIVERT TO SHORE**
	CASCADING DIVERSION BOOMS: *FLOOD and EBB DELTAS, INLET THROAT*

Location



Equipment

- Fast water class boom.
- Fast water multidirectional anchor systems or driven piles.
- Oil recovery and storage capability.
- Deployment and tending vessels.

Objectives

- Direct floating oil to shoreline in high current areas for recovery.

Limitations

- Minimum water depth should be deeper than draft of boom (suggest at least 3x).
- Anchors may drag on sand bottoms in high flow areas or when tides reverse, requiring redeployment.
- Rapid deployment and maintenance of boom position may be difficult, particularly in tidal situations.
- Longer deployment time requirements than other diversion systems.
- Boom may fail in presence of breaking waves.

Operating Requirements

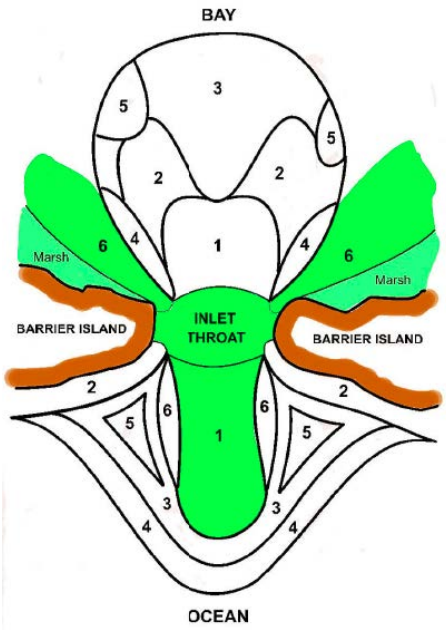
- Significant monitoring and redeployment may be required in response to any changes in local currents or wave approach direction. Not designed to contain oil.
- Boom will require demobilization in the event of deteriorating weather and sea conditions.

4.3.10	DIVERT TO SHORE
	BOOM VANES AND RUDDERS: *FLOOD and EBB DELTAS, INLET THROAT*

(a) Boom Vanes

(b) Boom Rudders

Location



Equipment

- Fast water class boom.
- Large and small boom vanes.
- Boom rudders.

Objectives

- Attach to fast water boom to rapidly deploy boom and maintain shape without anchors or vessels.

Limitations

- Minimum current of 1.5 knots required for deployment—not useable at lower velocity.
- Vane must float above bottom. (Suggest minimum depth of 3 feet (1 m) for small vane and 12 inch (0.3 m) skirt boom.
- Can deploy to only limited distances from shoreline.
- Vanes must be redeployed at every tidal reversal.

Operating Requirements

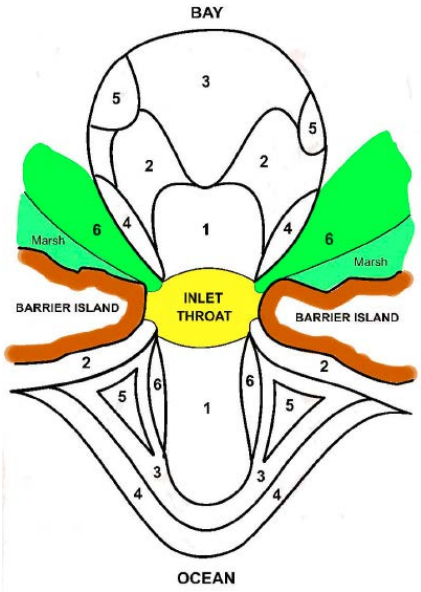
- Constant monitoring and redeployment crew required.
- Must have shoreline connection (Tidal seal boom, buried boom skirt, etc.).
- Contained oil must be recovered continually or boom drainage will occur.

4.3.11	**DIVERT TO SHORE**
	AIR CURTAIN DIVERSION: *FLOOD DELTA, INLET THROAT, BACK BAY*

(a) Prototype floating air curtain

(b) Air barrier

Location



Equipment

- Large portable compressors.
- Perforated pipe, hose, valves and anchors.
- Oil recovery sand storage equipment.

Objectives

- Flow of air from sunken pipe is used to create a diverging surface flow which presents a barrier to floating oil. Use to divert floating oil to shoreline for recovery.

Limitations

- Effectiveness diminishes at velocities above 1.5 knots.
- Requires minimum water depth > several meters.
- Require large compressors and shoreline access.
- Perforated pipe may be difficult to anchor or reposition in high currents.

Operating Requirements

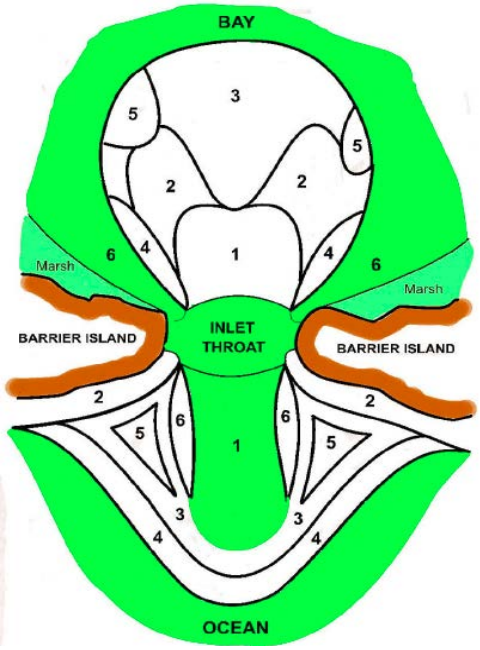
- Requires full-time operating personnel and monitoring.
- Submerged pipe and anchors require removal after use.

4.3.12	RECOVERY TACTICS
	ON-WATER RECOVERY: *OCEAN, FLOOD and EBB DELTAS, INLET THROAT, BACK BAY*

a) Fast Water (NOFI)

b) Vacuums—Vacuum Truck

Location



Equipment

- Advancing/ offshore class skimmers.
- Fast Water Skimmers (high flow areas).
- Conventional skimmers (onshore).
- Support Vessels.
- Onsite storage capability.

Objectives

- Use vessel operated advancing or stationary skimming systems to recover oil contained offshore.
- Use anchored advancing or fast water skimmers to recovery oil in high current areas.
- Use fast water or conventional skimmers and vacuum trucks to recover oil contained along shorelines.

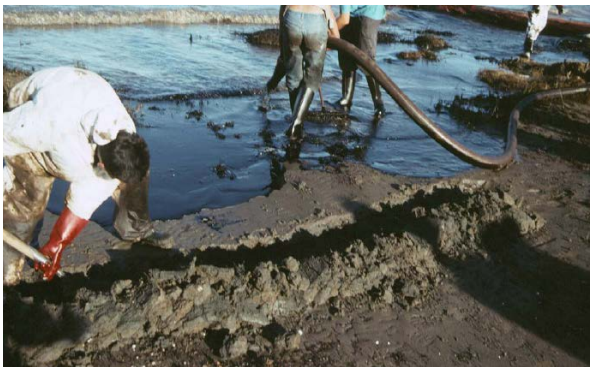
Limitations

- Sufficient depth to float skimming device.
- Skimming effectiveness is likely to be ineffective with breaking waves.

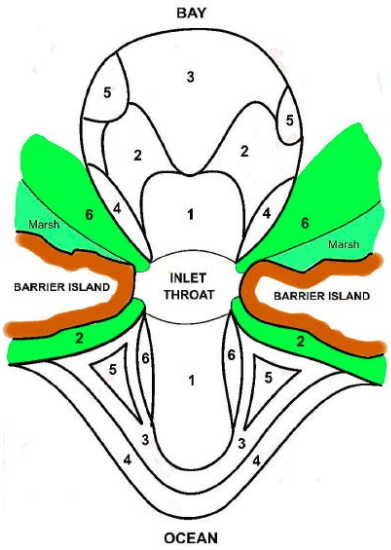
Operating Requirements

- Requires full time operating personnel.
- Adequate storage capacity must be provided to maintain skimming.

4.3.13	**RECOVERY**
	BERMS, TRENCHES and PUMP/VACUUM: *FLOOD and EBB DELTAS, BACK BAY SHORELINES*



Location



Equipment

- Manual or mechanized excavating equipment.
- Oil recovery / storage capability.

Objectives

- Construct pie across mid/upper intertidal zone to collect incoming oil. Pit may be connected to sand berm extending into water, or to diversion boom. Most useful where oil is moving along shoreline or diverted to shore.

Limitations

- May be difficult to keep pit open (caving of sides or infilling).
- Oil may be buried as pits fill in.
- Mechanized access to shoreline preferred.

Operating Requirements

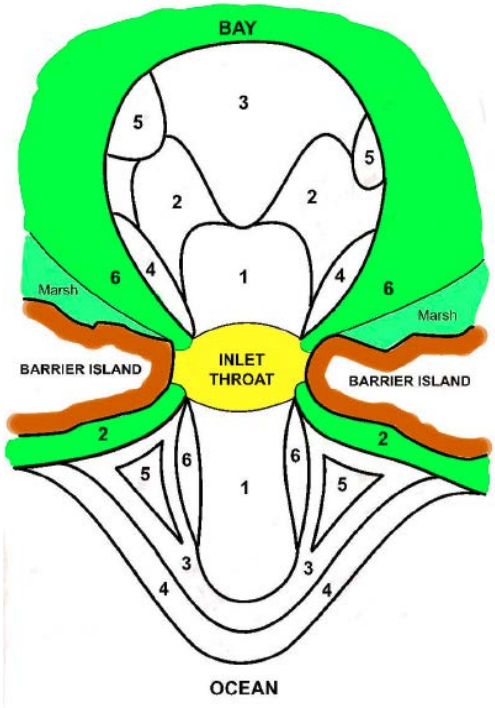
- Locations of all excavations must be accurately located and/or marked.
- Monitoring and recovery of collected material must be conducted periodically.
- Removal of all oil in pit sediments will be required during demobilization / restoration.

4.3.14	RECOVERY
	SORBENTS: *FLOOD and EBB DELTAS, INLET THROAT, BACK BAY*

Anchored sweeps—shallow, intertidal

Boom gaps

Location



Equipment

- Stock of sorbents.
- Spent sorbent bags / bins.
- Screw sand anchors.

Objectives

- Sorbent sweeps can be attached to shallow and exposed sand bars to collect lighter amounts of floating oil.
- Sorbents can be used to back booms and plug boom gaps at shorelines.

Limitations

- Relatively calm conditions required.
- Anchoring sweeps may be difficult in exposed locations.

Operating Requirements

- Monitoring, repositioning and change out of sorbents required.
- Spent sorbents should be bagged and removed regularly.

5 References

API 2013a. Shoreline Protection on Sand Beaches: Phase 1—Final Report. API Technical Report 1150-1, Washington DC, 35 pp.

API 2013b. Shoreline Protection on Sand Beaches: Phase 2—Field Guide. API Technical Report 1150-2, Washington DC, 18 pp.

Boothroyd, J.C., 1987. Tidal Inlets and Tidal Deltas, In *Coastal Sedimentary Environments*, R.A. Davis, Jr. (ed.), Springer-Verlag, New York.

Carter, R.W.G., 1989. Coastal Environments. Academic Press, London, 617 pp.

Davis, R.A. Jr. and Fitzgerald, D.M., 2004. Beaches and Coasts, Blackwell, 419 pp.

Hayes, M.O., 1975. Morphology of Sand Accumulations in Estuaries. *In* Cronin, L.E. (ed.) Estuarine Research, Vol. 2, Geology and Engineering. Academic Press, NY, pages 3-22.

Hayes, M.O., 1991, Geomorphology and Sedimentation Patterns of Tidal Inlets: A Review. *Proceeding Coastal Sediments '91*, American Society of Civil Engineers, NY NY, 1343-1355.

Hayes, M.O. and Montello, T., 1995. The Development of Potential Protection Strategies for Tidal Inlets. *Proceedings International Oil Spill Conference*, American Petroleum Institute, Washington, D.C., Pub. No. 4620, pages 1012-1013.

Hubbard, D.K, Oertel, G. and Nummedal, D., 1979. The Role of Waves and Tidal Currents in the Development of Tidal-Inlet Sedimentary Structures and Sand Body Geometry; Examples from North Carolina, South Carolina, and Georgia. Journal. Sedimentary Petrology, 49 (4), 1071-1092.

NOAA, 2001. Mechanical Protection Guidelines. National Oceanic and Atmospheric Administration, Seattle WA, 87 pp.

Owens, E.H., Roberts, H.H., Murray, S.P. and Foget, C.R., 1985. Containment Strategies for Marine Oil Spills in Nearshore Waters. *Proceedings Oil Spill Conference,* American Petroleum Institute, Washington, D.C., Pub. No. 4385, pages 113-120.

USACOE, 1984. Shore Protection Manual. Department of the Army, US Army Corp of Engineers. Coastal Engineering Research Center, Vicksburg MS, 2 Volumes.

Appendix A

User Guide Checklists

A.1 User Guide for Prespill Planning Appendix

1. RECOGNIZE INLET FEATURES.

    a. Use the generic model of an inlet system (Figures 2.1, 2.2 and 2.6) and the steps listed in Section 2.3.4 to identify the component features of the inlet.

    b. Complete the template presented in Table 2.2.

    c. Bear in mind that not every inlet has the symmetry and character of the generic model shown in Figure 2.1.

2. UNDERSTAND THE DYNAMICS OF AN INLET SYSTEM.

    a. After the components have been identified, read Section 2.2 that describes some of the key processes that operate in the different parts of the inlet system.

    b. Consult Table 2.3 and Figure 2.9 which present the same information in tabular and graphic forms respectively, to understand how water depth and current patterns change for each of the component features as the tidal waters ebb and flood.

    c. Consult Sections 3.1 and 3.2 for descriptions of how oil moves through an inlet system on a flood tide.

    d. Read Sections 3.3 and 3.4 to identify some of the operational opportunities and constraints that are typical of inlet systems.

3. SELECT RESPONSE STRATEGIES AND TACTICS.

    a. Consult Section 4.1 to develop a regional response strategy that includes containment and recovery or elimination of the oil before it reaches the inlet area.

    b. Refer to Figure 4.1 to select which strategy(ies) would be appropriate in time and space for the specific inlet system.

    c. Refer to Table 4.2 for a summary of the tactical options for the selected strategy(ies).

    d. Consider operational constraints that may apply to the specific inlet system.

    e. Select strategies and tactical options.

4. VERIFICATION.

    a. Conduct site visits and field deployment exercises.

    b. Modify planned strategies and tactics as appropriate.

A.2 User Guide for Selection of Options During a Response Operation Appendix

1. GATHER INFORMATION.

    a. Obtain chart(s), vertical or oblique aerial photographs, and satellite imagery of the inlet system.

    b. Obtain predicted tide tables for the location.

    c. Determine the estimated arrival time of oil at the inlet system.

    d. Identify what types and amounts of response equipment are available.

    e. Identify deployment times, that is, when can the equipment be in place to contain, recover or redirect oil.

    f. Consult an inlet-specific plan, as might be presented in a Geographic Response Plan, then go to Step 4.

    g. In the absence of an inlet-specific plan, follow Steps 2, 3 and 4 below.

2. RECOGNIZE INLET FEATURES.

    a. Use the generic model of an inlet system (Figures 2.1, 2.2 and 2.6) and the steps listed in Section 2.3.4 to identify the component features of the inlet.

    b. Complete the template (Table 2.2).

    c. Bear in mind that not every inlet has the symmetry and character of the generic model shown in Figure 2.1.

3. UNDERSTAND THE DYNAMICS OF AN INLET SYSTEM.

    a. After the components have been identified, read Section 2.2 that describes some of the key processes that operate in the different parts of the inlet system.

    b. Consult Table 2.3 and Figure 2.9 which present the same information in tabular and graphic forms respectively, to understand how water depth and current patterns change for each of the component features as the tidal waters ebb and flood.

    c. Consult Sections 3.1 and 3.2 for oil movement through an inlet system on a flood tide.

    d. Read Sections 3.3 and 3.4 to identify some of the operational opportunities and constraints that are typical of inlet systems.

4. SELECT RESPONSE STRATEGIES AND TACTICS.

    a. Consult Section 4.1 to develop a regional response strategy that includes containment and recovery or elimination of the oil before it reaches the inlet area.

b. Refer to Figure 4.1 to select which strategy(ies) would be appropriate in time and space for the specific inlet system.

c. Refer to Table 4.2 for a summary of the tactical options for the selected strategy(ies).

d. Consider operational constraints that may apply to the specific inlet system.

e. Select strategies and tactical options and determine applicability for different tide stages.

Appendix B

Barnstable Harbor

Working Example of Using a Chart to Recognize the Physical Components of a Tidal Inlet

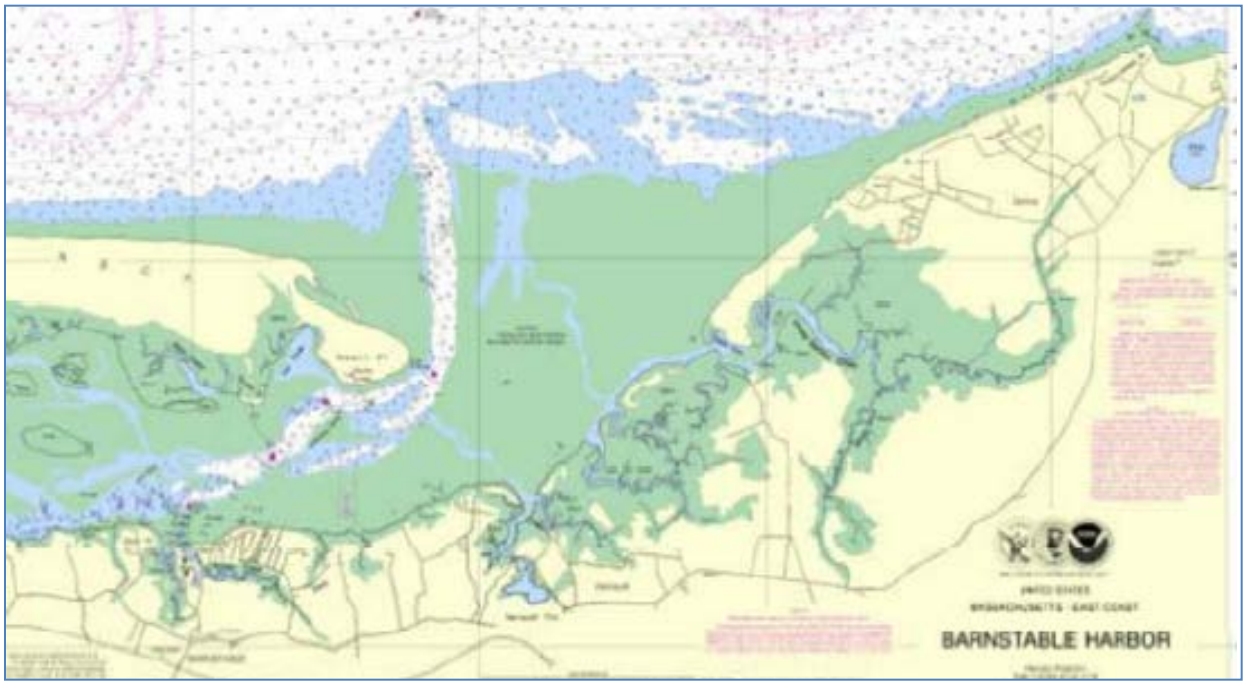


Figure B.1. NOAA Nautical Chart # 13251

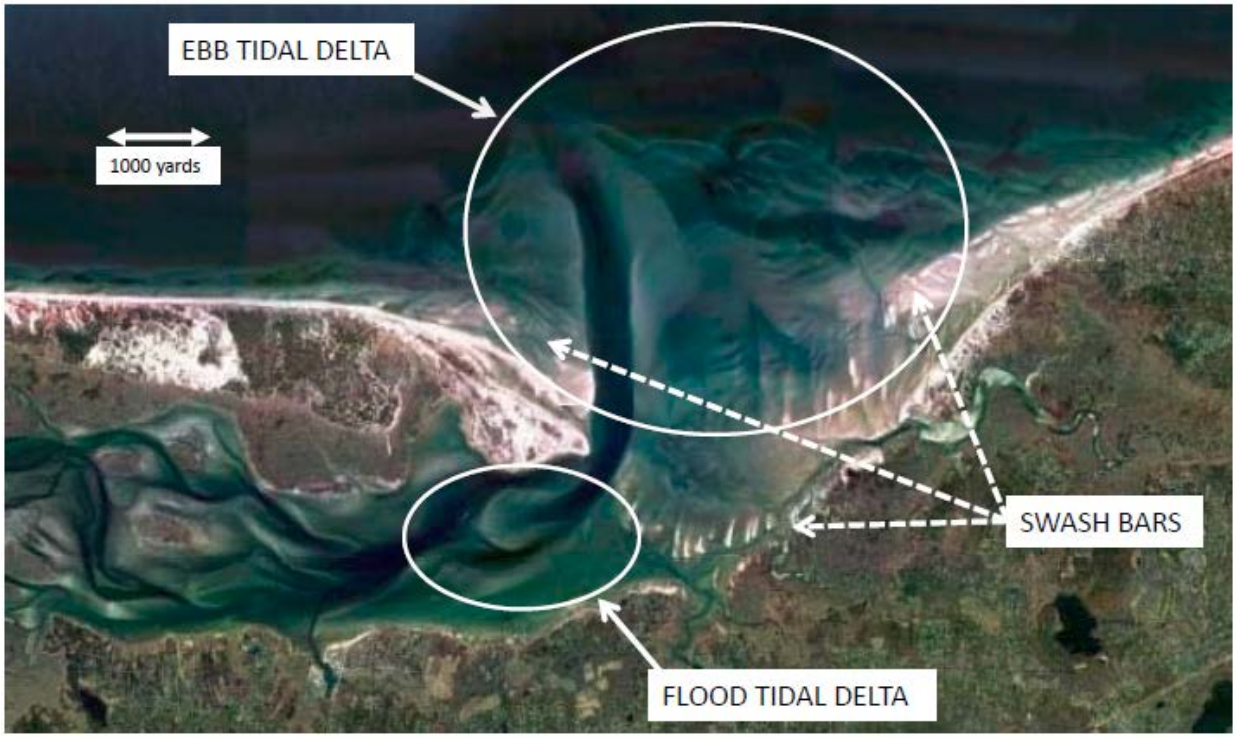


Figure B.2. Satellite Image: Time of Image with Respect to Tidal Water Level is Not Known

- LW and HW lines and depth contours are highlighted on enlarged sections of the nautical chart.
- Morphological components are identified from an interpretation of both the chart and the satellite image.
- These are labeled as indicated in Figures B.3 and B.4.
- In these examples, the primary channels are labeled in red.
- Spillover lobes on the flood delta ebb shield often are relatively small features at these scales. There are not evident from the chart but one (indicated by the green dot on the Figure B.4) is evident from the satellite image.

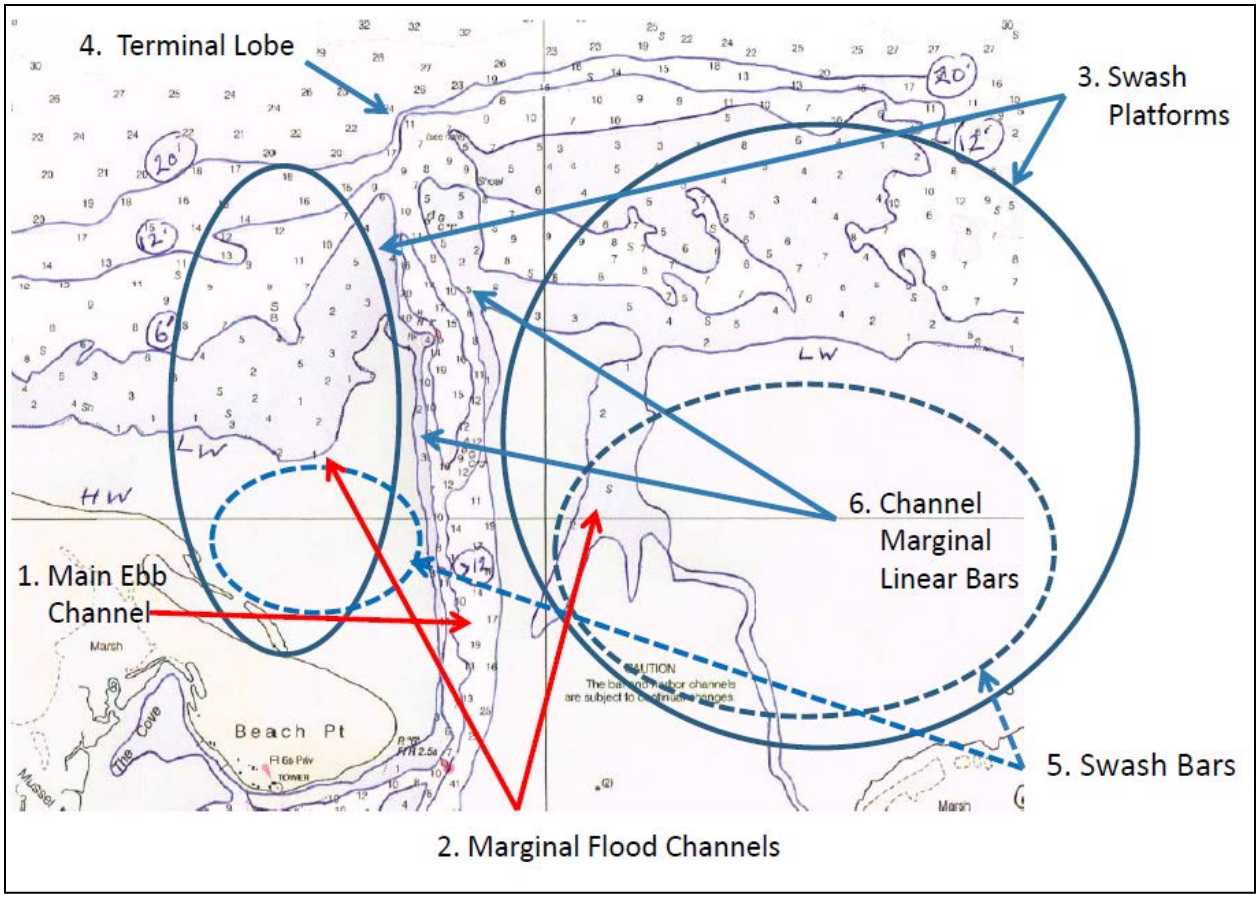


Figure B.3. Ebb Tidal Delta Components

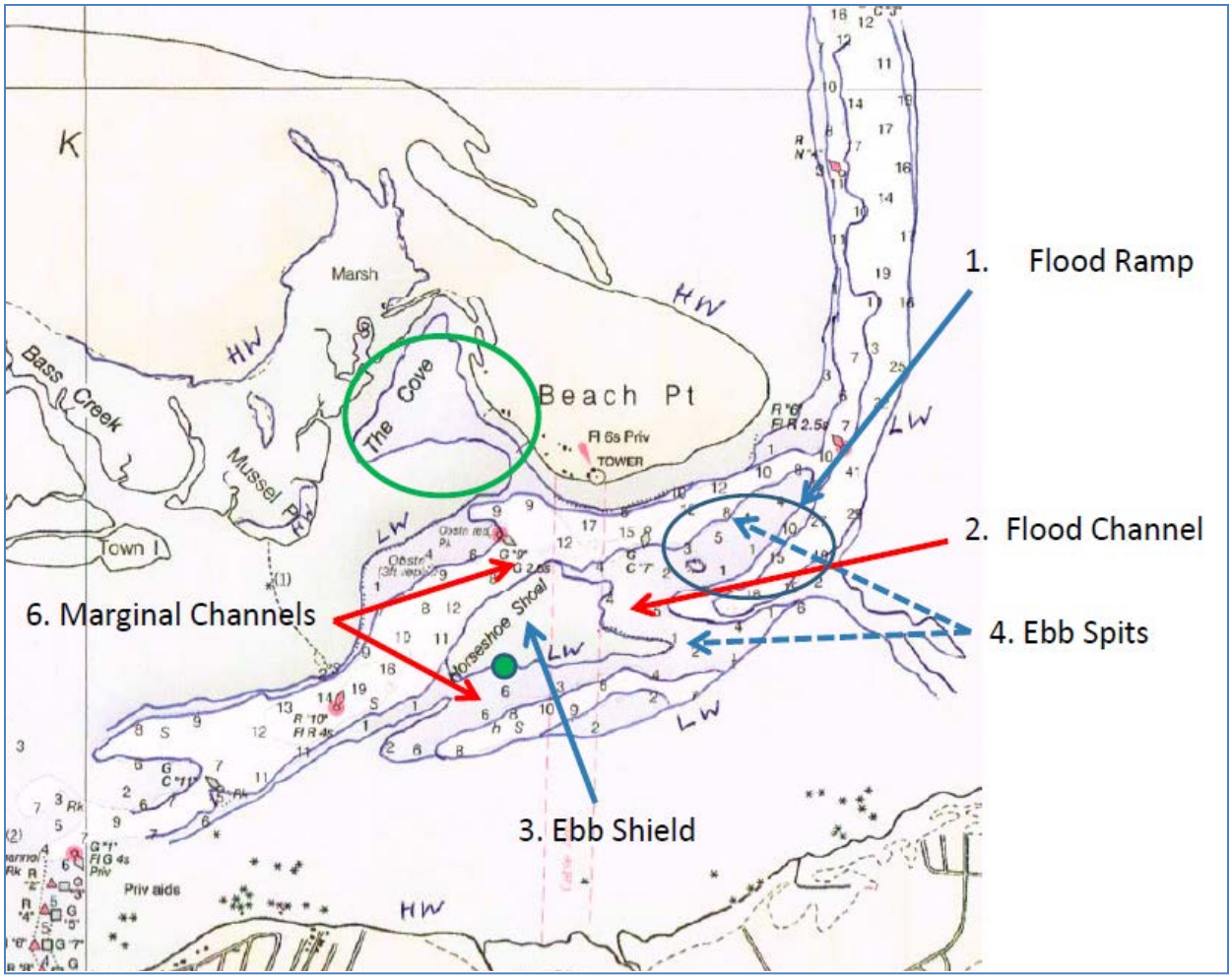
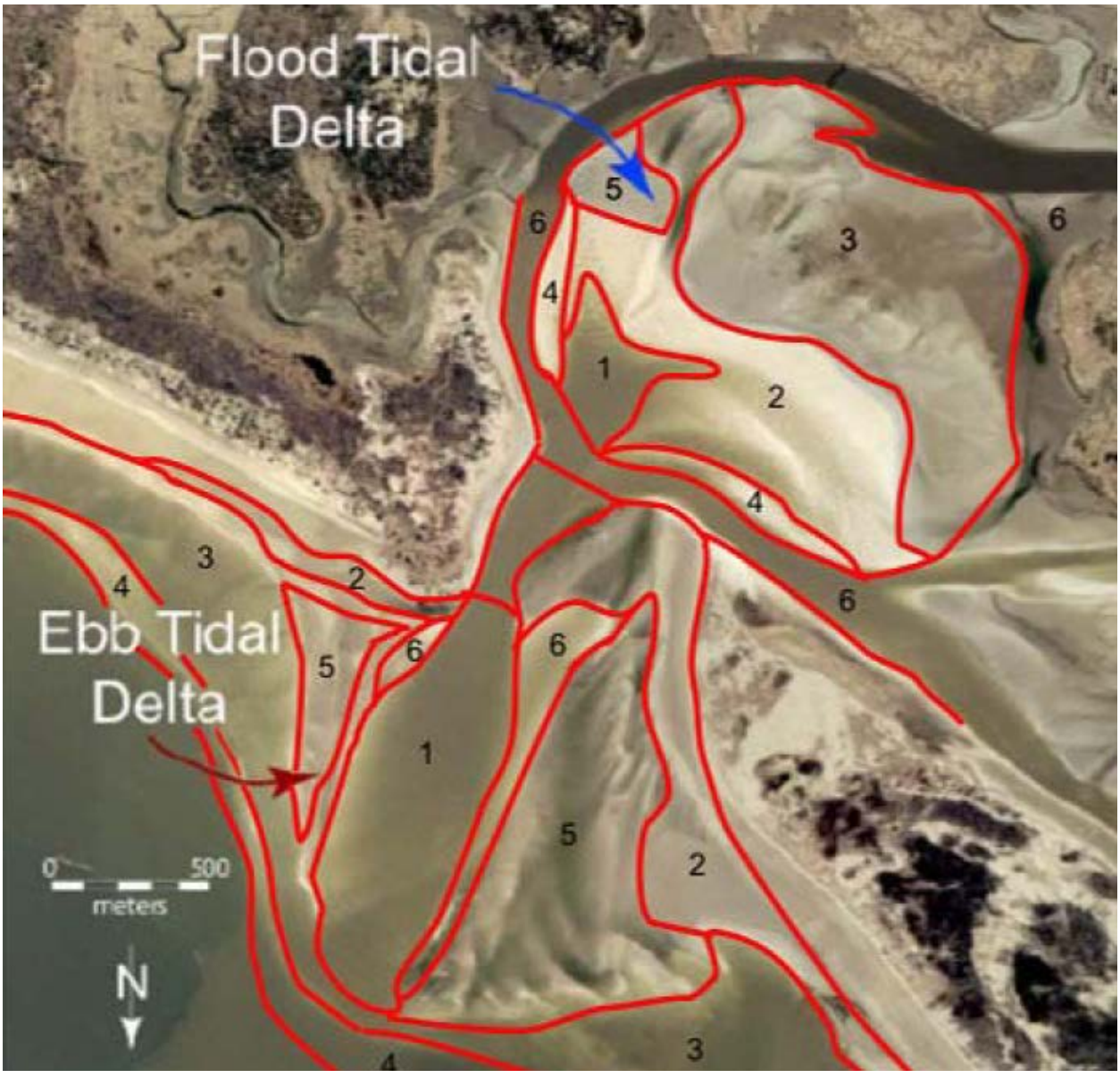


Figure B.4. Flood Tidal Delta Components

Appendix C

Essex River Inlet

This example shows an interpretation of the ebb and flood tidal delta components at the Essex River inlet, MA, from satellite imagery. The numbered components are listed in Figures 2.2 and 2.6.



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Annex LL

Incident Command Post Recommendations

Instructions to Set Up

Incident Command Post

Sector Delaware Bay
Incident Command Post setup
Quick Response Card (QRC) MISC-11
Updated 01/19/12

SITUATION: Sector Delaware Bay Command Staff determines the need to stand up an Incident Command for a large-scale incident or event and it is necessary to set up an Incident Command Post (ICP) outside of the Sector Command Center.

PROCEDURES: Once the Sector Commander designates the multipurpose room as the ICP, the Command Duty Officer should contact Officer of the Day to set up the ICP using MAA personnel. Officer of the Day should follow the following procedures as appropriate:

1. Pull out ICP layout diagram.
2. Set up tables as shown in the diagram. The diagram is posted on Cage #2.
3. Grab black flat extension cords (Cage #4). You will need 6 of them along with two power strips per extension (Cage #4).
4. Grab the 2 portable walls and set up according with diagram.
5. Grab computer cables and phones (Cage #5). The phone cables are already plugged into the phone jacks in the back of the MPR near the large poster printer.

    a. **Situation table-** 2 computer cables and 1 phone line. (Phone line will go from the MPR telephone in the front. Use extension 4949). This phone will be shared with Resources Section table.
    b. **Resources table-** 2 computer cables.
    c. Planning Section table- 3 computer cables and 1 phone line. Phone is in a box in Cage # 5. (Phone line is located in the back of the room by the large printer. Use extension 4894which is marked on the phone line).
    d. **Port Partners table-** 4 computer lines and 1 phone line. (Phone line is located in the back of the room by the large printer. Use extension 4874 which is marked on the phone line).
    e. **Operations Section table-** 4 computer cables and one phone line. (Phone line is located in the back of the room by the large printer. Use extension 4849 which is marked on the phone line).

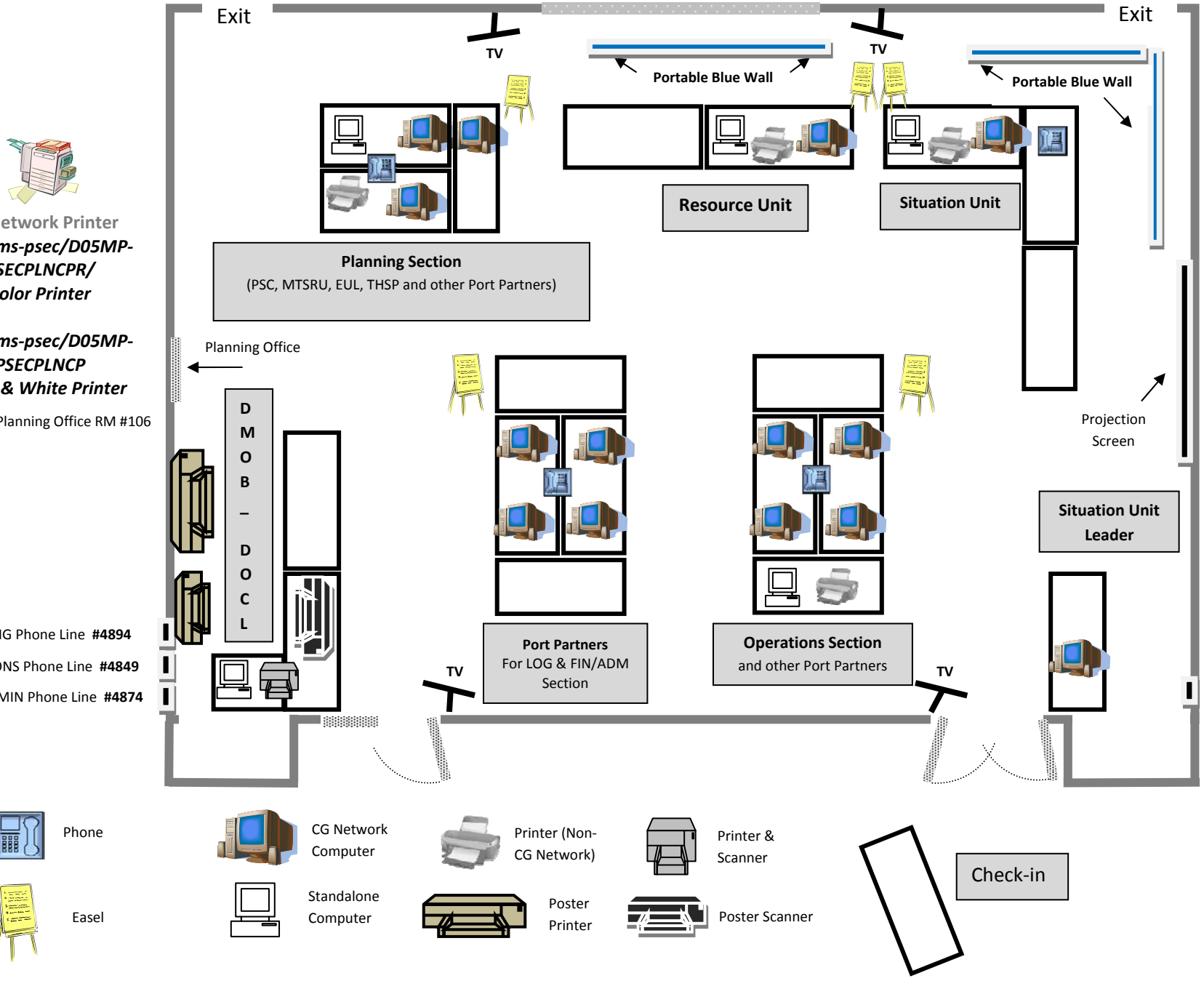
6. Note: Run all cables along the walls up and around doors and secured to ensure there are no safety hazards. (Cage #4 contains plenty of duck tape, look in the back of the cage).
7. Go to Cage # 2 and pull out Situation Unit Leader (SITL) and Resources Unit Leader (RESL) supplies and place on the appropriate tables. Cage # 2 is dedicated to SITL & RESL.
8. Go to Cage # 1, pull out Command & General Staff black go kits bags and place all bags on Planning Section Chief table.
9. Cage # 1, grab box with plastic triangle shaped section signs and place them on the appropriate desk IAW diagram.
10. Grab black pelican case with portable printers (Cage # 5) and place them at the following locations:

    a. Situation Unit Leader- 1
    b. Resources Unit Leader- 1
    c. Planning Section Chief- 1
    d. Operations Section Chief- 1

11. Grab small scanner printer located at Cage # 5 and set up on Demobilization/ Documentation Unit table. There should already be the large poster scanner on the Demobilization/ Documentation Unit table.
12. Grab easel boards out of Cage # 5 and set up IAW diagram.

ADDITIONAL COMMENTS:
All the Incident Command Post equipment is located in the multipurpose room. The room set up layout is posted on the cages. There are currently 4 available phone lines and 23 computer connections. All computer equipment will be provided by the respective users.

9770 Multi-Purpose Room Incident Command Post (ICP) Layout - Type III (Planning, Operations, Logistics & Finance/Admin)



Draft MOA Between

SDB and DE National Guard

9771 Memorandum of Agreement with Delaware National Guard

Memorandum of Agreement
Between
The Delaware Army National Guard
and the
United States Coast Guard

1. PARTIES: The parties to this Agreement are the United States Coast Guard (USCG), represented by the Commander, Sector Delaware Bay and the Delaware National Guard (DNG).

2. AUTHORITY: This Memorandum of Agreement (MOA) is authorized under the provisions of Title 33 United States Code 1321 (j), as amended by §4202 of the Oil Pollution Act of 1990 and Title 14 United States Code §141(b).

3. PURPOSE: This MOA is to facilitate the transfer of location for the Incident Command Post to a Delaware National Guard Armory listed below in the event of an oil spill, hazardous material release, chemical, biological or radiological incident on the C & D Canal, Delaware River/Bay, or off shore within Sector Delaware Bay's Area of Responsibility. This MOA will provide an alternate site for the Incident Command Post under the Area Contingency Plan (ACP) requirements.

   a. Designated alternate Incident Command Posts:

      - Kent County: Milford Armory, 500 N. Walnut Street, Milford, DE
      - New Castle County: Scannell Armory, Governor Bacon Health Center, Delaware City, DE
      - Sussex County: Dagsboro Readiness Center, Route 3, Dagsboro, DE

4. RESPONSIBILITIES:

   a. The Delaware National Guard agrees to:

      (1) Provide alternate temporary facility for the USCG to establish an Incident Command Post if the incident occurs in an area geographically better suited to be managed from one of the Armories listed in item three (3).

      (2) Identify the availability of in-building workspace to be utilized during the temporary relocation and maintain documentation for any associated cost(s) for space, equipment, and utilities.

      (3) Security provided by the Delaware National Guard shall verify, or supervise a contractor to verify the identification of USCG personnel seeking to gain access into the armory requested for use by the Coast Guard. Any person without a valid

Military, Coast Guard Civilian Employee, other Federal/State agency employee, or Civilian Contractor Identification Card will be denied access.

b. USCG, Sector Delaware Bay agrees to:

(1) Provide, at minimum, a 24-hour notification to the Director of Military Support, DNG of the need to utilize one of the facilities listed herein, and an estimated duration of relocation.

(2) Ensure Incident Command Post personnel relocating to the requested armory use an entrance designated by the Delaware Army National Guard.

5. POINTS OF CONTACT:

United States Coast Guard
Commander
Sector Delaware Bay
1 Washington Avenue
Philadelphia, PA 19147
(215)-271-4990

Delaware Army National Guard
Director of Military Support
Joint Force Headquarters
First Regiment Road
Wilmington, DE 19808
(302)-326-7085

6. OTHER PROVISIONS:

a. Nothing in this Agreement is intended to conflict with current law or regulations or directives of the United States Coast Guard, U.S. Department of Homeland Security, the Delaware National Guard, or the State of Delaware. If a term of this Agreement is inconsistent with such authority, then that term shall be invalid and the parties will rapidly consult to determine if this Agreement remains a useful and mutually beneficial instrument.

b. Nothing in this agreement shall be deemed to constitute a waiver of any immunity, which may exist in any action against the Delaware Army National Guard or the United States Coast Guard.

c. Commander, Sector Delaware Bay; Director of Military Support, DNG, shall ensure personnel are familiar with this MOA to expedite the transfer of Incident Command Post personnel to one of the three DNG Armories listed herein.

d. Should it become evident that the occupation of any of the three armories named herein by Incident Command Post personnel may extend beyond 30 days, all signatories will determine if the armory will be a suitable/available long-term location.

e. Except in matters of national security, the DNG will allow an alternate site for the Incident Command Post to be located and fully moved before the Incident Command Post can be evicted from the armory in use.

7. EFFECTIVE DATE: The terms of this Agreement shall become effective when all parties identified below have signed this Agreement.

8. MODIFICATION: This Agreement may be modified upon the mutual written consent of the parties.

9. TERMINATION: The terms of this agreement will remain in effect until terminated by either party. The parties will review the agreement every ___ years and may alter the agreement by written mutual agreement. All alterations will be documented in a letter, signed by cognizant representatives of both parties, and appended to each party's copy of the original agreement. The parties will determine at each review whether the alterations require the agreement to be rewritten. Either party may terminate this agreement upon thirty days written notice to the other party.

APPROVED BY:

_____	_____	_____	_____
Jonathan D. Sarubbi	Date	Francis D. Vavala	Date
Captain, United States Coast Guard		Major General, Delaware National Guard	
Commander, Sector Delaware Bay		The Adjutant General	
Philadelphia, Pennsylvania		Wilmington, Delaware	

Example of ICP

Needs Assessment Worksheet

9792 Facility Needs Assessment Worksheet (example)

FACILITY NEEDS ASSESSMENT WORKSHEET

1. INCIDENT NAME

2. DATE & TIME PREPARED

3. OPERATIONAL PERIOD (DATE & TIME)

4. LOCATION	5. FACILITIES	6. KINDS OF RESOURCES	Safety	Workspace ft	Work Station	Speaker Phone	Wall Space ft	Conf. Table	Chairs	Clock	Power Outlets	Easels	Telephones	Work Tables			Multi-Purpose Mtg Room	Printers	Fax	Copy Machine	Chart Pro Plotter	Video Projector	7. OVERHEAD	8. SPECIAL EQUIPMENT & SUPPLIES	9. REPORTING LOCATION	10. REQUESTED ARRIVAL TIME
ICP	Unified Command	REQ	6	400	1	1	6x10	1	8	1	3	1														
		HAVE																								
		NEED																								
	Liaison Officer and Agency Representatives	REQ	10	600	2		6x10		6	1	4	1	2	4												
		HAVE																								
		NEED																								
	Safety Officer	REQ	4	400	1		6x10		2	1	2	1	1	2												
		HAVE																								
		NEED																								
	Public Information Officer	REQ	2	200	1		6x40		4	1	2	1	2	2												
		HAVE																								
		NEED																								
	Planning Section	REQ	18	2k	8		6x40		16	1	20	4	8	10			800	4	2	2	2	1				
		HAVE																								
		NEED																								
	Operations Section	REQ	2	300	2																					
		HAVE																								
		NEED																								
	Logistics Section	REQ	12	1k	6		6x20		14	1	8	2	10	12												
		HAVE																								
		NEED																								
	Admin/Finance Section	REQ	6	400	2		6x10		6	1	4	1	2	3												
		HAVE																								
		NEED																								
	Common Areas	REQ		900																						
		HAVE																								
		NEED																								
		REQ																								
		HAVE																								
		NEED																								
	11. TOTAL RESOURCES REQUIRED																						14. PREPARED BY (NAME & POSITION)			
	12. TOTAL RESOURCES ON HAND																									
	13. TOTAL RESOURCES NEEDED																									

Annex MM

Public Information

Joint Information Center Information

Media Analysis Worksheet

9702 Media Analysis Worksheet

JOINT INFORMATION CENTER
MEDIA ANALYSIS WORKSHEET

Date:_____/_____/_____

Media Outlet Name: _____

Current Release: _____

Daily Broadcast Times: _____

(If recorded please mark Y or N after time.)

Daily Coverage Synopsis____ _____

Issues_____

Inaccuracies_____

View Points_____

Fixes _____

Who Replied to_____

JIC Query Record

9703 Joint Information Center Query Record

JOINT INFORMATION CENTER QUERY RECORD

Person Calling:_____

Date / Time of Call: _____

Organization: _____

Phone Number:_____

Fax: _____

Address: _____

_____

Inquiry: _____

_____

_____

_____

_____

Deadline: _____

Person taking call:_____

Reply made by:

_____

Date / Time

_____

Reply:

_____

_____

_____

_____

Example of

News Releases

News Release Templates

Coast Guard Responds to Spill Incident

Date: _____
Contact:_____

News Release

Coast Guard responds to TYPE spill in LOCATION

PHILADELPHIA — Coast Guard crews are responding to a report of a TYPE spill near LOCATION, TIME/DATE.

REPORTING SOURCE notified Coast Guard Sector Delaware Bay of the spill, which took place at LOCATION. Initial reports indicate the spill is coming from a VSL/FACILITY/SUSPECTED SOURCE due to SUSPECTED CAUSE.

The SUSPECTED SOURCE was reportedly CARRYING/TRANSFERRING nearly MAX POTENTIAL gallons of PRODUCT, but it is not known how much of the product was discharged.

Coast Guard Sector Delaware Bay pollution responders and state environmental officials are on scene investigating the impact of the spill. A broadcast notice to mariners is in place advising mariners to transit the area with caution due to pollution.

The cause of the incident is under investigation. Drug and alcohol tests will be performed.

###

Incident Joint Information Center Established

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact:_____

News Release

INCIDENT NAME joint information center established

PHILADELPHIA — A Joint Information Center has been established at LOCATION to provide response information for the INCIDENT NAME.

For incident response inquiries and interviews, media representatives should use the contact numbers below:

(###) ###-####

(###) ###-####

(###) ###-####

A website with incident response information can be found at the following URL: www.incidentwebsite.com

Members of the Unified Command are responding to a TYPE spill near LOCATION, DATE. The SUSPECTED SOURCE was reportedly CARRYING/TRANSFERRING approximately AMOUNT gallons of PRODUCT, but it is not known how much of the product was discharged.

The cause of the incident is under investigation.

###

Incident Media Briefing

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

INCIDENT NAME media briefing to be held in LOCATION

PHILADELPHIA — The INCIDENT NAME unified command is holding a media briefing at LOCATION today to discuss TOPIC.

WHEN: TIME, DAY

WHERE: BUILDING NAME, ROOM NUMBER, EXACT LOCATION, STREET ADDRESS, CITY, STATE

WHO: (NAME, AGENCY), Federal On Scene Coordinator
(NAME, AGENCY), State On Scene Coordinator
(NAME, AGENCY), Responsible Party

BACKGROUND: INCIDENT SUMMARY, SOMETHING HAPPENED AT SOME PLACE SOME DAY. TYPICALLY CAN BE THE LEAD PARAGRAPH FROM PREVIOUS RELEASE.

Please visit WWW.INCIDENTWEBSITE.COM for incident response information.

###

Response Continues

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

RESPONSE TYPE spill response continues in LOCATION

PHILADELPHIA — Members of the unified command continue to coordinate PRODUCT spill recovery operations in LOCATION, DATE.

Responders have recovered more than ----- gallons of oily water mixture and -- yards of solid soiled waste. More than ----- feet of containment boom and -- responders have been deployed to conduct shoreline assessments and recover as much product as possible.

Shipping traffic is still required to maintain minimum safe speed from ------ to ------ to minimize the impact to clean-up operations. The unified command will continue to closely monitor the situation and will adjust restrictions to commercial and recreational boating traffic accordingly.

The unified command consists of representatives from the UC MEMBER AGENCIES.

WHAT HAPPENED, WHERE at approximately TIME/DATE.

There have been no reports of impacted wildlife.
Address public safety concerns/messaging.

The cause of the incident is under investigation. Drug and alcohol tests will be performed.

###

Date: _____
Contact: _____

Unified Command Approves Dispersants

Joint Information Center

(Unified Command logos/names here)

News Release

Unified Command has approved the use of dispersants for the RESPONSE NAME

PHILADELPHIA — The Unified Command has approved the use of the chemical dispersant Name in order to break up the oil slick and protect shoreline habitat, seabirds and marine mammals from becoming oiled due to the PRODUCT spill recovery operations in LOCATION, DATE.

Dispersants break down oil into smaller particles helping it to disperse and sink below the surface. Before dispersants are used a range of criteria must be met:

- The application of dispersants must be 3 – 200 miles off shore and not within a National Marine Sanctuary.
- The application of dispersants must provide an environmental benefit for species at risk and/or species of special concern.
- The application of dispersants must be done safely and in accordance with standard marine and aviation practices.

Federal and state trustee agencies identified the LIST OF SPECIES as species of special concern and of significant risk of injury from this oil spill, especially if the spill were allowed to spread and hit sensitive habitats and shorelines.

Wildlife and resource agencies believe that these species will be benefited by the use of dispersants and will monitor the operations as appropriate for these species.

(PROVIDE ANY INFORMATION, AS NECESSARY ON FISHERIES AND PLANS FOR ANY SEAFOOD TAINTING PANELS)

The unified command consists of representatives from the UC AGENCIES.

THERE HAVE BEEN NO REPORTS OF IMPACTED WILDLIFE.

The cause of the incident is under investigation. Drug and alcohol tests will be performed.

###

Fishing Activity Suspended

Date: _____

Contact: _____

Joint Information Center

(Unified Command logos/names here)

News Release

Fishing activity suspended due to SPILL RESPONSE in LOCATION

PHILADELPHIA — Members of the unified command have suspended all fishing for human consumption in the areas affected by the INCIDENT NAME until at least DATE, or when state health officials have determined that fishing can safely be reopened.

The AGENCIES are collecting samples of fish and shellfish from the area impacted by the spill. Samples of FISH are being collected from various locations in WATER BODY and along the coast. The samples will be tested for toxic chemicals that are found in the oil, which can accumulate to dangerous levels in fish and shellfish. The main toxins of concern in the oil that was released are a group of chemicals called polycyclic aromatic hydrocarbons. Long-term exposure to high levels of PAHs is associated with an increased risk of developing cancer.

AGENCY's safety guidelines call for avoiding consumption of any fish or shellfish from WATER BODY until analysis of the collected samples is completed. Visible oil or oily smell are obvious indications of contamination, but fish and shellfish from the spill area could still pose a potential risk even if there are no visible signs of contamination.

In addition, health officials are asking people to stay away from shore areas until cleanup efforts are completed. After beaches are reopened, people who find oil deposits along the shore should report them to cleanup officials by telephoning CONTACT.

Safety advice for beaches in the spill area.

- Avoid direct contact with spilled oil, which can cause skin irritation. Prolonged contact can cause rashes.
- If you get oil or tar on your skin, wash it off with soap and water, and be certain to wash your hands before eating.
- If you get oil on your clothing, wash it in the usual way. There is no need to use harsh detergents, solvents or other chemicals to wash oil from skin or clothing.
- Do not burn driftwood or other debris that may be contaminated with oil.
- Use common sense. Do not swim in water with an oil slick and do not swallow water from the area. Oil-contaminated water can cause choking and lead to severe pneumonia if it gets into the lungs.

- Avoid prolonged exposure to fumes in closed spaces.
- Fish and shellfish caught from waters outside the spill area remain as safe to eat as before the spill, but marine life from the spill area should be avoided until the evaluation of its safety is completed.

THERE HAVE BEEN NO REPORTS OF IMPACTED WILDLIFE.

The cause of the incident is under investigation.

###

Volunteer Hotline Established

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

RESPONSE NAME Volunteer Hotline Established

PHILADELPHIA — The unified command has activated a volunteer hotline at 000-000-0000 for people who would like to contribute to the spill recovery operations near LOCATION, DATE.

The Volunteer Hotline will provide updates on the spill response and will allow potential volunteers to provide their contact information, availability, and applicable skills.

"We appreciate the public's outpouring of support and their desire to help out in the unfortunate event," said NAME, POSITION. "We are doing everything we can to minimize impacts to the environment and protect the wildlife that lives here. At this time, we are evaluating how we may best use volunteers in our response in a way that is both safe for the volunteers and productive."

Volunteers have been used in previous oil spill responses, with activities coordinated through the unified command. By calling the Volunteer Hotline number, prospective volunteers will get the most up-to-date information on whether their time and skills will be needed.

Volunteers and others should stay away from the spill site and not attempt to rescue oiled wildlife, as this may hamper clean-up efforts and increase the danger to both wildlife and humans. Oil is a toxic substance and only those with hazardous materials training are authorized to clean up oil. For the safety of both the public and the animals, only trained wildlife specialists will handle oiled wildlife.

The public can help at this time by reporting any oiled animals to 000-000-0000 (potentially Tristate Bird Rescue). This facility uses modern equipment and facilities and has trained staff to care for the oiled wildlife. Personnel experienced in animal capture and handling will respond at the earliest opportunity, presenting the best chance for wildlife survival.

The public's cooperation is greatly appreciated.

For more information on volunteering, visit WEBSITE.

###

Fact Sheet Checklists

Fact sheets produced and/or released by the PIO/JIC may include the following:

1st Fact Sheet

- Facts about the incident as known.
- Exclusion zones and evacuations.
- Total spill potential, expressed in gallons.
- MSIB information.
- Air monitoring information.
- Wildlife impacts/hotline number.
- Claims line (if established).
- Equipment/resources deployed.
- Number of personnel responding.
- Contact phone numbers for media.

Subsequent Fact Sheets

- Amount and type of product spilled.
- Location and time of the spill.
- Cause of the spill.
- Vessel information.
- Injuries or casualties.
- Responsible party.
- Trajectory of the oil.
- Public safety message.
- Evacuations.
- Air monitoring information.
- Environmental impacts.
- Beach closures.
- Wildlife impacts.
- Fishery closures.
- Cleanup contractors.
- Agencies responding.
- Actions taken.
- Resources applied and numbers.
- Personnel deployed.
- Future actions.
- Special considerations (dispersant use, port of refuge).
- Status of the investigation.
- Third party claim line.
- Oiled wildlife hotline.
- Volunteer hotline.
- Cost of the spill.
- Amount of product recovered.

Fact Sheet Templates

Initial Incident Details

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: RESPONSE TYPE spill response near LOCATION

PHILADELPHIA — Members of the unified command continue to coordinate PRODUCT TYPE spill recovery operations in LOCATION, DATE.

INCIDENT SUMMARY. Emergency response operations will continue and are being closely monitored until long term salvage or oil pollution mitigation plans can be finalized.

Unified Command:

- Members consist of the WHO.
- Agencies contributing to the response include WHO ELSE.

Current activity:

- Responders continue oil/water mixture removal from the SUSPECTED SOURCE.
- Crews continue to tend the hard boom while removing and replacing the sorbent boom used to collect the oil.
- Responders deployed skimmers.
- Responders place recovered oil into a tank where it will decant, settle and separate, for later quantification.
- Number of wildlife affected, being treated, released.

Quantities:

- VESSEL had a maximum capacity of ------ gallons aboard at the time of the incident.
- ------ gallons of oil/water mixture recovered to date.
- The Oil Spill Liability Trust Fund is currently at $--- million. More information on the OSLTF is available at http://www.uscg.mil/npfc/About_NPFC/osltf.asp.

Equipment and personnel on scene:

- ----- boats, and aircraft
- ----- skimmers
- ----- skiffs
- ---- holding tank for recovered oil
- ---- vacuum truck
- ---- personnel from -------
- ---- on scene recovery capacity compared to state requirements---- and federal requirements----
  * Note: Only use this metric if the on scene capacity is greater than state and federal requirements.

Safety:

- Coast Guard Sector Delaware Bay is requesting all vessel traffic inbound and outbound of ----- travel with no wake as a safety measure for responders working in and on the water.

Wildlife:

- 000 wildlife impacts have been reported at this time. Crews will monitor for oiled wildlife for the duration of the spill cleanup. Anyone seeing oiled wildlife should report it to 000-000-0000.

Fishery Closure:

- LOCATION

Ship Facts:

- Built in ----.
- Length -----
- Beam ____
- Draft -----
- ----- Flagged
- Max capacity of the tanks is approximately ------ gallons.

Photo and video resources

###

Unified Command

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Unified Command

PHILADELPHIA — A Unified Command (UC) is indispensable to response activities and requires a clear understanding of the roles and responsibilities of each participating organization. Success requires unity of effort, which respects the chain of command of each participating organization, while harnessing seamless coordination across jurisdictions in support of common objectives.

Use of the Incident Command System (ICS) is an important element across multijurisdictional or multiagency incident management activities. It provides a structure to enable agencies with different legal, jurisdictional, and functional responsibilities to coordinate, plan, and interact effectively on scene. As a team effort, the UC is made up of Incident Commanders (IC) from agencies with jurisdictional authority and/or functional responsibility for the incident, as well as staff for coordinating planning, operations, finance, and support. This allows each agency or IC to provide joint support through mutually developed incident objectives and strategies established at the command level. Each participating agency maintains its own authority, responsibility, and accountability, while the UC provides a forum for these agencies to make consensus decisions.

The need for UC arises when incidents:

- Cross geographic boundaries (e.g., two states, international boundaries);
- Involve various governmental levels (e.g., federal, state, local);
- Impact functional responsibilities (e.g., Search and Rescue, fire, oil spill, EMS); or
- Some combination of the above.

The UC is responsible for:
(1) developing a single set of objectives;
(2) using a collective, strategic approach;
(3) improving information flow and coordination;
(4) creating common understanding of joint priorities and restrictions;
(5) ensuring that no agency's legal authorities are compromised or neglected; and

(6) optimizing the combined efforts of all agencies under a single plan.

UC representatives must be able to:

- Agree on incident objectives and priorities;
- Have the capability to sustain a 24-hour-7-day-a week commitment to the incident;
- Have the authority to commit agenc
- Have the authority to spend agency
- Agree on constraints/limitations, pr
- Agree on an incident response orga
- Agree on the appropriate Comman direction for on-scene tactical resou
- Commit to speak with "one voice" Information Center (JIC), if establi
- Agree on managing sensitive infor
- Agree on logistical support includi
- Agree on cost-sharing and cost acc

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In general, a successful UC is a team. A UC is to skillfully use the strengths of each IC and acknowledges each representative's unique capabilities and authorities. A UC has a shared understanding of the situation and agrees on common objectives to bring the incident to closure. A UC is open to different perspectives and knows that contentious issues may arise, but that ICS inherently relies on the UC framework to provide the forum to resolve problems and find solutions.

###

Boom

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Boom

PHILADELPHIA — Spilled oil may be contained or diverted by using a floating physical barrier called boom. Boom floats on the surface, but parts may extend above and below it. Because oil primarily floats on water, the boom is utilized to collect or direct floating oil.

Boom length is measured in feet, and it is not unusual for thousands of feet of boom to be deployed for even a modest spill. Boom sizes are described in inches of freeboard and skirt. A 6-by-12 boom has a six-inch-high freeboard and 12-inch-deep skirt. Boom typically is manufactured in high-visibility colors, such as white, yellow or orange, for easy tracking by response teams and for the safety of vessels operating nearby.

Boom is not a perfect containment device. Waves can carry oil over a boom and a current may force oil under it. Debris or ice can also limit the effectiveness of boom. Boom is more effective directing oil which moves at a slight angle to the line of boom than as a barrier blocking the slick's movement. Such circumstances may require replacing light boom with boom having higher freeboard and deeper skirt. Multiple lines of boom are more effective at containing oil than a single line.

Limitations on the use of boom include the time required to get it to the scene, load it on boats, carry it to the spill and deploy it. Boom also has to be stored within reasonable traveling distance of a potential spill. Once used, boom has to be de-contaminated of the waste oil or chemical before it can be stored. If sorbent boom is used, it has to be disposed of safely once it has been contaminated with oil or chemical waste. Some types of boom have operational limitations, such as the loss of ballast or buoyancy if the water- or air-filled sections are breached by abrasion or handling.

A single string of boom often will serve several purposes simultaneously. Typical tasks for boom include:

- Encirclement – laying one or more barriers of boom around the source of the spill to keep it from spreading or around a section of slick to hold it in place for recovery. Tankers transferring cargo may be encircled by boom as a precaution, even though there is no spill.
- Diversion – setting one or more lines of boom at angles into or across a moving slick's path to guide it toward an area where it can be confined and recovered, or to let it safely pass a sensitive area. Diversion is primarily used near shore on rivers. It is most effective where currents are weak and there is little wave action.
- Collection – towing boom in a "V," "U," "J," or teardrop configuration through or around a slick to gather oil together for recovery or burning.

NEWS RELEASED IS CONTINUED BELOW

- Recovery – placing sorbent boom where it will contact floating oil and absorb or adsorb some of it for later recovery, or similarly using weir boom to catch oil and transport it to a skimmer.
- Exclusion – stringing boom around un-oiled areas to keep oil out. The exclusion booming may also divert moving oil away from a sensitive area.

Although different types of boom may look different, virtually all boom has five common components:

- Flotation device – keeps the boom at the water's surface, where floating pollutants are.
- Freeboard – the part that rises above the water's surface and prevents waves from washing pollutants over the top.
- Skirt – similar to freeboard but below the surface, the skirt prevents the current from washing floating pollutants under the boom.
- Ballast – this is the weight at the bottom of the skirt that keeps it hanging vertically against a current.
- Tension line or strength member – cables, chains or lines extending the length of the skirt or freeboard and, like the main boom cable, chain or boom, attached at the end.

In general, boom with a high freeboard and short skirt is called fence boom, because it prevents the pollutant from moving across the surface. A boom with a longer skirt and shorter freeboard is a curtain boom, and is good to prevent pollutants from moving just below the surface. Some boom includes both characteristics.

Similar to fence and curtain boom is tubular containment boom, such as Texas Boom. Tubular boom has at least two sections…one or more air-filled tubes above the water, for flotation and to keep oil from crossing the boom on waves, and one or more water-filled tubes below the water for ballast and to keep oil from passing beneath the boom.

Sorbent boom made of absorbent or adsorbent material to collect and hold oil within the boom itself. It's most effective with thin layers of pollutants and light winds or currents. Once soaked to capacity, the boom can be recovered and the collected oil squeezed out. Once soaked, it is heavier than simple barrier boom and so needs extra effort to remove from the water.

Recovery boom, such as three-weir boom, has four sections. An air-filled tube extending above the water for buoyancy and to keep oil from passing over the boom. A water-filled tube extending below the surface for ballast and to keep oil from passing beneath the boom. A discharge tube which collects oil from inlets between the air- and water-filled tubes and moves it the length of the boom to a recovery device. A smaller air-filled tube to keep the discharge tube afloat. Recovery boom not only holds floating pollutants in place, but is an active part in recovering pollutants from the water.

A frequent problem in the use of boom is the fact that each end of the boom must be anchored in place. On a small stream, it can be anchored to trees or rocks on land; in a harbor, it may be attached to piers or seawalls. On open water, however, the ends must be literally anchored, using lines attached to weights on the lake or sea bottom, or they must be attached to boats. The use of a boat to anchor one end of a boom means that boat cannot be used for any other assignment, and boats may be in short supply.

Sources: Department of Transportation, Pipeline and Hazardous Materials Safety Administration; US Coast Guard; Environmental Protection Agency; Department of the Interior, Bureau of Safety and Environmental Enforcement.

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Oil Types

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Oil Types

PHILADELPHIA — Oil spills along coasts affect many parts of the environment, such as water, ocean bottom, shoreline sea birds, marine mammals, shellfish, and people.

Major oil spills most commonly involve oils shipped in large quantities at sea, such as crude oil/petroleum, No. 1 and No. 2 fuel oils, diesel oil, Bunker C oil, kerosene, and jet fuel. Oils are compounds, complex mixtures that vary widely in composition.

Oils can be described as belonging to one of five groups:

- I very light oils (jet fuel, gasoline);
- II light oils (diesel, No. 2 fuel oil, light crude, home heating);
- III medium oils (most crude oils);
- IV heavy oils (heavy crude oils, No. 6 fuel oil, Bunker C);
- V group (very heavy oils).

The different types of oils behave in different ways during a spill, so the response to a spill varies, depending on the type of oil and quantity released.

Most oil has a density less than water and floats. The natural tendency of oil is to spread in a thin layer on the surface of the water as a sheen or film. Such sheens are extremely difficult to recover and do not remain for long periods; however, they do represent a continued threat to fish and wildlife, particularly nesting birds. Under turbulent conditions, oil is more likely to disperse into the upper layers of the water.

Oil changes rapidly once it is spilled into water. These changes are enhanced by the processes of evaporation, dilution and emulsification (when water incorporates into the oil, forming a stable mixture). Some changes help dissipate spilled oil, but others can make it linger in the water, on the bottom, or on the shore. Evaporation tends to remove the more toxic components and reduces the toxicity of spilled oil. Emulsification, on the other hand, can slow degradation of spilled oil.

Weathering describes the physical, chemical, and biological changes that happen to crude oil and refined petroleum products once they begin to interact with the watery environment. Ultimately, the more toxic elements of oil products spilled in the marine, estuarine, or freshwater environment are broken down. Exposure to air, sunlight, wave and tidal action, and certain microscopic organisms degrades and/or disperses oil. The rate of degradation and dispersion depends on many factors like the type of oil, weather, temperature, and the type of shoreline and bottom.

Very light oils are highly volatile, which means they evaporate quickly, usually completely within one to two days after a spill. These oils are also flammable and contain high concentrations of soluble toxic compounds. Very light oils can mix with water and kill aquatic life that lives in the upper layers. Cleanup is usually not necessary, or possible, with spills of very light oil.

Light oils are moderately volatile, but can leave a residue of up to one-third of the amount spilled after a few days. These oils contain moderate concentrations of soluble toxic compounds. Light oils leave a film or layer on intertidal resources with the potential of long-term contamination. Cleanup can be very effective on spills of light oil.

Medium oils are less volatile, leaving a residue of about two-thirds of the amount spilled after 24 hours. These oils are less likely to mix with water, and oil contamination of intertidal areas can be severe and long-term. The impact of medium oils on waterfowl and fur-bearing mammals can also be severe. Cleanup is most effective with spills of medium oil if conducted quickly.

Heavy oils have far less evaporation or dilution potential, and they weather more slowly. These oils do not readily mix with water. Spills of heavy oils can cause severe contamination of intertidal areas and possible long-term contamination of sediments. Heavy oils have severe impacts on waterfowl and furbearing mammals. Shoreline cleanup in spills of this type is difficult and long-term under most conditions.

Group V oils, mostly very heavy oils, can float, sink, or hang in the water. These oils can become oil drops and mix in the water, or accumulate on the bottom, or mix with sand and then sink. As a rule, these oils are less toxic than lighter oils, however they pose significant problems to responders because they are extremely difficult to track or predict.

Spill response teams of federal, state and local agencies, organizations and industry representatives have prepared contingency plans for oil spill emergencies.

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Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Tarball

PHILADELPHIA — Tarballs are remnants of oil spills or natural oil seeps in the Ocean. When crude oil from a seep, spill, or a heavier refined product floats on the ocean surface, its physical characteristics change.

During the first few hours of a spill or natural release, the oil spreads into a thin slick. Winds and waves tear the slick into smaller patches that are scattered over a much wider area. Various physical, chemical, and biological processes change the appearance of the oil. These processes are generally called "weathering."

Initially, the lighter components of the oil evaporate much like a small gasoline spill. In the cases of heavier types of oil, such as crude oil, much of the oil remains behind. At the same time, some crude oils mix with water to form an emulsion that often looks like chocolate pudding. This emulsion is much thicker and stickier than the original oil. Winds and waves continue to stretch and tear the oil patches into smaller pieces, or tarballs. While some tarballs may be as large as pancakes, most are coin-sized. Tarballs are very persistent in the marine environment and can travel hundreds of miles.

Weathering processes eventually create a tarball that is hard and crusty on the outside and soft and gooey on the inside, not unlike a toasted marshmallow. Turbulence in the water or beach activity from people or animals may break open tarballs, exposing their softer, more fluid centers. Scientists have not been very successful at creating weathered tarballs in the laboratory and measuring the thickness of the crusty outer layer. Therefore, we don't know how much energy is needed to rupture a tarball. We do know that temperature has an important effect on the stickiness of tarballs. As air and water temperatures increase, tarballs become more fluid and, therefore, sticky— similar to an asphalt road warmed by the summer sun. Another factor influencing stickiness is the amount of particulates and sediments present in the water or on the shoreline, which can adhere to tarballs. The more sand and debris attached to a tarball, the more difficult it is to break the tarball open. These factors make it extremely difficult to predict how long a tarball will remain sticky.

For most people, an occasional brief contact with a small amount of oil, while not recommended, will do no harm. However, some people are especially sensitive to chemicals, including the hydrocarbons found in crude oil and petroleum products. In general, we recommend that contact with oil be avoided. If contact occurs, wash the area with soap and water, baby oil, or a widely used, safe cleaning compound such as the cleaning paste sold at auto parts stores. Avoid using solvents, gasoline, kerosene, diesel fuel, or similar products on the skin. These products, when applied to skin, present a greater health hazard than the smeared tarball itself.

There is no magic trick to making tarballs disappear. Once tarballs hit the beaches, they may be picked up by hand or by beach-cleaning machinery. If the impact is severe, the top layer of sand containing the tarballs may be removed and replaced with clean sand. The number of tarballs found on the beach depends on several factors: tanker traffic, wind patterns, sea currents, whether an oil spill or seep occurred recently, and how often the beach is cleaned.

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Fact Sheets

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

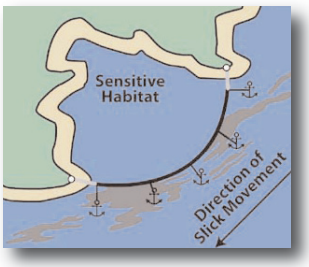
Using Boom in Response to Oil Spills

Fire Boom.

Boom is a common type of oil spill response equipment. It is used to protect shorelines or sensitive locations by acting as a barrier to oil, and to corral oil on the water to enhance the recovery effectiveness of skimmers or other response operations.

How Boom is Used

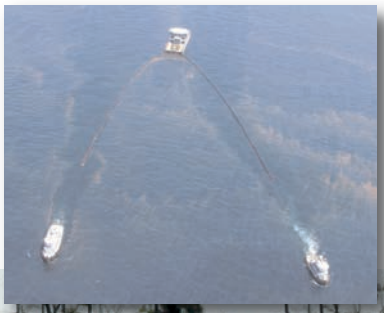
Boom is used in many ways during an oil spill response, including the following:



Boom can be placed to exclude oil from a sensitive stretch of shoreline, such as a coastal marsh, marina, seabird nesting area, or location where marine mammals congregate. This diagram shows how boom would be placed across the mouth of a small inlet to prevent oil from entering the inlet, with anchors used to keep the boom in place. Boom placed to protect an area deflects oil; it does not collect it.

Boom can be placed around a vessel or tank that is leaking oil. The boom confines the oil within a small space so it can be collected.

Boom may be towed behind boats to collect oil, as in the photo at right. Oil that collects in the apex of a towed U-shaped boom can either be skimmed from the water surface, or towed away from the main slick to a location where it is safe to burn it.



(below) Hard Boom.

Types of Boom

Four main types of boom are used for oil spill response. **Hard boom** is typically made of PVC or similar durable material. It consists of an inflated chamber that rides above the water, and an attached skirt that hangs down into the water. The two main types of hard boom are ocean boom, designed for use in high seas, and harbor boom, designed for sheltered waters. The primary difference between ocean and harbor boom is the strength of the material, size of the flotation chamber, and depth of the skirt.

Hard boom is used to contain oil. It may be placed around a leaking vessel to corral oil, or anchored offshore of a sensitive area to exclude oil from that area. Hard boom also can be towed behind boats to concentrate oil so that skimmers can recover it.

Fire boom is similar in design to hard boom, but is made of material that can withstand the heat generated by burning oil, which can exceed 2,000º F. Fire boom is used to corral oil to be burned in an on site (in situ) burn operation.

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Sorbent boom looks like a long sausage. It is constructed of a long fabric sock enclosing material that attracts oil but repels water. Unlike hard boom, sorbent boom does not have an attached skirt. Once saturated with oil, sorbent boom must be removed and properly disposed of. It is used to both contain and absorb oil on the water surface.

Snare boom looks like cheerleaders' pompoms tied to a long line. It is placed along shorelines, anchored by stanchions. The "pompom" strands catch tarballs and small quantities of oil brought by tides and waves.

Effective Use of Boom

For several reasons, NOAA recommends that boom be deployed and maintained in a coordinated strategy with other response equipment. For one thing, not all areas can be protected by boom; other response measures must be adopted in those locations. And because there typically aren't enough resources to protect all sensitive locations with boom, it is usually necessary to make tradeoffs when deciding where and when to place boom. For example, choosing to deploy boom to protect the entrance to an ecologically important coastal marsh rather than a recreational beach.

Because boom, once placed in the water, is difficult and time consuming to move, an effective strategy is to stage boom so that it is ready for deployment, but waiting to deploy until oil approaches the area. By using this strategy, responders can ensure that the boom is placed at the optimal location to protect against the oil, whether that location proves to be the originally envisioned site or a different location.

When boom is used to protect a shoreline, it must be tethered securely so that it will not be dislodged. Currents faster than 1.5 knots or even wakes from passing ships can dislodge boom. Rough seas and winds can tear, capsize, and shred boom. An effective method is to deploy concentric rings of boom to protect highly sensitive areas in exposed areas. In estimating the amount of boom needed to protect a given length of shoreline, responders then need to consider whether multiple rings of boom will be deployed.

Boom should never be set out and forgotten; deployed boom must be monitored to ensure that it remains in place. Untended boom can be a barricade to wildlife. For example, dislodged boom can strand on shorelines and prevent sea turtle adults and hatchlings from transiting between shore and water. Dislodged boom anchors can damage corals and sea grass beds. Untended boom also can become a barrier and hazard to ship traffic. Marinas and navigation channels must remain open for response vessels and commercial traffic.

Sorbent boom designed for oil spill response should be used whenever possible for most spill response uses, because it is specifically designed to collect spilled oil from the water surface. NOAA's years of experience in oil spill response and field testing indicate that sorbent boom is much more effective than alternatives such as recycled nylon stockings stuffed with straw and hair.

In a February 2010 NOAA field test, commercial sorbent boom absorbed more oil and much less water than hair boom, which became waterlogged and sank within an hour. NOAA foresees a risk that widespread deployment of hair boom could exacerbate the marine debris problem in the Gulf of Mexico, in that waterlogged hair boom would be especially difficult to retrieve and more likely to break apart. It is possible that hair sorbents (absorbent pads) would be useful for collecting oil from drier areas such as rocks and artificial structures.

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Guide to Distinguishing Oil From Algal Blooms

When observed from a boat or aircraft, many kinds of natural phenomena can be mistaken for oil on the water surface. Kelp beds, accumulations of jellyfish, and cloud shadows on the water are sometimes mistaken for oil. Oil spill response experts call such phenomena "false positives." Algal blooms are one kind of false positive. They are sometimes reported as oil on the water, even by trained and experienced observers. This document describes algal blooms and provides tips to help you avoid mistaking algal blooms for oil.

Noctiluca blooms

Algal blooms happen naturally when some kinds of microscopic algae multiply quickly to form visible patches on the water surface. *Noctiluca* is a common, non-toxic alga that forms red, tomato soup-like blooms in the Gulf of Mexico. A *Noctiluca* bloom can look similar to the reddish emulsified oil originating from the Deepwater Horizon wellhead.

Noctiluca *bloom in Hood Canal, Washington State. (Credit: University of Washington)*

Algal blooms can develop when nutrients become plentiful and other growing requirements (light, temperature, and salinity) are met. The Mississippi and Atchafalaya Rivers bring nutrient-rich water to the Gulf of Mexico, providing especially favorable conditions for blooms of *Noctiluca* and other species of algae from spring until the hurricane season.

Distinguishing *Noctiluca* from oil

If You're Observing From a Vessel, Aircraft, or the Shore

If you see a reddish patch on the water surface, look for these clues:

1. **Pattern**: A patch of oil tends to appear streaky, or oil may appear as rows of streamers. Algae and water weeds tend not to appear streaky, but instead appear as an amorphous mass. Oil that has emulsified (mixed with water to form an emulsion) typically either has no texture, or appears streaky.

Emulsified oil from the Deepwater Horizon appears as reddish streaks on the water. (Credit: USCG)

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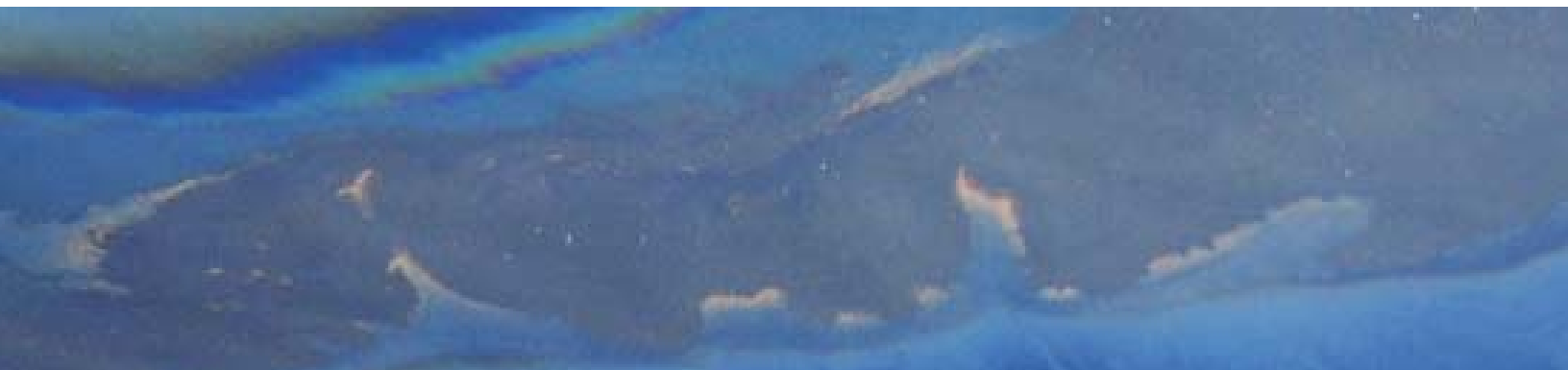


2. **Sheen**: If you observe a dark or reddish patch on the water surface from an aircraft or vessel, look for sheen around it. Sheen is a very thin film of oil on the water that may be brown, silvery, rainbow-colored, or transparent. Sheen is usually present around patches of thicker oil on the water. You may see small quantities of colorless, sheen-like biofilm around algal blooms, but oil usually produces stronger sheen. Any colored sheen indicates oil (though not all sheen associated with oil is colored).

A streamer of oil is surrounded by rainbow-colored sheen, observed during a May 6 overflight in the Gulf of Mexico. (Credit: USCG)

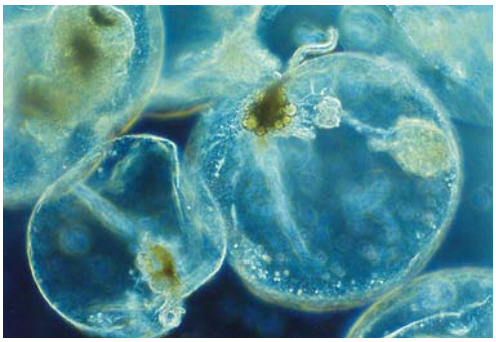
3. **Nighttime luminescence**: *Noctiluca* is bioluminescent: when gently shaken, it produces light from chemical reactions within its cells. Boat crews operating at night may observe glowing stripes or patches on waves, which indicate the presence of *Noctiluca*. Oil does not produce light.

It's possible that in some cases in the Gulf of Mexico, spilled oil may be comingled with algal blooms.

If You Have a Water Sample

Avoid direct contact with substances that could be crude oil, because oil on bare skin can cause mild skin irritation. However, if you have obtained a fresh water sample that you think could contain oil, here are two ways to tell whether the sample contains *Noctiluca* instead, without using a microscope:

1. Pour some of the water into a shallow dish, and inspect it closely. Look for tiny transparent balls somewhat like fish eggs. These balls are very small, less than a tenth of an inch in diameter. If you see them, your sample probably contains *Noctiluca*, and what you're seeing are the mature cells of this tiny algae.



Magnified view of Noctiluca *cells. (Credit: Instituto de Oceanografia, Faculdade Ciências da Universidade de Lisboa)*

2. Take your sample into a completely dark room. Let your eyes adapt for several minutes, and then swirl your sample. Watch for small flashes of light. If you see them, your sample contains *Noctiluca*.

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Ensuring the Safety of Your Seafood

Crude oil has the potential to taint seafood with flavors and odors imparted by exposure to hydrocarbon chemicals. The U.S. Food and Drug Administration regulates the presence of hydrocarbons as a possible adulterant in seafood.

The public should *not* be concerned about the safety of seafood they are buying at this time. The federal and state governments have strong systems in place to test and monitor seafood safety and to prohibit harvesting from affected areas, keeping oiled products out of the market.

NOAA Fisheries is working closely with the U.S. Food and Drug Administration and the states to ensure seafood safety. If managers determine that seafood may be affected, the next step is to assess whether seafood is tainted or contaminated to levels that could pose a risk to human health through consumption. NOAA conducts a combination of both sensory analysis (of tissue) and chemical analysis (of water, sediment, and tissue) to determine if seafood is safe following an oil spill. The results will be made public as soon as possible.

Seafood Inspection Program

The NOAA Seafood Inspection Program has often been called upon to perform screening and training tasks following major oil spills such as the 1989 *Exxon Valdez* spill in Alaska; 1996 spill in Rhode Island; 1999 spill in Coos Bay, Oregon; and several spills in San Francisco including the most recent in 2007.

Program experts perform sensory analysis to detect oil contamination. The results are compared with the results of chemical analysis conducted by NOAA's National Seafood Inspection Laboratory in Mississippi or its Science Centers.

In response to the current oil spill, the program is implementing a plan of operation to assist both industry and government to determine the extent of contamination in seafood. The program can mobilize staff to train state inspection personnel and industry on sensory analysis techniques to expand the detection capabilities. Depending upon the scope of the problem, it is often best to train a base of state or local industry personnel in the affected area rather than continue to have federal inspectors perform the routine analysis.

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The mission of the NOAA Seafood Inspection Program is to ensure the safety and quality as well as enhance the marketability and sustainability of seafood products for the benefit of the American consumer by providing science-based inspection services to the seafood industry.

The program is voluntary and fee-for-service to provide professional inspection services to ensure compliance with food safety and quality regulations. It is the only federal program with authority to bestow the U.S. "Grade A" mark for eligible products that meet exceptional quality standards.

Inspection Offices

The NOAA Seafood Inspection Program can assist with all seafood inspection needs. Contact one of our regional offices about services in your area.

Headquarters
Silver Spring, MD
800-422-2750

Northeast Inspection Branch
Gloucester, MA
978-281-9303

Western Inspection Branch
Seattle, WA
206-526-4259

Southeast Inspection Branch
St. Petersburg, FL
727-570-5383

To locate the regional office nearest you, go to http://www.seafood.nmfs.noaa.gov/Regional_Offices.html.

You can learn more about NOAA's Seafood Inspection Program at www.seafood.nmfs.noaa.gov.

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Oil Spill Dispersant Application and Monitoring

Once oil has spilled, responders use a variety oil spill countermeasures to reduce the adverse effects of spilled oil on the environment. Dispersants are one kind of countermeasure.

Oil spill dispersants are chemicals applied directly to the spilled oil in order to remove it from the water surface. Surface oil can be especially harmful to birds, mammals and other organisms that come in contact with the water surface.

Oil on the surface is often cohesive and natural degradation processes are slow. When dispersants are applied to surface oil slicks, tiny dispersant-oil droplets then separate from the slick and mix into the water column, reducing the size and volume of the surface slick.

The tiny droplets are too small to refloat to the surface. Bacteria and other microscopic organisms then act to quickly degrade the oil. Dispersants are commonly applied through specialized equipment mounted on an airplane, helicopter or ship.

Monitoring

Special Monitoring of Applied Response Technologies (SMART) is a cooperatively designed monitoring program for dispersant use. SMART relies on small, highly mobile teams that collect real-time data using portable, rugged and easy-to-use instruments.

The SMART program is designed to address critical questions:

Are dispersants effective in dispersing the oil? How quickly are dispersants working? Having monitoring data can assist the Unified Command with decision-making for operational use of dispersants.

Dispersants

To monitor the efficacy of dispersant application, SMART recommends three options, or Tiers.

Tier I

A trained observer, flying over the oil slick and using photographic job aids or advanced remote sensing instruments, assesses dispersant efficacy and reports back to the Unified Command.

Tier II

Tier II provides real-time data from the treated slick. A sampling team on a boat uses a fluorometer to continuously monitor for dispersed oil one meter under the dispersant-treated oil slick.

The team records and conveys fluorometer data to the scientific support team, which forwards it with recommendations to the Unified Command. Water samples are also taken for later analysis at a laboratory.

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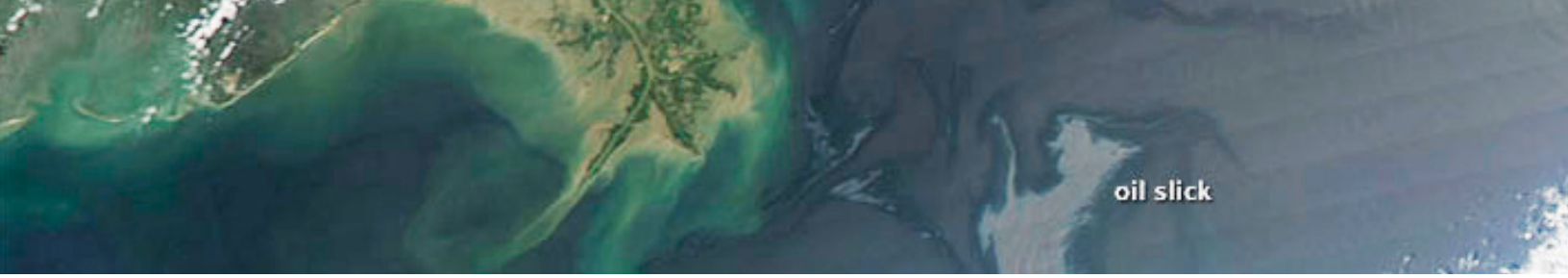


Tier III

By expanding the monitoring efforts in several ways, Tier III provides information on where the dispersed oil goes and what happens to it: (1) two fluorometers are used on the same vessel to monitor at two water depths; (2) monitoring is conducted in the center of the treated slick at several water depths, from one to ten meters; and (3) a portable water laboratory provides data on water temperature, pH, conductivity, dissolved oxygen, and turbidity.

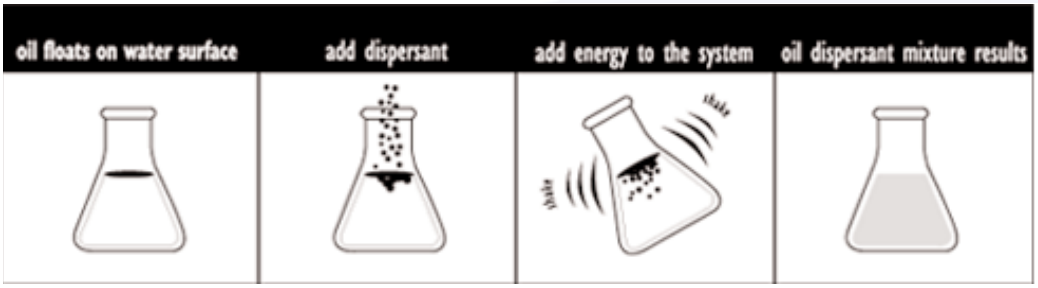
Field Experience

SMART has already been successfully tested in the field during exercises and spills. SMART has been used to monitor dispersant applications in the Gulf of Mexico. Practical usage help us to enhance SMART protocols and equipment.

For online information on SMART, visit http://response.restoration.noaa.gov/smart

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.



First, the dispersant is applied to the water surface. Next, molecules of the dispersant attach to the oil, causing it to break into droplets. Wave action and turbulence then force the oil-dispersant mixture into the water column, so that the oil that had been concentrated at the surface is diluted within the water column.

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Potentially Polluting Shipwrecks

The past century of commerce and warfare has left a legacy of thousands of sunken vessels along the US coast. Many of these wrecks pose environmental threats because of the hazardous nature of their cargoes, presence of munitions, or because of bunker fuel oils left onboard. As these wrecks corrode and decay, they may release oil or hazardous materials. Although a few, such as USS *Arizona* in Hawaii, are well-publicized environmental threats, most wrecks, unless they pose an immediate pollution threat or impede navigation, are left alone and are largely forgotten until they begin to leak.

Recent incidents, however, have heightened concerns about the potential environmental hazard posed by shipwrecks. In 2002, for example, the decaying wreck of S.S. *Jacob Luckenbach* was identified as the source of mysterious, recurring oil spills that had killed thousands of seabirds and other marine life along California's coast. The National Oceanic and Atmospheric Administration (NOAA) joined with the U.S. Coast Guard (USCG) and other agencies in operations to remove the approximately 100,000 gallons of oil remaining in the wreck.

Growing Interest in the Problem:

The public has long been captivated by shipwrecks, and there is growing interest in the environmental impacts these wrecks may have. Dozens of stories have been written about the problems associated with leaking WWII-era ships lost in both the Pacific and Atlantic Oceans.

There is also increasing interest from both government and industry to systematically identify, investigate and potentially lighter wrecks before they begin to leak. The Marine Technology Society published special proceedings in 2004 focusing on such underwater pollution threats, and the 2005 International Oil Spill Conference furthered the discussion within government agencies and with the response and salvage industries. Much of the interest is because of the cost and limited effectiveness of emergency response. Removal of oil while it is contained within a wreck can be planned and managed more cost-effectively than a reactive emergency spill response while at the same time preventing impacts to surrounding habitats and sensitive natural resources.

An Example: S.S. *Princess Kathleen*:

On September 7, 1952, S.S. *Princess Kathleen* ran aground on Pt. Lena just outside Auke Bay near Juneau, Alaska and sank. The wreck had been a source of periodic releases ever since. In 2010, the USCG, with scientific support from NOAA, contracted removal of approximately 130,000 gallons of heavy fuel oil and an additional 220,000 gallons of oily water from the wreck.

S.S. *Princess Kathleen* aground on Lena Point, Alaska.

2010-2011 Activities:

The 2010 NOAA budget included a one-time appropriation of $1 million for the Office of Response and Restoration, working jointly with the Office of National Marine Sanctuaries, to solicit a one-time independent assessment of potential manmade undersea threats that could impact coastal

and Great Lakes States. In 2010, NOAA hosted the International Corrosion Workshop, which brought together experts from the fields of oil spill response, military munitions response, and historic preservation to compare how marine corrosion affects each field and to leverage technologies and experience necessary for threat remediation and preservation of historic materials.

Potential Scope of Problem:

There are approximately 20,000 known wrecks in US waters. Most are old and do not pose a threat because they did not use oil as fuel or carry it as cargo. Some more recent wrecks, however, are known to be relatively intact, and based on accident investigation reports and cargo records are believed to contain oil.

How Many Really Contain Oil?

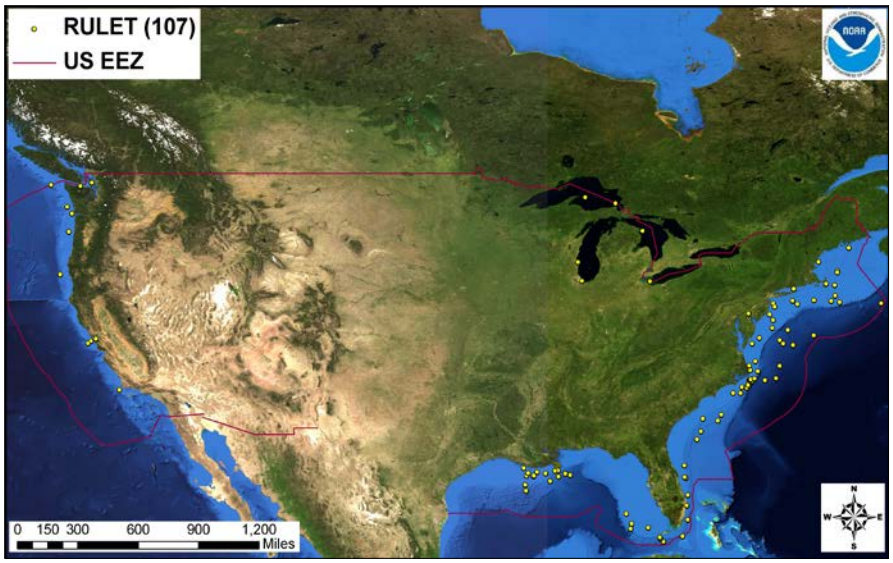
Initial evaluations of shipwrecks located within American waters found that approximately 600-1000 wrecks could pose a substantial pollution threat based on their age, type and size. This includes vessels sunk after 1891 (when vessels began being converted to use oil as fuel), vessels built of steel or other durable material (wooden vessels have likely deteriorated), cargo vessels over 1000 gross tons (smaller vessels would have limited cargo or bunker capacity), and any tank vessel. Additional ongoing research has revealed that the actual number of wrecks posing a potential pollution threat is probably closer to 100 due to the violent nature in which some ships sank and the structural reduction and demolition of those that were navigational hazards.

Moving Forward:

Given the number of potential targets and the modest funding level, it is crucial that the archival research and risk assessment continue to focus on wrecks that are most likely to contain harmful quantities of oil. NOAA is working with the USCG and other interested stakeholders to identify and collect additional information about those wrecks with the greatest pollution potential, with the overall goal of conducting a risk assessment and preparing a prioritized list of threats based on vessel contents, condition, environmental sensitivity, and other factors.

NOAA's Emergency Response Capabilities:

Thousands of incidents occur each year in which oil or chemicals are released into the environment as a result of accidents or natural disasters. Spills into our coastal waters, whether accidental or intentional, can harm people and the environment and cause substantial disruption of marine transportation with potential widespread economic impacts. NOAA provides scientific expertise to support an incident response and initiates natural resource damage assessment. This integrated approach provides for an efficient and effective response, minimizing the harm to people, reducing the negative impacts to the economy and enhancing environmental recovery.



NOAA's Remediation of Underwater Legacy Environmental Threats (RULET) Database

For more information about the Office of Response and Restoration, visit: http://response.restoration.noaa.gov.

For more information about the Office of National Marine Sanctuaries, visit: http://sanctuaries.noaa.gov/

Contacts:
Doug Helton (206.526.4563) or
Lisa Symons (301.713.7275)

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Shoreline Cleanup and Assessment Technique

Shoreline Cleanup and Assessment Technique (SCAT) is a simple and comprehensive way to perform a survey of an affected shoreline. This systematic approach uses standardized terminology to collect data on shoreline oiling conditions and supports decision-making for shoreline cleanup. SCAT is flexible in its scale of surveys and in the detail of data sets collected.

SCAT is part of the response, and outpaces operations. This process continues past the initial assessment to verify cleanup effectiveness and conduct final evaluations. The SCAT process uses eight steps:

1) Conduct reconnaissance survey
2) Segment the shoreline
3) Assign teams and conduct shoreline surveys
4) Develop cleanup guidelines and endpoints
5) Submit reports and sketches to Planning Section
6) Monitor effectiveness of cleanup
7) Post cleanup inspections
8) Do final evaluation of cleanup activities

SCAT Team

SCAT teams use team members who are trained in techniques, procedures, and terminology of shoreline assessment. Team members have a thorough understanding of the response goals and objectives and will consider safety concerns in cleanup recommendations.

Although they coordinate with division supervisors in the area, they do not direct cleanup workers.

SCAT teams collect data using a collaborative consensus-building approach. SCAT team members also prepare field maps and forms detailing the area surveyed and make specific cleanup recommendations. Team members verify the effectiveness of cleanup, modifying guidelines as needed if conditions change.

SCAT Team Responsibilities

- Evaluate oiling conditions
- Factor in shoreline types
- Identify sensitive resources
- Determine need for cleanup
- Recommend cleanup methods and endpoints
- Place constraints on cleanup if necessary, due to ecological, economic, or cultural concerns

SCAT Coordinator

The SCAT coordinator directs the activities of the SCAT teams. The SCAT coordinator is also involved with pre-SCAT planning, team calibration, and coordination with planning and operations sections on cleanup recommendations. In addition, the coordinator provides information to situation and documentation units.

(continued on back)

Members of a SCAT team may include:

- Federal representative (usually NOAA Scientific Support Team or Coast Guard)
- State representative
- Responsible Party representative
- Landowner or other stakeholder

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

SHORELINE ASSESSMENT FORM for _____ Spill Page ___ of ___

1. GENERAL INFORMATION	Date (dd/mm/yy)	Time (24h standard/daylight)	Tide Height
Segment ID:			L/M/H
Segment Name:		hrs to hrs	H/M/L
Survey By: Foot / Boat / Helicopter / Overlook / _____		Sun / Clouds / Fog / Rain / Snow / Windy	

2. SURVEY TEAM No. ___	Name	Organization	Phone Number

3. SEGMENT Total Length _____m/yd Length Surveyed _____m/yd Differential GPS Yes/No
Start GPS: LAT _____ deg. _____ min LONG _____ deg. _____ min
End GPS: LAT _____ deg. _____ min LONG _____ deg. _____ min

4. SHORELINE TYPE Select only ONE Primary (P) and ANY Secondary (S) types present

	Rocky Cliffs	
	Exposed Man-made Structures	
	Wave-cut Platforms	
	Fine-Medium grained Sand Beaches	
	Coarse-grained Sand Beaches	
	Mixed Sand and Gravel Beaches	
	Gravel Beaches	

5. OPERATIONAL FEATURES Oiled Debris? Yes / No
Direct backshore access? Yes / No Access restrictions ___
Alongshore access from next segment? Yes / No Suitable ba

6. SURFACE OILING CONDITIONS Begin with "A" in t

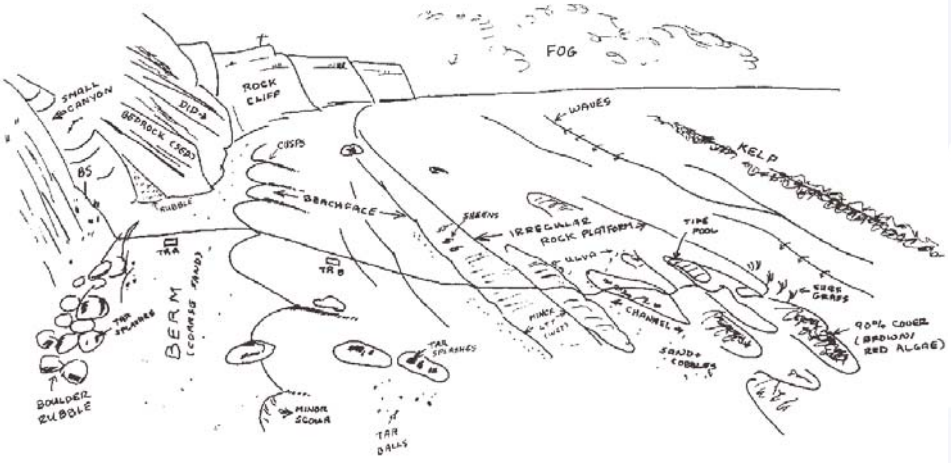
Zone ID	Tidal Zone LI	MI	UI	SU	Oil Cover Length m/ft	Width m/ft	Distr. %	PO	CV	Thi

7. SUBSURFACE OILING CONDITIONS Use letter of Z

Trench No.	Tidal Zone LI	MI	UI	SU	Trench Depth cm/in	Oiled Interval cm-cm/in-in	Subsurf OP	PP

8. COMMENTS Cleanup Recommendations; Ecological/I

(N 100M SOUTH OF BEGINNING OF CLIFF)
PROFILE OSP-1 LOCATION JALAMA BEACH PARK, CA (SOUTH SIDE) DATE 6 MAY 1992
RECORDERS MOHLING/SCHIA/HTJ/BLY/HB PHOTOGRAPHS (MOH) CAL-1 (14-24) TIME 1000
TIDE STAGE 3.0 @ 0196 (-0.1) RISING WEATHER FOG, 65°F WIND SPEED CALM DIRECTION —
PROFILE ANGLE 254° TRUE BREAKER HT. ± 1.0M BREAKER ANGLE (11) BREAKER TYPE PLUNGING/SPILLING
SEDIMENT TYPE COBBLE → FINE SAND WAVE EXPOSURE SW



Field sketch of station OSP 1 (Jalama Beach Park) on 6 May 1992.

Small Diesel Spills (500-5000 gallons)

Small Diesel Spills (500-5000 gallons)

Diesel fuel is most often a light, refined petroleum product. Small diesel spills will usually evaporate and disperse within a day or less. This is particularly true for typical spills from a fishing vessel (500-5,000 gallons), even in cold water. Thus, seldom is there any oil on the surface for responders to recover. However, what is commonly referred to as "marine diesel" is often a heavier intermediate fuel oil that will persist longer when spilled. When spilled on water, diesel oil spreads very quickly to a thin film of rainbow and silver sheens except for marine diesel, which may form a thicker film of dull or dark colors.

Characteristics of Small Diesel Spills (500-5000 gallons)

- Diesel oil has a very low viscosity and is readily dispersed into the water column when winds reach 5-7 knots or with breaking waves.
- Diesel oil is much lighter than water (specific gravity is between 0.83 and 0.88), compared to 1.03 for seawater). It is not possible for this oil to sink and accumulate on the seafloor as pooled or free oil unless adsorption occurs with sediment.
- However, it is possible for the diesel oil that is dispersed by wave action, to form droplets that are small enough be kept in suspension and moved by the currents.
- Oil dispersed in the water column can adhere to fine-grained suspended sediments(adsorption) which then settle out and get deposited on the seafloor. This process is more likely to occur near river mouths where fine-grained sediment are carried in by rivers. It is less likely to occur in open marine settings. This process is not likely to result in measurable sediment contamination for small spills.
- Diesel oil is not very sticky or viscous, compared to black oils. When small spills do strand on the shoreline, the oil tends to penetrate porous sediments quickly, but also tend to be washed off quickly by waves and tidal flushing. Thus, shoreline cleanup is usually not needed.
- Diesel oil is readily and completely degraded by naturally occurring microbes, under time frames of one to two months.
- In terms of toxicity to water-column organisms, diesel is considered to be one of the most acutely toxic oil types. Fish, invertebrates and seaweed that come in direct contact with a diesel spill may be killed. However, small spills in open water are so rapidly diluted that fish kills have never been reported. Fish kills have been reported for small spills in confined, shallow water.
- Crabs and shellfish can be tainted from small diesel spills in shallow, nearshore areas. These organisms bioaccumulate the oil, but will also depurate the oil, usually over a period of several weeks after exposure.
- Small diesel spills can affect marine birds by direct contact, though the number of birds affected is usually small because of the short time the oil is on the water surface. Mortality is caused by ingestion during preening as well as to hypothermia from matted feathers. Experience over the last 10 years in Alaska, with hundreds of small diesel spills, is that few birds are directly affected by diesel spills from fishing vessels. However, small spills could result in serious impacts to birds under the "wrong" conditions, such as a grounding right next to a large nesting colony or transport of sheens into a high bird concentration area.

Small Diesel Spills (500-5000 gallons)

Over 90% of the diesel in a small spill incident into the marine environment is either evaporated or naturally dispersed into the water column in time frames of a couple of hours to a couple of days. Percent ranges, in parentheses above, represent effects of winds ranging from 5 to 30 knots.

Adsorption (sedimentation) The process by which one substance is attracted to and adheres to the surface of another substance without actually penetrating its internal structure

Biodegradation The degradation of substances resulting from their use as food energy sources by certain micro-organisms including bacteria, fungi, and yeasts

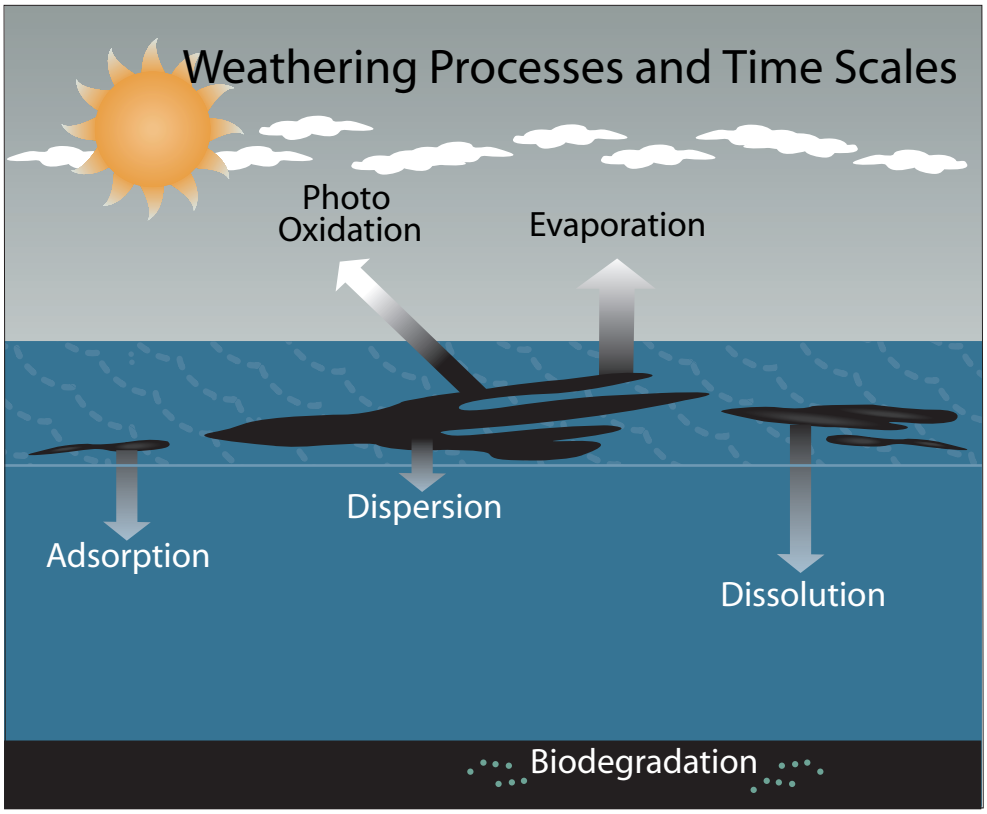
Dispersion The distribution of spilled oil into the upper layers of the water column by natural wave action or application of chemical dispersants

Dissolution The act or process of dissolving one substance in another

Emulsification The process whereby one liquid is dispersed into another liquid in the form of small droplets

Evaporation The process whereby any substance is converted from a liquid state to become part of the surrounding atmosphere in the form of a vapor

Photo Oxidation Sunlight-promoted chemical reaction of oxygen in the air and oil



For more information:
NOAA's Office of Response and Restoration
Emergency Response Division
7600 Sand Point Way NE
Seattle, Washington 98115
206.526.6317

November 2006

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Special Monitoring of Applied Response Technologies

Special Monitoring of Applied Response Technologies (SMART) is a cooperatively designed monitoring program for on site burning and dispersants. SMART relies on small, highly mobile teams that collect real-time data using portable, rugged, and easy-to-use instruments during dispersant and on site burning operations.

Data are channeled to the Unified Command to address critical questions: Are dispersants effective in dispersing the oil? Are particulates concentration trends at sensitive locations exceeding the level of concern? Having monitoring data can assist the Unified Command with decision-making for dispersant and on site burning operations.

The SMART Way

Dispersants

To monitor the efficacy of dispersant application, SMART recommends three options, or tiers.

Tier I

A trained observer, flying over the oil slick and using photographic job aids or advanced remote sensing instruments, assesses dispersant efficacy and reports back to the Unified Command.

Tier II

Tier II provides real-time data from the treated slick. A sampling team on a boat uses a fluorometer to continuously monitor for dispersed oil one meter under the dispersant-treated slick. The team records and conveys fluorometer data to the Scientific Support Team, which forwards it with recommendations to the Unified Command. Water samples also are taken for later analysis at a laboratory.

Tier III

By expanding the monitoring efforts in several ways, Tier III provides information on where the dispersed oil goes and what happens to it: (1) two fluorometers are used on the same vessel to monitor at two water depths; (2) monitoring is conducted in the center of the treated slick at several water depths, from one to ten meters; and (3) a portable water laboratory provides data on water temperature, pH, conductivity, dissolved oxygen, and turbidity.

On Site Burning

For on site burning operations, SMART recommends deploying one or more monitoring teams downwind of the burn at sensitive locations such as population centers. The teams begin sampling before the burn begins to collect background data.

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After the burn starts, the teams continue sampling for particulate concentration trends, recording them both manually at fixed intervals and automatically in the data logger, and reporting to the Monitoring Group Supervisor if the level of concern is exceeded. The Scientific Support Team forwards the data, with recommendations, to the Unified Command.

Field Experience

SMART has already been successfully tested in the field. SMART was used to monitor dispersant applications in the Gulf of Mexico, and in February 1999 it was used to monitor the on site burning of the *New Carissa* off Coos Bay, Oregon. Spills and exercises like these help us to enhance SMART.

For more information about SMART visit http://response.restoration.noaa.gov/smart.

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Surface Washing Agents

Surface washing agents are liquid products designed to make it easier to remove oil from surfaces and structures that have been oiled so that they don't become "secondary sources" of pollution.

Thirty-three surface washing agents are currently listed on the National Contingency Plan Product Schedule, an EPA list of products that have met basic requirements for being considered for use in an oil spill response. Approval from the Regional Response Team is needed before a surface washing agent can be used in a manner that would cause it to be released to the environment.

When Surface Washing Agents are Used

Surface washing agents are used to soften and lift oil off of surfaces or structures that have been oiled, such as beach rocks, rock platforms, artificial structures, and riprap. Typically, conventional cleanup methods are used first to the extent of their utility (e.g., removal of gross oiling).

Surface washing agents also are used to clean and decontaminate response equipment and, less often, vessels that have been oiled. For example, in 2001, the M/V *Genmar Hector* (left) was cleaned with surface washing agents after its hull and superstructure were oiled.

Surface washing agents typically act relatively quickly and can be used on all types of oil. The application methods vary but the agents are typically sprayed on the oiled surface, allowed to soak 5 to 15 minutes, followed by a warm water/high pressure wash.

How They Work

Surface washing agents contain surfactants, solvents, and/or other additives that soften and lift oil off the surface. There are two main types. "Lift and float" products lift oil from the surface so it floats on the water as a slick and can be recovered. Booms, sorbents, and vacuum pumps are often used with these products to collect and recover the oil. "Lift and disperse" products act like detergents to lift oil off surfaces, emulsify it (break it into fine droplets), and disperse it into the water.

Because it's not possible to recover the oil directly when using this type of product, responders must contain and recover the washwater.

Example Surface Washing Agents

Corexit 9580 and PES-51are both "lift and float" surface washing agents. PES-51 is composed mainly of surfactants and d-limonene, a chemical with a lemon-like odor produced naturally by citrus plants and some coniferous trees. PES-51 has been used or tested at many oil spills. A good summary of surface washing agents can be found at http://www.nrt.org/Production/NRT/RRTHome.nsf/resources/RRT%20IV%20Meeting%20Summaries/$file/SurfaceWashingAgents.pdf.

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

June 7, 2010

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Understanding Tar Balls

What are Tar Balls and How Do They Form?

Tar balls, the little, dark-colored pieces of oil that stick to our feet when we go to the beach, are actually remnants of oil spills. When crude oil (or a heavier refined product) floats on the ocean surface, its physical characteristics change.

During the first few hours of a spill, the oil spreads into a thin slick. Winds and waves tear the slick into smaller patches that are scattered over a much wider area. Various physical, chemical, and biological processes change the appearance of the oil. These processes are generally called "weathering."

Initially, the lighter components of the oil evaporate much like a small gasoline spill. In the cases of heavier types of oil, such as crude oil or home heating oil, much of the oil remains behind. At the same time, some crude oils mix with water to form an emulsion that often looks like chocolate pudding.

This emulsion is much thicker and stickier than the original oil. Winds and waves continue to stretch and tear the oil patches into smaller pieces, or tar balls. While some tar balls may be as large as pancakes, most are coin-sized. Tar balls are very persistent in the marine environment and can travel hundreds of miles.

How Long Will Tar Balls Remain Sticky?

Weathering processes eventually create a tar ball that is hard and crusty on the outside and soft and gooey on the inside, not unlike a toasted marshmallow. Turbulence in the water or beach activity from people or animals may break open tar balls, exposing their softer, more fluid centers.

Scientists have not been very successful at creating weathered tar balls in the laboratory and measuring the thickness of the crusty outer layer. Therefore, we don't know how much energy is needed to rupture a tar ball.

We do know that temperature has an important effect on the stickiness of tar balls. As air and water temperatures increase, tar balls become more fluid and, therefore, sticky — similar to an asphalt road warmed by the summer sun.

Another factor influencing stickiness is the amount of particulates and sediments present in the water or on the shoreline, which can adhere to tar balls. The more sand and debris attached to a tar ball, the more difficult it is to break the tar ball open. These factors make it extremely difficult to predict how long a tar ball will remain sticky.

(continued on back)

Are Tar Balls Hazardous to Your Health?

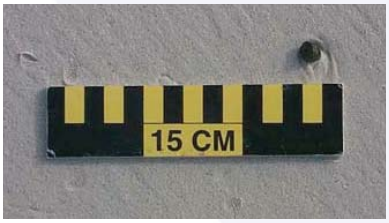
For most people, an occasional brief contact with a small amount of oil, while not recommended, will do no harm. However, some people are especially sensitive to chemicals, including the hydrocarbons found in crude oil and petroleum products. They may have an allergic reaction or develop rashes even from brief contact with oil. In general, we recommend that contact with oil be avoided.

If contact occurs, wash the area with soap and water, baby oil, or a widely used, safe cleaning compound such as the cleaning paste sold at auto parts stores. Avoid using solvents, gasoline, kerosene, diesel fuel, or similar products on the skin. These products, when applied to skin, present a greater health hazard than the smeared tar ball itself.

Tar Ball Bits and Pieces

Beach Cleanup

There is no magic trick to making tar balls disappear. Once tar balls hit the beaches, they may be picked up by hand or by beach-cleaning machinery. If the impact is severe, the top layer of sand containing the tar balls may be removed and replaced with clean sand.



Are there more tar balls on beaches along the East Coast than on the West Coast?

The number of tar balls found on the beach depends on several factors: tanker traffic, wind patterns, sea currents, whether an oil spill occurred recently, and how often the beach is cleaned.

Obviously, some beaches may have more tar balls than others, but to our knowledge, East Coast beaches are not necessarily more polluted with tar balls than beaches along the West Coast of the United States.

Can Dispersants Cause Tar Balls?

No. Dispersants do the exact opposite- they break oil up into tiny droplets, much smaller than the head of a pin, which do not re-form or re-congeal into a visible mass of oil.

Tar balls are weathered oil that has lost its lighter components. Thus they are denser than fresh oil and closer to the density of seawater. They still float, but in estuarine (less dense) waters like Lakes Pontchartrain and Borgne, they would float very low in the water and be easily entrained by currents, as well as roll under or around booms and barges. They are also widely scattered and may not be noticeable at sea or floating, but may accumulate on shorelines.

Reporting

New tar balls appearing on a beach may indicate an oil spill. If you notice unusual numbers of tar balls on the beaches, call the U. S. Coast Guard any time at 800-424-8802.

For additional information:

http://response.restoration.noaa.gov

http://response.restoration.noaa.gov/adios

NOAA's Office of Response and Restoration Emergency Response Division: 206-526-6317

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.

Question Preparation

Report to Senate

NOAA Office of Response and Restoration Briefing
Senate Commerce Committee
February 29, 2008

NOAA Participants:

Doug Helton, Incident Operations Coordinator, Emergency Response Division, Office of Response and Restoration, Seattle, WA

Debbie Payton, Chief, Technical and Scientific Services Branch, Emergency Response Division, Office of Response and Restoration, Seattle, WA

Ed Levine, Scientific Support Coordinator, Emergency Response Division, Office of Response and Restoration, New York, NY

William Conner, Chief, Emergency Response Division, Office of Response and Restoration, Silver Spring, MD

Presentation Outline:

Introduction – Helton
- Overview of NOAA roles in spill response
- Hypothetical Spill Scenario

Anatomy of Scientific Support for a Spill - Payton, Levine, Helton
- M/V Cosco Busan trajectory
- Key oversight questions

OR&R Budget status-Conner

Wrap Up - Helton

Follow-up Questions and Discussion

For More Information:

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http://response.restoration.noaa.gov/

Hypothetical Spill Scenario

Collision Closes New York Harbor Channel

-Updated 30 minutes ago-

NEWARK, NJ (AP) -- The Kill Van Kull was closed early this morning after an inbound freighter lost steering and struck a pier. U.S. Coast Guard and Port Officials said the incident occurred around 3 am. The 700-foot freighter, carrying 450,000 gallons of bunker fuel, was holed above the water line and is leaking fuel oil. Authorities are not sure how much of the fuel product has leaked into the water but confirmed that at least three tanks on the vessel are damaged and continue to leak. The Channel will remain closed until the area has been cleaned.

NOAA Office of Response and Restoration

NOAA's Office of Response and Restoration (OR&R) protects coastal and marine resources, mitigates threats, reduces harm, and restores ecological function. The Office provides comprehensive solutions to environmental hazards caused by oil, chemicals, and marine debris.

Thousands of incidents occur annually in U.S. waters where oil or chemicals are released into the environment as a result of accidents or natural disasters. Spills are unpredictable and chaotic events and the initial information may be incomplete or inaccurate. The following questions may help you evaluate spill incidents.

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Who is the Federal On-Scene Coordinator?

Under the NCP, marine and coastal spill responses in the United States are headed by the Coast Guard, who is referred to as the Federal On-Scene Coordinator (FOSC). The EPA has the lead for inland spills. Certain terrestrial and river spills may straddle these jurisdictional boundaries. When a spill occurs, the pre-designated FOSC has the overall responsibility for protecting public health and the environment after a spill. The FOSC has the authority to implement necessary spill response actions including the salvage and lightering of the vessel, closing the port to ship traffic, placement of booms, and other steps to implement the pre-determined response plans.

NOAA, along with a dozen other Federal agencies may provide technical support or assistance, or provide special teams for certain types of incidents. These agencies are coordinated at the national level through the National Response Team (NRT), and at the regional level through13 regional response teams (RRT). The NRT and RRT are policy, planning, and response assistance bodies to the FOSC.

Who is the Responsible Party?

In the event of a vessel oil spill, the responsible party, as defined under OPA 90, is any person owning, operating, or demise chartering the vessel. More than one responsible party may be identified for a single incident in which case each responsible party would be jointly liable. The cargo owner is not considered a responsible party under OPA 90.

The responsible party is required to direct the response and pay all claims. This includes hiring spill response contractors, managing the spill, dealing with claims from property owners and fisherman, and other elements of liability under OPA 90.

Except for major oil companies, most spillers hire contractors to address their OPA responsibilities and the spiller may have very limited visibility during the response. Oil Spill Removal Organizations (OSROs) are commercial vendors of oil spill response services. Response Management Firms provide clients with a Qualified Individual and a Spill Management Team (SMT). The SMT will bring in personnel to staff the command posts and implement the Incident Command System (ICS), including the responsible party's Incident Commander.

Payment of costs and claims is ultimately the function of the spiller's insurance. In the case of vessel spills, most vessel owners have pollution coverage through a Protection and Indemnity Club (P&I Club).

How much was spilled? How does that compare with other incidents?

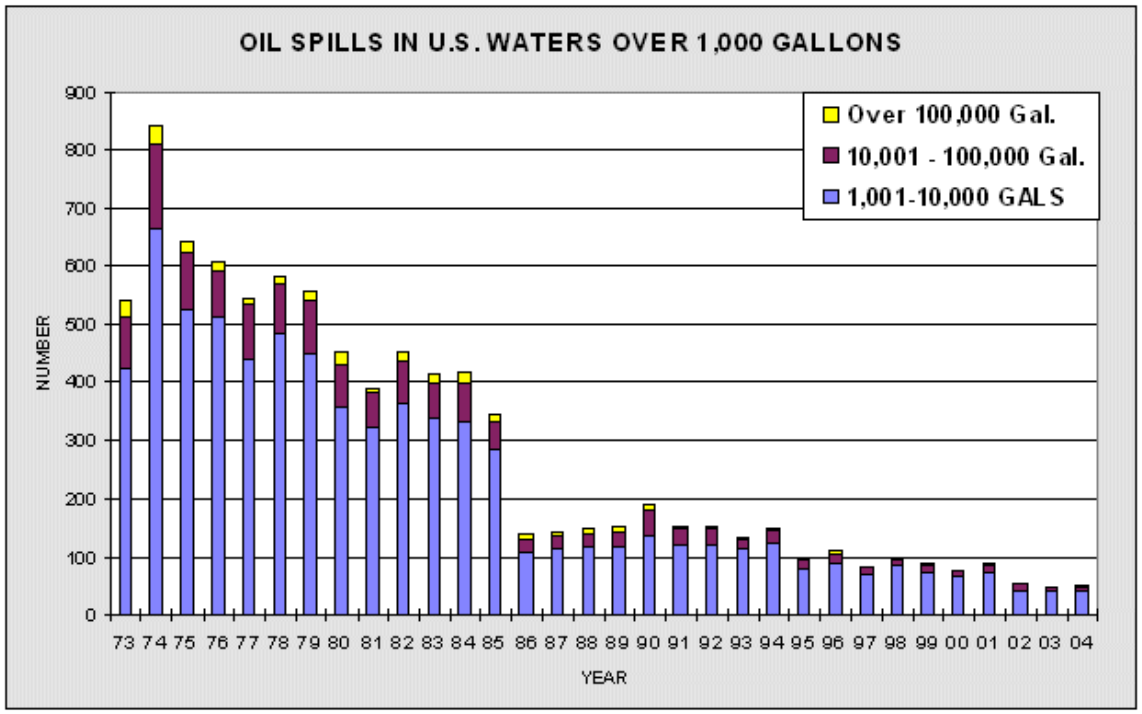
Spill size is one of many factors to consider when evaluating potential for environmental impacts. While an ill-timed oil spill that occurs in a sensitive location, regardless of spill size, can cause devastating damage to natural environments, property, and business, larger spills have the potential for greater harm. The National Contingency Plan categorizes oil spills into three general sizes:

(1) Minor: less than 1,000 gallons in freshwater or 10,000 gallons in marine waters

(2) Medium: 1,000 to 10,000 gallons in freshwater or 10,000 to 100,000 gallons in marine waters.

(3) Major: more than 10,000 gallons in freshwater or 100,000 gallons in marine waters.

Most notable spills fall into the "major" category, including the *Exxon Valdez* in Alaska (11 million gallons), the *DBL 152* in Texas (3.3 million gallons), the *North Cape* in Rhode Island (825,000 gallons), the *Selendang Ayu* in Alaska (337,000 gallons), and the *Athos I* in the Delaware River (264,000 gallons). The *Cosco Busan* spill in San Francisco would fall into the medium category (53,000 gallons), as would the *Bouchard Barge 120* spill in Buzzards Bay, MA (98,000 gallons).



Uncertainty in spill volumes

Estimation of spill volumes is difficult and sometimes contentious. Federal laws require spillers to notify the National Response Center or the nearest USCG unit whenever a spill generates a visible sheen, but there is no requirement that an accurate volume be reported. It is not uncommon for spill volume estimates to change over the course of an incident as more information becomes available.

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All NRC Notifications

*Displaying notifications **1** through **20** of **7113** notifications found.*

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DATE	#	REGION	COUNTY	CITY	STATE	QUANTITY RELEASED
Feb-01-2008	861201	09	LOS ANGELES	MARINE DEL REY	CA	1 QUART(S)
Feb-01-2008	861200	06	ORANGE	ORANGE	TX	2 GALLON(S)
Feb-01-2008	861199	07	LAWRENCE	MOUNT VERNON	MO	50 GALLON(S)
Feb-01-2008	861198	04	VOLUSIA	NEW SMYRNA BEACH	FL	0 UNKNOWN AMOUNT
Feb-01-2008	861197	06	PARKER	WEATHERFORD	TX	25 GALLON(S)
Feb-01-2008	861196	06	MOORE	DUMAS	TX	20 GALLON(S)
Feb-01-2008	861195	07	BOONE	COLUMBIA	MO	
Feb-01-2008	861194	04	GORDON	CALHOUN	GA	0 UNKNOWN AMOUNT
Feb-01-2008	861193	05	BELMONT	BLAIR	OH	0 UNKNOWN AMOUNT
Feb-01-2008	861192	02	MIDDLESEX	WOODBRIDGE	NJ	20 GALLON(S)
Feb-01-2008	861191	04	TALLADEGA	TALLADEGA	AL	50 GALLON(S)
Feb-01-2008	861190	07	COMANCHE	COLD WATER	KS	10 BARREL(S)
Feb-01-2008	861189	04	CHARLESTON	NORTH CHARLESTON	SC	40 GALLON(S)
Feb-01-2008	861188	04	MOBILE	BUCKS	AL	0 UNKNOWN AMOUNT
Feb-01-2008	861187	04	BOYD	CATLETTSBURG	KY	0 UNKNOWN AMOUNT
Feb-01-2008	861186	06	E. BATON ROUGE	BATON ROUGE	LA	1000 GALLON(S)
Feb-01-2008	861185	03	ANNE ARUNDEL	EDGEWATER	MD	15 GALLON(S)
Feb-01-2008	861183	03	CHESTERFIELD		VA	0 UNKNOWN AMOUNT
Feb-01-2008	861182	03	CHESAPEAKE	CHESAPEAKE	VA	2 GALLON(S)
Feb-01-2008	861181	04	DADE		FL	1 PINT(S)

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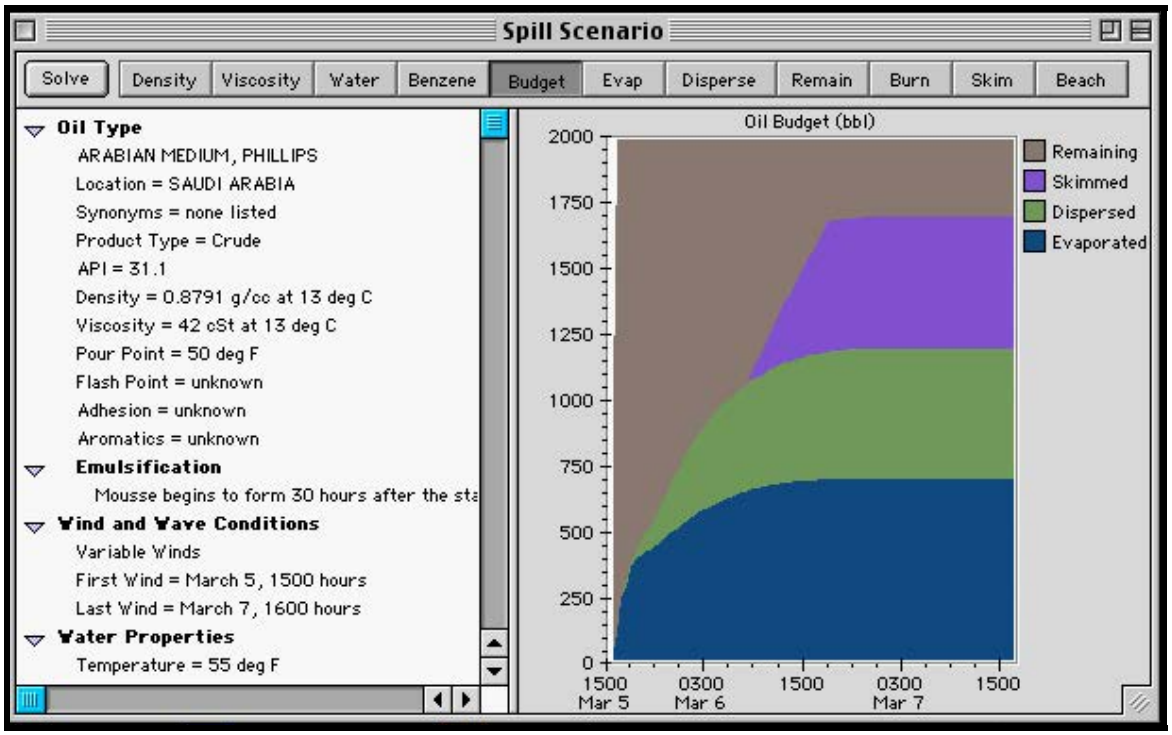
Most spills are small and many are reported as an unknown amount.

What type of oil was spilled?

There are thousands of different types of crude and refined oils. These products can vary significantly in terms of physical and chemical characteristics, which in turn affect the behavior of the oil when spilled, the cleanup strategy, and the toxicity to marine life and human health. Heavy oils may not even flow at room temperature, and some oils are heavier than seawater and therefore sink when spilled. Lighter oil products can evaporate in hours and are sufficiently volatile to create inhalation and fire hazards.

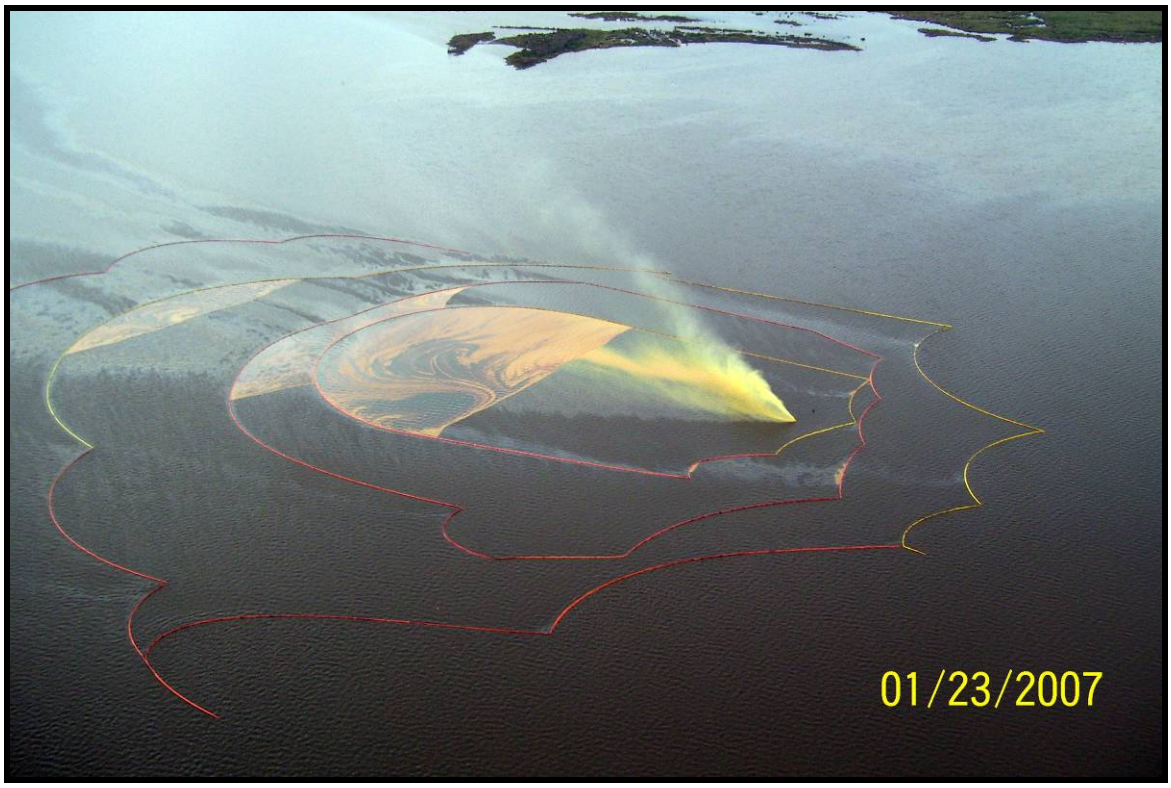
Most large freighters carry a blend of heavy and light fuels, in addition to large amounts of lubricating oil. Smaller non-tank vessels, including tugs and fishing boats, typically use light fuel oils, such as diesel. If spilled, these oil types can have dramatically different fates and effects.

The process of oil degradation in the environment is called weathering. The oil type and environmental conditions greatly affect the weathering process. NOAA developed and maintains an oil weathering model, the Automated Data Inquiry for Oil Spills (ADIOS), which helps responders evaluate the likely behavior of spilled oils and cleanup options. ADIOS integrates a library of approximately one thousand oils.



Is the release contained or on-going?

Oil spills come from a variety of sources, including vessels, facilities, pipelines, railcars, and trucking accidents. Some releases may be essentially instantaneous, while others may persist for days or weeks. Clarifying the nature of the release will help to understand how large and wide-spread the impacts may be. On-going releases may include scenarios such as a leaking pipeline, sunken wreck, or oil well/production platform. In these situations, the spill may be reported as a daily estimated rate.



Production Platform spill in Louisiana. The control valve was sheared off by a passing vessel, resulting in a multi-day release.

Is it the actual or potential volume?

Given the uncertainty in loss calculations and uncertainty whether the vessel can be salvaged, emergency responders may report an estimate of the spill and the potential if the entire cargo or tank was released. Most vessels have multiple fuel tanks, and tank ships and tank barges will have segregated cargo tanks. A tank ship may be designed with 2 or 3 tanks wide, and 5 to 7 tanks long, with 5 x 3 arrangement (15 tanks arranged 3 wide and 5 long) being a common arrangement. Cargo and fuel tanks are not typically evenly-sized and tanks may vary in volume.

The potential volume could be the entire contents of the vessel, or just the contents of the damaged tank(s).

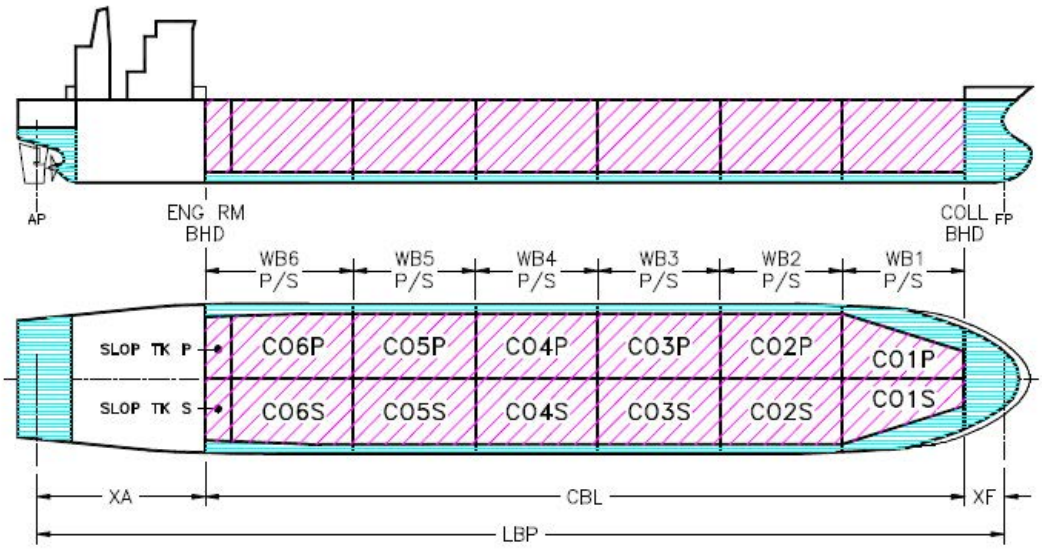


Figure 1
Typical 6x2 Cargo Tank Arrangement

The potential volume could be the entire vessel or just the damaged tank(s).

Is the vessel a tank vessel or non-tank vessel?

OPA 90 makes a distinction between vessels that carry oil in bulk as cargo, such as tankers and tank barges, and vessels that simply carry oil as fuel. This distinction is appropriate due to operational differences in the vessels and the potential varying consequences of a ship casualty.

Knowing the vessel type will help to put bounds on the potential amount spilled. Many early news reports may be incorrect on the type of vessel, and cargo vessels are often confused with tank vessels. Tankers and tank barges carry a substantially greater volume of oil than non-tank vessels.

Updated: 09:43 AM EST

Tanker Fuel Threatens Alaskan Wilderness Search Suspended for Six Missing Crew Members

By RACHEL D'ORO, AP

ANCHORAGE, Alaska (Dec. 11) - The Coast Guard suspended its search for six people lost for three days in the frigid Bering Sea after the crash of a rescue helicopter that had plucked them from a broken freighter.

Searchers covered 227 miles of coastline and 550 square miles of ocean before suspending the search Friday evening, said Rear Adm. James Olson, commander of the Coast Guard in Alaska.

"There is little hope that any survivor will be found," Olson said.

High wind hampered efforts Friday to stem an oil spill from the `738-foot` Selendang Ayu. The spill is near a wildlife refuge, home to sea lions, harbor seals, sea otters, tanner crabs, halibut and kelp beds.

In this case, the freighter Selendang Ayu was confused with a tanker. The Selendang Ayu carried about 700,000 gallons of fuel oil. A tanker with a tonnage similar to the Selendang would have carried approximately 40 million gallons.

Is the vessel double-hulled?

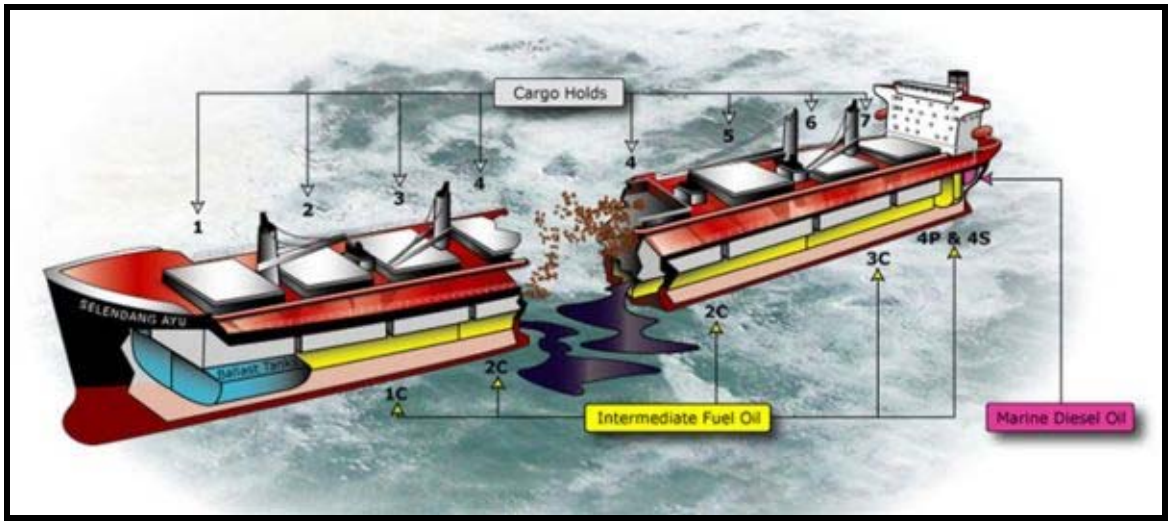
Double hull construction is generally reserved for tank vessels and tank barges. Single hulled tankers and barges are being phased out according to a size and date of construction schedule, with the last single hulls being phased out in 2015.

Double hull construction provides protection during groundings and collisions but the inner hull may be punctured during a severe incident. In these scenarios, the double hull may reduce the number of tanks ruptured and amount of cargo lost.

Cross section of a double-hulled tanker.

Double bottom construction

Double bottom construction is sometimes confused with double hull construction. Large commercial freighters are single hulled, but are built with a double bottom. This construction allows for a flat floor in the cargo holds. Otherwise, the cargo hold would have numerous longitudinal and lateral frames running along the bottom of the hold, making it difficult to unload bulk cargos. These frames are covered with steel plate making a flat floor. The void space below is then used for carrying ballast and fuel. Fuel carried in these tanks is particularly vulnerable to grounding damage.



Double bottom tanks on the Freighter Selendang Ayu.

What is the tonnage of the vessel?

Since vessels vary significantly in design, vessel size is scaled in tonnage rather than length. In the maritime field, there are several tonnage measures, including Gross Tonnage, Net Tonnage, Deadweight Tonnage, and Light Weight Tonnage. For the purposes of OPA 90, Gross Tonnage, or the measure of the internal capacity of a vessel is the standard metric. This tonnage is not a weight, but is instead a volume measurement of the ability of a vessel to carry cargo. This includes both cargo spaces on the ship and other enclosed areas of the vessel, exempting some space such as living quarters. Many of the regulatory requirements under OPA 90, including safety and manning rules and liability limits, are either triggered by a vessel size, or scaled by vessel size, with larger vessels having greater requirements and greater potential liabilities.

Liability rates are triggered by the type (tank or non-tank), hull type (single hull or double hull) and tonnage of the vessel. Rates established under OPA 90 were raised in 2006.

If the vessel is a. . .	The original limit of liability limit was the greater of. . .	And the amended limits of liability are the greater of. . .
Tank vessel greater than 3,000 gross tons with a single hull, double sides only, or double bottom only	$1,200 per gross ton or $10,000,000	$3,000 per gross ton or $22,000,000.
Tank vessel less than or equal to 3,000 gross tons with a single hull, double sides only, or double bottom only	$1,200 per gross ton or $2,000,000	$3,000 per gross ton or $6,000,000.
Tank vessel greater than 3,000 gross tons with a double hull	$1,200 per gross ton or $10,000,000	$1,900 per gross ton or $16,000,000.
Tank vessel less than or equal to 3,000 gross tons with a double hull	$1,200 per gross ton or $2,000,000	$1,900 per gross ton or $4,000,000.
Any vessel other than a tank vessel	$600 per gross ton or $500,000	$950 per gross ton or $800,000.

Original and amended liability limits under OPA 90

What are the spill units? gallons, barrels, tons?

Oil is measured in a number of different units, with cargo often measured in barrels, and with fuel measure in tons. Vessel operators and production facilities rarely report volumes in gallons, but spill volumes are often converted to gallons for public reporting. This can create confusion, and newspaper reporters may sometimes incorrectly report units.

Approximate Conversions:
1 gallon is 3.785 liters
1 Barrel (bbl) is 42 gallons
1 Metric Ton is 1000 liters, or 264 gallons, or 6.3 barrels.

Understanding the general capacity of various sized vessels can help evaluate whether the units are questionable. For example, in the situation below, a 65,000 gallon capacity would be very small for a tank barge. In this situation, the actual volume was 65,000 barrels, or 2.7 million gallons.

Oil Barge Strikes SF Bay Bridge in Fog

7 hours ago

SAN RAFAEL, Calif. (AP) — A barge carrying oil struck a bridge in the San Francisco Bay, but there were no immediate reports of oil spilling into the bay, authorities said.

The U.S. Coast Guard said a tugboat was pulling the barge under the Richmond-San Rafael Bridge in foggy conditions Thursday evening when the barge hit a piling. Authorities were investigating the cause.

The barge has a capacity of more than 65,000 gallons of oil, but Coast Guard officials said no oil or other pollution was released into the bay.

The crash came about two months after a container ship struck a support on the San Francisco-Oakland Bay Bridge tower, spilling 58,000 gallons of oil into the bay. The spill killed thousands of birds and closed more than a dozen beaches.

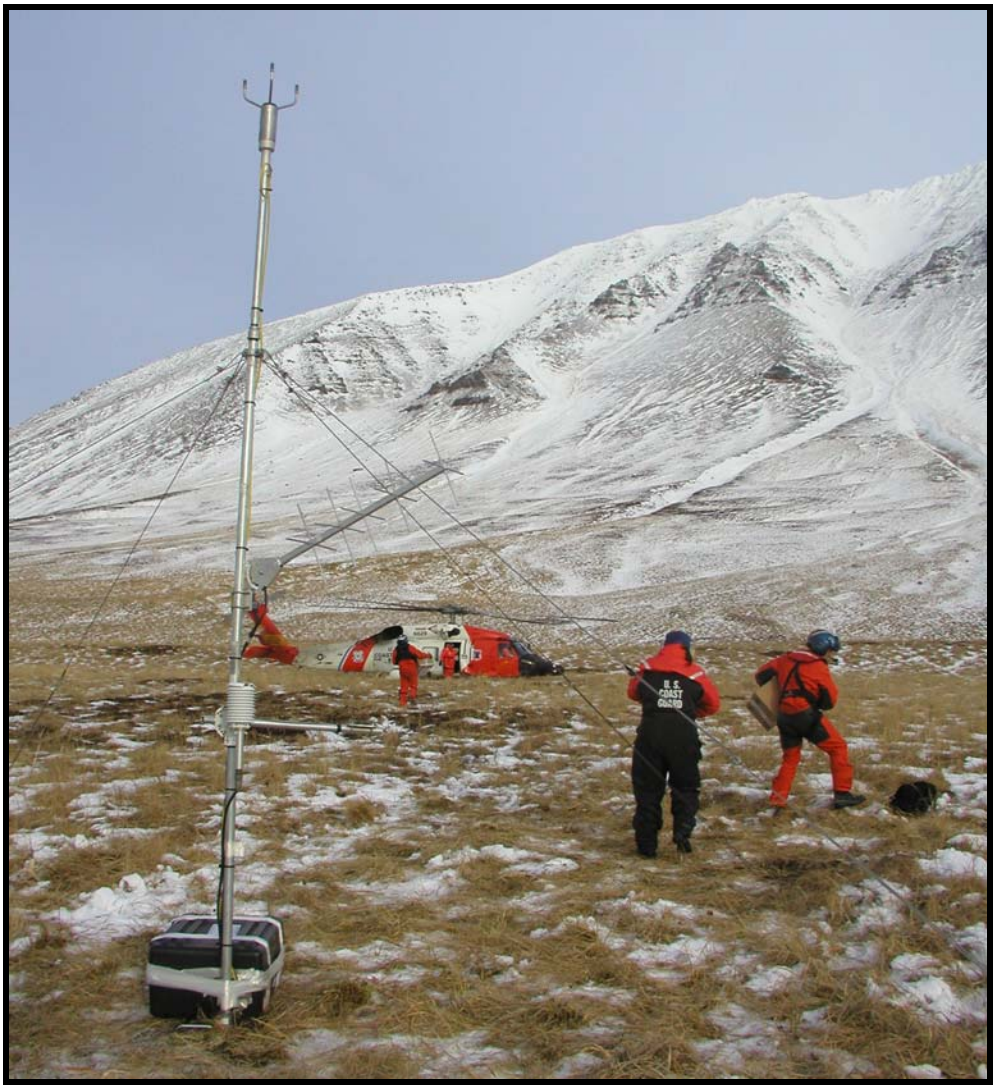
Is the spill in freshwater or seawater?

Spills in freshwater may have longer-term impacts because oil is often contained rather than naturally dispersed. Certain oils that float in seawater may sink in freshwater. Freshwater resources may be more significant in terms of industrial and municipal uses. Spills in estuaries may exhibit complicated behaviors because of the confluence of river and tidal currents and mixing of waters of varied densities.

Red-dyed diesel in a river in Virginia.

What are the weather conditions?

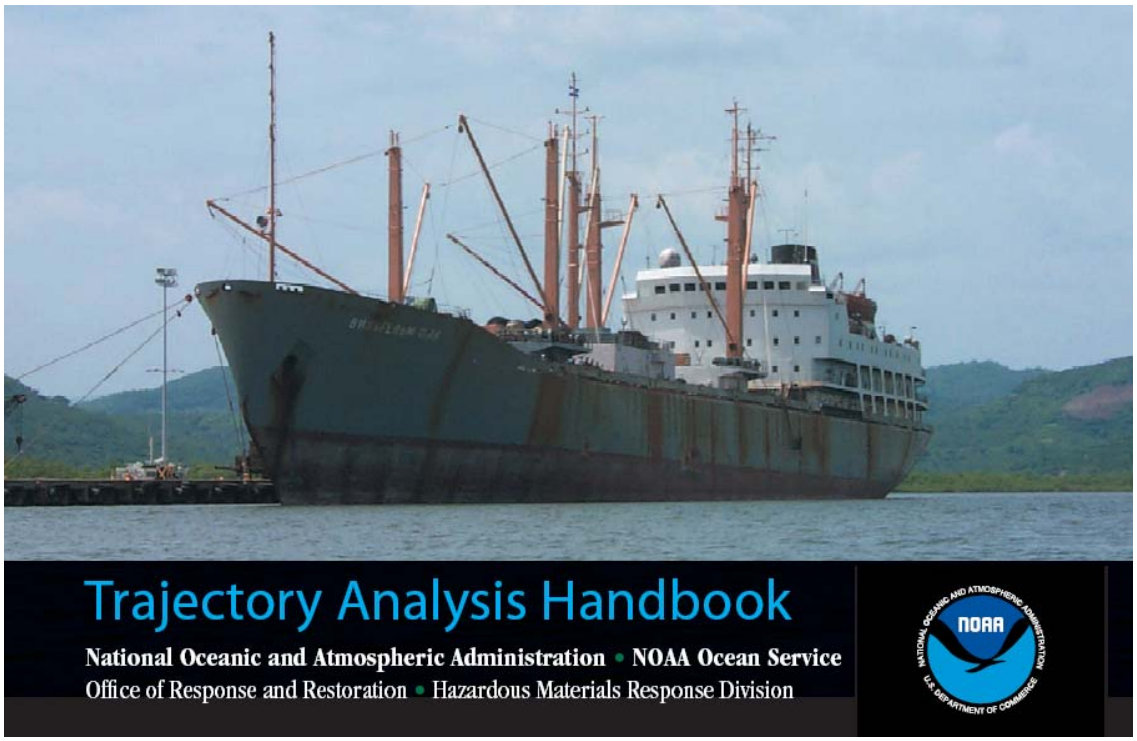
Weather and oceanographic conditions have a major role in the outcome of an incident, including the fate of the spilled oil, the success of salvage, the feasibility and effectiveness of certain response alternatives, and safety of the response efforts. NOAA provides site-specific weather forecasts to the Unified Command, including marine and aviation forecasts, to assist in operational decision-making. When requested, NOAA can install remote weather stations and supply an Incident Meteorologist to provide real-time information in the command post.



USCG and NOAA setting up a remote weather station near the wreck of the Selendang Ayu, Unalaska Island, Alaska.

What is the expected spill trajectory?

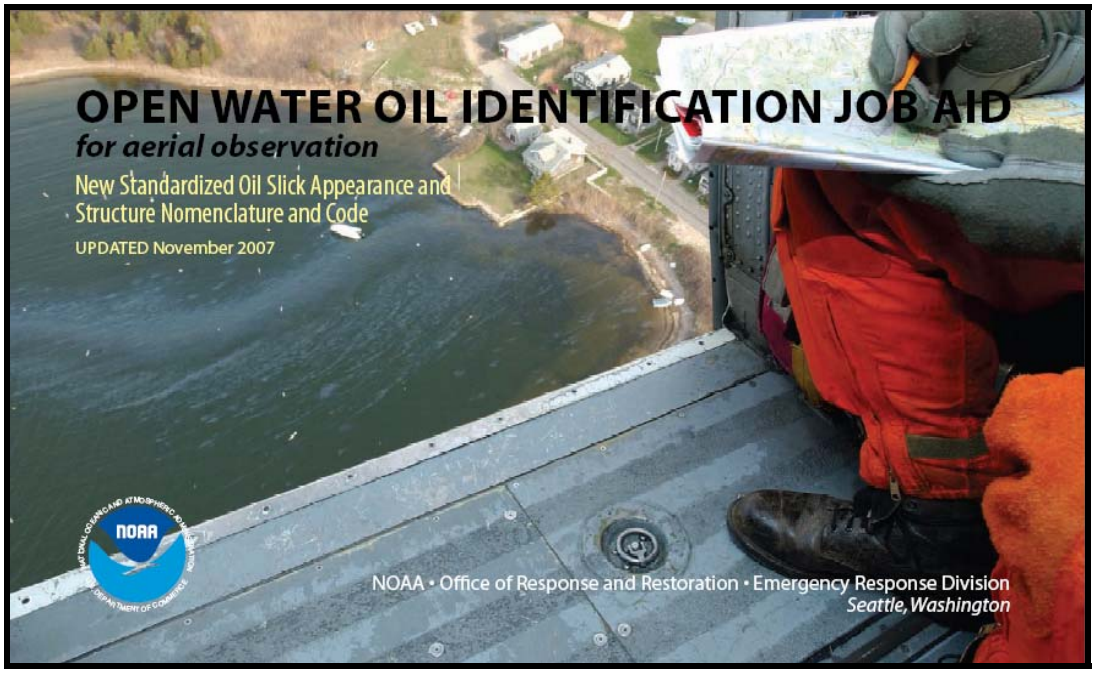
Once spilled, oil begins to spread and move quickly with winds and currents. NOAA conducts modeling to forecast the likely movement of the oil. Knowing where the oil is going to go and when it will arrive is critical for protection of sensitive areas and staging of response equipment.



NOAA guidebook describing the basic concepts involved in analyzing the trajectory of spilled oil.

Where is the oil?

An important step in spill response is to assess the character and extent of oil spilled on the water. During spills, the NOAA scientific support team conducts systematic aerial reconnaissance to track the oil movements. This information is used by the Incident Command to prioritize response and direct cleanup resources. NOAA developed and maintains guidance on oil spill reconnaissance. This job aid helps responders perform efficient assessments and use standard language to communicate their findings effectively. Similar job aids are available for shoreline oiling.



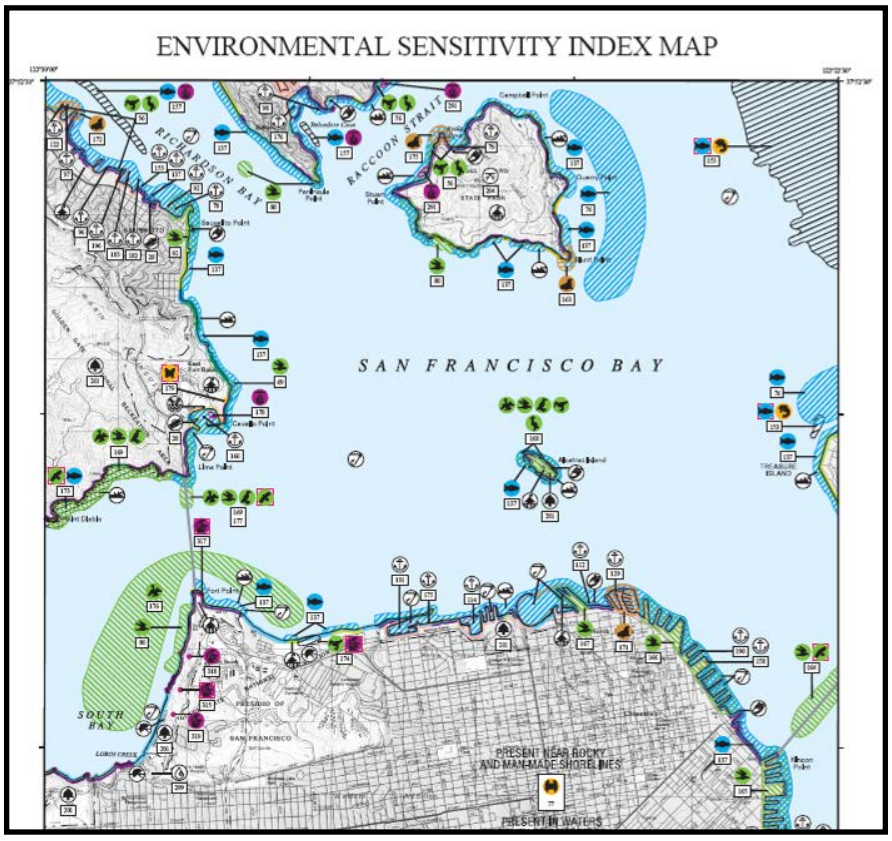
NOAA Aerial Observation Manual

What resources are at risk?

The impacts of a spill will vary depending on the resources at risk. Spills in urban harbors will typically have less severe biological impacts than spills in more pristine locations, but harbor spills may result in substantial commercial and recreational disruptions.

Basic shoreline types are important considerations, as sensitivity to oil spills and cleanup alternatives vary considerably. Exposed rocky shorelines have a lower sensitivity than sheltered marshes because oil is much more likely to persist in the marshes. Cobble and pebble shorelines may collect large amounts of oil because of the interstitial spaces.

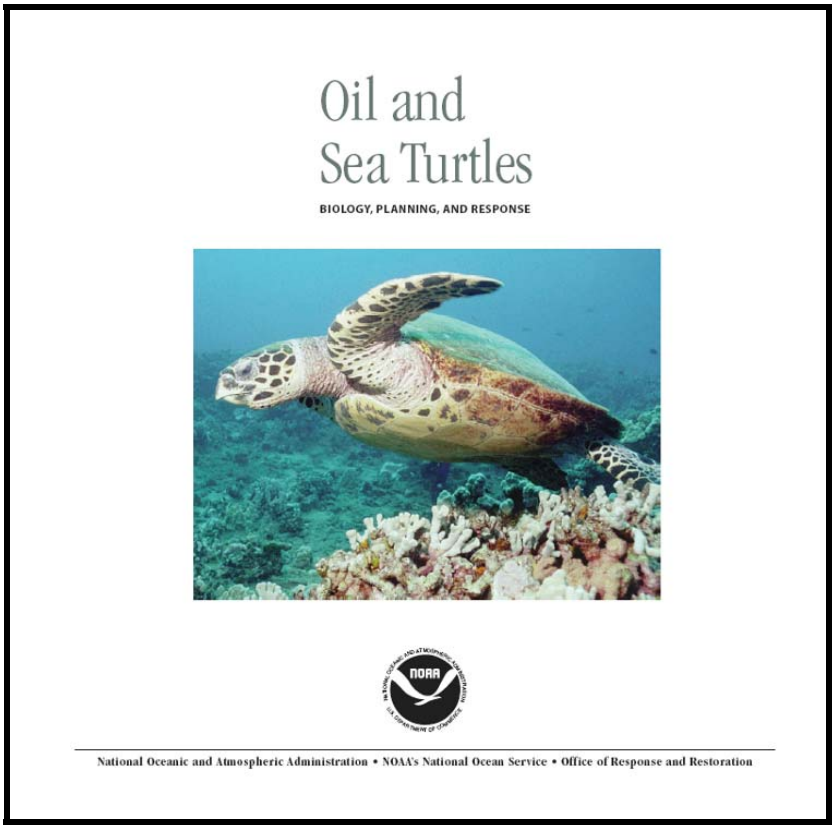
NOAA maintains shoreline sensitivity maps of the entire US coastal zone. These maps include basic shoreline types, data on wildlife, fish, and shellfish resources, and human use resources such as parks, marinas, and water intakes. This information allows responders to rapidly prioritize and protect sensitive areas.



Portion of an ESI map for San Francisco Bay.

What types of biological effects are anticipated?

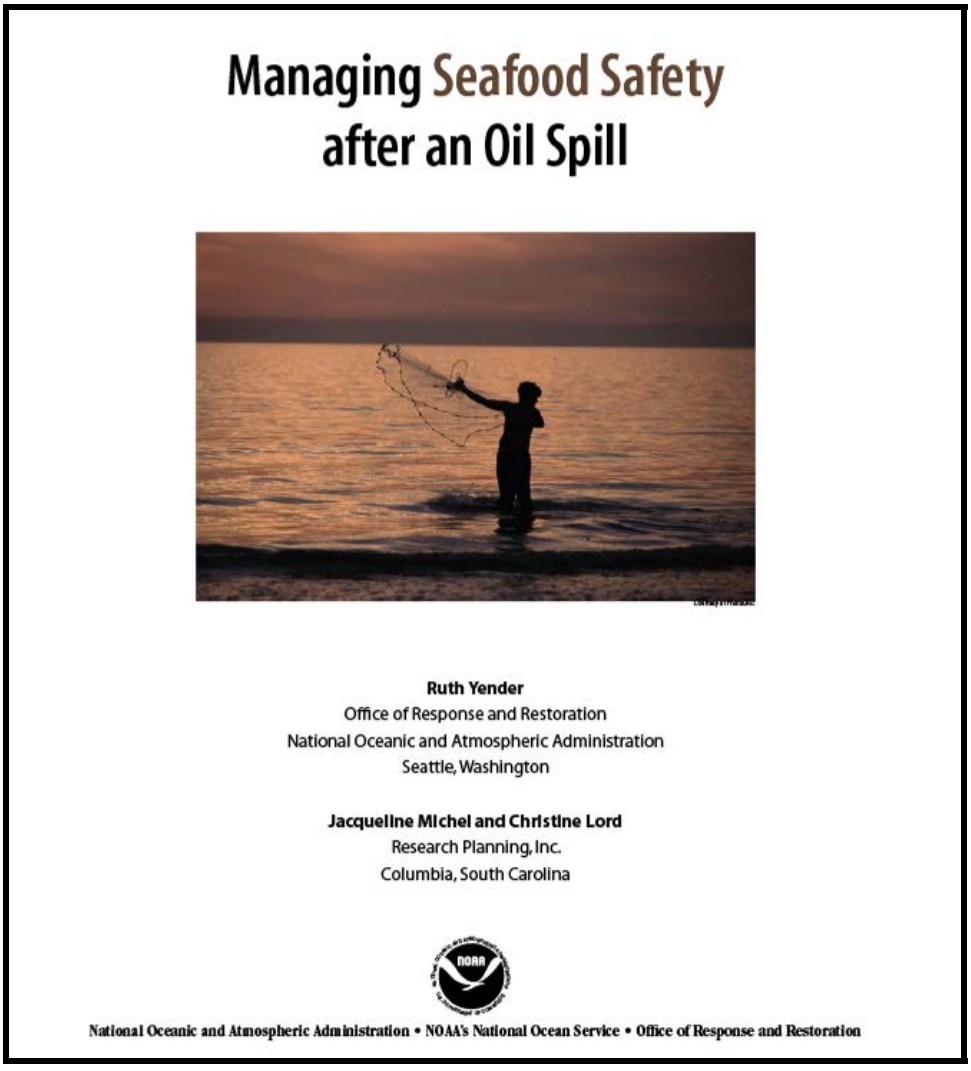
The severity of biological impacts will be very incident specific and depend on many factors including toxicity of the oil, environmental conditions, seasonality and presence of sensitive resources. Even a small spill, in a sensitive environment or time of year can have significant impacts. Time of year can be a major factor in whether migratory fish and wildlife are present, or if sensitive life stages, such as fish spawning, is on-going. Certain response and cleanup alternatives also have the potential to cause additional harm. NOAA helps to address these considerations through research and planning and works within the Incident Command during spills to select response alternatives and cleanup endpoints that minimize biological impacts and maximize recovery of the affected resources.



NOAA Guide on planning and response considerations for sea turtles.

Are there any closures or restrictions?

Ports, waterways, and fishing grounds may be closed or restricted during a pollution response to facilitate cleanup and prevent tainted seafood products from reaching markets. These closures may have significant economic and social implications. Closure of a large port for even a day may have regional or even national implications. Management of fisheries during spills can also be complex. Research on past spills has shown that seafood safety is rarely a problem but communication of risk is complex. The economic impact on fishery dependent communities can be widespread. Spill impacts may be restricted to a small region, but the public may assume that all seafood products from the entire state are contaminated. NOAA works with local and state seafood managers to help manage fisheries during a spill event.



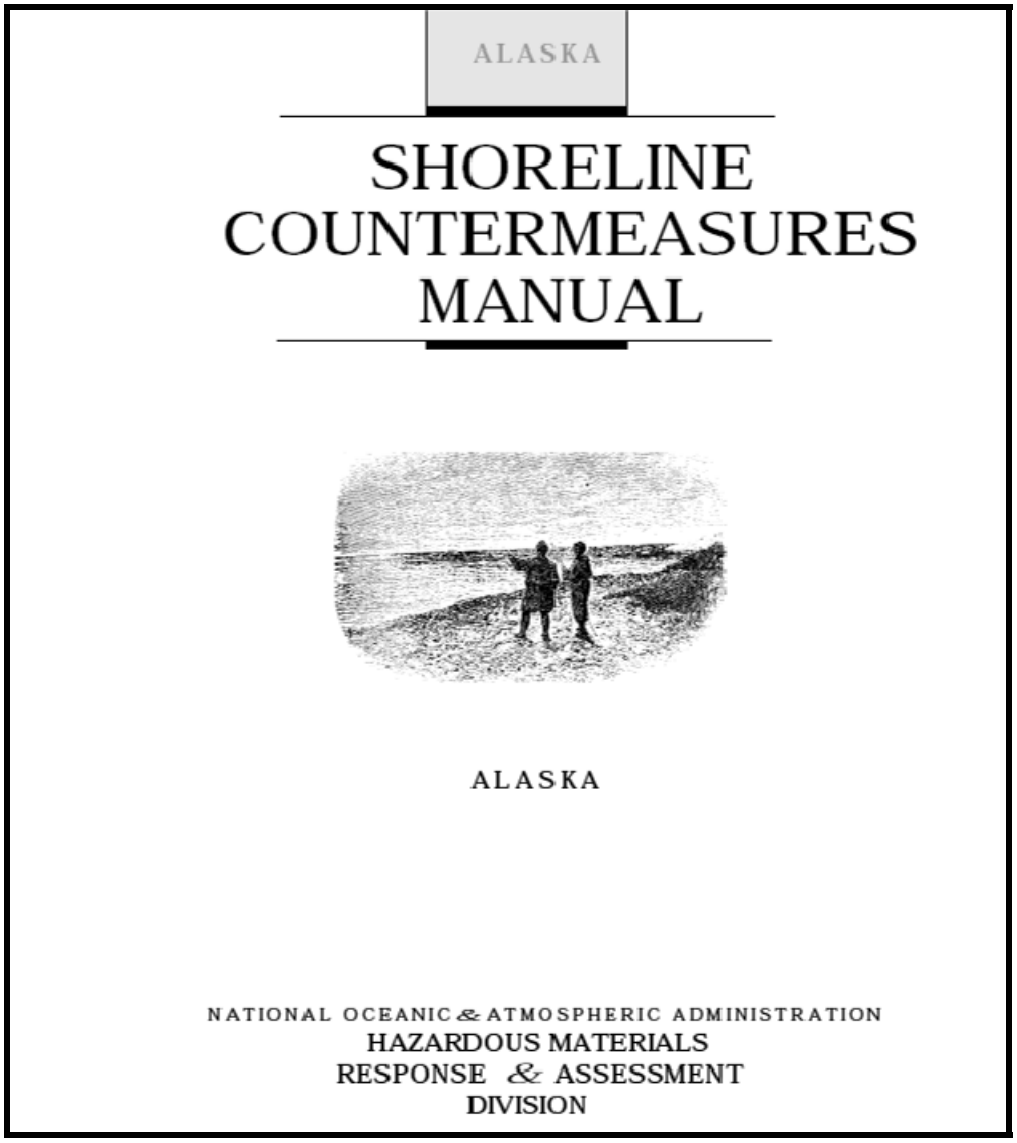
Will the vessel be moved to a place of refuge?

A place of refuge is an area, often a port or sheltered embayment, where a vessel in distress can be taken for repair and stabilization. In the event of a leaking vessel, the decision to bring a ship into a harbor may reduce the overall impact on the environment, but the place of refuge may incur significant localized impacts. NOAA helps the unified command to select places of refuge based on prevailing weather and oceanographic conditions, resources potentially at risk, harbor bathymetry, and other critical information. The actual designation of a Place of Refuge will always be an incident-specific decision made by the U.S. Coast Guard Captain of the Port.

Car Carrier Cougar Ace near Dutch Harbor Alaska.

What types of response countermeasures are being used?

Most spill response efforts rely on long-established countermeasures such as booms and skimmers at sea, and manual labor on shore. On occasion, alternative response technologies such as dispersants and burning may be used. In all instances, selection of response options involves trade-offs among cost, efficacy, and environmental impacts. NOAA helps to evaluate cleanup alternatives during planning and during responses and has prepared a series of shoreline countermeasure manuals for particular regions and shoreline types.



How much oil has been recovered?

Recovery rates for oil spills are highly variable and depend on the oil type, location, and intensity of the response. Light products such as diesel and gasoline spread, evaporate, and disperse quickly, leaving little to recover. Heavier oils often have higher recovery rates, but responders rarely recover more than a fraction of the spilled oil. Occasionally, high recovery rates may be reported, sometimes nearing or even exceeding the amount spilled. These reports are often a result of the inclusion of the oily material, including oily debris and water, rather than just the volume of oil recovered.

Recovery of all of the spilled oil may not necessarily be desirable from an environmental recovery perspective. The harm caused by intrusive cleanup methods may outweigh the benefits of oil removal. NOAA helps the Unified Command to determine "how clean is clean" and when to stop cleanup.

Solitary tar ball on a sand beach.

How long will the cleanup take?

Most spill responses are completed in a matter of days but large spills, especially those in remote locations, may take months or years to complete. The time window for at-sea recovery tends to be short- only a matter of days. Shoreline cleanup is the most labor intensive, and a large crew may be needed for months on a major incident. As the response winds down, the staffing may drop to a small crew responsible for monitoring and cleaning and demobilization of equipment.

Duration of cleanup operations will vary significantly with the climate, oil type and shoreline type. Arctic and subarctic locations are especially challenging as severe weather, safety considerations, and limited winter daylight may restrict cleanup operations. Oil types are an important consideration. Light oils such as gasoline and diesel tend to evaporate and disperse quickly, leaving little to recover. Heavier oils, including bunker fuels, can be quite persistent and require lengthy cleanup operations. The shoreline type is also important in terms of access and penetration of oil. Large sandy shorelines may allow heavy equipment access, and oil is generally readily recovered. Small pocket beaches with gravel and cobble may be very time-consuming to clean because of access limitations and the potential for substantial subsurface penetration of oil.

As response efforts continue during a spill, the recovery of oil tends to decline while collateral impacts of the response increase. Recovery of the last 10% of the oil may take as much effort as the first 90%. More and more aggressive techniques are necessary, potentially increasing environmental harm and delaying recovery. NOAA helps to evaluate the environmental trade-off and determine reasonable cleanup endpoints.

UNIFIED COMMAND DECISION MEMO
M/V SELENDANG AYU INCIDENT

June 23, 2006

Subject: Completion of Response and Stand Down

The Unified Command has determined that response operations initiated as a result of the grounding and breakup of the M/V SELENDANG AYU are complete. Shoreline treatment has reached the lowest practicable level of contamination and remaining contamination does not pose a significant threat to public health or the environment.

Natural Resource Damage Assessment, the processing of claims, and other activities by federal, state, and responsible party organizations will continue. Ongoing communications among the organizations participating in the response and their constituents will also continue as needed.

Accordingly, the Unified Command will stand down effective with the close of business on Friday, 23 June, 2006.

How do claimants get compensated for their losses?

There are a wide variety of claims that may arise after spills, including claims from individuals incurring loss of income, oiled vessels, property damage, or other personal losses. The responsible party must establish a claims procedure following an incident, and advertise the availability of the claims process. If the spiller is unknown, or if the responsible party fails to resolve claims, claimants may then submit their claims to the U.S. Coast Guard's National Pollution Funds Center (NPFC) for adjudication. The NPFC has extensive guidance on claims processes at http://www.uscg.mil/npfc/

How do natural resources get restored?

Under the Oil Pollution Act, NOAA and other designated Federal, State, and tribal trustees are authorized to conduct natural resource damage assessments, bring claims against the spiller or the Oil Spill Liability Trust Fund, and use the recovered funds for restoration of the affected resources. The damage assessment process is generally initiated within days of the incident, but can take several years to complete. The goal of the assessment process is to determine the amounts and types of injuries to natural resources and public lost uses and to develop restoration projects that compensate for those losses. The public has an opportunity to participate in the restoration planning process by proposing restoration concepts and by commenting on draft and final restoration plans.

San Francisco Chronicle

SAN FRANCISCO BAY OIL SPILL

How much for a bird? A day not surfing?

Mill Valley meeting discusses spill's costs for people, wildlife

Peter Fimrite, Chronicle Staff Writer
Wednesday, January 30, 2008

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A group of government agents is attempting to determine, among other things, the value of a bird's life and the cost in lost enjoyment to a surfer who missed out on a day at the beach.

The men and women from six government agencies are trying to put a value on how the Cosco Busan oil spill affected people and wildlife, and they held a meeting in Mill Valley on Tuesday night to ask the public for ideas on what restorations might be needed in the wake of the disaster.

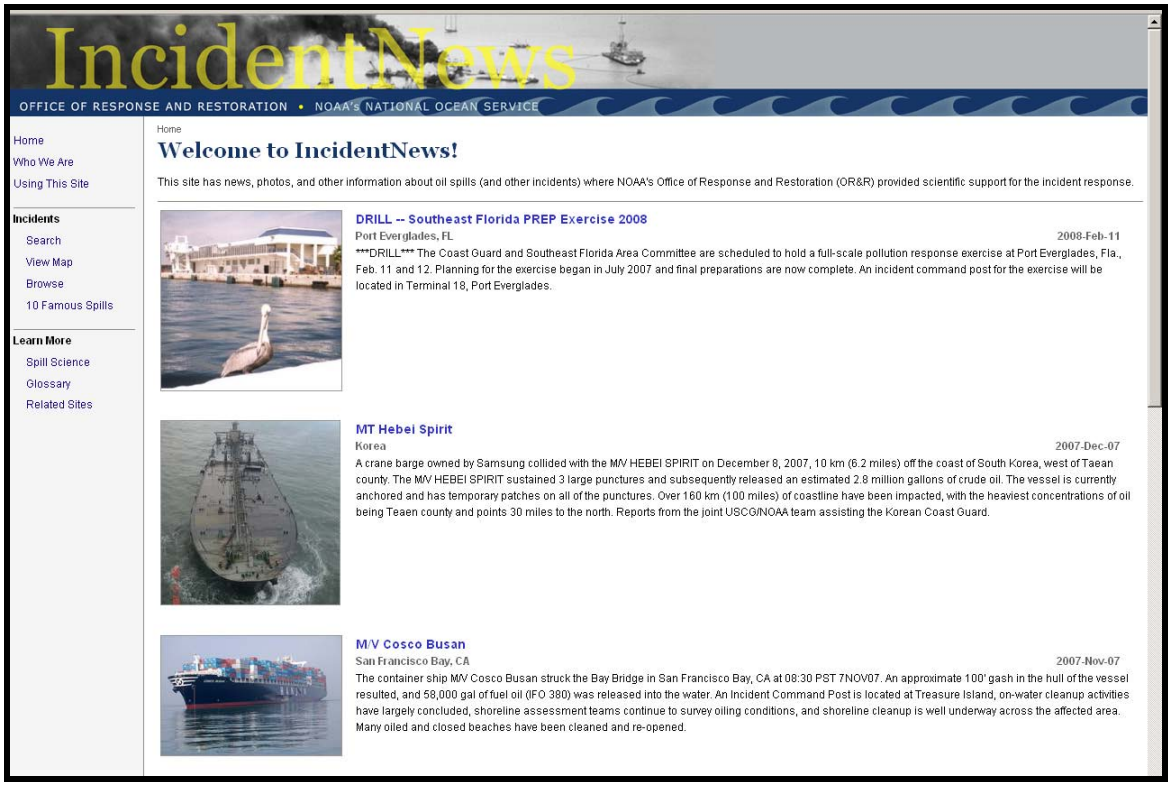
"We can make a claim on behalf of wildlife and habitat and people's use of the resources," said Steve Hampton, a state Department of Fish and Game resource economist.

It was the second meeting in a whole series of studies, reports and hand-wringing sessions that will ultimately result in money being allocated for everything from the restoration of bird habitat to improved beach access. The goal is to compensate for the environmental havoc wrought by the Nov. 7 spill, which dumped more than 53,000 gallons of bunker fuel into the bay.

How do I get more information?

The best source of information during a spill is from the Joint Information Center (JIC). The JIC is part of the Incident Command Structure, and typically includes media representatives from the RP, the Coast Guard, and other local, state, federal and private organizations responding to the spill. All official press releases come through the JIC.

There are a number of other sources of information about of spills. NOAA maintains the Incident News website: http://www.incidentnews.gov/ with information about current and historic spills. The Office of Response and Restoration (OR&R) website http://response.restoration.noaa.gov/ has extensive information on oil and chemical spill response and damage assessments in coastal waters. OR&R also maintains ResponseLINK, a real-time bulletin board for incident specific information, including all maps, trajectories, photographs, and other products generated by NOAA. The NOAA Office of Legislative Affairs has access to this system and can generate briefing products for specific incidents.



What if I want to learn more about spills?

The NOAA Office of Response and Restoration conducts Science of Oil Spills (SOS) workshops to build skills in analyzing complex spill events and making risk-based decisions that maximize long term environmental benefit. The SOS workshops generally take place at NOAA's Sand Point campus in Seattle, but occasionally are held in other regions. The next workshop will be held April 8-10, 2008 in Seattle.
The workshops cover:

- Fate and behavior of oil spilled in the environment.
- An introduction to oil chemistry and toxicity.
- A review of basic spill response options for open water and shorelines.
- Spill case studies.
- Principles of ecological risk assessment.
- A field trip.
- An introduction to damage assessment techniques.
- Determining cleanup endpoints.

Glossary of Oil Spill Terms

NOAA's Office of Response and Restoration (OR&R) – protects coastal and marine resources, mitigates threats, reduces harm, and restores ecological function. The Office provides comprehensive solutions to environmental hazards caused by oil, chemicals, and marine debris.

NOAA Emergency Response Division (ERD) - Provides scientific expertise to support an incident response and helps the OR&R Assessment and Restoration Division (ARD) initiate a natural resource damage assessment.

NOAA Scientific Support Coordinators (SSC) – A special technical advisor within the Incident Command System (ICS), as specified in the National Oil and Hazardous Substances Pollution Contingency Plan. They may be designated as principal advisors for scientific issues, communication with the scientific community and Natural Resource Trustee agencies, and coordination of requests for assistance from state and federal agencies regarding scientific issues.

NOAA Scientific Support Team (SST) - An extensive team of NOAA scientists and technicians as both a home team at ERD headquarters in Seattle and other offices, and the on-scene team. The home team typically includes:
• A weather team working with NWS Incident Meteorologists/forecasters to provide incident specific spot forecasts,
• Oceanographer modelers running the computer models to generate trajectories, spill fate forecasts, and similar products,
• A chemistry team to advise on chemical reactivity, hazards, oil identification, and toxicology,
• Biologists to assist with natural resource protection strategies, and
• An industrial hygienist to provide health and safety and toxicology consultation to the NOAA team and to consult with the Unified Command's Safety officer.

Oil Spill Response Models and Spill Tools –

GNOME (General NOAA Oil Modeling Environment) – NOAA's spill response trajectory model. Used to investigate the effects of different pollutants and environmental conditions on trajectory results. GNOME has the ability to examine both the forecast trajectory ("best guess") and the uncertainty estimate ("minimum regret") at the same time.

Trajectory Analysis Planner (TAP) – an innovative, statistics-based approach to give oil spill contingency planners real-world answers. Graphical output from TAP is presented in five modes; Shoreline Impact Analysis, Response Time Analysis, Site Oiling Analysis, Threat Zone Analysis, and Resource Analysis. TAP is not designed to use during response to an actual spill, but provides an excellent approach to response planning, preparedness, and consequence analysis.

Automated Data Inquiry for Oil Spills (ADIOS2) – an oil spill response tool to assist oil spill responders and contingency planners in making decisions on potential response strategies. ADIOS2 integrates a library of approximately one thousand oils with a short-term oil weathering and cleanup model to help you to develop cleanup strategies based on estimates of the amount of time that spilled oil will remain in the marine environment.

Spill Tools – computer-based tools and learning aids designed to help local groups gain access to information for developing local area plans required under the National Oil and Hazardous Substances Pollution Contingency Plan.

Environmental Sensitivity Index (ESI) Mapping – the most widely used approach to sensitive environment mapping in the United States that systematically compiles information in standard formats for coastal shoreline sensitivity, biological resources, and human-use resources. ESI maps are useful for identifying sensitive resources before a spill occurs so that protection priorities can be established and cleanup strategies designed in advance. Using ESIs in spill response reduces environmental consequences of the spill and cleanup efforts.

Glossary of Standard Oil Spill Observation Terms -

Oil Color and Appearance Terms
Dark (or True) Color: Represents a continuous true oil color (i.e., its natural color), commonly occurring at thicknesses of at least a hundredth of an inch (or, a little over a tenth of a millimeter).

Oil thickness at this "dark" stage (especially in a calm and/or contained state) could range over several orders of magnitude. At sea, however, after reaching an equilibrium condition, most oils would not achieve an average thickness beyond a few millimeters. Heavy fuel oils and highly weathered or emulsified oils (especially on very cold water) could, of course, reach equilibrium states considerably greater than a few millimeters.

Metallic: The next distinct oil color, thicker than rainbow, that tends to reflect the color of the sky, but with some element of oil color, often between a light gray and a dull brown. Metallic is a "mirror to the sky."

Sheen: Sheen is a very thin layer of oil (less than 0.0002 inches or 0.005 mm) floating on the water surface and is the most common form of oil seen in the later stages of a spill. According to their thickness, sheens vary in color from rainbows, for the thicker layers, to silver/gray for thinner layers, to almost transparent for the thinnest layers.

Transitional Dark (or True) color: The next distinct oil on water layer thickness after metallic, that tends to reflect a transitional dark or true oil color. At the "Transitional" stage, most of the oil will be just thick enough to look like its natural color (typically a few thousandths of an inch, or few hundredths of a millimeter), and yet thin enough in places to appear somewhat patchy.

Oil Structure/Distribution Terms

Convergence Zone: A long narrow band of oil (and possibly other materials) often caused by the convergence of two bodies of water with different temperatures and/or salinities. Unlike windrows and streamers, commonly associated with wind, convergence zones are normally associated with the interface between differing water masses, or with the effects of tidal and depth changes that cause currents to converge due to density differences or due to large bathymetric changes. Such zones may be several kilometers in length, and consist of dark or emulsified oil and heavy debris surrounded by sheens.

No Structure: Random eddies or swirls of oil at any one or more thicknesses. This distribution of oil is normally the result of little to no winds and/or currents.

Patches: An oil configuration or "structure" that reflects a broad range of shapes and dimensions. Numerous tarballs could combine to form a patch; oil of various colors and consistency could form a patch or single layer 10s of cm to 10s (or even 100s) of meters in diameter; and a large patch of dark or rainbow oil could have patches of emulsion within it. Patches of oily debris, barely able to float with sediment/plants in them, might be called "tarmats," circular patches at sea might be called "pancakes"; *really big* patches might simply be called "continuous" slicks. But, they are all "patches."

Streamers: Narrow bands or lines of oil (sheens, dark or emulsified) with relatively clean water on each side. Streamers may be caused by wind and/or currents, but should not be confused with multiple parallel bands of oil associated with windrows, or with convergence zones or lines commonly associated with temperature and/or salinity discontinuities.

Tarballs: Discrete, and usually pliable, globules of weathered oil, ranging from mostly oil to highly emulsified with varying amount of debris and/or sediment. Tarballs may vary in size from millimeters to 20-30 centimeters across. Depending on exactly how weathered, or hardened, the outer layer of the tarballs is, sheen may or may not be present.

Windrows: Multiple bands or streaks of oil (sheens, dark, or mousse) that line up nearly parallel with the wind. Such streaks (typically including seaweed, foam, and other organic material) are caused by a series of counter rotating vortices in the surface layers that produce alternating convergent and divergent zones. Sometimes referred to as Langmuir vortices (after a researcher in 1938), the resulting "windrows" begin to form with wind speeds of approximately six knots or more.

Other Oil Slick Terms

Black oil: A black or very dark brown-colored layer of oil. Depending on the quantity spilled, oil tends to spread out quickly over the water surface to a thickness of about one millimeter. However,

from the air it is impossible to tell how thick a black oil layer is. The minimum thicknesses for a continuous black oil layer would commonly be around a hundredth of an inch to about two tenth of a millimeter. Dark (or Black) oils just begin to look their natural color at around a thousandth of an inch (or, a few hundredths of a millimeter). *See* Chart *link at page bottom.*

Dispersion: The breaking up of an oil slick into small droplets that are mixed into the water column as a result of sea surface turbulence. For response purposes, dispersed oil is defined as oil droplets that are too small to refloat back to the surface. The physical properties of the oil and the sea state are the main factors that determine how much oil is dispersed. Chemical dispersants can be used to change the chemical properties of the oil and enhance oil dispersion.

Emulsification: The formation of a water-in-oil mixture. The tendency for emulsification to occur varies with different oils and is much more likely to occur under high energy conditions (winds and waves). This mixture is frequently referred to as **mousse**. Emulsification will impact the cleanup by significantly increasing the volume and viscosity of the oil to be collected.

Entrainment: The loss of oil from containment when it is pulled under a boom by a strong current. Entrainment typically occurs from booms deployed perpendicular to currents greater than 3/4 knot.

Recoverable Oil: Oil that is in a thick enough layer on the water to be recovered by conventional techniques and equipment. Only black or dark brown oil, mousse, and heavy metallic layers are generally considered thick enough to be effectively recovered by skimmers. Thinner films may be recoverable with sorbents and/or concentrated with booms or chemical herders to enhance their recovery.

Slick: Oil spilled on the water that absorbs energy and dampens out the surface waves making the oil appear smoother or "slicker" than the surrounding water. "Slicks" refer to oil layers that are thicker than rainbow and silver sheens. Natural slicks, from plants or animals, also may occur on the water surface and may be mistaken for oil slicks.

Weathering: A combination of physical and environmental processes such as evaporation, dissolution, dispersion, photo-oxidation, and emulsification that act on oil and change its physical properties and composition.

SCAT Terms

SCAT Jargon

ACP: *Area Contingency Plan*: Prepared for the use of all agencies engaged in responding to environmental emergencies in a defined geographic area.

ADIOS 2: *Automated Data Inquiry for Oil Spills*: Model developed by NOAA to estimates the evaporation, natural dispersion, and other weathering processes of oil on water for up to the first five days after it is spilled.

API gravity: An arbitrary scale expressing the gravity or density of liquid petroleum products. API gravity is determined by the equation API at 60°F = 141.5/(oil density -131.5).

Beach berm: A nearly flat back portion of a beach, formed of material deposited by the action of the waves.

Beach face: The sloping section of a beach below the berm that is exposed to the swash of the waves

BMP: *Best Management Practice*: Detailed instructions to field observers and crew chiefs on how they can direct crews to accomplish cleanup objectives with the least injury to the environment.

ESA: *Endangered Species Act*: This federal law requires, for a federal action, including pollution response, that the lead federal agency to consult with FWS and NMFS if the federal action (the response, not the pollution itself) may adversely affect ESA-listed species, or their critical habitat.

ESI: *Environmental Sensitivity Index*: Maps used for oil spill planning and response that includes shoreline type, biological resources, and human-use resources.

ERMA: *Environmental Response Management Application*: A Web-based Geographic Information System tool that provides access to spatial data about a response and lots of other environmental data in real time.

EU: *Environmental Unit*: Works within the Planning Section under ICS and has a key responsibility to ensure that any response to an incident addresses environmental, cultural, and socioeconomic priorities.

FOSC: *Federal On-Scene Coordinator*: The Federal OSC is predesignated by EPA or USCG to coordinate and direct Federal responses.

GNOME: *General NOAA Operational Modeling Environment*: Model developed by NOAA ERD to simulate the movement of a substance on or in the water. The GNOME model is the primary tool used by NOAA to forecast the movement of oil for responders.

IAP: *Incident Action Plan*: documents the goals, operational period objectives, and the response strategy defined by incident command during response planning.

ICS: *Incident Command System*: Organizational structure for emergencies consisting of five major functional areas: Command, Operations, Planning, Logistics, and Finance/Administration.

LHTS: Last high-tide swash line. The line formed by the accumulation of wrack or oil at the highest water level during the most recent high tide.

NCP: *National Oil and Hazardous Substances Pollution Contingency Plan* 40 CFR Parts 9 and 300.

NFT: *No further treatment*: A recommendation by SCAT teams for a segment because it has met cleanup endpoints or further removal efforts are expected to cause more harm than leaving the oil in place.

NHPA Section 106: *National Historic Preservation Act*: Requires Federal agencies to take into account the effects of their undertakings on historic properties through consultation with the SHPO.

NMFS: *National Marine Fisheries Service*. NOAA office under the National Ocean Service.

NOO: *No oil observed*: SCAT term for no visible oil.

NPFC: *National Pollution Funds Center*: USCG office than manages the Oil Spill Liability Trust Fund.

NPS: *National Park Service.* A bureau in the U.S. Department of the Interior. They often take the lead on cultural

resource issues, as well as spills that affect national park properties.

NRT: *National Response Team*: responsible for broad coordination and oversight of preparedness, planning and response across the federal government.

OR&R: *Office of Response and Restoration*: NOAA office under the National Ocean Service.

RAR: *Resources at Risk*: Rapid analysis of the natural resources at risk as a result of the incident, including sensitive habitats and biological resources, but also human-use resources and cultural and historical resources.

READ or NRA: *Natural Resource Advisor*: Assigned to monitor operations to document compliance with the STR.

RP: *Responsible Party*: Representative of the spiller during a response.

RRT: *Regional Response Team*: There are 13, composed of representatives from field offices of the federal agencies that make up the NRT, tribal nations, and representatives of state government. The major responsibilities of RRTs include response, planning, training, and coordination.

Segment: A length of shoreline surveyed by SCAT with data documented on a single SOS form. There can be multiple zones per segment.

SSC: *Scientific Support Coordinator*: Provides liaison with the scientific research and response community to the U.S. Coast Guard for oil and chemical spills as part of the Emergency Response Division, Office of Response and Restoration, NOAA.

SHPO: *State Historic Preservation Officer*: Administers the national historic preservation program at the state level and consults with federal agencies during Section 106 review.

SIR: *Shoreline Inspection Report*: Form completed by SCAT teams during inspection of a segment to determine if it meets cleanup endpoints.

SMART: *Special Monitoring of Applied Response Technologies*: A monitoring program to collect real-time data of effectiveness of in situ burning and dispersant applications.

SOS: *Shoreline Oiling Survey*: Form used to document SCAT field observations for a segment.

SOSC: *State Onscene Commander*: State rep to coordinate and direct State responses.

STR: *Shoreline Treatment Recommendation*: Operational permit to work generated by SCAT that indicates where shoreline cleanup is to be done, approved methods, constraints, and best management practices.

THPO: *Tribal Historic Properties Officer*: Tribes that have assumed SHPO responsibilities on their tribal lands.

UC: *Unified Command*: In charge of managing a response and includes the FOSC, SOSC, and RP Incident Commander.

USCG: *U.S. Coast Guard*: Usually the FOSC for spills in marine, coastal, and navigable waterways.

USFWS: *U.S. Fish and Wildlife Service*: One of the bureaus in the U.S. Department of the Interior.

Zone: a section of shoreline that represents a unique combination of shoreline/habitat type, oiling condition, and elevation on the shoreline. Each zone is designated on the SOS form. Zones can be end-to-end, or overlapping (e.g., zone A for a high-water band of oil along 100 ft of riprap and zone B for a band of oil along 200 ft of the beach in front of the riprap

JIC Model

NRT

National Response Team (NRT) Joint Information Center Model

Collaborative Communications during Emergency Response

April 2013

Chair

Vice Chair

Member Agencies

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Acknowledgements

The National Response Team (NRT) acknowledges the NRT member agencies, and state and federal agencies participating on the Regional Response Teams (RRTs), for their contributions in preparing this document. We invite comments or concerns on the usefulness of this document in all-hazard planning for responses. Please send comments to:

U.S. National Response Team
NRT Response Committee
U.S. Environmental Protection Agency
(Mail Code 5104A)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

U.S. National Response Team Member Agencies:

Chair: U.S. Environmental Protection Agency
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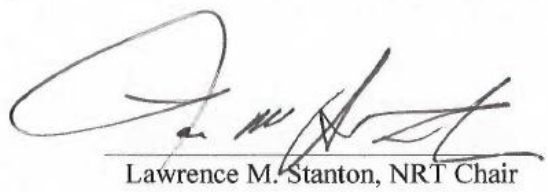
U.S. Department of Homeland Security
U.S. Federal Emergency Management Agency
U.S. General Services Administration
U.S. Nuclear Regulatory Commission
U.S. Department of Transportation

For more information on the NRT, please visit *www.nrt.org*.



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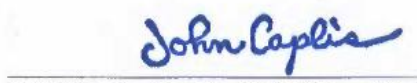

CAPT John Caplis, NRT Vice-Chair

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How To Use This Model

The NRT Joint Information Center (JIC) Model explains what a JIC is and why a JIC is established. It outlines the structure, processes, functional positions and roles and responsibilities of JIC personnel.

The NRT JIC Model is separated into the following sections:

- ***Section I – Background and Overview*** provides background information on the Incident Command System (ICS) and the history of the NRT JIC Model. This section also describes how the NRT JIC Model corresponds with other external affairs/public information documents.
- ***Section II – Establishing a Joint Information Center*** provides general information on the structures and processes of the JIC, including how the JIC is operated and how it fits within the different response structures.
- ***Section III – Joint Information Center Staffing*** provides position descriptions, qualifications, responsibilities and position-specific functions of the Public Information Officer (PIO), Assistant PIO (APIO)/JIC Manager, APIO for Information Gathering, APIO for Information Products, APIO for Media Relations, APIO for Community Relations and other potential personnel.

This document is intended for field use. Portions of this document were developed to stand on their own so that specific position descriptions and their corresponding sections may be removed from the NRT JIC Model and given to personnel filling these positions. To use this model, individuals should refer to the position description for which they have been assigned to gain an understanding of their roles and responsibilities. Likewise, users are encouraged to review other sections to identify how their particular roles will fit within the overall JIC operation. Also included in the document are a series of appendices that are designed to provide additional reference materials and tools that can support a JIC operation. These include:

- ***Appendix A: NRT JIC and Emergency Support Function (ESF) #15 – External Affairs Operations During a Federal Response*** describes recommendations to coordinate efforts between the NRT JIC and ESF #15.
- ***Appendix B: Job Aids*** provides checklists that can assist JIC personnel to perform their responsibilities associated with activating and operating a JIC.
- ***Appendix C: Information Exchange Matrices*** provides information exchange matrices that can assist JIC personnel to perform their responsibilities associated with activating and operating a JIC.
- ***Appendix D: Forms*** provides forms that can assist JIC personnel to perform their responsibilities associated with activating and operating a JIC.
- ***Appendix E: References, Worksheets, and Samples*** provides references, worksheets and samples of products and other materials that can assist JIC personnel to perform their responsibilities associated with activating and operating a JIC.
- ***Appendix F: Acronyms*** identifies acronyms and abbreviations common to response operations.

The NRT JIC Model is available online at www.nrt.org.

NOTE: This document outlines basic principles for establishing and implementing a JIC at the Incident Command Post level; however, the guidelines set by official government policy should always take precedence over the guidelines provided in this document. For example, in the case of a nationally significant incident, the National Response Framework (NRF) and ESF #15, should be followed.

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Section I. Background and Overview

1.1 PURPOSE

The NRT JIC Model documents a plan for conducting public information operations during emergency responses and other situations in which multiple organizations need to collaborate to provide timely, useful and accurate information to the public and other stakeholders. The primary focus of the model is to provide the PIO with a JIC structure that works within the framework of the National Incident Management System (NIMS) ICS. However, because it is functionally based, the model can be used during any situation in which there is a need for centralized communications support involving multiple organizations.

The NRT JIC Model was designed based on requirements identified by the NRT and was developed using a collaborative process through the NRT Response Committee's JIC Model Workgroup. The model is primarily intended for use at the Incident Command Post (ICP) level by PIOs and JIC members working under an Incident Commander (IC)/Unified Command (UC) structure.

1.2 REVISIONS

This edition of the NRT JIC Model is an update to the January 2010 version. To develop the updated NRT JIC Model, the NRT Response Committee chartered a joint-agency workgroup of PIOs with Type 1 all-hazards incident response experience, as well as expertise in establishing, managing and demobilizing JICs.

The workgroup made updates to the model based on PIO best practices, lessons learned from public information operations during all-hazards incident responses of all types and changes to various federal plans and guidance.

The NRT JIC Model Workgroup also reviewed and consulted various federal, state and local guidance documents for conducting public information and JIC operations.

The workgroup took special care to ensure that this document is NIMS ICS compliant and applicable to an all-hazards approach to public information activities during incident response.

1.3 NIMS AND HSPD-5

On February 28, 2003, the President issued Homeland Security Presidential Directive 5 (HSPD-5), Management of Domestic Incidents, which directs the Secretary of the U.S. Department of Homeland Security (DHS) to develop and administer NIMS to provide a consistent, nationwide approach for federal, state and local governments to work effectively and efficiently together to prepare for, respond to and recover from domestic incidents, regardless of cause, size or complexity. All federal agencies are required to adopt NIMS.

On March 1, 2004, the Secretary of DHS issued NIMS. NIMS represents a core set of doctrines, concepts, principles, terminology and organizational processes to enable effective, efficient and collaborative incident management at all levels to provide a comprehensive, all-hazards approach to domestic incident management. A key component of NIMS is ICS.

NIMS ICS is a flexible, adaptable and scalable system driven by the tactical needs of the responders at the scene of an incident. ICS provides a flexible management structure, common terminology, standardized training, pre-designated leadership positions, specific span of control and assigned responsibilities.

1.4 ICS

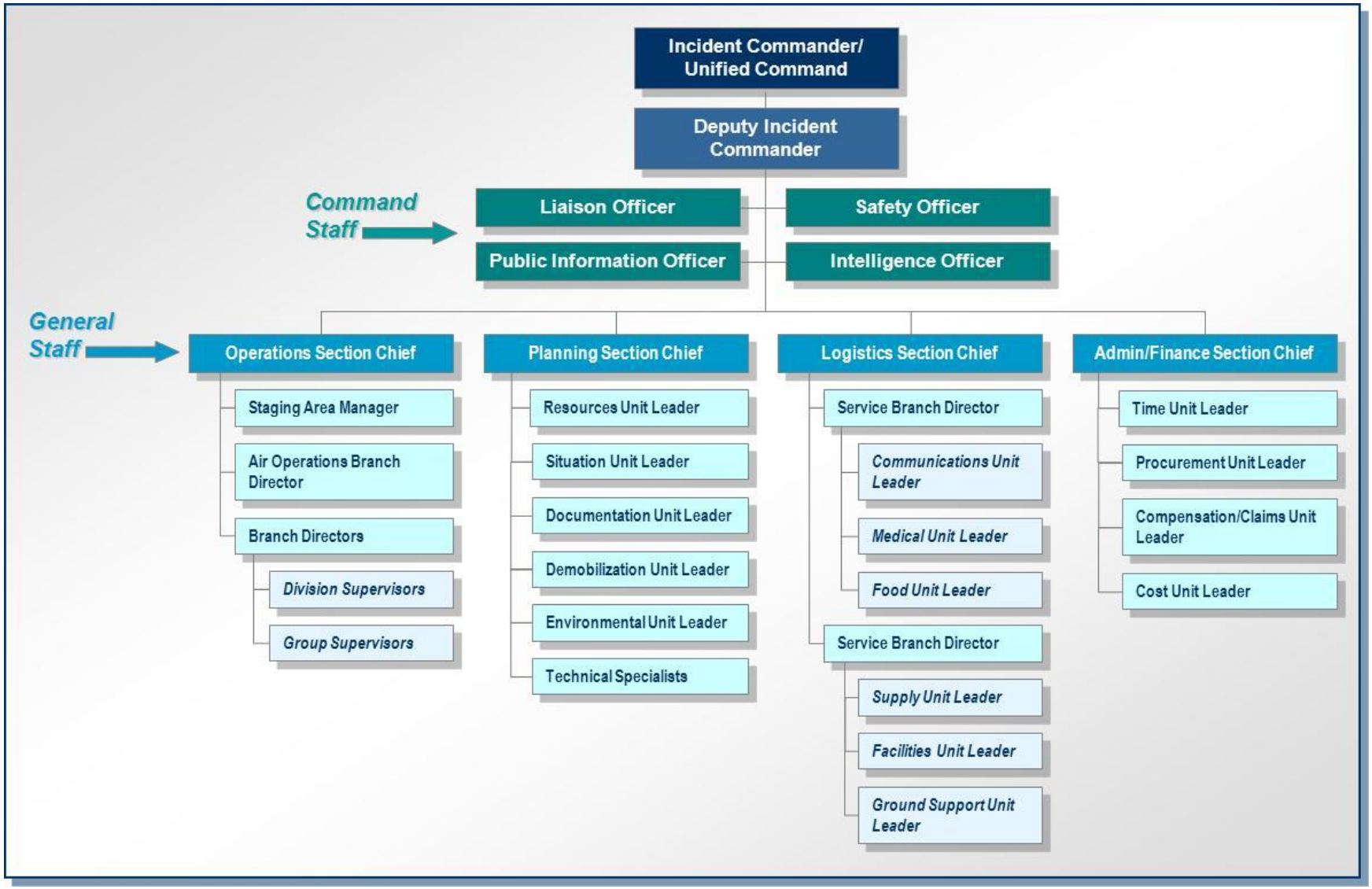
The ICS organization is designed to work equally well for both small and large incidents and can expand or contract to meet the needs of the event. For example, during small incidents, the IC may directly assign tactical resources and oversee all operations. However, large incidents usually require the IC/UC to delegate responsibility for each major activity to separate sections within the organization. Each of the primary ICS functions may be delegated as needed. When more than one entity has response authority, the IC/UC may include response partner representatives from federal, tribal, state, local, private sector and Non-Governmental Organizations (NGO).

The ICS organization is built around five major management functions:

- ***Command*** - sets objectives, priorities and has overall responsibility at the incident or event.
- ***Operations*** - conducts tactical operations to carry out the plan, develops the tactical objectives and organization and directs all resources.
- ***Planning*** - develops the Incident Action Plan (IAP) to accomplish the objectives, collect and evaluate information and maintain resource status.
- ***Logistics*** - provides support to meet incident needs, as well as resources and all other services needed to support the incident.
- ***Finance/Administration*** - monitors costs related to the incident and provides accounting, procurement, time recording and cost analysis.

On the following page, Figure 1 is an illustration of the ICS organization.

FIGURE 1 – ICS ORGANIZATION



Under ICS, the PIO is one of the key members of the Command Staff. The PIO represents and advises the IC/UC on all public information matters relating to the incident. In carrying out public information responsibilities, the PIO and JIC staff may interact with personnel at all levels of the ICS organization, including the IC/UC and other Command and General Staff positions.

1.5 FLEXIBILITY OF THE NRT JIC MODEL

The NRT JIC Model is flexible, scalable and can be adapted for use in a diverse range of field responses likely to be performed by NRT member agencies, ranging from a small, single agency, single-hazard response that lasts a few hours to a large, multiple agency, multi-hazards response or recovery operation that lasts for several weeks or months.

Although NRT member agencies respond to oil spills and other hazardous materials releases under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and ESF #10 – Oil and Hazardous Materials Response, the NRT JIC Model has been designed to be an all-hazards model that is compatible with NIMS.

The NRT JIC Model is a voluntary guidance document, not a regulation or requirement. Individual NRT agencies and other response partner organizations may modify the NRT JIC Model or develop their own JIC model to better meet their specific needs, hazards, incident type, JIC type and available personnel and other resources.

For example, the Federal Emergency Management Agency (FEMA) is an NRT member agency that has developed several guidance documents and training courses for PIOs that provide samples of several different JIC organizational structures:

- ***NIMS IS-702 (Public Information Systems) training*** - http://training.fema.gov/emiweb/is/is702.asp
- ***FEMA publication 517: "Basic Guidance for Public Information Officers"*** - http://www.fema.gov/emergency/nims
- ***NIMS IS-250 (Emergency Support Function #15) training*** - http://training.fema.gov/emiweb/is/is250.asp

The JIC organizational structures described in this NRT JIC Model, NIMS IS-702 and FEMA Publication 517 are designed for use under ICS at the Incident Command Post level. The JIC organizational structure described in NIMS IS-250 is designed for use at an Area, Support or National JIC formed under the NRF. Additional information concerning NRT JIC and ESF #15 operations during a Federal response can be found in Appendix A.

Although the job titles and responsibilities may vary between the various JIC organizational structures, they are designed to perform the same mission: to keep the public informed during a crisis/event. The following table compares and contrasts the roles and responsibilities defined in the various JIC organizational structures identified on page 4.

NRT JIC Model	NIMS IS-702 Course	FEMA Publication 517 Guidance	NIMS IS-250 ESF #15 Training
Incident Commander/ Unified Command	Incident Commander/ Unified Command	Incident Commander/ Unified Command	Principal Federal Official or Federal Coordinating Officer
Public Information Officer	Public Information Officer	Lead Public Information Officer	ESF #15 External Affairs Officer or Deputy Officer
Assistant Public Information Officer/JIC Manager	Deputy Public Information Officer or JIC Coordinator	JIC Facility Liaison	ESF #15 Executive Officer and/or Resource Manager
Assistant Public Information Officer for Information Gathering	Information Gathering and Analysis	Information Gathering	Strategy/Message Unit Leader
Assistant Public Information Officer for Information Products	Information Coordination and Production	Information Dissemination	Assistant External Affairs Officer for Planning & Products
Assistant Public Information Officer for Media Relations	Information Dissemination	Divided among Information Gathering and Information Dissemination	Assistant External Affairs Officer for the JIC or Media Relations Unit Leader
Assistant Public Information Officer for Community Relations	Public Inquiry Center	Liaison for Community Relations	Assistant External Affairs Officer for Community Relations

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Section II. Establishing a Joint Information Center

2.1 WHAT IT IS

The Joint Information System (JIS) provides the mechanism to organize, integrate and coordinate information to ensure timely, accurate, accessible and consistent messaging across multiple jurisdictions and/or disciplines.

The JIC is the central location that facilitates the operation of the JIS. It is a physical or an Internet-based virtual location where personnel with public information responsibilities perform media and community relations during an incident or event. The JIC structure is designed to work equally well for large or small incidents and can expand or contract to meet the needs of the incident.

Efficient information flow is critical to effectively meet public information needs and carry out PIO responsibilities when multiple organizations come together to respond to an emergency or manage an event.

By maintaining a centralized communication facility, resources can be better managed and duplication of effort is minimized. The use of a JIC allows for tracking and maintaining records and information.

2.2 JIC RESPONSIBILITIES

- Be the first and best source of information.
- Develop, recommend and execute public information plans and strategies on behalf of the IC/UC.
- Advise the IC/UC concerning public affairs issues that could impact the response.
- Ensure the various response agencies' information personnel work together to minimize conflict.
- Gain and maintain public trust and confidence.
- Gather information about the crisis.
- Capture video and photos of the crisis for release to the media and to support the response.
- Write and communicate emergency public information regarding public protective actions, evacuations, sheltering and other public safety messages.
- Ensure the timely and coordinated release of accurate information to the public by providing a single release point of information.
- Facilitate and manage control of rumors.
- Monitor and measure public perception of the incident.
- Inform the IC/UC of public reaction, attitude and needs.

2.3 WHEN IT SHOULD BE ESTABLISHED

The JIC structure is most useful when multiple organizations must coordinate timely, accurate information to the public and other stakeholders. Emergency situations could include natural disasters, oil spills and other hazardous substance releases or terrorist incidents. The JIC structure may also be useful in coordinating multi-agency event planning for major meetings and events, such as the Olympics, Super Bowl.

The following are incident types in which multiple agencies are involved and for which the IC/UC would usually decide to establish a JIC.[1]

Type 4

- Command staff and general staff functions are activated only if needed.
- Several resources are required to mitigate the incident.
- The incident is usually limited to one operational period in the control phase.
- No written IAP is required, but a documented operational briefing will be completed for all incoming resources.
- Examples include house fires, minor oil spills and minor chemical releases.

Type 3

- When capabilities exceed initial needs, the appropriate ICS positions should be added to match the complexity of the incident.
- Some or all of the Command and General Staff positions may be activated, as well as Division/Group Supervisor and/or Unit Leader level positions.
- The incident may extend into multiple operational periods.
- A written IAP may be required for each operational period.
- Examples include the Texas City Refinery explosion and fire, Graniteville, SC train derailment, medium oil spill or chemical release and local flooding.

Type 2

- This type of incident extends beyond the capabilities of local control and is expected to go into multiple operational periods. A Type 2 incident may require the response of resources out of the area, including regional and/or national resources, to effectively manage the operations, command and general staffing.
- Most or all of the Command and General Staff positions are filled.
- A written IAP is required for each operational period.
- Many of the functional units are needed and staffed.
- Examples include National Special Security Events (NSSE), such as pre-deployments for the Olympics or Super Bowl, national political conventions, major flooding and major wildfires.

[1] Source: U.S. Fire Administration. http://training.fema.gov/EMIWeb/IS/ICSResource/assets/IncidentTypes.pdf

Type 1

- This type of incident is the most complex, requiring national resources to safely and effectively manage and operate.
- All Command and General Staff positions are activated.
- Branches need to be established.
- Use of resource advisors at the incident base is recommended.
- There is a high impact on the local jurisdiction requiring additional staff for office administrative and support functions.
- Examples include the Deepwater Horizon Event, the terrorist attacks of September 11, 2001, Hurricane Katrina, and national pandemic influenza.

2.4 FLEXIBLE, FUNCTIONAL APPROACH

The JIC structure is designed to accommodate the diverse range of responses likely to be performed by NRT member agencies, ranging from a large multiple-agency, all-hazards response to a small single-agency, single-hazard response. The structure can grow or shrink depending on the unique requirements of a specific response and should be customized for each response. This adaptability encompasses staffing, organizational structure, facilities, hours of operation, resource and logistical requirements, and products and services. If a virtual JIC is established, JIC staff members can perform their assigned functions from work, home or any location with Internet access.

The JIC organizational structure is based on functions that must be performed whether a person is handling a routine emergency, or managing communications for a major response to a disaster. The following are options for organizing a JIC.

FIGURE 2 – INITIAL PIO

The organizational chart below represents the jobs being accomplished by the initial PIO and assistants, if any, before the JIC is formed.

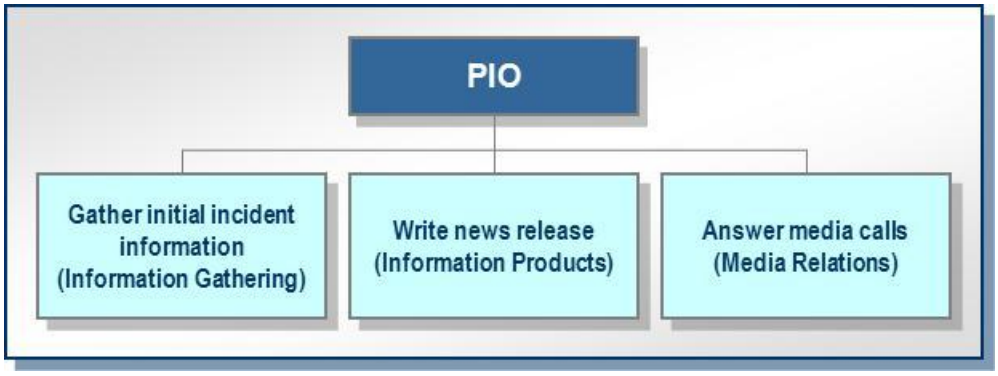


FIGURE 3 – JIC (TYPE 4)

The organizational chart below is an example of how the initial JIC structure may look during a Type 4 incident. A box represents a person assigned to the JIC. The functions performed by personnel in these positions are listed below each box.

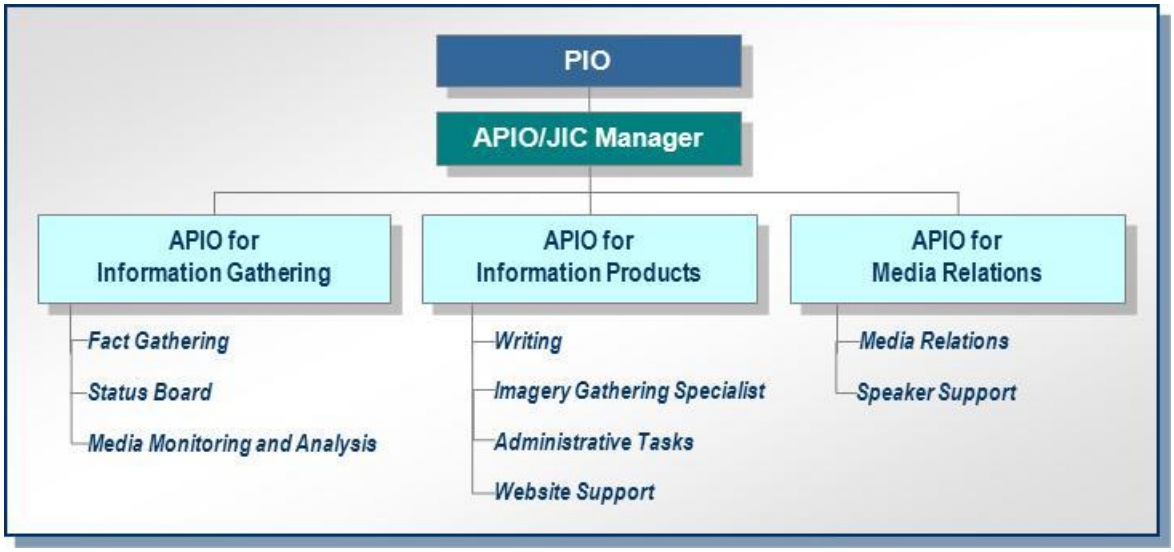


FIGURE 4 – JIC (TYPE 3)

The organizational chart below is an example of how the JIC structure may look during a Type 3 incident. Response positions below the APIO level may be staffed by more than one person, based on the needs of the incident. Functions not specifically assigned would be performed by the appropriate APIO.

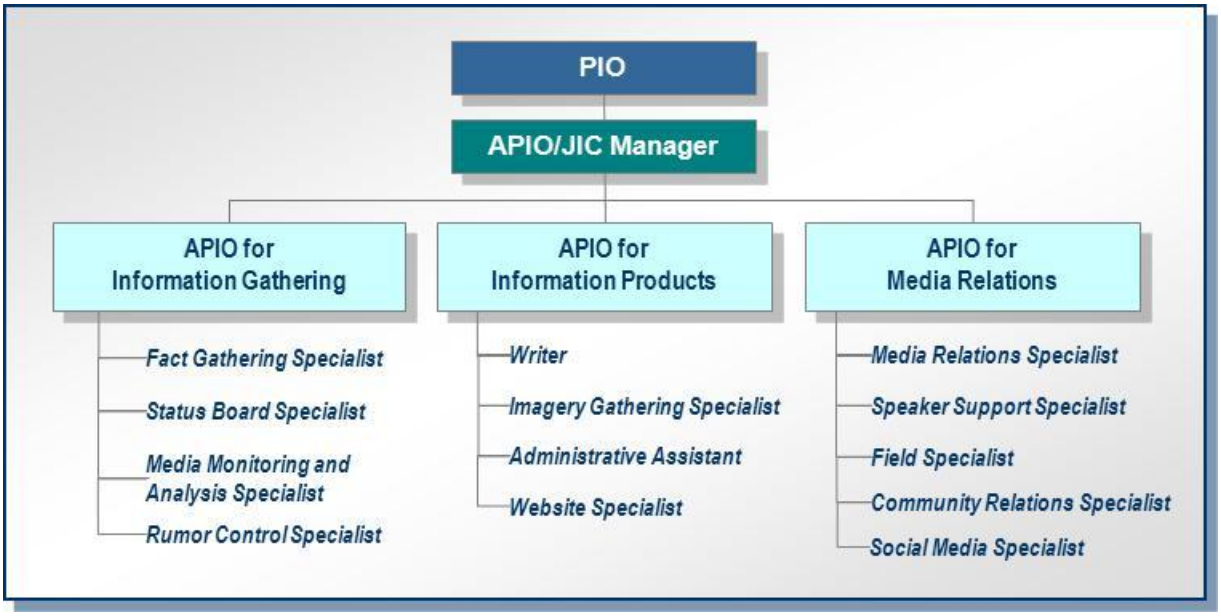


FIGURE 5 – JIC (TYPE 3 OR TYPE 2)

The organizational chart below is an example of how the JIC structure may look during a Type 3 or Type 2 incident with major community relations issues. Response positions below the APIO level may be staffed by more than one person, based on the needs of the incident. Functions not specifically assigned would be performed by the appropriate APIO.

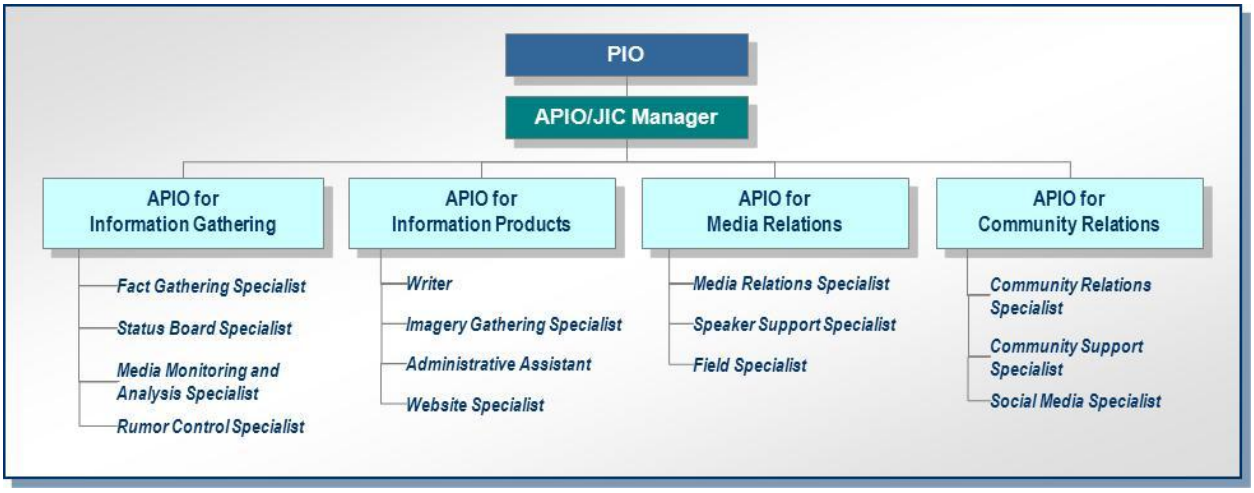


FIGURE 6 – JIC (TYPE 3, TYPE 2, OR TYPE 1)

The organizational chart below is an example of how your JIC structure may look during a Type 3, Type 2 or Type 1 incident with major community relations issues and a need for constant JIC representation in the field. Response positions below the APIO level may be staffed by more than one person, based on the needs of the incident. Functions not specifically assigned would be performed by the appropriate APIO.

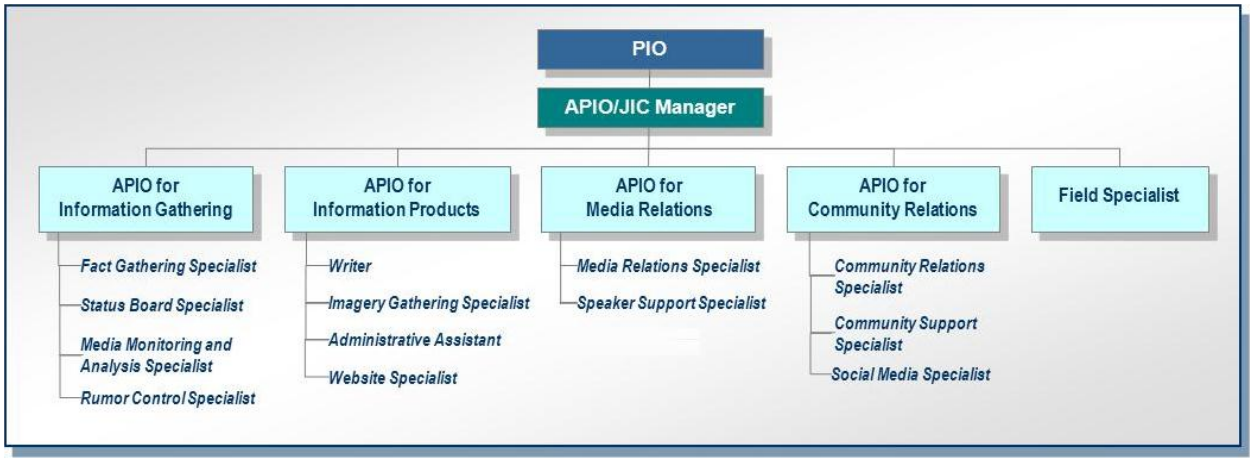
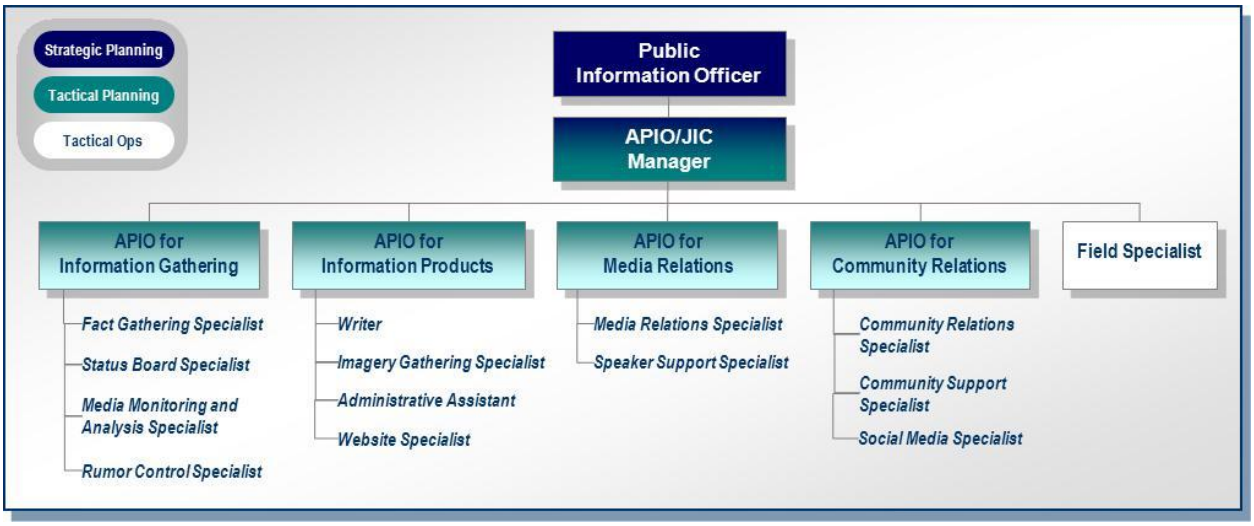


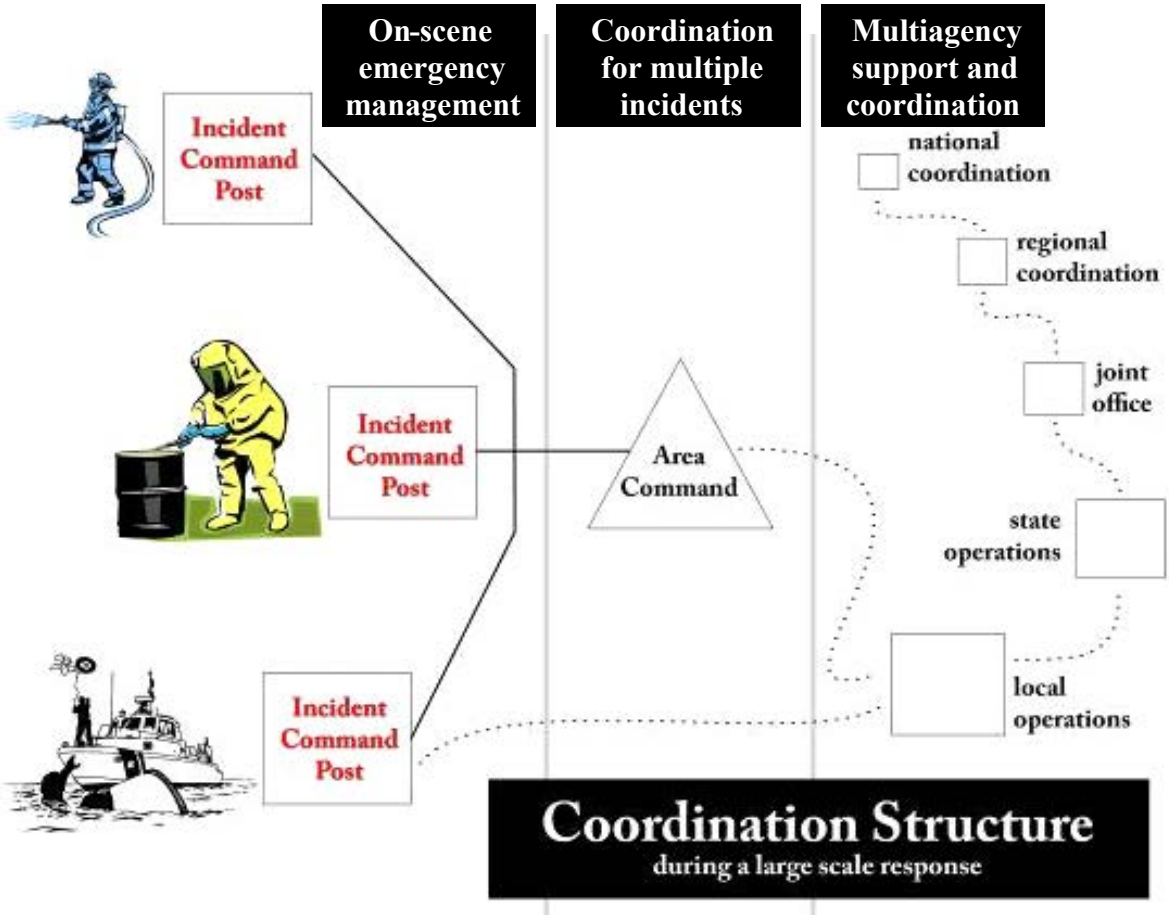
FIGURE 7 – JIC

The organizational chart below illustrates how JIC management and leadership activities divide among the three leadership levels of PIO, APIO/JIC Manager and APIOs below the JIC Manager for, or with, APIO for Information Gathering, APIO for Information Products, APIO for Media Relations and APIO for Community Relations. The PIO has certain responsibilities dictated by NIMS ICS and in reality spends most of his or her time outside the JIC working on strategic goals with the IC/UC and other Command and General staff. The JIC Manager works with the PIO on strategic plans, takes on the PIO's responsibilities in his or her absence and acts as an office manager, primarily directing the APIOs. The APIOs are the top-level "specialists", and work with the JIC Manager to develop tactical public information activities in support of the IC/UC's strategic plans. Activities below the APIO level are more specialized (in a full JIC) comprising "boots on the ground" work implementing tactical operations.



2.5 COORDINATION

FIGURE 8 – COORDINATION STRUCTURE DURING A LARGE SCALE RESPONSE

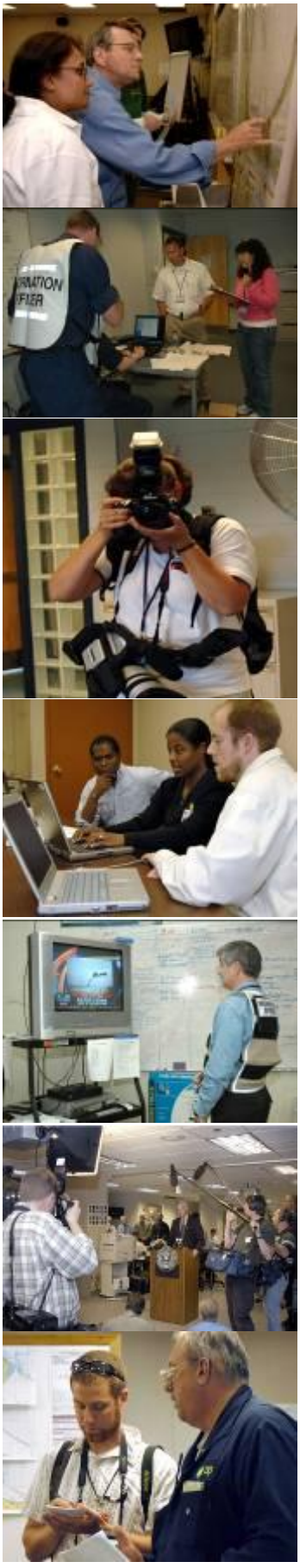


During a national incident of significance, a coordinated response from all levels of the national response community occurs. The figure above illustrates the command and coordination structure that could be put in place during such an incident. ICP PIOs and JICs are located where tactical operations are managed directly. Multiple ICPs may be established due to geographic concerns, such as during widespread wildland fires, or for specific mission assignments, such as one ICP solely responsible for oil spill response or other missions. At the national level, ESF #15 of the NRF is activated when the Department of Homeland Security determines an incident is complex enough to require a coordinated interagency communication effort and is intended to support existing response communication efforts. Coordination between the NRT JIC and ESF #15 is described in more detail in *Appendix A: NRT JIC and ESF #15 operations during a Federal response*.

2.6 ESTABLISHING THE INITIAL RESPONSE

Immediately after an incident occurs, there is a high demand for information. The media, public and responders require accurate and timely information for all incidents—large or small, a natural disaster or accident. The PIO is responsible for the dissemination of updated information during a response/incident.

To assist the PIO in gathering, preparing and disseminating the information a JIC should be established. A guide for the establishment of the JIC, *Job Aid 1 – Establishing the Initial Response* can be found in Appendix B.



Section III. Joint Information Center Staffing

3.1 PIO

Position Description

The PIO is responsible for developing and releasing public information about the incident to the media, incident personnel and other appropriate agencies and organizations.

Only one PIO will be assigned for each incident, including multi-jurisdictional incidents operating under an IC/UC. The PIO may appoint as many assistants (APIO or JIC Specialists) as necessary, and the assistants may also represent assisting agencies, jurisdictions or other response partners (such as private sector and NGOs).

The PIO is appointed by the IC/UC to support the information needs of the response; establish, maintain and deactivate the JIC; and represent and advise the IC on all public information matters relating to the incident. A person is assigned to this position based on skills and ability, not rank or employer.

Position Qualifications

Per NIMS, all Command Staff, including the PIO, should complete the following training:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System.
- IS-800.B National Response Framework, An Introduction.
- ICS-300 Intermediate Incident Command System for Expanding Incidents.
- ICS-400 Advanced Incident Command System, Command and General Staff-Complex Incidents.

The PIO is also recommended to be trained in:

- IS-250 Emergency Support Function #15.
- IS-702 National Incident Management System Public Information Systems.
- ICS-203 Introduction to Public Information.
- ICS-403 Incident Management Team Public Information Officer.
- ICS-420 Command and General Staff.
- E-388 Advanced Public Information Officer.
- G-290 Basic Public Information Officer.
- Risk Communications.

Responsibilities

- Support public information needs of the IC/UC. (See *Daily Checklist*, Appendix E)
- Obtain approval from Command to disseminate public information products.
- As appropriate, coordinate activities with ESF #15. (See *NRT JIC and ESF #15 operations during a Federal response*, Appendix A. See Job Aid 4, Appendix B)
- Advise Command on public information issues and concerns.
- Attend all Command Staff briefings and meetings. (See *Operational Planning "P"*, Appendix E)
- Share information gathered at Command Staff briefings and meetings with JIC Staff.
- Work closely with the Liaison Officer (LNO), Safety Officer (SO) and Intelligence Officer (INTO).
- Establish and equip a JIC and oversee its operations.
- Gather incident information.
- Inform the media and public.
- Provide public information to incident staff.
- Monitor the media, correct misinformation and identify trends and issues.
- Analyze public perceptions and develop public information strategies.
- Advise response leaders on public perception of the IC/UC and develop strategies to communicate on how the incident is being managed.

Position Specific Functions

Establishing a JIC

When the appointed PIO arrives to relieve the initial PIO, several actions must be taken to establish and manage a JIC. To assist in establishing and managing a JIC, *Job Aid 2 – Establishing a JIC* can be found in Appendix B.

Establishing a 24-hour Schedule

If demands are high, a 24-hour operating schedule may require multiple shifts, such as:

- A Shift: 6am to 3pm.
- B Shift: 2pm to 11pm.
- C Shift: 10pm to 7am.

The one-hour overlap in each 9-hour shift provides time for briefing and transition, and meets most major media deadlines. The C shift may only be required if the incident draws national or international media coverage from multiple time zones.

The decision to establish a C shift is made by the PIO and the IC/UC; however the PIO and/or JIC Manager should consider organizing JIC shifts to mirror those of the rest of the staff at the ICP. In the event a 24-hour schedule is required, an APIO will be assigned to perform the PIO's responsibilities when he or she is not present. The APIO has all of the responsibility and authority of the PIO.

Exchanging Information

Information Exchange Matrix 1 – Public Information Officers can be found in Appendix C. This information exchange matrix describes what types of information or resources the PIO should obtain from

specific response positions within the ICS organization and, if activated, ESF #15, as well as what information or resources the PIO should provide to those same positions.

Working with the Safety Officer, Liaison Officer and Intelligence Officer

The PIO meets regularly with the SO, LNO and INTO. The SO's main responsibility is to monitor safety conditions and develop measures for assuring the safety of all incident personnel. The PIO works with the SO to develop safety messages and escort media and VIPs to the incident site in a safe manner.

The PIO works with the LNO to obtain and provide information to agency representatives, public officials and other stakeholders. The PIO also works with the LNO to address stakeholder concerns, requests for briefings, tours and VIP visits.

The IC/UC may appoint an INTO as the incident requires. The INTO's main responsibility is to supervise, coordinate and participate in the collection, analysis, processing and dissemination of intelligence. The PIO works with the INTO regarding intelligence information and operational security. *Figure 1 – ICS Organization* (page 3) shows the INTO as part of the Command Staff. Depending on circumstances surrounding each incident the INTO may become a function within the General Staff as a technical specialist within the Operations Section or Planning Section, or as its own Section[2].

Demobilizing a JIC

The IC/UC determines when to deactivate the JIC based on the recommendation of the PIO. This decision would usually be made when media and public interest has diminished or when recovery and mitigation operations are complete. To assist the PIO with demobilization activities, *Job Aid 3 – Demobilizing a JIC* can be found in Appendix B.

[2] 2008 FEMA Intelligence/Investigations Function Guidance Document

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3.2 APIO/JIC MANAGER

Position Description

The APIO/JIC Manager is selected by the PIO to supervise the daily operations of the JIC; execute plans and policies, as directed by the PIO; and provide direction to the APIOs to ensure that all functions are well organized and operating efficiently. The APIO/JIC Manager should possess public affairs, crisis response, JIC and management or leadership experience. Personnel are assigned to this position based on training, experience, skills and ability, not rank or employer. The APIO/JIC Manager should have the same training as the PIO.

Position Qualifications

In addition to agency training requirements, the APIO/JIC Manager should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System.
- IS-800.B National Response Framework, An Introduction.
- ICS-300 Intermediate Incident Command System for Expanding Incidents.
- ICS-400 Advanced Incident Command System, Command and General Staff-Complex Incidents.

The APIO/JIC Manager is also recommended to be trained in:

- IS-250 Emergency Support Function #15.
- IS-702 National Incident Management System Public Information Systems.
- ICS-203 Introduction to Public Information.
- ICS-403 Incident Management Team Public Information Officer.
- ICS-420 Command and General Staff.
- E-388 Advanced Public Information Officer.
- G-290 Basic Public Information Officer.
- Risk Communications.

Responsibilities

- Assume all responsibilities of the PIO, as needed. (See *Information Exchange Matrix 1*, Appendix C)
- Be familiar with all forms in Appendix D: *Forms* and Appendix E: *References, Worksheets, and Samples* and oversee all JIC administrative activities.
- Oversee all operations of the JIC. (See *Job Aids 2, 3, and 4,* Appendix B)
- Ensure proper organization of JIC. (See *Daily Checklist,* Appendix E)
- Coordinate internal JIC information flow. (See *Job Aids,* Appendix B and *Information Exchanges Matrices,* Appendix C)
- Set JIC staff work hours, daily operating schedule and conduct morning and evening briefings. (See *Job Aid 4*, Appendix B)
- Maintain unit log. (See *ICS Form 214,* Appendix D)
- Assess and assign JIC staff to appropriate roles. (See *JIC Staff Self-Assessment Survey,* Appendix E)
- Provide training or coaching to JIC staff as needed.

- Coordinate with Logistics Section Chief (LSC) to obtain equipment, supplies and other resources for the JIC. (See *ICS Form 213 RR-CG*, Appendix D)

Position Specific Functions

Developing the Operating Schedule

The APIO/JIC Manager manages the JIC staff by developing an operating schedule. To assist the APIO/JIC Manager in developing an operating schedule, *Job Aid 4 –Developing the Operating Schedule* can be found in Appendix B. The *Daily Brief Worksheet*, Appendix E is a useful tool when developing the operating schedule as well as *ICS Form 204,* Appendix D.

3.3 APIO FOR INFORMATION GATHERING

Position Description

The APIO for Information Gathering is assigned by the PIO or APIO/JIC Manager.

The APIO for Information Gathering conducts information gathering activities in support of the JIC. Personnel selected for this position should possess experience in public affairs, crisis response, JIC operations and management. Personnel should be assigned to this position based on training, experience, skills and ability, not on rank or employer.

Position Qualifications

In addition to agency training requirements, the APIO for Information Gathering is required to complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The APIO for Information Gathering is also recommended to be trained in:

- IS-702 National Incident Management Systems Public Information Systems.
- ICS-300 Intermediate Incident Command System for Expanding Incidents.
- Risk Communications.

Responsibilities

The following responsibilities can be performed by the APIO for Information Gathering or by a unit composed of several individuals in all or some of the following JIC positions.

- Gather facts. (See *ICS Form 209*, Appendix D)
- Display facts on status boards.
- Monitor the media.
- Analyze and respond to media and social media reports.
- Respond to rumors.

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Fact Gathering Specialist

Position Description

The Fact Gathering Specialist is assigned by the APIO/JIC Manager and reports to the APIO for Information Gathering. The Fact Gathering Specialist is responsible for gathering incident information in the JIC. Personnel selected for this position should possess public affairs and ICS experience. Selected personnel should be able to work quickly, accomplish tasks with only initial direction and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Fact Gathering Specialist is required to complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Gather information about the incident from Command staff, the Planning Section's Situation Unit and other appropriate response partners. (See *Information Exchange Matrix 2 –Fact Gathering Specialist*, Appendix C for more details)
- Establish contacts and maintain regular times to pick up information from all sections within the ICS structure.
- Respond rapidly to breaking news and quickly gather information for the other specialists in the JIC.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Exchanging Information

The Fact Gathering Specialist should contact key response positions face-to-face and establish good working relationships. The Fact Gathering Specialist should continuously obtain and provide information from the various response positions. *Information Exchange Matrix 2 –Fact Gathering Specialist* can be found in Appendix C. This information exchange matrix describes what types of information the Fact Gathering Specialist should obtain from specific response positions within the ICS organization, as well as what information the Fact Gathering Specialist should provide to those same positions.

The APIO/JIC Manager may also assign the Fact Gathering Specialist to complete tasks listed on *Information Exchange Matrix 1 –Public Information Officer,* Appendix C. These tasks focus on information exchanges to the JIC.

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Status Board Specialist

Position Description

The Status Board Specialist is assigned by the APIO/JIC Manager and reports to the APIO for Information Gathering. The Status Board Specialist is responsible for displaying incident information in the JIC. Personnel selected for this position should possess public affairs and ICS experience. Selected personnel should be able to work quickly, accomplish tasks with minimal direction and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Status Board Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Display incident information on status boards in the JIC so that it is easily accessible to personnel answering inquiries and producing written products.
- Provide all members of the JIC with copies of news releases, fact sheets, current command message(s) and talking points.
- Work with the Planning Section's Display Processor and Situation Unit Leader to maintain JIC information in high traffic areas of the ICP and field locations to keep responders informed.
- Consider available technology to enhance information status boards in the JIC. When electronic displays are used, each must be backed up and archived via hard copy.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Producing the Status Board

The Status Board Specialist produces status boards in the JIC for all JIC personnel. To assist the Status Board Specialist in producing a status board, *Job Aid 5 –Producing the Status Board* can be found in, Appendix B. *ICS Form 209* is also a useful tool when creating a status board (See Appendix D).

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Media Monitoring and Analysis Specialist

Position Description

The Media Monitoring and Analysis Specialist assesses the content and accuracy of news media reports and assists in identifying trends and breaking issues.

The Media Monitoring and Analysis Specialist provides daily coverage synopses; identifies issues, inaccuracies and view points; and recommends corrections to the APIO for Media Relations. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer. (See *Media Analysis Worksheet*, Appendix E)

Position Qualifications

In addition to agency training requirements, the Media Monitoring and Analysis Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Determine newspaper, radio, television and internet outlets to monitor.
- Gather perceptions from the media, public, the LNO, and other response organizations about the progress of the response efforts.
- Identify potential detrimental rumors and rapidly determine effective ways to deal with them or pass to Rumor Control, if an individual or group of individuals has been designated to process rumors.
- Set up a news clip collection (radio, TV, print and appropriate Internet websites). Request Finance Section to contract a broadcast media monitoring and print clipping service, or set up equipment to record radio and television news and/or to print media websites and blogs.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Analyzing Information

The Media Monitoring and Analysis Specialist will monitor and analyze the media coverage of the response, as well as the local community's concerns about the response. When appropriate, the Media Monitoring and Analysis Specialist will make recommendations to improve or increase the coverage and accuracy of information in an effort to alleviate concerns and gain community support.

The major activities involved in analyzing information are:

- Attend community meetings.
- Conduct door-to-door surveys.
- Track incoming phone calls and requests.
- Determine media outlets that reach significant diverse audiences.
- Identify potential issues, problems and rumors and report the information immediately to the PIO and appropriate agency or office.

- Identify significant diverse communities and determine the most effective ways to communicate with them (e.g., media, fliers, posters and community meetings).
- Monitor the perceptions of the affected communities concerning the progress of the response.
- Make a record of each print, broadcast and Internet news clip (including a summary of coverage, issues, inaccuracies and view points) using the *Media Analysis Worksheet* (See Appendix E).

Rumor Control Specialist

Position Description

The Rumor Control Specialist receives, verifies and ensures facts are disseminated to dispel incorrect rumors regarding the incident. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Rumor Control Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Identify and report any rumors that may cause issues or problems to the APIO for Information Gathering, APIO for Media Relations and APIO for Community Relations.
- Verify the accuracy of the rumor and document results on JIC Rumor Control form. For sources of information on specific guidance, see *Information Exchange Matrix 2 –Fact Gathering Specialist*, Appendix C.
- Report results of each rumor investigation to previously noted APIOs.
- Maintain a file of JIC Rumor Control forms. (See *Query Record*, Appendix E). *ICS Form 213,* Appendix D can also be used to record rumors that are reported to the JIC.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Validating Rumors

To assist the Rumor Control Specialist with validating rumors *Job Aid 6 –Validating Rumors* can be found in Appendix B.

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3.4 APIO FOR INFORMATION PRODUCTS

Position Description

The APIO for Information Products is assigned by the PIO or APIO/JIC Manager to manage the product development responsibilities of the JIC. Personnel selected for this position should possess some public information, journalism, photography, videography, web management, desktop publishing, ICS and JIC experience. Selected personnel should be able to type, operate a variety of computers and software, work quickly, accomplish tasks with minimal direction and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the APIO for Information Products should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The APIO for Information Products is also recommended to be trained in:

- IS-702 National Incident Management Systems Public Information Systems.
- ICS-300 Intermediate Incident Command System for Expanding Incidents.
- Risk Communications.

Responsibilities

- Produce written news releases, media advisories, public service announcements, fact sheets and other publications.
- Route to PIO for approval all documents, photos, video and other materials (accurate information is essential in preventing public confusion, loss of credibility and/or adverse publicity).
- Establish and manage an incident news website.
- Take and disseminate news photos and video of the incident.
- Produce and gather graphics and logos for the incident.
- Produce incident casebook.

These responsibilities can be performed by the APIO or by a unit composed of several individuals in all or some of the following JIC positions.

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Writer

Position Description

The Writer is assigned by the APIO for Information Products to produce written news releases, media advisories, public service announcements, fact sheets, talking points, emergency public information, voice and text messages, and other direct-to-public information products. Personnel selected for this position should possess strong journalism skills and some public information, ICS and JIC experience. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Writer should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Position Specific Functions

Writing a News Release

The Writer should draft and gain approval of a written news release. See *Writing Guidelines for News Releases*, Appendix E for instructions on how to write a news release. Also refer to Appendix E for a *Sample News Release*.

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Imagery Gathering Specialist

Position Description

The Imagery Gathering Specialist is assigned by the APIO/JIC Manager to shoot high quality photos and video for release to the public and media. The Imagery Gathering Specialist reports to the APIO for Information Products. Personnel selected for this position should possess extensive photographic, videographic, electronic photo and video editing and some journalism skills. The Safety Officer may require that the Imagery Gathering Specialist have HAZWOPER certification or wear personal protective equipment in order to photograph or videotape near the hazard site. Selected personnel should be able to operate a variety of digital, still and video cameras, audio recording equipment; accomplish tasks with minimal direction; and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Imagery Gathering Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Shoot photographs of professional quality.
- Shoot video of broadcast quality.
- Record audio of broadcast quality.
- Catalog and manage all photos, videos and audio recordings.
- Provide all photos, videos, and audio recordings to the Administrative Assistant, the Website Specialist, the Documentation Unit, and the Social Media Specialist.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Exchanging Information

Information Exchange Matrix 3 –Imagery Gathering Specialist in Appendix C describes what type of information and resources the Imagery Gathering Specialist should obtain from specific response positions, as well as what information the Imagery Gathering Specialist should provide to those same response positions.

The APIO/JIC Manager may also assign the Imagery Gathering Specialist to complete tasks listed on *Information Exchange Matrix 1 –Public Information Officer* in Appendix C. These tasks focus on information exchanges to the JIC.

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Administrative Assistant

Position Description

The Administrative Assistant is assigned by the APIO/JIC Manager to manage additional activities in support of the APIO for Information Products and his/her staff. Personnel selected for this position should be able to accomplish tasks with minimal direction and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Administrative Assistant should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Work with Logistics Section to acquire, set up and run audio/visual support for briefings.
- Provide support for media briefings and community meetings.
- Produce a casebook available in the JIC and/or stored on the internal JIC website.
- Provide all JIC files and products to the Documentation Unit.
- Produce briefing packets.
- Coordinate security needs with the Security Manager of the Facilities Unit in the Logistics Section.
- Catalog, file and copy all JIC materials.
- Maintain media credentialing files.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Provide Media Briefings/Community Meeting Support

The Administrative Assistant will provide support to the JIC for media briefings and community meetings by coordinating with the Logistics Section. To assist the Administrative Assistant with supporting media briefings/ community meetings, *Job Aid 7 – Providing Media Briefings/Community Meeting Support* can be found in Appendix B and the *Media Briefing/Community Meeting Worksheet* can be found in Appendix E.

Produce a Casebook

A casebook is a compilation of all public information about the incident that can be used for post-incident information requests and evaluations. It provides a case history that can be used as a reference for future events. A printed or electronic copy of the casebook should be made available to each of the JIC's response partners. The casebook should contain:

- All news releases, fact sheets, talking points and key messages generated by the JIC.
- Copies of significant news clips.
- Copies of all JIC-produced videos, photographs, maps and other visuals.

NOTE: The casebook should not include IAPs.

Exchanging Information

Information Exchange Matrix 4 –Administrative Assistant in Appendix C describes what types of materials and resources the Administrative Assistant should obtain from specific response positions, as well as the information the Administrative Assistant should provide to those same response positions.

The APIO/JIC Manager may also assign the Administrative Assistant to complete tasks listed on *Information Exchange Matrix 1 –Public Information Officer* in Appendix C. These tasks deal with information exchanges.

Website Specialist

Position Description

The Website Specialist is assigned by the APIO/JIC Manager to manage all JIC web activities in support of the APIO for Information Products and his/her staff. The Website Specialist may be located in the physical JIC or at a virtual JIC location away from the Command Post. Personnel selected for this position should be knowledgeable of website design software, internet protocols, website accessibility for special needs populations (Section 508 of the Americans with Disabilities Act of 1990); able to accomplish tasks with minimal direction; and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Website Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Maintain and update incident website.
- Route email inquiries to Media or Community Relations Specialist.
- Ensure approval of all items prior to emailing or posting on the incident website.
- Ensure all items posted to the incident website are Section 508 compliant.
- Establish a virtual JIC, as needed.
- Coordinate with web support personnel for all agencies represented in organization to ensure site meets individual agency requirements.
- Coordinate media and community distribution lists.
- Work with the Social Media Specialist to ensure incident website is linked to the incident social media sites.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

The IC/UC should designate one official website to represent the response efforts, provide answers to the public's questions and address issues raised through other media sources. After a case is closed and the JIC demobilizes, the PIO should consider monitoring continued interest and keeping the website online longer than a few months.

Responders should monitor the information being posted on other websites. Questions, concerns or misinformation found on other websites should be addressed on the official website.

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3.5 APIO FOR MEDIA RELATIONS

Position Description

The APIO for Media Relations is assigned by the PIO or APIO/JIC Manager to coordinate the release of information to the media.

Personnel selected for this position should possess experience in public information, crisis response, JIC operations, management and ICS, as well as have demonstrated skills in interacting with the media. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the APIO for Media Relations should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The APIO for Media Relations is also recommended to be trained in:

- IS-702 National Incident Management Systems Public Information Systems.
- ICS-300 Intermediate Incident Command System for Expanding Incidents.
- Risk Communications.

Responsibilities

- Respond to media inquiries.
- Select and prepare speakers prior to interviews.
- Conduct news briefings and interviews.
- Provide escorts to the media.
- Credential media.
- Maintain multi-lingual capabilities, if necessary.
- Maintain and update media lists.
- Identify misinformation or rumors.

These responsibilities can be performed by the APIO or by a unit composed of several individuals in all or some of the following JIC positions.

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Media Relations Specialist

Position Description

The Media Relations Specialist is assigned by the APIO/JIC Manager to manage the distribution of information regarding the event. Personnel selected for this position should have experience interacting directly with the media, be able to speak clearly and concisely, be able to accomplish tasks with minimal direction and function efficiently in a high-stress environment. Depending on the region, bilingual personnel may be needed in this unit. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Media Relations Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The Media Relations Specialist is also recommended to be trained in:

- Risk Communications.

Responsibilities

- Determine media outlets.
- Produce detailed accounts of calls, including name and organization, phone number, nature of inquiry and result. (See *Query Record*, Appendix E)
- Maintain a comprehensive and current media list containing points of contact, phone, pager, cellular and fax numbers and e-mail and postal addresses.
- Disseminate approved written material to the media.
- Staff the phones with people able to answer calls, possibly in more than one language, from local, state, national and international media.
- Respond to routine inquiries using talking points, speaker preparation, news releases and fact sheets.
- Promote story and feature ideas to target media.
- Establish a daily drive-time call-out schedule that meets local radio and television deadlines. This will vary with each incident.
- Document the time and details of the response; track inquiries to ensure response and closure within a timely manner (ideally, less than one hour).

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

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Speaker Support Specialist

Position Description

The Speaker Support Specialist is assigned by the APIO/JIC Manager to manage the coordination of meetings, interviews and engagements. The Speaker Support Specialist reports to the APIO for Media Relations. Personnel selected for this position should have good interpersonal skills, the ability to accomplish tasks with minimal direction and function efficiently in a high-stress environment. In addition, personnel may need to be bilingual. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Speaker Support Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The Speaker Support Specialist is also recommended to be trained in:

- Risk Communications.

Responsibilities

- Identify, schedule and prepare appropriate personnel and subject matter experts for news briefings and media interviews.
- Advise the PIO and APIO/JIC Manager on times for news briefings.
- Coordinate with the Administrative Assistant about set-up and audiovisual needs for news briefings and media interviews.
- Schedule and coordinate Editorial Board.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Speaker Preparation

The Speaker Support Specialist should prepare personnel for speaking to the general public and media during phone interviews, on-camera interviews and news briefings. See the *Speaker Preparation Worksheet* in Appendix E.

Media Briefings

The Speaker Support Specialist should identify spokespersons for scheduled media briefings. (See *Spokesperson Request Worksheet*, Appendix E) When setting up and conducting media briefings, refer to the *Media Briefing Worksheet*, Appendix E. Personnel from nearly all positions in the JIC will play some part in this process.

Editorial Board

An Editorial Board is a meeting between the IC/UC and an editor from a media organization in which reporters may or may not be present. Usually an Editorial Board meeting is not conducted until several days into an incident, but may need to occur sooner based on the needs of the incident. The Editorial Board meeting serves the following functions:

- Provides the IC/UC a chance to explain in broad terms the policies and positions of the command.

- Provides the editor with a chance to ask questions about IC/UC's policies and positions as they pertain to the response.
- Is normally held in the offices of the editor and typically does not result in a story; it is intended to be used for background in future stories.

Field Specialist

Positions Description

The Field Specialist is assigned by the APIO/JIC Manager to provide media relations and other JIC support in the field. Depending on the region, bilingual personnel may be needed. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Field Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Coordinate with the Safety Officer to ensure it is safe to escort others to the incident scene.
- Ensure media are properly equipped and informed. (See *Field Escort Equipment and Communications Checklist,* Appendix E)
- Escort media to incident scene or other field locations.

Based on the needs of the incident, the Field Specialist may be assigned additional responsibilities, such as:

- Take photos and video of incident scene.
- Gather facts from incident scene.
- Disseminate approved incident information to members of the media and public.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

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3.6 APIO FOR COMMUNITY RELATIONS

Position Description

The APIO for Community Relations is assigned by the PIO/JIC Manager to monitor the community's concerns regarding the incident, advise the PIO about community information needs, and coordinate release of information to the public.

Personnel selected for this position should possess community relations, crisis response, JIC, operations, management and ICS experience, as well as have demonstrated skills in interacting with the public. Personnel should have experience identifying different publics/stakeholders, and using interviews to ascertain community knowledge, attitudes and behaviors. Personnel should also have good interpersonal skills, risk communications experience, the ability to accomplish tasks with minimal direction and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the APIO for Community Relations should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The APIO for Community Relations is also recommended to be trained in:

- IS-702 National Incident Management Systems Public Information Systems.
- ICS-300 Intermediate Incident Command System for Expanding Incidents.
- Risk Communications.

Responsibilities

When appropriate, work with the LNO to:

- Determine the information needs of the community.
- Develop and coordinate community outreach programs.
- Establish contact with influential local community members that can provide feedback about how the response is perceived.
- Determine the need for and format of community meetings.
- Conduct and/or participate in community meetings.
- Canvass the local community for feedback and to disseminate incident information. (See *Opening Statement for Community Relations Interviews,* Appendix E).
- Develop posters, fliers, newsletters and other community outreach materials.
- Inform the public of volunteer opportunities coordinated by the Volunteer Coordinator, LNO and assisting agencies.
- Respond to community inquiries.

These responsibilities can be performed by the APIO or by a unit composed of several individuals in all or some of the following JIC positions.

Community Relations Specialist

Position Description

The Community Relations Specialist is assigned by the APIO/JIC Manager to document and respond to community inquiries. Personnel selected for this position should have experience interacting directly with the community, speaking clearly and concisely, accomplishing tasks with minimal direction and functioning efficiently in a high-stress environment. Personnel should also have experience identifying different publics/stakeholders, and using interviews to ascertain community knowledge, attitudes and behaviors. Depending on the region, multilingual personnel may be needed in this unit. Personnel should be assigned to this position based on training, experience, skills, and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Community Relations Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The Community Relations Specialist is also recommended to be trained in:

- Risk Communications.

Responsibilities

- Identify communities affected by the incident.
- Produce detailed accounts of calls, including name and organization, phone numbers, nature of inquiry and results.
- Determine how well community members comprehend command objectives/messages and make recommendations for corrective actions through the APIO for Community Relations.
- Determine community attitudes toward the incident and response organization and recommend actions to encourage/change those attitudes, as necessary.
- Debrief APIO/JIC Manager following a community meeting. Note major issues of concern and provide recommendations for future action.
- Determine community behaviors related to the incident situation and recommend actions to encourage protective or corrective behavior.
- In conjunction with the LNO, maintain a comprehensive and current list of interested stakeholders, including phone and fax numbers or e-mail addresses.
- Disseminate approved written material to the community.
- Staff the phones with people able to answer calls, possibly in more than one language, from the community.
- Respond to routine inquiries using talking points, frequently asked questions, news releases, fact sheets and other community relations materials.
- Route inquiries about volunteer opportunities to the Volunteer Coordinator, LNO, or LSC.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

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Community Support Specialist

Position Description

The Community Support Specialist is assigned by the APIO/JIC Manager to manage the coordination of meetings, interviews and engagements. The Community Support Specialist reports to the APIO for Community Relations. Personnel selected for this position should have good interpersonal skills, the ability to accomplish tasks with minimal direction and function efficiently in a high-stress environment. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Community Support Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

Responsibilities

- Identify, schedule and prepare appropriate personnel and subject matter experts for community meetings.
- Advise the PIO and APIO/JIC Manager on times for community meetings.
- Coordinate with the Administrative Assistant about set-up and audiovisual needs for community meetings.
- Participate in meetings hosted by the community.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Speaker Preparation

The Community Support Specialist should prepare personnel for speaking at community meetings. See the *Speaker Preparation Worksheet*, Appendix E.

Community Meetings

The Community Support Specialist should set up community meetings. To assist the Community Support Specialist with preparing for a community meeting, *Job Aid 8 –Conducting Community Meetings* can be found in Appendix B.

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Social Media Specialist

Position Description

The Social Media Specialist is assigned by the APIO/JIC Manager to distribute information regarding the event and interact with the public via approved social media channels. Personnel selected for this position should have experience communicating appropriately in various social media platforms, and should be able to accomplish tasks with minimal direction and function efficiently in a high-stress environment. Depending on the community, bilingual personnel may be needed in this unit. Personnel should be assigned to this position based on training, experience, skills and ability, not rank or employer.

Position Qualifications

In addition to agency training requirements, the Social Media Specialist should complete:

- IS-100 (ICS 100) Introduction to Incident Command System.
- IS-200 (ICS 200) Introduction for Single Resources and Initial Action Incidents.
- IS-700 National Incident Management System, An Introduction.
- IS-800.B National Response Framework, An Introduction.

The Social Media Specialist is also recommended to be trained in:

- Risk Communications.

Responsibilities

- Conduct regular analysis of social media outreach success and report current trends to the APIO/JIC Manager.
- Work with APIO for Community Relations, JIC Manager, and PIO to establish appropriate release authority unique to the two-way, real time communications necessary for successful and credible social media engagement.
- Monitor social media sites and identify trends and interact appropriately.
- Disseminate validated facts.
- Drive traffic to incident news sites or other reliable sources.
- Ensure all incident social media sites are linked to the incident website.
- Ensure that all social media sites are archived and delivered to the Documentation Unit in accordance with their guidance.

These responsibilities can be performed by one or more individuals or by a unit composed of several individuals per shift.

Position Specific Functions

Analyzing Information

The Social Media Specialist will monitor and analyze social media activity about the response. The *Social Media Analysis Worksheet* in Appendix E can be used for analyzing and identifying potential solutions for social media coverage and activity. When appropriate, the Social Media Specialist will make recommendations or act to alleviate concerns and gain community support.

The major activities involved in analyzing information are:

- Monitor the activity of the social media communities posting about the response.
- Track response information that is a trending/popular topic on a particular site to monitor additional information and interact accordingly.

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Appendix A: NRT JIC and ESF #15 Operations During a Federal Response

The term "Incident Command Post Public Information Officer (ICP PIO)" in this Appendix refers to the Public Information Officer who is delegated by a Federal On-Scene Coordinator/Incident Commander to carry out public information duties at the Incident Command Post level (see Figure 8, page 13). The guidance in this Appendix is not exclusive to communicators assigned to a JIC using the NRT Model; rather, the concepts discussed here should be considered by communicators assigned to any Incident Command Post-level JIC, as well as those assigned to an ESF #15.

The National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan (NCP), describes the national preparedness and response system for oil spills and hazardous materials releases.

In response to incidents that fall under the jurisdiction of the NCP, the U.S. Coast Guard or U.S. Environmental Protection Agency will provide a Federal On-Scene Coordinator (FOSC) who directs and manages response activities. The FOSC designates one Incident Command Post Public Information Officer (ICP PIO) who is a member of the Command Staff and is responsible for developing and releasing information about the incident to the news media, affected publics, and incident personnel. The ICP PIO serves as principle advisor to the FOSC for public information matters (***see Section 2.1, 2.2, 3.1***). Communicators working in public information under a NCP response use the National Response Team's Joint Information Center Model to communicate with affected publics.

Conversely, the National Response Framework (NRF) outlines the Federal government's guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies. It is subdivided into specific mission support areas, or Emergency Support Functions (ESFs), which group Federal resources and capabilities into functional areas to serve as the primary mechanisms for providing assistance at the operational level.

ESF #15 of the NRF is activated when the Department of Homeland Security Assistant Secretary for Public Affairs determines an incident is complex enough to require a coordinated interagency communication effort. Under the ESF #15 construct, an External Affairs Officer (EAO) is assigned for each of its functional areas. These functional areas are organized differently than the NRT JIC functional areas and may result in misunderstanding of the responsibilities and authorities of each construct.

NRT JICs are often established prior to, as well as concurrently with, the establishment of ESF #15. Following Deepwater Horizon, a 2011 NCP-NRF Alignment Working Group discovered that some of the challenges communicators faced arose from a lack of understanding of the relationship between a NRT JIC and ESF #15 when both constructs were activated.

As a result, the Working Group recommended the roles be clarified in order to improve communication efforts during future events:

- **ESF #15 is intended to *support* existing response communication efforts, not direct them.** They do this by providing additional coordination mechanisms and additional resources to support a national communications effort (e.g., Congressional Affairs and the White House).

- **NRT JICs are not meant to be absorbed into the ESF #15 organizational structure.** This is due to the fact that ESF #15's focus is strategic with some operational elements, while NRT JICs are purely tactical, with some strategic communication functions focused on command-post level operations.

- **To achieve unity of effort and facilitate message alignment:**
    - When ESF #15 is activated, the NRT JIC and the ICP PIO retain the information release authority delegated to them by their respective FOSC/Incident Commander; ICP PIO & NRT JIC responsibilities/roles do not end with the implementation of Federal ESF #15 activities.
    - A regular line of communication should be established from the ICP PIOs by means of the NRT JIC to the ESF #15 Deputy EAO or EAO to exchange information and requests for support.
    - Specifically how and where the NRT JIC connects with the ESF #15 construct is established by the ICP PIO and the ESF #15 EAO based on the needs of the response.

Appendix B: Job Aids

Position	Job Aid	Description
Public Information Officer	1. Establishing the Initial Response	This Job Aid includes tasks that the PIO must accomplish prior to and in preparation for the establishment of a JIC.
	2. Establishing a JIC	This Job Aid includes tasks to assist the PIO in establishing and managing a JIC.
	3. Demobilizing a JIC	This Job Aid includes tasks to assist the PIO with demobilization activities applicable to all personnel assigned to the JIC.
Assistant Public Information Officer/JIC Manager	4. Developing the Operating Schedule	This Job Aid assists the APIO with developing the operating schedule.
Status Board Specialist	5. Producing the Status Board	This Job Aid assists the Status Board Specialist with producing the status board.
Rumor Control Specialist	6. Validating Rumors	This Job Aid assists the Rumor Control Specialist with validating rumors that arise.
Administrative Assistant	7. Providing Media Briefings/ Community Meeting Support	This Job Aid assists the Administrative Assistant in coordinating with the Logistics Section to provide support for media briefings and community meetings.
Administrative Assistant	8. Conducting Community Meetings	This Job Aid assists the Community Support Specialist and Administrative Assistant in planning for and conducting community meetings.
Social Media Specialist	9. Social Media in a Response	This Job Aid includes tasks associated with using social media in a response.

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JOB AID 1 – ESTABLISHING THE INITIAL RESPONSE

STEP	ACTION	✓
1.	Check in and obtain initial briefing from IC/UC.	☐
2.	Establish a dedicated phone line and website for providing information and managing telephone and e-mail inquiries from the media, stakeholders and general public.	☐
3.	Gather basic facts about the incident – who, what, where, when, why and how.	☐
4.	Use gathered facts to answer inquiries.	☐
5.	Activate the following positions as needed: ☐ Media Relations Assistant 1. Use dedicated phone to answer calls from media, stakeholders and public. 2. Record names, phone numbers and organization of the callers; also note date/time of calls, nature of inquiries and deadlines for receiving additional information. (See *Query Record* in Appendix E) 3. Use approved news releases and gathered facts to answer media calls. (See *Sample Documents* in Appendix E) ☐ Information Gathering Assistant 1. Gather verified incident information from sources throughout the response organization. (See *ICS Form 209* in Appendix D) 2. Provide this information to the assistants handling inquiries and writing news releases. ☐ Information Products Assistant 1. Assemble gathered facts into two or three sentences that answer who, what, when, where, why and how of incident. (See *Sample Documents* in Appendix E) **NOTE**: Answering the "why" and "how" at many incidents is difficult or impossible to accomplish (e.g., these facts may only come out after an investigation). 2. List remaining facts and information in bullet form. (List responding agencies, type and amount of equipment, etc.) **NOTE:** News releases should be only one page in length. If there is a need for additional information about specific topics, then a separate fact sheet should be made. 3. Spell check and edit news releases and give to PIO for editing, approval and routing to the IC/UC for final approval. 4. Give approved news releases to Media Relations Assistant. 5. Distribute news releases to news media and other requestors. 6. Develop three key messages as soon as information is gathered.	☐ ☐
6.	Select a location for the JIC. The location should meet the following criteria: • Enough space for everyone to work based on personnel resource requests. • Enough AC outlets and/or power strips, used within fire codes. • Access to a photocopier. • Access to a computer and/or access to the Internet. • Access to phone lines. • Access to a fax machine. • Located at or near the ICP or Emergency Operations Center (EOC).	☐
7.	Call for more assistance, preferably people trained in public information, JIC and ICS operations. Make requests for additional resources via the Logistics Section.	☐

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JOB AID 2 – ESTABLISHING A JIC

STEP	ACTION	✓
1.	Conduct transition meeting with initial PIO.	☐
2.	Appoint someone experienced as APIO/JIC Manager, who can meet the responsibilities and achieve the position goals as listed in the NRT JIC Model.	☐
3.	Appoint someone experienced as APIO for Information Gathering who can meet the responsibilities and achieve the position goals as listed in the NRT JIC Model.	☐
4.	Appoint someone experienced as APIO for Information Products who can meet the responsibilities and achieve the position goals as listed in the NRT JIC Model.	☐
5.	Appoint someone experienced as APIO for Media Relations who can meet the responsibilities and achieve the position goals as listed in the NRT JIC Model.	☐
6.	Appoint someone experienced as APIO for Community Relations who can meet the responsibilities and achieve the position goals as listed in the NRT JIC Model.	☐
7.	Use the NRT JIC Model to ensure all PIO responsibilities are being performed.	☐

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JOB AID 3 – DEMOBILIZING A JIC

STEP	ACTION	✓
1.	Receive Demobilization Plan from Planning Section Chief (PSC) or Demobilization Unit Leader.	☐
2.	Brief personnel regarding demobilization. Debrief appropriate personnel prior to departing incident: • IC/UC • PSC • LSC • Incoming/outgoing JIC personnel	☐
3.	Supervise demobilization of unit, including inventory, return and storage of equipment and supplies.	☐
4.	Forward all Section/Unit documentation to PSC or Documentation Unit Leader.	☐
5.	Supervisors to complete Incident Personnel Performance Rating (ICS 225); all individuals complete Check-out Sheet.	☐
6.	Notify media and other stakeholders when JIC will demobilize, whether virtual JIC website will continue to be updated and which agency or organization PIOs to contact for any future inquiries or updates.	☐

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JOB AID 4 – DEVELOPING THE OPERATING SCHEDULE

STEP	ACTION	✓
1.	Conduct transition briefing between shifts. (See Daily Checklist and Daily JIC Brief Worksheet, Appendix E.) NOTE: Conduct daily morning and evening JIC staff briefings.	☐
2.	Review Self-Assessment Survey completed by new JIC staff members and assign to appropriate roles and work hours.	☐
3.	Coordinate with PSC regarding Daily Meeting Schedule (ICS Form 204) of Command and General Staff briefings and meetings.	☐
4.	Coordinate with the APIO for Information Products to set deadlines for writing, approval and dissemination of all information products.	☐
5.	Coordinate with the APIO for Media Relations and Speaker Support Specialist to set the schedule of media briefings, community meetings, media/VIP tours and other JIC events, including deadlines for speaker preparation.	☐
6.	If ESF #15 is activated, establish a regular line of communication with the ESF #15 Deputy EAO or EAO and connections, as appropriate, between ESF #15 and the NRT JIC. (See NRT JIC and ESF #15 operations during a Federal response, Appendix A.)	
7.	Gather Command Message(s) for the APIO for Information Products from the PIO and IC/UC.	☐
8.	Coordinate with PIO and JIC staff on messages and strategies for reaching target audiences.	☐
9.	Deliver media analysis to PIO.	☐
10.	Ensure preparation for news briefings.	☐

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JOB AID 5 – PRODUCING THE STATUS BOARD

STEP	ACTION	✓
1.	Contact PSC or Situation Unit Leader to obtain latest ICS Form 209 Status Summary.	☐
2.	Meet with key response positions and post obtained information in the JIC.	☐
3.	Display current news releases, fact sheets and incident news clips in physical JIC on status board or data projectors and/or in virtual JIC website for Command and JIC staff to view.	☐
4.	Display non-incident/morale boosters – other news, sports, comics, local restaurant menus, etc.	☐
5.	Coordinate with Planning Section's Display Processor to identify high-traffic locations to post JIC products in the ICP (break rooms, main hallways, etc.) visible to other responders.	☐
6.	Update boards as needed, including after each Operations Briefing.	☐

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JOB AID 6 – VALIDATING RUMORS

STEP	ACTION	✓
1.	The Rumor Control Specialist receives rumor from someone in other response position (e.g., Media Relations Specialist or Community Relations Specialist). NOTE: Rumors can be received by anyone from many different means – by field workers through interaction with the public, by other JIC members who work with the media, etc. Intake of rumors to the JIC may be via telephone, face-to-face interaction, via ICS Form 213 General Message, or other means.	☐
2.	The Rumor Control Specialist documents received rumor and all amplifying information on JIC Query Record (See Appendix E).	☐
3.	The Rumor Control Specialist seeks out appropriate response organization subject matter expert to validate/invalidate received rumor (e.g., Situation Unit Leader (SITL) for collected incident data or LNO for list of assisting agencies).	☐
4.	The Rumor Control Specialist records validated fact on Rumor Query Record.	☐
5.	The Rumor Control Specialist provides copies of completed form to the following JIC personnel: • APIO for Information Gathering (for posting and media analysis, if necessary); • APIO for Information Products (to correct any previously released or draft information products, to correct any information posted to incident website and for filing in JIC records); • APIO for Media Relations (for dissemination to the media); and • APIO for Community Relations (for dissemination to the public).	☐

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JOB AID 7 – PROVIDING MEDIA BRIEFINGS/COMMUNITY MEETING SUPPORT

STEP	ACTION	✓
1.	Secure a space for the event.	☐
2.	Provide and set up chairs, tables and lectern.	☐
3.	Set up microphone and public address system, if necessary.	☐
4.	Set up supporting graphic material near spokespersons.	☐
5.	Set up overhead projector, televisions/VCRs and/or computers for supporting visuals.	☐

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JOB AID 8 – CONDUCTING COMMUNITY MEETINGS

STEP	ACTION	✓
1.	Select the appropriate time for the exhibit/community meeting. NOTE: The end of the working day is best. Tuesday and Thursday have proven to generate greater attendance.	☐
2.	Select an appropriate meeting format, e.g., open house, audiovisual presentation, or panel discussion. (See *Public Exhibit and Discussion Diagram*, Appendix E.)	☐
3.	Select and schedule an appropriate location. NOTE: The location should be easily accessible, contain plenty of parking, power and minimal background noise.	☐
4.	Coordinate security needs with the Security Manager of the Facilities Unit in the Logistics Section for community meetings.	☐
5.	Select appropriate Subject Matter Experts as presenters/speakers at the exhibit /community meeting. Consider designating a member of the IC/UC to give opening remarks, if appropriate.	☐
6.	Notify the community of the event.	☐
7.	Identify exhibitors from the IC/UC, schedule and conduct speaker preparation and provide assistance with materials for exhibits.	☐
8.	Debrief APIO/JIC Manager following a community meeting. Note major issues of concern and provide recommendations for future action.	☐

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JOB AID 9 – SOCIAL MEDIA IN A RESPONSE

STEP	ACTION	✓
1.	Obtain a stand-alone computer with internet connectivity. a. If a response website has been created, then obtain administrator privileges. b. If a response website does not exist, work with Website Specialist to create a response website.	☐
2.	Create a Gmail and Yahoo! Account	☐
3.	Create Twitter Account a. If an organizational YouTube Account exists, then obtain administrator privileges. b. If an account doesn't exist, create a YouTube account.	☐
4.	Create a Flickr Account.	☐
5.	Create Blog.	☐
6.	Obtain approval from APIO Information Products or JIC Manager of design/base content of Social Media sites.	☐
7.	Share Links.	☐

Is Social Media Right for the Response?

Early in the response, the PIO should establish unified command level of comfort with using social media and make recommendations based on the needs of the response. Consider the following:

- The use of social media should support the IC/UC communication goals, not drive them. As the PIO considers people who need information about the response, sometimes social media is a great way to communicate, but sometimes it is not.
- Social media is a dialogue with the public as an information dissemination and engagement tool. It should be used as a two-way communication tool and not as a mechanism to "push" information. Be prepared to engage and respond to comments and concerns in a timely manner.
- Social media efforts should closely align with JIC operations so that information is being released online in concert with public and media interests. Therefore, the Social Media Specialist should be located in the JIC and work under the APIO for Community Relations.
- The PIO should socialize the intent and basic plan to use social media up and down the chain of command for concurrence. Inform IC/UC that a more formal plan will be provided before launching response sites.

Develop a Social Media Implementation Plan

This section outlines a content management plan for social media sites and outlines how content will be gathered, developed, repurposed and released on social media.

Consider the following:

- What effect are you trying to achieve by putting information out?
- What content can be posted? What content cannot be posted?
- Will you get original content? Will you be considered as a source for breaking news?
- Can you post non-official (other news media) content?
- What content will be consistently and readily available? (e.g. daily news releases, status reports, operational summaries, multimedia products, etc.)
- Keep an open mind and seek other content to post online.

Outline who has release authority and how the chain of approval for publishing content will flow. This may require varying levels based on the type of content (i.e. original, repurposed, imagery, etc.). This

section is essential to avoid unnecessary delays in the posting of information and ensures maximum disclosure, minimum delay.

Determine how social media efforts will be evaluated. Social media can be used to create valuable reports for the response leadership. The following shall be considered:

- Analyze comments to determine gaps in public understanding and awareness of response operations and status. (*See Appendix E: Social Media Analysis Worksheet*)
- Track trending topics, arising issues and misperceptions.
- Use the metric systems for each social media tool to produce quantitative and qualitative reports on engagement.

How to Create Social Media Email Accounts

This section outlines the various social media accounts available and how to create an account. Careful consideration should be made when choosing which social mediums to engage in.

Gmail

(These accounts will be used to create all social media accounts).

1. Go to the Google homepage.
2. Click the "Sign In" link at the top right of the screen and "Create an account."
3. Fill in the appropriate boxes: "First Name," "Last Name" and "Desired Login Name." *(Name each account created (login/username) the same as the response website name if possible).*
4. Choose and confirm a password.
5. Fill out the remainder of the form with a security question (which will help you if you forget your password), a secondary email (if you have one), location and word verification.
6. Click on the button marked "I accept. Create My Account."

Yahoo!

(These accounts will be used to create all social media accounts).

1. Go to the Yahoo! homepage.
    a. Click on "Sign Up" on the right side of the screen
    b. Fill in the appropriate boxes then click "Create My Account" *(Name each account created (login/username) the same as the response website name if possible).*

Facebook

The following tips can help develop your response Facebook page.

1. Establish a vanity URL for your page. Go to www.facebook.com/username and use the drop-down menu to select a name for the response page.
2. Use the "link" and "upload" options. Compliment the link or photo upload using the "status" field to add an authentic note and entice readership/engagement.
3. Link to relevant regional or national news stories, blog posts, press releases or web sites that post about the response.
4. Make sure to carefully consider copyright issues and intellectual property rights when using other sources of information.
5. Post current/upcoming events or safety/security zones, interesting facts, personal messages or quotes from response leadership and other items of interest to the response on the wall.
6. Use the "Notes" option to post blog-type stories.

7. Closely monitor comments and engage when appropriate. Always interact as an official spokesperson and be sure to follow the SOP and policy and practice full disclosure of who you are and your affiliation with the response.
8. Engage on other official pages and the pages of various stakeholders. Consider yourself an official spokesperson and be sure to follow the SOP and policy and practice full disclosure of who you are and your affiliation with the response.

Twitter

The following tips can help develop your microblog.

1. Send short snippets about breaking news, countdowns, case updates, "As-It-Happens" updates, ask questions, "did you knows," hot-off-the-press information, picture of the day, things to know, area familiarization information, unit stats, etc.
2. Be clever and unique, drawing the reader in so they want to click the link or re-post your message.
3. Send pictures using the photo upload option or third party services like Twitpic.
4. Follow other federal, state or local Twitter accounts and re-post (e.g. Re-tweet (RT)) as appropriate.
5. Reply as appropriate to mentions.
6. Use unique hashtags to help people follow your updates (e.g. #2011floods, #opsail2012)
7. Use third party microblog services to easily manage your site (e.g. www.tweetdeck.com or www.hootsuite.com).
8. Use a URL shortener that has a privacy policy (we suggest using goo.gl).

Creating an Account

1. Go to www.Twitter.com and click on the "Get Started-Join!" button.
2. Fill out the blanks. Create a username and password that is similar to the response website created by the PIO. Twitter will automatically check the availability of your username. Enter your email address and continue.
3. After you create your account, you can manually see if any of your e-mail contacts are on Twitter. Just enter your e-mail username and password, and Twitter will automatically import anyone it recognizes.
4. Uncheck "Select All" box on the "Look who else is here" page or skip the step.
5. Go to Profile and click on Add a Photo. Click the "Choose File" button and search for Icon image designed for response.
6. If setting up a phone is available at the response then go to the "Devices" tab on your profile page and then enter your cell phone number. A confirmation message will be sent to your phone, and then you'll be able to make your first update.

YouTube

1. Go to www.YouTube.com
2. Click the "Sign Up" link.
3. Select a username for the site (use the name of the response if possible) and follow YouTube instructions.
4. To embed a video on a response site, first upload a video to YouTube and then click on the video to view it. Copy and paste the "Embed" code to wherever you want it: blog, etc.

Flickr

1. Go to www.flickr.com
2. Click "Create Your Account."
3. Fill out the required fields. Required fields are the ones with the * symbol beside them.

Uploading Images[3]

1. Click the "upload photos" button.
2. You will be prompted to choose the photo you want to upload. Click the "choose photos" button and select the location where your picture is located on your computer.
3. Now that your photo is uploaded, click the "add titles and descriptions" buttons to add text to your picture.
4. Be sure to add photos to a set. This is necessary to create a slideshow.

Flickr to Twitter

1. Go to www.Flickr.com
2. Log in to newly created account.
3. Click on "You" and select "Your Account."
4. Click on "Extending Flickr."
5. Scroll down to "Your blogs" and click "Edit."
6. Add response Twitter account and Blogger account from drop down menu.
7. Now all photos uploaded to Flickr can be disseminated via Twitter or posted to Blog.

Blog

The following tips can help develop your blog writing style.

- Style of writing should be conversational, fun and engaging, but appropriately serious to the situation. Blog writing is similar to feature writing style.
- Use your insider access to take the reader behind the scenes. For example, get a quote from a person involved or a unique picture only available on your site.
- Find a personal and interesting angle to the story. Answer the "what's in it for me, the reader?"
- Turn a photo caption into a story with quotes and updates about the operation.
- To establish readership and credibility, blog managers should post frequently. Pre-establish content that can be posted regularly like status updates, maps, imagery, daily summaries, etc. If content or ideas are lacking, consider providing more in-depth stories about response operations or tactics (e.g. oil skimmers during a pollution response, claims processes during disasters or resources available at local shelters).
- At times, a cross-post of a relevant regional or national news story may be appropriate. Try not to favor any one news outlet and be careful of inappropriate endorsements. It may be best to write a short introduction and include a quote from leadership to provide a command message, and then link to the story.
- Make sure to carefully consider copyright issues and intellectual property rights when using other sources of information.
    - Go to www.blogger.com
    - Click on "Create a Blog."
    - Fill in the appropriate fields[4]

[3] Recommend using Flickr Uploadr - a good tool for uploading a group of images from a desktop (Mac & PC).

[4] Blogger allows up to 10 email addresses to be added for notifications of a new blog entry (click Settings, Email & Mobile).

TwitterFeed

How to set up RSS feed from PIER to Twitter using TwitterFeed

1. Go to www.TwitterFeed.com and create an account.
2. Set up a TwitterFeed account using Google (Gmail account). Use the URL for the RSS feed for Recent Updates on the PIER site:
   Example: http://www.piersystem.com/go/feed/**SITE_NUMBER**/ru/rss20
   1. Add that Feed to your TwitterFeed account.

Google Maps

1. Login into Google account.
2. Go to Google Maps http://maps.google.com/maps.
3. Type in the address of location used for media briefing or other pertinent locations. (Hit "Enter" to begin search.)
4. Click on the blue text of the address after it appears.
5. In the white pop-up box click "Save To My Maps."
6. Select "Create New Map."
7. Fill in "Title" (on left).
8. Add any other features that may be needed.
9. Click the "Save" button and "Done" button (on the left).
10. On the map (top right) click on the "Link" icon.
11. Copy HTML to embed in Website.
12. Paste HTML to Response site page "Media."

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Appendix C: Information Exchange Matrices

Appendix C includes information exchange matrices for the following positions:

- Public Information Officer
- Fact Gathering Specialist
- Imagery Gathering Specialist
- Administrative Assistant
- Social Media Specialist

These matrices were developed to assist personnel with knowing what type of information, materials and/or resources they should obtain or provide to specific response positions within the JIC and ICS organization.

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INFORMATION EXCHANGE MATRIX 1 – PUBLIC INFORMATION OFFICER

Leadership Position	When the PIO should talk to other positions	Information and Resources Exchange	
		PIO Provides	PIO Receives
Incident Commander/ Unified Command	• Initial incident briefing. • Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • Operations briefing. • Release of incident information (all information products, media events, etc.).	• Initial incident data. • Level of public interest. • Public information strategy. • Speaker preparation. • News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips. • Interviews, news briefs and community meeting schedules. • Media analysis. • Social media analysis with source quote highlights.	• Appointment of PIO. • Initial incident brief. • Key messages. • News release authority. • Delegation of duties.
Safety Officer	• Initial incident briefing. • Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • Operations briefing. • Access for JIC personnel, media, community and distinguished visitors to incident site. • As needed.	• News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips. • Roster of on-site visitors escorted by JIC personnel. • Escorts for media, community and distinguished visitors to incident site. • Media "hold harmless" release statement (cleared by legal counsel) for media traveling on government provided transportation.	• Safety briefings for JIC personnel, media, community and distinguished visitors. • Personal protective equipment when going on-site. • Incident response organization accident reports.
Liaison Officer	• Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • As needed.	• News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips. • Names of additional agencies, organizations and stakeholders for inclusion in incident response.	• Names and numbers of additional agencies, organizations and stakeholders to be added to JIC dissemination list. • Pass-down of trends in stakeholder concerns.
Intelligence Officer	• Command and General Staff, Objectives, and Planning meetings. (See *Operational Planning "P"*, Appendix E). • As needed.	• News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips. • De-briefing of JIC field personnel, as needed. • Facts gathered from outside the incident response organization, as needed.	• Intelligence briefings.

Leadership Position	When the PIO should talk to other positions	Information and Resources Exchange	
		PIO Provides	PIO Receives
Planning Section Chief	• Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • As needed.	• Copies of all news releases, fact sheets, videos, photos, audio recordings, social media postings and news clips for Documentation Unit. • Interview, news brief and community meeting schedule. • Public information guidance for inclusion in IAP. • Select information products for inclusion in IAP. • Demobilization paperwork for outgoing JIC personnel.	• Incident situation status data (SITL). • Daily meeting schedule. • Copy of IAP.
Operations Section Chief	• Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • As needed.	• News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips. • Proposed schedule for JIC personnel conducting information gathering at field work locations or personnel escorting media to field	• Incident operations data.
Logistics Section Chief	• Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • As needed.	• News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips. • Names of and a proposed schedule for people needing air/vessel transportation.	• Supplies and office equipment. • Adequate working space for JIC. • Contract assistance for newspaper, television and radio clipping service. • Specialized clothing. • Air/vessel transportation for JIC personnel and media to incident site(s).
Finance/ Administration Section Chief	• Command and General Staff, Objectives and Planning meetings. (See *Operational Planning "P"*, Appendix E). • As needed.	• News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips.	• Travel orders.
Response Personnel	• Incoming personnel briefings, as needed. • Operations Briefing. • As needed.	• Speaker preparation. • News releases, fact sheets, videos, photos, audio recordings, social media postings and news clips.	• Spokespersons at media briefings, community meetings and individual interviews with media.
ESF #15 EAO or Deputy EAO	• When ESF #15 is activated. • Daily, as needed, based on needs of ICP Incident Action Plan for next operational period. • If ICP PIO receives request for interview that is beyond the scope of the FOSC/IC. • During the National Incident Communication Coordination Line (NICCL) calls.	• FOSC/IC field level command messaging for current and upcoming operational period. • FOSC/IC command concerns. • ICP JIC situation report. • ICP JIC media & community engagement plans for next operational period.	• Strategic, national level command messaging. • Support for media & community engagement requests that go beyond the scope of the FOSC/IC's responsibility. • ESF #15 media & community engagement plans.

INFORMATION EXCHANGE MATRIX 2 – FACT GATHERING SPECIALIST

Request Information From	Information to Request	✓
Public Information Officer	Request initial incident briefing. Request updated information following the Command and General Staff meetings.	☐
Assistant Public Information Officer for Media Relations	Request media inquiries to gather information to formulate answers. Gather information for developing responses to media inquiries.	☐
Assistant Public Information Officer for Community Relations	Request community inquiries. Gather information for developing responses to community inquiries.	☐
Assistant Public Information Officer for Information Gathering	Obtain work assignment(s). Provide updates.	☐
Logistics Section	Request information regarding equipment/personnel.	☐
Planning Section – Situation Unit	Request information from Situation Reports. Request plume modeling and spill trajectories.	☐
Planning Section – GIS	Request maps and charts.	☐
Planning Section – Environmental Unit	Request Material Safety Data Sheet (MSDS).	☐
Planning Section	Request a copy of the IAP. Request a copy of the daily meeting schedule.	☐
Operations Section	Request location and number of resources on-site from Staging. Request information about on-going operations.	☐
Finance Section	Request cost of response and claims hotline number.	☐
Response partners	Request other agency's participation and plans.	☐
Intelligence Officer	Request information cleared for public release by the IC/UC regarding law enforcement, terrorist or security issues.	☐
Liaison Officer	Request information about affected stakeholders.	☐
Safety Officer	Request safety concerns for responders and general public and appropriate protective actions.	☐

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INFORMATION EXCHANGE MATRIX 3 – IMAGERY GATHERING SPECIALIST

APIO or ICS Section you receive assignments from	Materials and Resources Exchange	
	From APIO/ICS Section to Imagery Gathering Specialist	From Imagery Gathering Specialist to APIO/ICS Section
Assistant Public Information Officer for Information Products	• Imagery assignments.	• Briefing on activities.
Assistant Public Information Officer for Media Relations	• Not applicable.	• Edit photos, videos and audio recordings for release to the media.
Assistant Public Information Officer for Community Relations	• Not applicable.	• Edit photos, videos and audio recordings for release to the public and for use at community meetings.
Writer	• Photo assignments.	• Image support for fact sheets (as needed). • Briefing on activities.
Status Board Specialist	• Not applicable.	• Imagery for information boards.
Operations Section	• On-water/aerial transportation to sites.	• Not Applicable.
Logistics Section	• Supplies.	• Not Applicable.
Planning Section	• Daily schedule. (ICS Form 204.)	• Imagery for IAP.
Documentation Unit	• Not applicable.	• Copies of all photos, videos and audio recordings.

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INFORMATION EXCHANGE MATRIX 4 – ADMINISTRATIVE ASSISTANT

Request items/information from:	Materials and Resources Exchange	
	From Response Position to Administrative Assistant	From Administrative Assistant to Response Position
Logistics Section	• Space, chairs, lectern, tables, PA system and other materials for media briefings. • Security service for the JIC. • JIC visitor passes.	• Not applicable.
Media Monitoring and Analysis Specialist	• Copies of news clips.	• Not applicable.
Writer	• Copies of news releases and fact sheets for briefing packs and media briefings. • Copies of key message(s), talking points and speaker prep sheets.	• Not applicable.
Imagery Gathering Specialist	• Photos, videos and audio recordings for media briefings. • All products that do not have an immediate use for inclusion in the casebook.	• Not applicable.
Assistant Public Information Officer for Media Relations	• Copies of media list.	• Not applicable.
Social Media Specialist	• Copies of archived social media content.	• Not applicable.
Documentation Unit	• Not applicable.	• Copies of all JIC files and products.

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INFORMATION EXCHANGE MATRIX 5 – SOCIAL MEDIA SPECIALIST

APIO or ICS Section you receive assignments from	Materials and Resources Exchange	
	From APIO/ICS Section to Social Media Specialist	From Social Media Specialist to APIO/ICS Section
Public Information Officer	• Direction on site design.	• Not applicable.
JIC Manager	• Not applicable.	• Information of trending topics for the daily briefings.
Assistant Public Information Officer for Information Products	• News releases, fact sheets, media advisories, PSAs, photos, videos and audio recordings.	• Trending issues that could prompt information products. • Relevant social media postings.
Assistant Public Information Officer for Media Relations	• Talking points and media inquiry trends.	• Trending issues that could prompt responses to media.
Assistant Public Information Officer for Community Relations	• Rules of engagements for social media use. (See *Social Media in a Response Job Aid 9,* Appendix B).	• Trending issues that can be used during community engagements.
Writer	• Feature length content for social media sites.	• Trending issues that could prompt information products. • Relevant social media postings.
Status Board Specialist	• Not applicable.	• Trending topics.
Website Specialist	• Website design.	• Integrating social media sites with incident website.
Imagery Gathering Specialist	• Photos, videos and audio recordings.	• Not Applicable.
Rumor Control Specialist	• Validated information on rumors.	• Rumors.
Documentation Unit	• Not applicable.	• Copies of archived social media content.

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Appendix D: Forms

Below is a list of sample ICS forms that JIC personnel should be familiar with.

Form	Description
ICS 214	Unit Log
ICS 204	Assignment List
ICS 209-CG	Incident Status Summary
ICS 213	General Message
ICS 213RR-CG	Resource Request Form

For a complete listing of FEMA ICS forms, visit:
http://training.fema.gov/EMIWeb/IS/ICSResource/ICSResCntr_Forms.htm

To download the USCG forms included in this Appendix, visit:
http://homeport.uscg.mil

Click on "Library" on the horizontal menu bar, then click on "Incident Command System ICS" in the left menu. Under the "Forms" heading, click on "Coast Guard ICS Forms (Individual)". You can download fill-in-the-blank Word .DOT templates or Adobe Acrobat .PDF versions.

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ICS FORM 214

UNIT LOG	1. Incident Name	2. Date Prepared	3. Time Prepared
4. Unit Name/Designators	5. Unit Leader (Name and Position)		6. Operational Period

7. Personnel Roster Assigned

Name	ICS Position	Home Base

8. Activity Log

Time	Major Events

9. Prepared by (Name and Position)

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ICS FORM 204

Sample Assignment List, ICS Form 204

1. BRANCH	2. DIVISION/GROUP	ASSIGNMENT LIST
3. INCIDENT NAME	4. OPERATIONAL PERIOD DATE _____ TIME _____	

5. OPERATIONAL PERSONNEL

OPERATIONS CHIEF _____ DIVISION/GROUP SUPERVISOR _____
BRANCH DIRECTOR _____ AIR TACTICAL GROUP SUPERVISOR _____

6. RESOURCES ASSIGNED TO THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	EMT	LEADER	NUMBER PERSONS	TRANS. NEEDED	PICKUP PT./TIME	DROP OFF PT./TIME

7. CONTROL OPERATIONS

8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LEADER)	APPROVED BY (PLANNING SECT. CH.)	DATE	TIME

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ICS FORM 209-CG (ICS FORM 209)

1. Incident Name	2. Operational Period (Date / Time) From: To: Time of Report	INCIDENT STATUS SUMMARY ICS 209-CG

3. Type of Incident

☐	Oil Spill	☐	HAZMAT	☐	AMIO
☐	SAR/Major SART	☐	SI/Terrorism	☐	Natural Disaster
☐	Marine Disaster	☐	Civil Disturbance	☐	Military Outload
☐	Planned Event	☐	Maritime HLS/Prevention	☐	

4. Situation Summary as of Time of Report:

5. Future Outlook/Goals/Needs/Issues:

6. Safety Status/Personnel Casualty Summary

	Since Last Report	Adjustments To Previous Op Period	Total
Responder Injury			
Responder Death			
Public Missing (Active Search)			
Public Missing (Presumed Lost)			
Public Uninjured			
Public Injured			
Public Dead			
Total Public Involved			

7. Property Damage Summary

Vessel	$
Cargo	$
Facility	$
Other	$

8. Attachments with clarifying information

☐	Oil/HAZMAT	☐	SAR/LE	☐	
☐		☐		☐	
☐	Marine Disaster	☐	Civil Disturbance	☐	Military Outload

9. Equipment Resources					
Kind	Notes	# Ordered	# Available	# Assigned	# Out of Service
USCG Assets					
Aircraft – Helo					
Aircraft – Fixed Wing					
Vessels – USCG Cutter					
Vessels – Boat					
Vehicles – Car					
Vehicles – Truck					
Pollution Equip – VOSS/SORS					
Pollution Equip – Portable Storage					
Pollution Equip – Boom					
Non-CG/Other Assets					
Aircraft – Helo					
Aircraft – Fixed Wing					
Vessels – SAR/LE Boat					
Vessels – Work/Crew Boat					
Vessels – Tug/Tow Boat					
Vessels – Pilot Boat					
Vessels – Deck Barge					
Vessels –					
Vehicles – Car					
Vehicles – Ambulance					
Vehicles – Truck					
Vehicles – Fire/Rescue/HAZMAT					
Vehicles – Vac/Tank Truck					
Vehicles –					
Pollution Equip – Skimmers					
Pollution Equip – Tank Vsl/ Barge					
Pollution Equip – Portable Storage					
Pollution Equip – OSRV					
Pollution Equip – Boom					
Pollution Equip –					

10. Personnel Resources	
Agency	**Total # of People**
USCG	
DHS (other than USCG)	
NOAA	
FBI	
DOD (USN Supsalv, CST, etc.)	
DOI (US Fish & Wildlife, Nat Parks, BLM, etc.)	
RP	
State	
Local	
Total Personnel Resources Used From all Organizations:	

11. Prepared by:	Date/Time Prepared:

1. Incident Name	2. Operational Period (Date / Time) From: To: Time of Report	ICS 209-CG OIL/HAZMAT ATTACHMENT

3. HAZMAT/Oil Spill Status (Estimated, in gallons)

Common Name(s):

UN Number:	☐ Secured ☐ Unsecured
CAS Number:	Remaining Potential (bbl):
	Rate of Spillage (bbl/hr):

	Adjustments To Previous Operational Period	Since Last Report	Total
Volume Spilled/Released			
Mass Balance - HAZMAT/Oil Budget			
Recovered HAZMAT/Oil			
Evaporation/Airborne			
Natural Dispersion			
Chemical Dispersion			
Burned			
Floating, Contained			
Floating, Uncontained			
Onshore			
Total HAZMAT/Oil accounted for:	N/A	N/A	

Comments:

4. HAZMAT/Oil Waste Management (Estimated, Since Last Report)

	Recovered	Disposed	Stored
HAZMAT/Oil (bbl)			
Oily Liquids (bbl)			
Liquids (bbl)			
Oily Solids (tons)			
Solids (tons)			

Comments:

5. HAZMAT/Oil Shoreline Impacts (Estimated in miles)

Degree of Impact	Affected	Cleaned	To Be Cleaned
Light			
Medium			
Heavy			
Total			

Comments:

6. HAZMAT/Oil Wildlife Impacts (Since Last Report)

					Died in Facility	
Type of Wildlife	Captured	Cleaned	Released	DOA	Euthanized	Other
Birds						
Mammals						
Reptiles						
Fish						
Total						

Comments:

7. Prepared by:	Date/Time Prepared:

1. Incident Name	2. Operational Period (Date / Time) From: To: Time of Report	ICS 209-CG SAR/LE ATTACHMENT

3. Evacuation Status

	Since Last Report	Adjustments To Previous Operational Period	Total
Total to be Evacuated			
Number Evacuated			

4. Migrant Interdiction Status

	Since Last Report	Adjustments To Previous Op Period	Total
Vessels Interdicted			
Migrants Interdicted at Sea			
Migrants Interdicted Ashore			
Injured			
MEDEVAC'd			
Deaths			
Migrants Repatriated			

5. Sorties/Patrols Summary (List of Sorties Since Last Report)

Air	Since Last Report	Total
Number of Sorties/Patrols		
Area Covered (square miles)		
Total Time On-Scene (In Hours)		
Surface	Since Last Report	Total
Number of Sorties/Patrols		
Area Covered (square miles)		
Total Time On-Scene (In Hours)		

6. Use of Force Summary

Category	Since Last Report	Total
III - Soft Empty Hand Control		
IV - Hard Empty Hand Control		
V - Intermediate Weapons		
VI - Deadly Force		
VSL - Force to Stop Vessel from Cutter/Boat		
A/C - Force to Stop Vessel From Aircraft		
Arrests		
Seizures		
Deaths		

7. Operational Controls Summary

Currently In Force

Type	Initiating Unit	Initiated Date	Activity #

Removed Since Last Report

Type	Initiating Unit	Initiated Date	Date Removed	Activity #

18. Prepared by:	Date/Time Prepared:

ICS FORM 213

GENERAL MESSAGE		
TO:	POSITION:	
FROM:	POSITION:	
SUBJECT:	DATE:	TIME:
MESSAGE:		
SIGNATURE:	POSITION:	
REPLY:		
DATE:	TIME:	SIGNATURE/ POSITION:

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ICS FORM 213RR-CG

Resource Request Message	Purpose: The 213RR CG is used by all incident personnel to request tactical and non-tactical resources.		ICS-213 RR CG (2/07)
1. Incident Name:	2. Date/Time:	3. Resource Request Number:	

Requestor

4. ORDER Note: Use additional forms when requesting different resource sources of supply

a. Qty	b. Kind	c. Type	d. Priority U or R	e. Detailed item description (vital characteristics, brand, specs, experience, etc.) and, if applicable, purpose/use, diagrams, and other info.	f. Requested Reporting Location:	f. Requested Reporting Date/Time:	g. Order # (LSC)	h. ETA (LSC)	i. Cost

5. Suggested source(s) of supply - POC phone number if known and suitable subtitutes:

6. Requestor Position and Signature: Date/Time:

7. Section Chief/Command Staff Approval: Date/Time:

Plans

8. RESL - check box (a) if request is for tactical or personnel resources. Then note availability in box 8.b or 8.c.

a. ☐ b. ☐ Resources available as noted in block 12

c. ☐ Resources not available

9. RESL Review/Signature: Date/Time:

Logistics

10. Requisition/Purchase Order #:

11. Supplier Name/Phone/Fax/Email:

12. Notes:

13. Logistics Section Signature: Data/Time:

14. Order placed by (check box): ☐SPUL ☐PROC ☐OTHER _____

Finance

15. Reply/Comments from Finance:

16. Finance Section Signature: Date/Time:

Full instructions on back page. Requestor fills in blocks 1-5, except # 3 & # 4.g-I (shaded area), signs block 6 (do not forget position), gets appropriate Section Chief or Command Staff approval in block 7, and keeps yellow copy (bottom). If applicable, RESL reviews if resource available, signs block 9 and keeps blue copy. Logistics fills in block 4.g and h, and blocks 10-13, and keeps orange copy. Orderer (LSC or FSC) fills in block 4.I. Finance fills in blocks 15 - 16 and keeps green copy. Pink copy is returned to RESL for tactical/personnel or requestor for non-tactical. White copy goes to DOCL.

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Appendix E: References, Worksheets, and Samples

Reference/Worksheet/Sample	Description
Daily Checklist	This checklist is a helpful tool to assist the PIO complete daily activities.
Operational Planning "P"	The Operational Planning "P" is a guide to the process and steps involved in planning for an incident.
JIC Self-Assessment Survey	By filling out the JIC Self-Assessment Survey, the PIO and JIC Manager can use the information provided to staff JIC positions.
Daily Brief Worksheet	Information collected using the daily brief worksheet is provided during transition meetings.
Media Analysis Worksheet	This worksheet assists in assessing the content and accuracy of news media reports and assists in identifying trends and breaking issues.
Social Media Analysis Worksheet	This worksheet assists in assessing the content and accuracy of social media reports and assists in identifying trends and breaking issues.
Query Record	This tool assists in keeping records of any inquiries or rumors reported.
Risk Communication Strategies & Guidelines	This tool assists in development of messages early in the response and in working with LNO to identify stakeholders.
Writing Guidelines for News Releases	These are guidelines to assist in writing news releases.
Sample News Release	This is a sample of a news release.
Media Briefing/Community Meeting Worksheet	This worksheet assists in preparing for a media briefing or community meeting.
Speaker Preparation Worksheet	This worksheet assists in preparing information that will be delivered via a media briefing or community meeting.
Spokesperson Request Worksheet	This worksheet assists in requesting spokespersons for media briefings.
Media Briefing Worksheet	This worksheet provides general guidelines and provides a sample moderator script for media briefings.
Field Escort Equipment and Communications Checklist	This checklist assists in ensuring that the media visiting the incident site are properly equipped and informed.
Opening Statement for Community Relations Interviews	This worksheet assists in performing interviews in order to obtain community feedback and information needs.
Sample Media Advisory (Media Briefing)	This is a sample of a media advisory for a scheduled media briefing.
Sample Media Advisory (JIC Established)	This is a sample of a media advisory announcing that the JIC has been established.
Sample Public Service Announcement	This is a sample of a public service announcement.
Public Exhibit and Discussion Diagram – Poster Exhibits/Public Availability Session	This is an example of one of the types of community meetings that may be held.

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DAILY CHECKLIST

- [ ] Receive briefing from previous shift.
- [ ] Identify JIC priorities and tasks for oncoming shift.
- [ ] Develop and monitor information strategies in support of overall response effort.
- [ ] Monitor Joint Information Center's activities to ensure information strategies are being followed.
- [ ] Ensure public affairs people in field are given assignments.
- [ ] Ensure necessary work space, materials, equipment and personnel are available or requested.
- [ ] Receive approval from Incident Commander (IC)/Unified Command (UC) on all information released from the JIC.
- [ ] Maintain high level of understanding of current situation and response operations by attending Command and General Staff Briefings.
- [ ] Ensure Status Board Specialist works with the Situation Unit to obtain the most current information.
- [ ] Ensure information is being provided to internal and external stakeholders.
- [ ] Monitor any request identified by either the IC/UC of JIC as "special." VIPs, special interest, local issues, etc.
- [ ] Provide IC/UC with timely information about external perceptions, concerns and needs regarding the incident and response.
- [ ] Ensure the speakers for the media briefings are prepared by the JIC well before the conferences.
- [ ] Represent the IC/UC during all public functions where the actual members of the IC/UC are not in attendance.
- [ ] Ensure appropriate and timely communications are maintained by the JIC with government, community and media publics throughout the response.
- [ ] Ensure all work of the JIC is well documented and delivered to the appropriate places.
- [ ] Complete Daily Log (ICS-Form 214 or 214-CG).
- [ ] Brief incoming shift.

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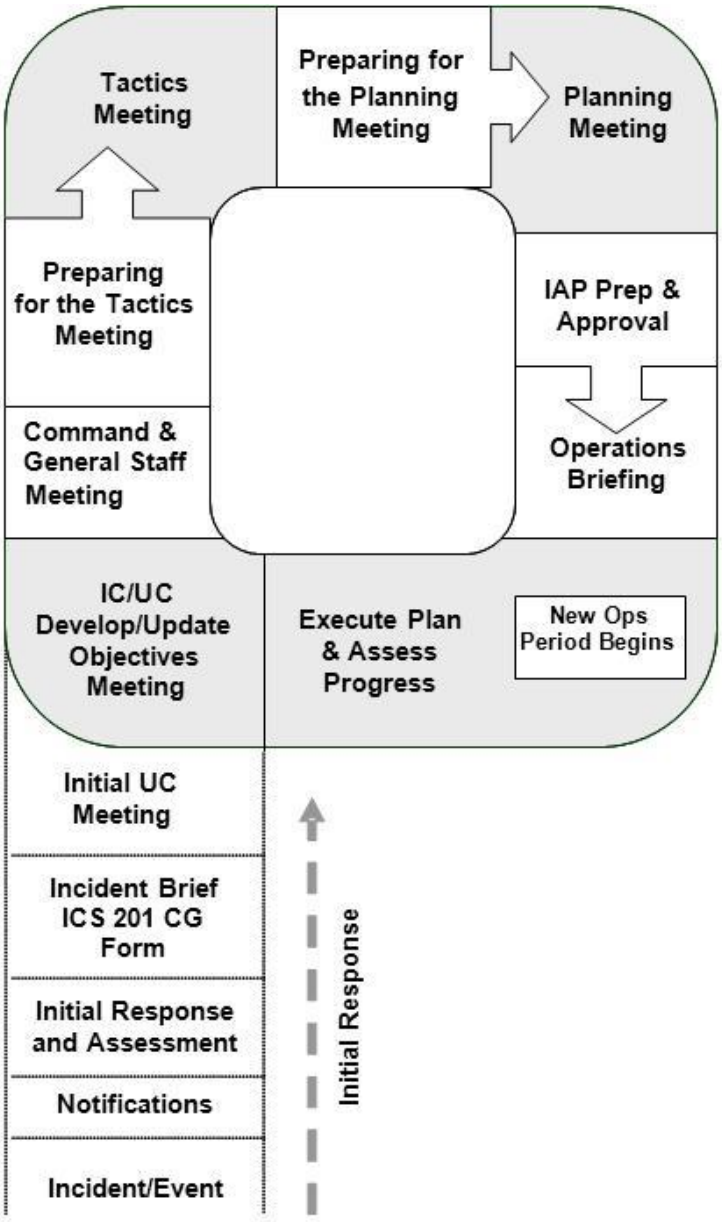
OPERATIONAL PLANNING "P"



- The Planning "P" is a guide to the process and steps involved in planning for an incident. The leg of the "P" describes the initial response period: Once the incident/event begins, the steps are Notifications, Initial Response & Assessment, Incident Briefing Using ICS 201 or ICS 201-CG, and Initial Incident Commander (IC)/Unified Command (UC) Meeting.
- At the top of the leg of the "P" is the beginning of the first operational planning period cycle. In this circular sequence, the steps are IC/UC Develop/Update Objectives Meeting, Command and General Staff Meeting, Preparing for the Tactics Meeting, Tactics Meeting, Preparing for the Planning Meeting, Planning Meeting, IAP Prep & Approval, and Operations Briefing.
- At this point a new operational period begins. The next step is Execute Plan & Assess Progress, after which the cycle begins again.

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JIC STAFF SELF-ASSESSMENT SURVEY

Welcome to the JIC! Please complete this survey, so our PIO and JIC Manager can match your availability, experience, training, and preferences to the JIC Staff positions presently available.

First and Last Name: _____

Rank and/or Job Title: _____

Agency/Organization: _____

Work Phone: ( ) Cell Phone: ( )

E-mail address: _____

If you are staying at a hotel, list Hotel name: _____ Room #: _____

AVAILABILITY

Please list any dates/times or shifts that you are NOT available to work in the JIC:

_____

RESOURCES

Please check any equipment/supplies or other JIC resources that you brought with you:

☐ Laptop ☐ Printer ☐ Camera/videocam ☐ Tape recorder ☐ Office supplies

☐ Other: _____

EXPERIENCE

How many years of public affairs experience do you have? _____

How many times have you previously worked in a JIC? _____

Describe what JIC roles or duties you have previously performed:

_____

TRAINING

Please check which NIMS courses that you have completed:

☐ None ☐ IS-700 ☐ IS-702 ☐ IS-800 ☐ ICS-100 ☐ ICS-200 ☐ ICS-300 ☐ ICS-400

Have you completed any PIO or JIC training? ☐ No ☐ Yes _____

Have you completed any media spokesperson training? ☐ No ☐ Yes _____

SKILLS

Please check your "Top 3" best skills:

☐ Supervising others ☐ Developing strategies ☐ Conducting media briefings and interviews

☐ Gathering info ☐ Writing copy ☐ Taking photos/video ☐ Web support

☐ Answering inquiries ☐ Investigating rumors ☐ Computer skills ☐ Admin support

☐ Social media

☐ Other: _____

PREFERENCES

Please indicate which JIC role(s) or duties that you would like to be assigned to:

☐ Preferred role(s): _____

☐ No preference; I'll work any role or duties as needed

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DAILY BRIEF WORKSHEET

1. Incident Name:	**2. Operational Period:**
3. PIO:	**4. Prepared by:**
5. Joint Information Center Personnel Assigned	
APIO – JIC Manager:	APIO – JIC Manager (satellite JIC):
APIO – Information Gathering:	APIO – Media Relations:
APIO – Information Products:	APIO – Community Relations:
6. Joint Information Center Daily Activities	
6a. Information Gathering	
Media monitoring & analysis highlights:	Rumor control highlights:
Social media monitoring & analysis highlights:	
6b. Information Products	
Written news releases:	Fact sheets:

Photographs:	Video:
PSAs:	Website:
Incident Social Media Websites:	
6c. Media Relations	
Media inquiry highlights:	Media interviews scheduled:
Media briefings scheduled:	Media speaker preparation scheduled/required personnel:
Field activities scheduled:	
6d. Community Relations	
Community inquiry highlights:	Community meetings scheduled:
Community speaker preparation scheduled/required personnel:	

MEDIA ANALYSIS WORKSHEET

Date: / /

Media Outlet Name:

☐ Radio ☐ TV ☐ Print ☐ Website ☐

Current Release #:

Daily Broadcast Times:

(If recorded please mark Y or N after time)

Daily Cover Synopses:

Issues:

Inaccuracies:

View Points:

Fixes:

Who Replied To:

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SOCIAL MEDIA ANALYSIS WORKSHEET

Social Media Source:
Date/Time/Length/Placement:
Spokespersons/Information Sources:
Facts/Statements:
Words/Phrases:
Visuals (pictures, analogies, anecdotes):
Key Messages/Themes:
Overall Evaluation/Follow-Up Issues:

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QUERY RECORD

Person Calling: _____

Date/Time of Call: _____

Organization: _____

Phone/Fax Number: _____

Email Address: _____

Physical or Mailing Address: _____

Inquiry: _____

_____

_____

Deadline: _____

Person Taking Call:

Reply Made By: _____

Date/Time: _____

Reply: _____

_____

_____

_____

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RISK COMMUNICATION STRATEGIES & GUIDELINES

Although some of the worksheets in this section specify risk communication during a health crisis, the worksheets are easily adaptable for any emergency situation.

Crisis & Emergency Risk Communication (CERC): Crisis Leader—First Message[5]

Build credibility with these 6 emergency message components:

1. Expression of empathy (e.g., understand you are hurt, confused, anxious, frightened):

_____
_____

2. Clarifying facts (Fill in only VERIFIED facts, skip if not certain):

Who_____

What (Action)_____

Where_____

When_____

Why_____

How_____

3. What we don't know:_____
4. Process to get answers:_____
5. Statement of commitment:_____

6. Referrals (If possible, skip if not yet ready**):**

For more information_____
Next scheduled update_____

Finally, check your message for the following:

Positive action steps	Avoid jargon
Honest/open tone	Avoid judgmental phrases
Say "we" not "I"	Avoid humor
Careful with early promises (can you do it?)	Avoid extreme speculation

Delivered: _____Time _____ Date

[5] Information from the Centers for Disease Control and Prevention, "*Crisis & Emergency Risk Communication*" *Workbook.*

CERC: First Response to Media Inquiries[6]

By phone to media:

- "We've just learned about the situation and are trying to get more complete information now. How can I reach you when I have more information?"
- "All our efforts are directed at bringing the situation under control, so
- I'm not going to speculate about the cause of the incident." How can I reach you when I have more information?"
- "I'm not the authority on this subject Let me have XXXX call you right back." "We're preparing a statement on that now. Can I fax it to you in about two hours?"
- "You may check our web site for background information and I will fax/e-mail you with the time of our next update."

At incident site or press availability:

Response to Inquiries (you are authorized to give out the following information)

Date: _____
Time: _____
Approved by: _____

This is an evolving emergency and I know that—just like we do—you want as much information as possible right now. I wish I could answer all of your questions here. While we work to get your questions answered as quickly as possible, I want to tell you what we can confirm right now:

- At approximately, _____ (time), a (brief description of what happened)

_____

- At this point, we do not know the number of _____ (persons ill, persons exposed, injuries, deaths, etc.).

- We have a system (plan, procedure, operation) in place for just such an emergency and we are being assisted by _____ (e.g., police, FBI, EOC) as part of that plan.

The situation is (under)(not yet under) control and we are working with (local, State, Federal) authorities to (e.g., contain this situation, determine how this happened, determine what actions may be needed by individuals and the community to prevent this from happening again).

We will continue to gather information and release it to you as soon as possible. I will be back to you within _____(amount of time, 2 hours or less) to give you an update. As soon as we have more confirmed information, it will be provided. We ask for your patience as we respond to this emergency. **For more information:**

_____
_____

[6] Information from the Centers for Disease Control and Prevention, "*Crisis & Emergency Risk Communication*" *Workbook.*

CERC: Leader Pre-event Checklist[7]

The following are keys to successful crisis communication. Discuss these with your communication director.

We know:

- ☐ Public information and media response is perceived by us as critical to our operational success
- ☐ Spokespersons (by topic) are identified and trained (e.g., empathy, honesty, commitment)
- ☐ Crisis Communication plan is integrated into overall operational plan
- ☐ A written procedure and agreement on clearance procedures is in place
- ☐ These clearance procedures take 15 minutes or less to accomplish
- ☐ These clearance procedures ensure accurate information is released
- ☐ These clearance procedures have been tested in drills/exercises
- ☐ These clearance procedures allow for authority delegation to speed response
- ☐ Contact information (including after hours) for primary media is handy to all who need it
- ☐ Adequate manpower and equipment is set aside to keep a 24-hour media operation going for up to 10 days
- ☐ Our information telephone number (hotline) for public inquiries is ready with trained operators
- ☐ Our response partners are identified and know our communication role and expectations
- ☐ Our stakeholders are identified and know how we will respond directly to them
- ☐ We have the capability of holding a national press conference if needed
- ☐ We can monitor media reports and public inquiries for rumors and respond to rumors in real time
- ☐ Strategic National Stockpile communication tools are in place
- ☐ Our emergency response plan notifies the communication director in first wave of calls/pages
- ☐ As an important stakeholder, we know our elected officials will want to communicate to constituents about this crisis and we have a plan to ensure a consistent message is delivered to the public
- ☐ Our Internet site can post media and public information materials within 45 minutes of final clearance
- ☐ We have an accountability plan to public/media about resource allocations during and after the crisis such as a web page that shows where disaster response funds are going that is updated routinely
- ☐ We can conduct a meaningful community hall meeting during crisis recovery
- ☐ All potential incident command or department leaders are fully trained in Crisis and Emergency Risk Communication and understand their role as a spokesperson

[7] Information from the Centers for Disease Control and Prevention, "*Crisis & Emergency Risk Communication*" *Workbook*.

Guide for planning
health risk communication
(long version)[8]

Personnel's plan
Situation and place _____ Date _____

Determine the risk communication responsibilities in your team

Name, division, branch, phone, fax, e-mail	**Responsibilities**
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

Other members of your institution

Press office

Community relations

Team members from regional offices, state offices

Name, phone, fax, e-mail

_____
_____
_____
_____
_____
_____

Team members from other institutions (health sector, environmental sector)

Name, phone, fax, e-mail

_____
_____
_____
_____
_____
_____

[8] Information from the Centers for Disease Control and Prevention, "*Crisis & Emergency Risk Communication*" *Workbook*.

Schedule of activities

Plan the duration of your activities for health risk communication. Complete the activities on time, to achieve the highest impact. Set deadlines.

Activity	Person responsible	Deadline	Done (√)

Objectives of the health risk communication

Situation and place _____Date_____

This is one of the most important parts of your plan and one that is most often missed out. Set specific measurable objectives for the risk communication task, but not for the overall program.

Considerations

Why carry out risk communication activities in this situation and place?

_____
_____
_____

What ***knowledge*** of the community members do you want to affect?

_____
_____
_____

What ***attitudes*** of the community members do you want to affect?

_____
_____
_____

What ***behavior*** of the community members do you want to affect?

_____
_____
_____

Communication objectives

1. _____
_____

2. _____
_____

3. _____
_____

4. _____
_____

5. _____
_____

How will you determine whether the objectives have been met? (Are the objectives clear, measurable, and time-specific?)

1. _____
_____

2. _____
_____

3. _____
_____

4. _____
_____

5. _____
_____

Overview of the situation and place

Situation and place _____Date _____

Summarize your knowledge of the situation and place, including a synopsis of the history, summary of work done, and unique circumstances pertaining to the work carried out by your institution.

Type of situation

_____
_____
_____

Public health situation

Contaminants of interest detected_____
_____

Environment with potential or declared contamination

____ air
____ soil
____ water
____ sediments
____ biological (fish/fauna)

Do some people use water from a well? ____ Yes ____ No

Potential health impacts_____
_____

Suspected or documented health impacts_____
_____

Complete routes of exposure_____
_____

Potential routes of exposure _____
_____

Known incidents of exposure_____
_____

History of the situation and place

Include a map of the place and the relationship with residents, schools, parks, water sources, etc.

Use formerly given to this place_____
_____

Owner of the place_____
_____

Type of jobs in this place _____
_____

Type of government institution involved_____
_____

Critical decisions and significant actions_____

Key dates in the future_____
_____

Government structure

Type of local government_____
_____

Key political positions_____
_____

Previous community interaction with government institutions_____
_____

Description of the community

Geographic limits _____
_____

Total density of population_____
_____

Population living in neighboring areas _____
_____

Distribution of residents per age group_____
_____

Level of education _____
_____

Ethnic structure _____
_____

Languages / dialects spoken _____
_____

Socioeconomic level _____
_____

Religious groups _____
_____

Interests _____
_____

Characteristics

____ Immediate neighborhood
____ Schools / day-care centers
____ Community buildings (churches)
____ Office buildings / work premises
____ Parks and recreation areas
____ Areas for protection of natural resources
____ Health-care services
____ Industry in the area
____ Other potential sources of contamination

Concerns of the community

Health concerns_____
_____

Environmental concerns_____
_____

Economic concerns_____
_____

Legal concerns_____
_____

Unmet needs for information, education, or training _____
_____

Perceived lack of response to their concerns _____
_____

What does the community know about the situation and the place?
_____

What gaps are there in the knowledge of the community members?
_____

What does the community want to know?
_____

What attitudes or beliefs of the community members can ***negatively*** affect the incorporation of preventive actions or community cooperation? _____
_____
_____

What attitudes or beliefs of the community members can ***positively*** affect the incorporation of preventive actions or community cooperation?_____
_____
_____

What do the community members do that puts them at risk? _____
_____
_____

What can the community members do to protect themselves from the hazards associated with the situation and the place?_____
_____
_____
_____

Community organization and contacts

Environment_____
_____

Business_____
_____

Social_____
_____

Religious_____
_____

Community leaders

Elected _____
_____

Not elected_____
_____

Publicity on the situation and the place

News coverage _____
_____

Visibility of the situation and the place_____
_____

Planning tool for making a list of the media

Situation and place _____Date _____

Determine which media cover the situation and the place. Review coverage given to them in the past.

Media	Contacts	Past coverage
Newspapers		
Radio stations		
Television channels		
Other media		

Planning tool for designing messages

Situation and place _____Date _____

Your messages must be well grounded to communicate accurate and consistent information

Questions asked by the community

Are we safe? _____
_____
_____

What have you found that can affect us? _____
_____
_____

What is the source of the problem?_____
_____
_____

Does this contaminant cause health problems? (specify)_____
_____
_____

Can you correct it? Who can correct it? _____
_____
_____

Considerations

How do you define health risk? _____
_____
_____

What inconsistencies are there in the messages to the community from different sources? How are we going to clarify them?_____
_____
_____

What doubts or concerns do members of the community have? How are we going to clarify them?_____
_____
_____

What other communicators are working in the community? What messages have they transmitted?
_____
_____
_____

Key Messages

1._____
_____
_____
Supporting information or evidence_____
_____
_____

2._____
_____
_____
Supporting information or evidence_____
_____
_____

3._____
_____
_____
Supporting information or evidence_____
_____
_____

Planning tool for community interaction

Situation and place _____Date _____

Define the community and the audience for the health risk communication activities.

Consider:
Individuals and groups who facilitate action_____
_____

Individuals and groups who have been involved previously in this matter_____
_____

Individuals and groups who are interested in participating _____
_____

Individuals and groups who can be affected or who perceived themselves to be affected_____
_____

Individuals and groups who may feel relegated or annoyed if they are not included_____
_____

Segment of the audience	Key contact	Specific concerns and issues
Government personnel		
Elected authorities		
Local government personnel		
Citizen groups		

Segment of the audience	Key contact	Specific concerns and matters
Local residents		
Local health professionals		
Representatives of local businesses		
Civic groups		
Groups of public interest		
Principals of local schools		
Potentially responsible parties		
Other federal institutions		
Other personnel from your institution		
Others		
Others		

Sub-group	Key contact	Specific concerns and issues
What other language or dialect do they speak?		
Sociocultural situations		
Activists		
Workers and their families		
Other groups with special characteristics		

Tool for planning strategies and techniques of health risk communication

Situation and place _____Date _____

Design a specific plan for health risk communication activities. Strategies are things you plan to do, and techniques are how you are going to do them. For example, "Explain the type of work your institution does" is a Strategy, in which one of your Techniques may be to "Distribute fact sheets about the institution."

Strategies and Techniques:

Strategy: Introduce your organization to the community.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Strategy: Involve the community in the risk communication.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Strategy: Work effectively and include the community leaders and other work partners.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Strategy: Communicate early and regularly with the community.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Strategy: Use the news media to transmit accurate information.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Strategy: Be ready to face a crisis.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Strategy: Be in contact with the community after carrying out the main activity, if applicable.
Technique
1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

Tool for planning the evaluation of the health risk communication

Situation and place _____Date _____

Formulate your plan to give follow-up to your work in accordance with your original objectives. Review this section periodically to write notes on the program, suggestions for future work, and comments. Once you have finished your field activities, this section completes your plan and provides you with a complete file on the field work.

Base line information that will enable comparisons to be made (for example: prevalence of activities or beliefs that you hope to modify or eradicate).

_____
_____
_____

Planning of the evaluation (formative) to test your messages and materials

What are you evaluating? _____
_____
_____

How are you going to evaluate it? _____
_____
_____

What were the results? _____
_____
_____

Evaluation of the immediate impact: review and document the activities carried out

What are you evaluating? _____
_____
_____

How are you going to evaluate it? _____
_____
_____

What were the results? _____
_____
_____

Evaluation (of products) at an intermediate point to determine whether the short-term objectives were met

What are you evaluating? _____
_____
_____

How are you going to evaluate it? _____
_____
_____

What were the results? _____
_____
_____

Evaluation of results (impact) to determine whether the long-term impacts were achieved

What are you evaluating? _____
_____
_____

How are you going to evaluate it? _____
_____
_____

What were the results? _____
_____
_____

WRITING GUIDELINES FOR NEWS RELEASES

1. Assemble the facts into two or three sentences that answer – who, what, when, where, why and how.

2. List the remaining facts in descending order of importance (i.e., the Inverted Pyramid journalism style) in narrative or, if necessary, bullet form (e.g., what agencies are responding, type and amount of equipment). **NOTE:** The release should be only one page in length. If there is a need for additional information about specific topics, then a separate fact sheet should be created. Follow steps 3 - 5 for fact sheets and news releases.

3. Spell check and edit the release and give it to the APIO for Information Products and the PIO for review and approval by IC/UC. (Review by subject matter specialists, technical experts and/or legal counsel may be helpful prior to approval by IC/UC.)

4. Give copies of approved release to all JIC staff members or posting on Status Boards, inclusion in JIC Case Book and to respond to media and community inquiries.

5. Email, fax or disseminate to media and other internal/external stakeholders.

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SAMPLE NEWS RELEASE

(Unified Command logos/names here)

News Release

Date: (date)
Contact: Joint Information Center
(###) ###-####

UNIFIED COMMAND RESPONDS TO (INCIDENT)

(**CITY, State -**) Write one sentence for the LEAD paragraph being as brief as possible. Include the most important information in this first sentence such as what happened, where, to who and when.

The BRIDGE paragraph is next and covers more detailed information than the lead. The release should be written in inverted pyramid style. *Inverted pyramid means that you start with the most important information at the beginning of the release and the least important goes at the end.* Why and how are mentioned here (if available) as well as secondary facts and identification (lead paragraphs do not contain names of individuals.)

The BODY section covers the remaining relevant information. Stick to the facts. Use active, not passive, voice. *(e.g. Rather than writing "entered into a partnership" use "partnered" instead.)* Use only enough words to tell your story. Beware of jargon. Avoid the hype. (*The exclamation point (!) is your enemy.)* Always have someone proof read your release and be prepared for changes.

###
(this signifies the end of the release)

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MEDIA BRIEFING/COMMUNITY MEETING WORKSHEET

Event:	
Date:	
Time:	
Location:	
Moderator:	
Speakers:	
Length of conference or meeting:	
Exhibits:	
1.	
Presenter:	Handouts:
2.	
Presenter:	Handouts:
3.	
Presenter:	Handouts:
4.	
Presenter:	Handouts:
5.	
Presenter:	Handouts:
Refreshments:	
Special needs arrangements:	
Notes:	

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SPEAKER PREPARATION WORKSHEET

1. Statement
2. Key Message(s)
3-4. Key Message(s) with Supporting Facts
5. Repeat Key Message(s)
6. Future Action(s)

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SPOKESPERSON REQUEST WORKSHEET

Speaker's Event: _____

Contact and Phone Number: _____

Date and Time Contacted: _____

Date of Event: _____

Time of Event: _____

Location: _____

Street Address or City: _____

Subject of Event: _____

Speaker Requested (if known): _____

Speaker Assigned: _____

Speaker's Event: _____

Contact and Phone Number: _____

Date and Time Contacted: _____

Date of Event: _____

Time of Event: _____

Location: _____

Street Address or City: _____

Subject of Event: _____

Speaker Requested (if known): _____

Speaker Assigned: _____

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MEDIA BRIEFING WORKSHEET

General Guidelines:
As the moderator it is your responsibility to set the tone for the media briefing.

Have a predetermined message for each media briefing. If you do not have a message, you do not need a media briefing.

Provide correct spellings for any of the names with peculiar spellings. Ensure you state the person's position in the Unified Command.

Determine proper local pronunciations. (For example, Biloxi is pronounced Beh-lux-ee not Beh-lox-ee).

Set a time with your speakers prior to starting the media briefing. Stick to that time. Do not let any one person dominate the time during the media briefing. Take charge and use time as your authority.

Make yourself available at the end of the media briefing. This will build relationships and your trust and credibility with the members of the media attending your media briefing.

Moderator Script:
Welcome, Ladies and Gentlemen to today's (this morning's, tonight's) MEDIA BRIEFING.

We will be presenting information on _____ today.

With us today is _____.

We will begin today with some brief statements from the representatives of the Unified Command. Then we will open the floor to your questions. Because of on-going operations we will be available for _____ minutes today. Please allow time for everyone here to ask questions.

Following the media briefing, the Joint Information Center Staff and myself will be available to help you with any further needs.

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FIELD ESCORT EQUIPMENT AND COMMUNICATIONS CHECKLIST

Personal Protective Equipment	**Notes:**
☐ Hard Hat	
☐ Goggles	
☐ Gloves	
☐ Tyvek	
☐ Rubber Boots	
☐ Life Jacket	
☐ Respirator	
☐ Level A Suit	
☐ Self-contained Breathing Apparatus	

Communications	
☐ VHF Radio	
☐ Cell Phone	

Information	
☐ ICS 204	
☐ Latest situation status	
☐ Latest news release	

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OPENING STATEMENT FOR COMMUNITY RELATIONS INTERVIEWS

Example for Intercept Interview

Hello, my name is _____, and I'm from the Joint Information Center that is helping with the response to the incident (describe).

Do you live or work in this area?

We are asking a few community members to give us feedback on the incident.

We want to make sure we are getting you and all community members the information you want and need.

The questions will only take a few minutes to answer.

I can assure you that your answers will be kept in confidence.

First, let me ask…

Example for Telephone Interview

Hello, my name is _____, and I'm calling from the Joint Information Center that is helping with the response to the incident *(describ*e).

Is this (state telephone number)?

We are asking a few community members to give us feedback on the incident.

We want to make sure we are getting you and all community members the information you want and need.

The questions will only take a few minutes to answer.

I can assure you that your answers will be kept in confidence.

First, let me ask….

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SAMPLE MEDIA ADVISORY (MEDIA BRIEFING)

(Unified Command logos/names here)

Media Advisory

Date: (date)
Contact: Joint Information Center
(###) ###-####

(INCIDENT) RESPONSE MEDIA BRIEFING

WHAT: The (incident) unified command is holding a media briefing at the incident command post today to discuss (response topic).

WHEN: (time, day)

WHERE: (building name)
(room number, exact location)
(street address)
(city, state)
(telephone number)

PARTICIPANTS: (name, agency), Federal On Scene Coordinator
(name, agency), State On Scene Coordinator
(name, agency), Responsible Party

BACKGROUND: (incident summary, something happened at some place some day.)

Please visit www.incidentwebsite.com for incident response information.

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SAMPLE MEDIA ADVISORY (JIC ESTABLISHED)

(Unified Command logos/names here)

Media Advisory

Date: (date)
Contact: Joint Information Center
(###) ###-####

(INCIDENT) JOINT INFORMATION CENTER ESTABLISHED

(**CITY, State -**) A Joint Information Center has been established at (location) to disseminate response information for the (incident).

The media is requested to use the phone numbers listed below for incident response inquiries and interviews.

(###) ###-####
(###) ###-####
(###) ###-####

A website with incident response information can be found at the following URL:
www.incidentwebsite.com

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SAMPLE PUBLIC SERVICE ANNOUNCEMENT

(DR##)-DR-(STATE)-(PSA##)
(DATE)

DISASTER INFORMATION FROM:
(Organization)
(Street Address)
(City, State, Zip)

MEDIA CONTACTS:
JIC (PAO name) (phone)
(State Agency) (PIO name) (phone)

PSA: APPLY FOR DISASTER ASSISTANCE BY PHONE
Kill date: until further notice

:20 SEC

(STATE) (Pennsylvanians, Marylanders) WHOSE HOMES AND PROPERTY WERE DAMAGED BY THE RECENT (DISASTER) CAN APPLY FOR DISASTER ASSISTANCE BY PHONE. CALL THE JOINT INFORMATION CENTER TOLL-FREE AT 1-800-XXX-XXXX. IF YOUR HOME OR BUSINESS WAS DAMAGED BY THE (DISASTER)…AND IF YOU LIVE OR DO BUSINESS IN (COUNTY) OR (COUNTY)…YOU COULD BE ELIGIBLE FOR DISASTER ASSISTANCE…BUT YOU HAVE TO APPLY….CALL 1-800-XXX-XXXX. APPLY NOW.

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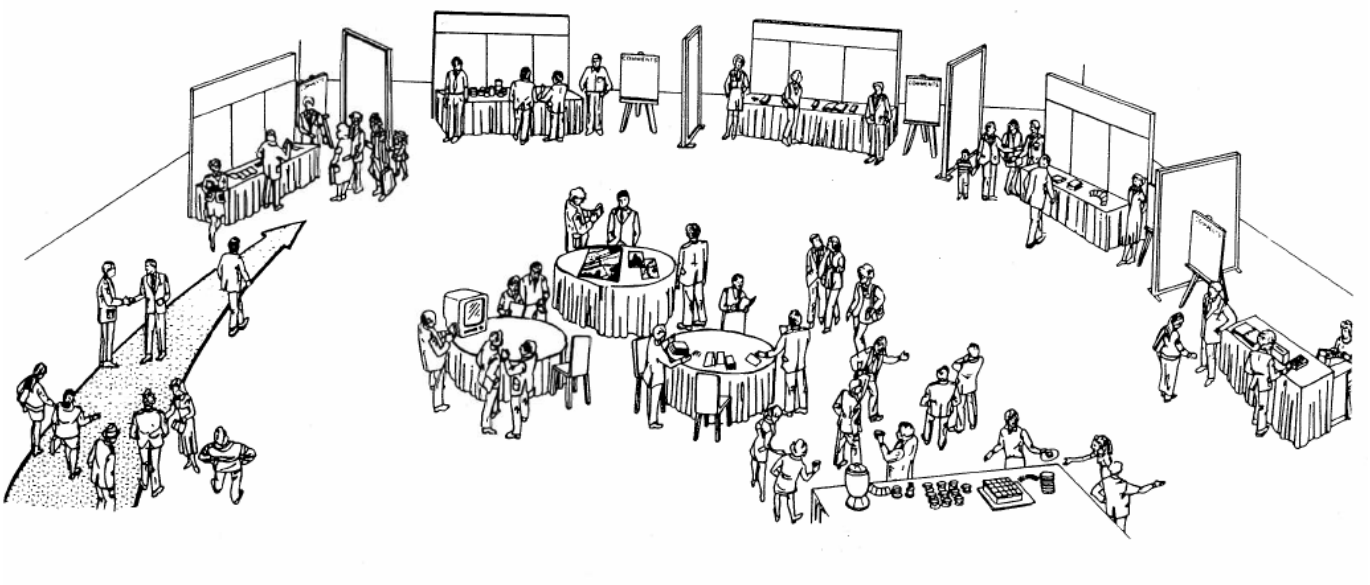
PUBLIC EXHIBIT AND DISCUSSION DIAGRAM – POSTER EXHIBITS/PUBLIC AVAILABILITY SESSION



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Appendix F: Acronyms

ACP: Area Contingency Plan

AOBD: Air Operations Branch Director

API: American Petroleum Institute

APIO: Assistant Public Information Officer

APR: Air/Purifying Respirator

AREP: Agency Representative

ASGS: Air Support Group Supervisor

ASOF: Assistant Safety Officer

BBL: Abbreviation for barrel

CAA: Clean Air Act

CDC: Center for Disease Control and Prevention

CEMP: Comprehensive Emergency Management Plan

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq); also known as Superfund

CFR: Code of Federal Regulations

CHEMTREC: Chemical Transportation Emergency Center (1-800-424-9300)

CHRIS: Chemical Hazard Response Information System

COLREG: (USCG) Collision Regulations

COML: Communications Unit Leader

COMP: Compensation/Claims Unit Leader

COR: (USCG) Certificates of Registry

COST: Cost Unit Leader

COTP: (USCG) Captain of the Port

CRWB: Crew Boss/Crew Supervisor

CVM: (NOAA) Contingent Value Methodology

CWA: Clean Water Act

Decon: Abbreviation for decontamination

DHHS: U. S. Department of Health and Human Services

DHS: U.S. Department of Homeland Security

DINS: Damage Inspection Technical Specialist

DIVS: Division/Group Supervisor

DMOB: Demobilization Unit Leader

DOCL: Documentation Unit Leader

DOD: U.S. Department of Defense

DOE: U.S. Department of Energy

DOI: U.S. Department of Interior

DOJ: U.S. Department of Justice

DOL: U.S. Department of Labor

DOSC: (USCG) Deputy Operations Section Chief

DOT: U.S. Department of Transportation

DPIC: Deputy Incident Commander

DPRO: Display Processor

DWT: Dead Weight Tonnage

EBBS: (USCG) Electronic Bulletin Board System

ENSP: Environmental Specialist

ENVL: Environmental Unit Leader

EOC: Emergency Operations Center

EPA: U.S. Environmental Protection Agency

EQ: Environmental Quality

ERT: Emergency Response Team

ESD: Emergency Shutdown Device

ESF: Emergency Support Function

FAA: Federal Aviation Administration

FACL: Facilities Unit Leader

FDUL: Food Unit Leader

FEMA: Federal Emergency Management Agency

FOBS: Field Observer

FOG: Field Operations Guide (for ICS)

FOSC: Federal On-Scene Coordinator

FSC: Finance/Administration Section Chief

FWPCA: Federal Water Pollution Control Act

GIS: Geographic Information System

GSA: General Services Administration

GSUL: Ground Support Unit Leader

HazCom: Abbreviation for Hazard Communications Program (29 CFR 1910.1200)

HAZMAT: Hazardous Materials

Hazwoper: Abbreviation for Hazardous Waste Operations and Emergency Response (29 CFR 110.120)

HSPD: Homeland Security Presidential Directive

IAP: Incident Action Plan

IBRRC: International Bird Rescue Research Center

IC: Incident Commander

ICP: Incident Command Post

ICS: Incident Command System

IDLH: Immediately Dangerous to Life or Health

IMAT: Incident Management Assistance Team

IMT: Incident Management Team

INTO: Intelligence Officer

JIC: Joint Information Center

LEL: Lower Explosive Limit

LNG: Liquefied Natural Gas

LNO: Liaison Officer

LOSC: Local On-Scene Coordinator

LPG: Liquefied Petroleum Gas

LSC: Logistics Section Chief

MARPOL 73/78: International convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978

MEDL: Medical Unit Leader

MSDS: Material Safety Data Sheet

MSHA: Mine Safety and Health Administration (federal)

NCP: National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300)

NEPA: National Environmental Policy Act

NGO: Non-Governmental Organization

NICCL: National Incident Communication Coordination Line

NIMS: National Incident Management System

NIOSH: National Institute for Occupational Safety and Health

NLS: Noxious Liquid Substance (33 CFR 151.47 or .49)

NMFS: National Marine Fisheries Service

NOAA: National Oceanic and Atmospheric Administration

NPRM: Notice of Proposed Rule Making (federal)

NRC: National Response Center; also Nuclear Regulatory Commission

NRDA: National Resource Damage Assessment

NRF: National Response Framework

NRT: National Response Team

NSFCC: National Strike Force Coordination Center

NSSE: National Special Security Events

NVIC: Navigation and Vessel Inspection Circular

OPA 90: Oil Pollution Act of 1990

OPBD: Operations Branch Director

OPS: Operations Section Chief

OSC: On-Scene Coordinator

OSHA: Occupational Safety and Health Administration (federal)

OSRO: Oil Spill Response Organization

P & I: Protection and Indemnity Club

PEL: Permissible Exposure Limit

PFO: Principal Federal Official

PIO: Public Information Officer

POC: Point-of-Contact

PPE: Personal Protection Equipment

PPM: Parts Per Million

PROC: Procurement Unit Leader

PSC: Planning Section Chief

PSI: Pounds Per Square Inch.

PSIG: Pounds Per Square Inch Gauge

RCRA: Resource Conservation and Recovery Act

RESL: Resource Unit Leader

RRT: Regional Response Team

RULET: Remediation of Underwater Legacy Environmental Threats Program

SARA: Superfund Amendments and Reauthorization Act of 1986

SCBA: Self-Contained Breathing Apparatus

SCKN: Status/Check-In Recorder

SCTL: Scientific Unit Leader

SIT: Spontaneous Ignition Temperature (SIT); also abbreviation for Situation

SITL: Situation Unit Leader

SO: Safety Officer

SOSC: State On-Scene Coordinator.

SPUL: Supply Unit Leader

SSC: (NOAA) Scientific Support Coordinator

STAM: Staging Area Manager

STEL: Short Term Exposure Limit

STORMS: Standard Oil Spill Response Management System

STVE: Strike Team Leader, Vessel

SUBD: Support Branch Director

SVBD: Service Branch Director

TAT: (EPA) Technical Assistance Team

TFLD: Task Force Leader

THSP: Technical Specialist

TIME: Time Unit Leader

TLV: Threshold Limit Value

TSCA: Toxic Substances Control Act

TSD: Treatment, Storage and Disposal Facility

TWA: Time Weighted Average

UC: Unified Command

UCS: Unified Command System

UEL: Upper Explosive Limit

USACE: U.S. Army Corps of Engineers

USCG: U.S. Coast Guard

USFS: U.S. Forest Service

USFWS: U.S. Fish & Wildlife Service

USGS: U.S. Geological Survey

USN: U.S. Navy

VOSS: Vessel of Opportunity Skimming System

VTS: (USCG) Vessel Traffic Service

WMD: Weapons of Mass Destruction

Annex NN

Response Resources

OSROs

Response Resource Inventory

OSRO Guidelines

United States Department of
Homeland Security

United States
Coast Guard

Guidelines for the U.S. Coast Guard Oil Spill Removal Organization Classification Program

December 2021

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Executive Summary

The revisions in the 2021 guidelines focus on maintaining the integrity of the program, and provide minor technical amendments to the guidelines. The largest changes to the guidelines provide policy clarifications on Temporary Storage capacity calculations, and to clarify the requirements for nonfloating oil classification equipment requirements.

Throughout the recent challenging and dynamic operational environment, response professionals across the country have demonstrated resilience and dedication to their craft, pioneering new strategies and innovations in communication and remote presence while maintaining exceptional performance standards.

Real-world incidents have shown that this program directly contributes rapid and well-coordinated responses. The OSRO classification does not guarantee performance, nor does the use of a Coast Guard-classified OSRO relieve plan holders of their responsibility to ensure the adequacy of response resources. **Plan holders must ensure their contracted OSRO, regardless of classification, is able to meet their planning requirements.** Plan holders must continue to conduct a plan-by-plan and vessel-by-vessel review of identified resources provided by their OSROs to validate that the resources available under the contract are sufficient to meet their planning requirements, even if an OSRO has a given classification for a specific operational area.

Although participation in the OSRO classification is voluntary, it is critical that participating OSROs ensure their resources are accurately reflected in the Response Resource Inventory (RRI) at all times. The success of the program relies on the real-time capture of OSRO capabilities at their specified OSRO sites, which determines the classifications that plan holders cite in their response plans. The Coast Guard is actively working to modernize and improve data entry within the RRI to ease the administrative burden on participating OSROs and to ensure that it meets the highest standards of cyber security requirements mandated by the federal government and our DoD partners.

As we continue to refine the connectivity between response and preparedness, stay tuned for future efforts to better connect these guidelines with our Preparedness Assessment Visits, Government-Initiated Unannounced Exercises, Area Contingency Plans, exercises, real-world events and RRI status—all in an effort to support the highest level of preparedness. We encourage all OSROs to provide input and lessons learned to CG-MER through their professional organizations and direct feedback to CG-MER and the NSFCC.

Thank you for all your continued commitment to oil spill response excellence and to the protection of the environment. While no one desires an incident, it is heartening to be able to rely on the expertise and professionalism of the oil spill response community.

Semper Paratus! Always Ready!

Captain, U.S. Coast Guard
Office Chief
Office of Marine Environmental Response Policy

Captain, U.S. Coast Guard
Commanding Officer
National Strike Force Coordination Center

CHAPTER 1. Classification Process and Requirements

A. OSRO Guidelines: A Brief History

1. Section 311(j) of the Federal Water Pollution Control Act (FWPCA), amended by section 4202 of the Oil Pollution Act of 1990 (OPA 90), requires the preparation and submission of response plans by the owners or operators of certain oil-handling facilities and for all vessels defined as "tank and non-tank vessels" (hereafter referred to as plan holders). Plan holders, through their response plans, must address the extremely complex system for assembling, mobilizing, and controlling response resources to maintain statutory compliance as well as being prepared to respond to oil spills within their area of operation. Plan holders are required to submit a response plan to the Coast Guard that identifies and ensures, by contract or other approved means, the availability of response resources (personnel and equipment) necessary to remove, to the maximum extent practicable, a worst case discharge (WCD), including a discharge resulting from fire or explosion, and to mitigate or prevent a substantial threat of such a discharge.
2. To relieve the burden upon the plan holders to provide extensive detailed lists of response resources, the Coast Guard created the Oil Spill Removal Organization (OSRO) classification program, administered by the National Strike Force Coordination Center (NSFCC), so that plan holders would be required to identify the OSROs only by name in their response plans, if the OSRO meets a plan holder's planning requirements. If the OSRO is classified by the Coast Guard, then its capacity has been determined to equal or exceed the response capability caps needed by a facility, tank vessel and non-tank vessel plan holders. In addition, OSROs voluntarily participating in the classification program must maintain detailed lists of response resources in the Response Resource Inventory (RRI), which is administered by the NSFCC.
3. The RRI is the backbone of the classification system and its capabilities are two-fold: an inventory element and a classification element. The inventory element provides Federal On-Scene Coordinators (FOSCs) and contingency planners the ability to query available spill response equipment and its proximity to Coast Guard Captain of the Port (COTP) zones. The classification element, largely considered an incentive for OSROs to enter their inventories into the RRI, complements Facility Response Plan (FRP) and Vessel Response Plan (VRP) development and review processes by systematically classifying OSRO response capability up to the response capability caps.
4. Historically, the Coast Guard based OSRO classification levels upon three categories: (1) feet of containment boom; (2) temporary storage capacity (TSC); and (3) skimmer capacity, which translated into an estimated daily recovery capacity (EDRC) measured in barrels per 24-hour period. In December 1995, the guidelines added classification based upon COTPs zones and specific operating environments.
5. In June 2002, the Coast Guard modified the guidelines to include classifying OSROs in six operating areas versus four, eliminating Average Most Probable Discharge (AMPD) classifications, and incorporating Maximum Most Probable Discharge (MMPD) through WCD Tier 3. In addition, the guidelines introduced Alternate Classification Cities (ACCs) within COTP

zones to stimulate increases in classified OSRO coverage. Further, the guidelines added time delivery parameters to calculate response times based on whether or not companies had personnel on-site 24 hours a day, capable of mobilizing and deploying equipment upon notification, and whether or not the equipment being used was owned, contracted, or obtained for company use by other approved means.

6. In 2019, the Coast Guard modified the guidelines to bring them into compliance with regulatory requirements and to eliminate exceptions and waivers which were not permissible under the existing statutes/regulations. The guidelines clarified that the alternative compliance program consistent with 33 CFR §§ 154-155 continued to remain a part of the guidelines.

7. In a collaborative process with the maritime response industry, BSEE has introduced a set of response system planning calculators which provide the Estimated Recovery System Potential (ERSP) of the response plan. The Coast Guard recognizes the value of these calculators as a planning tool, and is actively working to develop near-shore and coastal ERSP calculators to assist planholders in identifying and meeting their planning goals. Existing regulations within 33 CFR §§154, 155 mandate the use of Effective Daily Recovery Capacity (EDRC) to evaluate response equipment, and these guidelines continue to use EDRC as a key performance metric. Although not required for classification, the Coast Guard encourages OSRO and planholders to evaluate their plan performance through multiple methods; including ERSP (where applicable).

B. Significant Revisions to the OSRO Guidelines

1. The most significant revision in this edition clarifies the intent of the contracted Temporary Storage Capacity calculations, located in Chapter 3.F.2. Like dedicated storage, non-dedicated temporary storage may only be counted towards the classification requirements when it is available to meet response time requirements. Therefore, non-dedicated storage must be regularly operated within the COTP zone or ACC in order to meet the requirements of 3.F.2.

2. These guidelines also add a clarification in Chapter 6 covering Nonfloating Oil OSRO applications. Applicants for a Nonfloating Oil classification must maintain an equipment inventory sufficient to perform services across the full range of the operating area and operating zone sought. Classifications will not be given for partial capabilities (e.g., response capabilities only for shallow water areas <6ft). OSROs must demonstrate the capability to respond to all areas and conditions where nonfloating oil response operations may take place within that zone, and must provide an equipment inventory which demonstrates the capability to work in a variety of water depths, conditions, and bottom types.

C. Application Process

1. Any OSRO may voluntarily apply for classification by contacting the NSFCC. Participation in the OSRO classification program is voluntary; however, once an OSRO chooses to participate in the classification program, full compliance is mandatory in order to maintain the classification.

2. The RRI website can be found at the following link: https://cgrri.uscg.mil/logon.aspx?ReturnUrl=%2fdefault.aspx.

3. OSROs should review the guidelines prior to applying as each classification program has specific requirements. Guidance regarding this program may be obtained from:

   Commanding Officer
   National Strike Force Coordination Center
   ATTN: Response Resource Assessment Branch
   1461 North Road Street, Elizabeth City, NC 27909-3241
   Tel: (252) 331-6000 / Fax: (252) 331-6012
   Email: D05-SMB-NSFCC-RRI@uscg.mil
   http://www.uscg.mil/hq/nsfweb/nsf/nsfcc/ops/ResponseSupport/RRAB/rrab.asp

4. NSFCC assigns classification based on the information supplied by each OSRO. Participation in the RRI is mandatory for an OSRO to receive classification. For an application to be accepted, an OSRO must complete all pertinent RRI data fields.

5. For a majority of the classification programs, the NSFCC utilizes the response times, discharge quantities, and equipment requirements specified in the FRP and VRP regulations and in these guidelines to determine the appropriate classification(s) for each COTP zone or ACC requested by an OSRO. For all classifications, OSROs requesting new classification should complete the initial registration and equipment entry into the RRI and provide the NSFCC with a complete response equipment inventory list. For the nonfloating oil classification, OSROs should complete the application outlined in Chapter 6 and, upon approval from the NSFCC, enter their nonfloating response equipment inventory list into RRI.

6. Following the classification assessment by the NSFCC, the NSFCC will schedule an initial Preparedness Assessment Visit (PAV) with the applicant. The NSFCC will coordinate with the appropriate COTP and District Response Advisory Team (DRAT) to schedule the PAV.

7. An OSRO may withdraw from the participating in the classification program at any time with written notice to the NSFCC. However, in order to return to the program, the OSRO will be reevaluated through the full application process

8. The following figures depict the evaluation and review process for becoming a classified OSRO. The timelines depicted below do not begin until the NSFCC receives all necessary documentation.

Figure 1-1: OSRO Classification Review Process

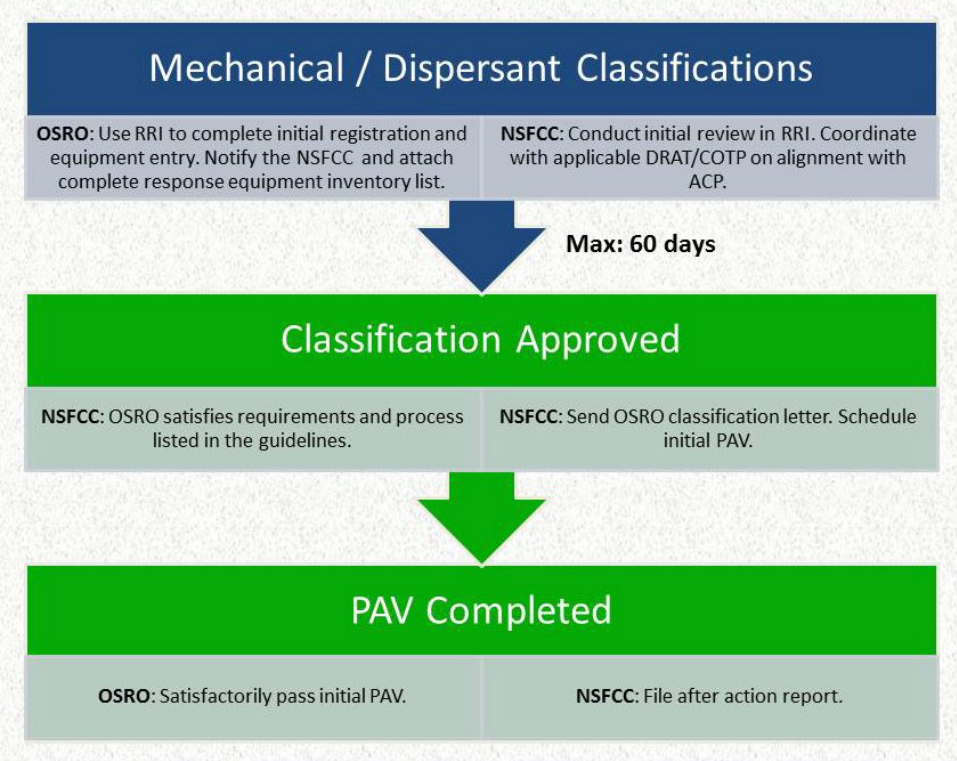
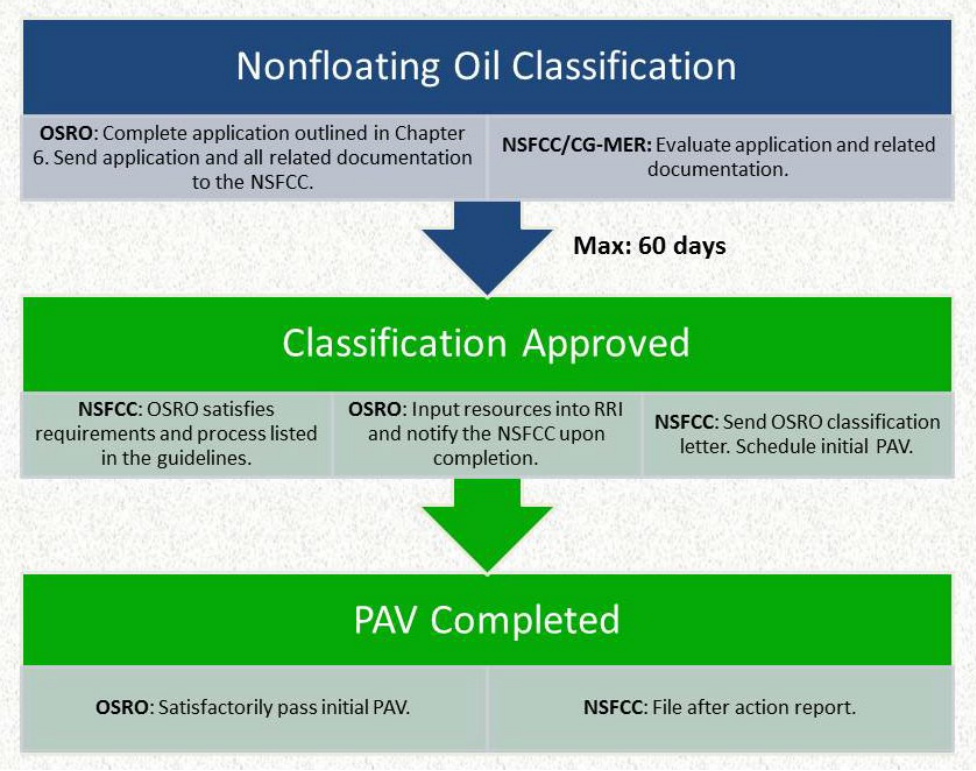


Figure 1-2: OSRO Nonfloating Oil Classification Review Process



D. Alternative Compliance

1. **Alternative Compliance Background:** Previously, an OSRO was able to submit for an optional acceptable classification for EDRC, travel speed, TSC, and boom. However based on a regulatory review, the optional acceptable classification program ended. In its place, OSROs may apply for an alternative compliance if an OSRO feels that one or more of the alternative calculations allowed by regulations are applicable and necessary. OSROs shall also document if their alternative compliance request relates to an approved or pending alternative planning criteria. OSROs shall submit requests electronically or in writing to the NSFCC. OSROs or plan holders seeking alternatives for categories other than what is in Table 1-1 should use the Alternative Planning Criteria process.

Table 1-1: Acceptable Alternative Compliance and Regulatory Citations

Category	Response Plan Regulations	
	Facility	Vessels
	33 CFR § 154	33 CFR § 155
EDRC	Appendix C, Section 6.3	Appendix B, Section 6.3
Travel Speed	Appendix C, Section 2.6	Appendix B, Section 2.6
TSC	Appendix C, Section 9.2	Appendix B, Section 9.2

2. **Alternative Compliance Procedures:**

   a. Any approved alternative compliance will be valid for a maximum of three years. Six months prior to expiring, the NSFCC will notify the OSRO either to reapply for the alternative compliance or to update their resources in RRI to reflect that the alternative compliance is no longer necessary.

   b. After the OSRO has sent the alternative compliance request to the NSFCC either by mail or electronically, the NSFCC will solicit input from the applicable COTP, District, Area, and Coast Guard Office of Marine Environmental Response Policy (CG-MER) prior to making an approval decision within 60 days of receiving all required documentation.

3. **Estimated Daily Recovery Capacity (EDRC):**

   a. 33 CFR § 154 Appendix C and 33 CFR § 155 Appendix B allow OSROs to submit an alternative compliance for EDRC on behalf of plan holders via the instructions in the regulations cited in Table 1-1 of these guidelines.

   b. OSROs or plan holders submitting these requests must provide the appropriate documentation requested in the regulations; including the specific tests utilized and the results for the specific class of equipment requested, or provide verified performance data from real-world operations.

4. **Vessel Speeds**: For classification purposes, the regulation calculates vessel speeds using the planning speed criteria of 5 knots (kts). The speed of five kts is a conservative planning criterion which is specified in 33 CFR § 154 and § 155 and takes into account mobilization time and environmental factors. However, OSROs that demonstrate that a vessel can consistently and safely perform at speeds greater than five kts may request their classification(s) be determined using an alternative transit speed. Alternative speeds are most likely to apply to large vessels such as Oil Spill Response Vessels (OSRVs), tugboats, and barges.
    a. OSROs who wish to use alternative transit speeds for water transit shall submit their alternative compliance requests electronically or in writing to the NSFCC. The requests should specify the individual vessel(s) the alternative speeds will apply to and must, at a minimum, include the following documentation:
        (1) Logs and records indicating vessel speed over various routes;
        (2) Charts indicating routes and distance transited; and
        (3) Mobilization plan (including personnel recall numbers).
    b. Upon concurrence, the NSFCC will factor in the alternative speeds when determining the OSRO's classification for the applicable vessels. If the OSRO has already received a classification, the information will be used to revise that classification.
5. **Vehicle Speed**: No request for alternative over-the-road speeds will be accepted. The set planning standard for over-the-road vehicles is 35 mph. The NSFCC sets this speed based on external factors such as average speed limits and traffic, so actual mechanical ability does not increase the planning standard.
6. **Aircraft Speed:** For classification purposes, the regulation calculates aircraft using the planning speed of 100 kts. If OSROs demonstrate an aircraft can perform at speeds greater than 100 kts safely, they can request an alternative compliance for transit speed.
    a. OSROs that wish to use alternative transit speeds for air transit shall submit their requests electronically or in writing to the NSFCC. The requests should specify:
        (1) Logs and records indicating aircraft speed over various routes;
        (2) Confirmation that they have reviewed and are abiding by all applicable Federal Aviation Administration (FAA), state and local regulations and policies; and
        (3) Charts indicating routes and distance transited.
    b. Upon concurrence, the NSFCC will factor in the alternative speeds when determining the OSRO's classification for the applicable aircraft and COTP zones. If the OSRO has already received a classification, NSFCC will use the information to revise the classification.
7. **Temporary Storage Capacity**: 33 CFR § 154 Appendix C and 33 CFR § 155 Appendix B allow OSROs to submit an alternative compliance for TSC on behalf of plan holders via the instructions in the regulations cited in Table 1-1 of these guidelines.

E. Alternate Classification Cities Program

1. Traditionally, OSRO capability has been measured from COTP zones identified in 33 CFR §

3.05-10 through 33 CFR § 3.85-15. Recognizing that commercial operation often occurs in ports other than the COTP zones, the Coast Guard has identified ACCs. ACCs are Coast Guard designated locations used in addition to the zone in which the COTP is located for classifying OSROs. ACCs help to alleviate the concern that, in larger COTP zones, a spill could occur at a greater distance from the COTP zone to which an OSRO could not respond within the regulatory timeframes. However, regulation requires the plan holder to calculate response times using the location the vessel operates farthest from the storage location of the OSROs response equipment. This may not be the COTP city or the ACC. It may be an area offshore.

2. The following ACCs are geographic locations within the United States that have been designated to fill coverage gaps between COTP zones:
   a. Cape Fear River, NC; COTP North Carolina
   b. Huntington, WV; COTP Ohio Valley
   c. Paducah, KY; COTP Ohio Valley
   d. Panama City, FL; COTP Mobile
   e. Port Canaveral, FL; COTP Jacksonville
   f. Toledo, OH; COTP Detroit
   g. Cleveland, OH; COTP Buffalo
   h. Oswego, NY; COTP Buffalo
   i. Marquette, Ml; COTP Sault Ste. Marie
   j. Traverse City, MI; COTP Sault Ste. Marie
   k. Alpena, MI; COTP; Sault Ste. Marie
   l. Chicago, IL; COTP Lake Michigan
   m. Eureka, CA; COTP San Francisco
   n. Morro Bay, CA; COTP Los Angeles/Long Beach
   o. Cape Flattery, WA; COTP Puget Sound
   p. Coos Bay, OR; COTP Columbia River
   q. Portland, OR; COTP Columbia River
   r. American Samoa; COTP Honolulu
   s. Adak, AK; COTP Western Alaska
   t. Kodiak, AK; COTP Western Alaska
   u. Prudhoe Bay, AK; COTP Western Alaska
   v. Nome, AK; COTP Western Alaska
   w. Unalaska, AK; COTP Western Alaska

x. Ketchikan, AK; COTP Southeast Alaska
y. Sitka, AK; COTP Southeast Alaska
z. Yakutat, AK; COTP Southeast Alaska
aa. Aberdeen, SD; Inland ACC
bb. Denver, CO; Inland ACC
cc. Gallup, NM; Inland ACC
dd. Lincoln, NE; Inland ACC
ee. Lubbock, TX; Inland ACC
ff. Miles City, MT; Inland ACC
gg. Missoula, MT; Inland ACC
hh. Oklahoma City, OK; Inland ACC
ii. Salt Lake City, UT; Inland ACC
jj. Saipan; COTP Guam
kk. Lewes – Lower Delaware Bay; COTP Delaware Bay
ll. Akutan; COTP Western Alaska
mm. Sand Point; COTP Western Alaska
nn. Atka-Nazan Bay; COTP Western Alaska
oo. Shemya Island – Alcan Harbor; COTP Western Alaska
pp. Buldir Pass; COTP Western Alaska
qq. Amchitka Pass; COTP Western Alaska
rr. Sanak Island; COTP Western Alaska
ss. Attu Transit Zone; COTP Western Alaska
tt. Amukta Pass; COTP Western Alaska
uu. King Cove; COTP Western Alaska
vv. Attu Island; COTP Western Alaska
ww. St. Thomas; COTP San Juan
xx. St. Croix; COTP San Juan

3. OSROs wishing to provide services for plan holders in areas where it may be appropriate to determine classification using an ACC should send all requests for ACC designations to the NSFCC. The NSFCC consults with the applicable COTP and CG-MER as they review requests and establish new ACCs.

F. OSRO Exercises

1. Both the FRP and VRP regulations require plan holders to conduct annual equipment deployment exercises involving the OSROs listed in their response plans pursuant to 33 CFR § 154.1055 and 33 CFR § 155.1060. An OSRO who is listed as the primary response organization in a response plan and wishes to obtain and maintain a classification shall participate in, record, and maintain documentation of these completed exercises.
2. For OSROs using a combination of owned and contracted resources to meet the requirements for classification, exercises should include both categories of resources working together and integrating separate system components provided by multiple OSROs.
3. In addition to equipment deployment, exercises should include mobilization, transportation and logistics support aspects, especially as they relate to WCD Tier 1 resources.
4. While implementing plan holder exercise requirements per 33 CFR § 154.1055 and/or 33 CFR § 155.1060, 40 CFR § 300.212, or while implementing NPREP exercises, to the maximum extent practicable, OSROs are encouraged to work with plan holders, COTPs, and Area Committees to hold equipment deployment exercises in conjunction with annual spill management team and area exercises. Additionally, OSROs are encouraged to use these exercises as an opportunity to validate response strategies contained in response and contingency plans.

G. Personnel Training

1. The FRP and VRP regulations require plan holders to ensure response personnel are trained to perform their jobs in alignment with 33 CFR § 154.1050, § 155.1055, and § 155.5055. The OSRO classification program requires an OSRO to provide similar assurances. OSROs must conduct periodic training to reinforce required knowledge.
2. An OSRO should provide confirmation that it has identified the skills necessary to demonstrate in a response and show that personnel have received the proper training to perform in those areas. Training records and descriptions of the methods in which training is delivered to personnel shall be available for review. An effective response training program should include, but is not limited to, the following:
    a. Actions to take in accordance with designated job responsibilities;
    b. Occupational Safety and Health Administration (OSHA) requirements outlined in 29 CFR § 1910.120;
    c. A clear, streamlined communication program; and
    d. Training on specific response equipment identified in the OSRO application for all classification programs.
3. OSROs shall maintain training records for three years following completion of the training. All records must be available for review during a PAV.

H. Equipment Maintenance

1. An OSRO must ensure that response resources listed in its application are inspected periodically and maintained in good operating condition in accordance with the manufacturer's recommendations, best commercial practices, and as per 33 CFR § 154.1057, § 155.1062, and §

155.5062. This includes ancillary equipment, such as hoses, secondary pumps and trailers. OSROs should have a clear, preventative and corrective maintenance system in place. Furthermore, OSROs must document all inspections and maintenance and maintain the records for three years. All maintenance records must be available for review during the PAV.

I. Resource Requirements

1. The number of personnel needed to support a response depends on numerous factors. For the OSRO classification program, the number of personnel required for a classification for each COTP zone or ACC is based on the location of resources and certain environmental and geographic factors. During the application process, through the RRI, an OSRO will identify, per the guidance contained herein, the number of personnel required to mobilize and operate the resources at each of its resource sites.
2. Each site that meets the time requirements for a classification should have its personnel requirements totaled for that classification. If the OSRO has identified sufficient personnel that meet the response time requirements and concurrently deploys and operates all equipment necessary for that level of classification, then an OSRO qualifies for the resource requirement of that specific classification.
3. Resources counted for OSRO classification can be owned or contracted and dedicated or non-dedicated. Since non-dedicated resources may not be available to respond immediately, extended notification and mobilization times are assigned to these resources. FRP and VRP regulations require plan holders to ensure the availability of response resources by contract or other approved means. OSROs must meet these same requirements for all response resources (dedicated, non-dedicated, owned and non-owned equipment and personnel) that they claim for classification purposes. The resource owner should list all contracted equipment in the RRI prior to an OSRO listing a resource as contracted.
4. OSROs shall ensure the resource information in the RRI is accurate to maintain classification and service plan holders.
5. A full and up-to-date inventory in the RRI will help COTPs and Area Committees know what response resources are available in their zones. Though not a requirement, Coast Guard requests that OSROs enter their full equipment inventory into the RRI, and not just the minimum needed for classification.

J. Response Times

1. OSROs are required to meet certain response times as per 33 CFR § 154.1045, § 154.1047, § 155.1050, § 155.1052, § 155.5050 and § 155.5052. The regulations set the response times for classification; the RRI standardizes the classification through a series of calculations. To receive a classification for a specific COTP zone or ACC, an OSRO must ensure its resources and trained personnel are able to meet the specified response times in that area.
2. Plan holders are required to use OSROs that are able to respond with resources from where they are stored to the incident location in accordance with various regulations in 33 CFR 154 and 155. The Coast Guard uses criteria in regulation to determine response times to the COTP city and ACCs when determining classification. A plan holder is then required to determine the

response time to the facility location or vessel location farthest from the response equipment storage site when different from the COTP city or ACC.

3. The RRI computes response times for the Mechanical and Dispersant classification programs by combining the notification times, mobilization times, and travel times of the resource sites used for a specific classification. Response plan regulations require the plan holder to include the time for notification, mobilization, and travel when computing response times (33 CFR § 154 Appendix C, paragraph 2.6 and 33 CFR § 155 Appendix B, paragraph 2.6). Therefore, the time needed for a resource to move from its primary staging site to a classification point is the sum of the notification, mobilization, and travel times.

4. Mobilization is the time it takes to get the resources assembled and prepared at the staging site. Mobilization begins once notifications are complete and ends when the resources are ready to move off-site. The time to notify and mobilize resources at a site is largely based on how much control the OSRO has over those resources (i.e., dedicated, non-dedicated, owned and contracted). For this reason, different mobilization times are used for calculating OSRO classifications based on resource status (see Table 1-2 below). Using this table, an OSRO determines the notification/mobilization time for each response resource included in its application, and provides that information on the status of each response resource during the application process. *Note: Full-time personnel are a dedicated resource; part-time personnel are a non-dedicated resource. On-site indicates a 24-hour staffed resource site, as opposed to personnel who have to be recalled. Also, add one half hour to response time to account for the time between the discovery of discharge and the notification to the OSRO.*

Table 1-2: Resource Notification/Mobilization Response Times in Hours

Resource Status	Response Personnel Availability	
	On-Site (OS)	Recall (R)
Owned/Dedicated (O/D)	1	2
Contract or Dedicated (C/D)	1.5	2.5
Owned/Non-dedicated (O/ND)	2.5	3.5
Contract /Non-dedicated (C/ND)	3	4

5. Travel times are computed using standard speeds and the highway or water distance between an OSRO site and a COTP office address or coordinates of the ACC. The distance is calculated in a direct line, but it is the responsibility of the plan holder, in coordination with the OSRO, to ensure the response resources can arrive within the timelines specified in applicable regulations.

6. As previously mentioned, the regulation uses travel speeds of 35 miles per hour (mph) for land, 5 kts for water, and 100 kts for aircraft for OSRO classification calculations. The regulation divides the distance by the speed to determine the travel time using the equation below. The total response time assigned to each site is the sum of the notification time, mobilization time, and travel time to the geographic point.

Travel Time = (Distance between OSRO Site and COTP Zone or ACC) / Travel Speed
Total Response Time = Notification Time + Mobilization Time + Travel Time

K. Status Changes in Equipment or Capabilities

1. Once classified, an OSRO shall report any significant changes made to its response resources to the NSFCC and COTP within 72 hours.
    a. The regulation defines "significant changes" as a reduction in the OSRO's classified capacity by a factor of 10% or greater, for a period of 48 hours or longer.
    b. Additional changes should also be updated in the RRI within 72 hours in the case of moving equipment from one site location to another site or deleting equipment that is no longer functioning that could impact classification.
2. Reductions in OSRO capabilities caused by surging of equipment into another COTP zone during a response may result in a loss of OSRO classification if it drops their capabilities below their classification threshold.
3. For changes in coverage due to planned maintenance that will exceed 48 hours, the OSRO should provide NSFCC , the appropriate COTP(s) and its plan holders using their resources, with as much advance prior notice as possible along with a description of the reduction in capability and any proposed mitigating measures.
4. The NSFCC reviews any mitigating measures submitted by an OSRO and either approves, proposes, or requests more information from the OSRO. The NSFCC, in consultation with the applicable COTP and CG-MER, determines if the OSRO needs to provide additional mitigating measures based on the amount of time the equipment is to be out of service, the expected decrease in coverage, and the areas impacted. If mitigating measures are approved, the NSFCC will coordinate notifications to affected COTPs. Any mitigating measures implemented by an OSRO should commence prior to the start of the planned gap. If the mitigating measures do not meet the requirements for classification, then the OSRO will lose its classification until it restores full coverage.
5. The RRI has a feature that notes when an OSRO site has been verified last by a user from the OSRO. This new mechanism will notify the NSFCC when an OSRO site's inventory has not been updated or verified in the last six months. If this occurs, the NSFCC will contact the OSRO and prompt them to verify the site's inventory.

L. OSRO Guidelines Biannual Review

The NSFCC and CG-MER shall conduct a biannual review and update process of the *Guidelines for the U.S. Coast Guard Oil Spill Removal Organization Classification Program*.

CHAPTER 2. Preparedness Assessment Visits (PAV)

A. Introduction and Purpose

1. PAVs are a critical component of the oil spill response preparedness system, providing on-site verification of resources and their condition.
2. NSFCC, DRAT, and COTP personnel shall collaborate with industry representatives on PAVs to ensure thorough oversight and awareness of the OSROs (and their capabilities) within their area of responsibility.
3. The PAV program encompasses various stages geared towards classifying OSROs for specific response thresholds, ensuring OSRO resources are consistent with classifications, examining equipment systems, and reviewing maintenance and training programs.
4. The Coast Guard may visit each location listed in the OSRO's application to account for and verify all listed resources, including both owned and contracted equipment and locations.
5. The following guidance within this chapter provides OSROs with an overview of the PAV process and a basic framework of what to expect during a PAV.

B. Roles and Responsibilities

1. CG-MER serves as the program office for the OSRO classification program. CG-MER shall:
   a. Provide the NSFCC with requested VRP information to include, but not limited to, which OSROs serve as resource providers for vessel plan holders, which COTP zones the vessels operate in, and any other related information;
   b. Assist the NSFCC with coordinating or conducting PAVs when requested by the NSFCC, and shall attend two PAVs annually; and
   c. At the beginning of every fiscal year, facilitate a PAV scheduling conference call between CG-MER, the NSFCC, and DRAT Supervisors.
2. The Commanding Officer of the NSFCC serves as the Administrator of the OSRO classification program, including all components of the PAV process. The NSFCC leads or coordinates all PAVs. In addition, the NSFCC shall:
   a. Maintain a list of OSROs, their classification status (if applicable), and when they last received a PAV;
   b. Annually schedule PAVs. Ensure DRATs and COTP personnel have access to the PAV schedule;
   c. Schedule and coordinate spot check PAVs when requested by DRAT or COTP;
   d. Notify applicable DRATs and COTP personnel to assist with application process outlined in Figures 1-1 and 1-2 of these guidelines;
   e. Ensure DRATs and COTP personnel have access to RRI and other applicable PAV documentation in advance of a scheduled PAV;

f. Notify OSROs of a scheduled PAV, or spot check PAV, and designate one point of contact for OSROs to communicate questions beforehand;

g. Complete an After Action Report (AAR) for each COTP zone or ACC, and archive and send it to CG-MER, the applicable DRAT, and COTP;

h. Brief the COTP upon completion of a PAV and assist with the identification of OSRO equipment shortfalls or issues;

i. Lead or facilitate coordination of PAV spot checks within COTP zones or ACCs; and

j. Notify CG-MER of changes to classifications based on new input and determinations from PAVs

3. The DRAT Supervisor, or their representative, shall serve as the District representative for PAVs and shall work with the FOSC, COTP personnel, National Strike Force (NSF) representatives, and other federal, state, local, and tribal stakeholders to optimize District pollution response preparedness. DRAT Supervisors (or their representative) shall:

   a. Maintain a comprehensive knowledge of OSRO inventories located throughout the District;

   b. Provide the District Commander and COTPs information on pollution response equipment capabilities, strategies, and operations;

   c. Assist the NSFCC with PAV coordination and when operationally available, assist with the PAV;

   d. Assist the NSFCC with the COTP brief upon completion of a PAV;

   e. Identify District response equipment shortfalls, including the identification of any challenges associated with cascading equipment into or within the District;

   f. Coordinate with the NSFCC to schedule a spot check PAV when the DRAT/COTP determines a spot check PAV is needed; and

   g. Brief results of PAV spot checks, upon completion, to the NSFCC and COTP.

4. COTPs should provide, when operationally available, representatives to assist with a PAV. Also, COTPs shall:

   a. Upon request from the NSFCC or DRAT, provide the NSFCC or DRAT with required FRP information to include, but not limited to, which OSROs serve as resource providers for facility plan holders, and any other related information;

   b. Notify the DRAT when a PAV spot check is deemed appropriate;

   c. Provide feedback to the NSFCC and DRATs if they observe discrepancies during an actual response or exercise.

5. The NSFCC and CG-MER shall coordinate on all decisions that affect the OSRO classification program and the PAV process.

C. Types and Frequency of Preparedness Assessment Visits

1. To clarify roles and responsibilities, the following is a list and broad overview of the types of PAVs and expected participants:

   a. **Routine PAV** – Participants: NSFCC (lead), DRAT, servicing NSF team and COTP personnel. A routine PAV verifies response equipment listed within RRI and the OSRO's application for classification at the time of the visit. The Coast Guard will assess OSROs using the process outlined in Sections D through G of this chapter within the scheduled COTP zone or ACC.

      (1) **Frequency** – An OSRO should expect one routine PAV every four years. The Coast Guard schedules these PAVs based on higher volume port areas (HVPAs), National Preparedness for Response Exercise Program (PREP) exercise schedule, high-risk geographic locations, COTP zones, Government-Initiated Unannounced Exercise (GIUE) performance, ACCs and upon specific requests from a District Commander or COTP. The COTP reserves the right to increase the frequency of PAVs or conduct PAV spot checks within their respective zone and shall coordinate directly with the NSFCC.

      (2) **Other Government Agency (OGA) Equipment Verifications (EVs)** - Other agencies have initiated the development of their own equipment verification programs. To strengthen interagency collaboration while reducing a duplicative burden on the OSROs, the Coast Guard should coordinate with its interagency partners prior to conducting PAVs. The Bureau for Safety and Environmental Enforcement (BSEE), the U.S. Environmental Protection Agency (EPA), and the Pipeline and Hazardous Materials Safety Administration (PHMSA) have all initiated their own equipment verification programs.

   b. **PAV Spot Checks** – Participants: NSFCC (coordinator), DRAT, servicing NSF team and COTP personnel. PAV spot checks are conducted on OSROs that participate in the program. PAV spot checks verify requirements outlined in Sections D through G of this chapter and that the equipment listed within RRI is up to date. PAV spot checks may be utilized to verify corrective action when prior OSRO system or documentation discrepancies are recorded during a past PAV, exercise, or response, or at the discretion of the COTP. PAV spots check may occur announced or unannounced.

      (1) **Frequency** – Contact NSFCC in order to conduct a PAV spot check. At the beginning of every fiscal year, the NSFCC, CG-MER, and DRATs will meet to coordinate PAV spot checks. Once the dates for the aforementioned PAVs, verifications for alternatives, and interagency equipment verifications are finalized, the PAV spot checks will be individually scheduled between each DRAT and their COTPs when operationally feasible. PAV spot checks are mutually (COTP/DRAT) determined based on risk, personnel availability, and feedback from COTPs concerning the requested quantity of PAV spot checks and how many OSRO sites can be assessed.

D. Preparedness Assessment Visit Process

1. Once the NSFCC or PAV team schedules the PAV for an owned and/or contracted OSRO site, the PAV team lead will print the OSRO's RRI data for that particular location. OSROs shall notify the PAV team lead or the NSFCC as soon as possible if unscheduled operations or other challenges may limit the scope or timing of the PAV.

2. Prior to visiting the OSRO site, the PAV team should review the classification(s) that particular OSRO holds and the associated guidance contained within these guidelines. At the minimum, the PAV team shall complete the following process:
   a. Complete a visual survey of all listed resources and operate at least 10% of listed equipment systems to ensure satisfactory condition and function to include (when applicable):
      (1) Boom;
      (2) Vessels;
      (3) Skimmers;
      (4) Vacuum systems;
      (5) Product transfer pumps;
      (6) Temporary storage;
      (7) Dispersants;
      (8) Dispersant delivery systems;
      (9) Aerial oil tracking aircraft (manned or unmanned);
      (10) Nonfloating oil resources (detection, recovery);
      (11) Shoreline cleanup resources; and
      (12) Miscellaneous OSRO equipment (e.g., salvage and marine firefighting equipment, hazardous material response equipment, oil-water separators).
   b. Ensure response resources are properly maintained. Verify that a preventative and corrective maintenance system is in place. Validate maintenance-related documentation.
   c. Verify the OSRO personnel listed as available and trained to mobilize, deploy, and operate the equipment.
   d. Verify compliance with all Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements listed in 29 CFR § 1910.120 and ensure documentation accurately reflects all listed personnel who have satisfactorily completed HAZWOPER.
   e. Verify the response inventory's operability and logistic support capability. Where applicable, review the site's logistic narrative and determine the status of the support services listed in the narrative (e.g., equipment rentals, commercial drivers, personnel services) plus their ability to mobilize and sustain the resources.
   f. Verify records of exercise participation, including AARs or lessons learned, to ensure the OSRO continues to improve operations and is rectifying previous areas of concern.
3. While the aforementioned process is the primary framework, it is not all-inclusive. The Coast Guard PAV team lead may determine a more in-depth look is required to verify a specific component in the OSRO's operation.

E. Personnel Training

1. The Coast Guard verifies that response personnel at the resource site are trained in accordance with HAZWOPER regulations (29 CFR § 1910.120) and other job-specific requirements (e.g., commercial driver's license (CDL), diver certifications or merchant mariner credential) by conducting a review of personnel training records located at the OSRO site.
2. Prior to the Coast Guard's visit, the OSRO should review personnel records and subcontracting or consulting agreements to verify the number and availability of trained personnel listed within the RRI. The OSRO should provide these records to the Coast Guard upon request.

F. Examination of Equipment Systems and Maintenance Records

1. The PAV conducts a review of the OSRO's listed resources as required by the appropriate classification program and level. When completing the visual equipment survey, the Coast Guard will examine equipment systems from each classification category. All systems that count toward classification should be in working order and able to be deployed into the marine environment. While PAVs are not an operational equipment deployment exercise, the verification of the equipment's ability to function properly is key. During the PAV, if an OSRO cannot account for the equipment's proper operation (recent spill or exercise), they may be required to operate one or more systems for the PAV team. PAV team leads are encouraged to operate equipment as "systems" rather than as individual components of a system (i.e., testing compatible pumps and skimmers)
2. In addition to a physical examination of equipment systems, the PAV team will conduct a review of all applicable equipment maintenance record as required by 33 CFR § 154.1057, 33 CFR § 155.1062, and 33 CFR § 155.5062. Records should be maintained on-site at manned locations, and include the equipment maintenance history and proof of ownership, lease, or subcontract. At unmanned sites with staged equipment, the OSRO should have equipment maintenance records readily available.

G. Preparedness Assessment Visit Equipment Criteria

1. The PAV team should consider, when applicable, the following criteria (not all-inclusive):
    (1) Boom:
        (a) Overall condition;
        (b) Evidence of ownership, lease, or subcontract;
        (c) Manufacturer, type, and quantity;
        (d) Compatibility of connectors;
        (e) Number and adequacy of anchors;
        (f) Transportability;
        (g) Planned operating area(s); and
        (h) Condition of shoreline cleanup boom.
    (2) Recovery Devices (Skimmers and Vacuum Trucks):

(a) Evidence of ownership, lease, or subcontract;

(b) Manufacturer, type, model, and throughput capacity;

(c) Compatibility of components (e.g., hoses, suction and skimmer head, couplings and connectors);

(d) Operability and maintenance;

(e) Condition of the prime mover and other supporting equipment;

(f) Holding capacity;

(g) Planned operating area(s); and

(h) Condition of shoreline cleanup boom.

(3) Oil Spill Response Vessels (Skimmers, Barges, and Support Craft):

(a) Evidence of ownership, lease or subcontract;

(b) Operability and maintenance;

(c) Storage capacity, shelf life and/or expiration date;

(d) Inspection/certification;

(e) Planned operating areas;

(f) Grade of oil carried;

(g) Offload capability; and

(h) Length, beam, draft, range, transit speed and crew size.

(4) Temporary Storage Devices:

(a) Evidence of ownership, lease or subcontract;

(b) Manufacturer, type and model (as applicable);

(c) Capacity (twice the daily capacity of recovery devices);

(d) Inspected and maintained in accordance with manufacturer's recommendations;

(e) Contracted barges with current certificates;

(f) Planned operating area(s);

(g) Grade of oil carried; and

(h) Location of fixed storage.

(5) Boats:

(a) Sufficient numbers of trailers, outboard motors and Coast Guard-required safety equipment (life jackets, lights, etc.);

(b) Types and number of boats appropriate to the area of classification;

(c) Operability and maintenance;

(d) Length, beam, draft, range, transit speed and crew size;

(e) Adequate working platform for oil spill response; and

(f) Certification/registration.

(6) Dispersants:

(a) Manufacturer, type and quantity;

(b) Volumes of dispersant(s) to support WCD tiers;

(c) Stowage;

(d) Identification of dispersant product resource provider;

(e) Primary staging site location;

(f) Distance between product's home base and primary staging site;

(g) Amount of each stockpile required to support required effective daily application capacity (EDAC) of each dispersant application platform;

(h) Capability of commencing dispersant application operations at site of discharge within seven hours of decision by FOSC; and

(i) EDAC determination using Estimated Dispersant System Potential (EDSP) calculator.

(7) Application Platforms:

(a) Type;

(b) Providing resource organization;

(c) Distance between platform's home base and identified primary dispersant staging site; and

(d) Dispersant payload for each dispersant application platform.

(8) Aerial Oil Tracking and Application Capabilities:

(a) Identification of resource provider;

(b) Type and location of aerial surveillance aircraft available, through contract or other approved means;

(c) At least 50% of each EDAC tier requirement must be achieved through the use of fixed-wing aircraft-based application platforms;

(d) Capability of arriving at the site of a discharge in advance of the arrival of response resources identified in the plan for WCD Tiers 1, 2 and 3 response times, and for a distance up to 50 nautical miles (NM) from shore (excluding inland areas);

(e) Capability of supporting oil spill removal operations continuously for three 10-hour operational periods during the initial 72 hours of the discharge; and

(f) Numbers of aircraft, pilots, and trained observation personnel.

(9) Nonfloating Oil Response Resources:

(a) Evidence of ownership, lease, or subcontract;

(b) Identification of resource provider;

(c) Industry and professional certifications;

(d) Condition of detection and recovery equipment;

(e) Information management of software systems related to the detection and recovery equipment;

(f) Manufacturer, type, and model (as applicable);

(g) Operability and maintenance;

(h) Length, beam, draft, range, transit speed, and crew size;

(i) Capacity;

(j) Transportability;

(k) Primary staging site location;

(l) Inspected and maintained in accordance with manufacturer's recommendations;

(m) Contracted barges with current certificates;

(n) Planned operating area(s); and

(o) Location of temporary/fixed storage.

(10) Groups II-IV (within inland, near shore, or offshore where preauthorization exists):

(a) Capability of commencing dispersant application operations at site of discharge within seven hours of decision by FOSC; and

(b) Capability to meet Tier 1, 2, and 3 response times for completed applications listed in Table 33 CFR § 155.1050(k).

(11) Records and Labeling:

(a) Equipment must be clearly marked for identification;

(b) Records must be available that support claims of ownership, lease, or subcontract;

(c) Complete maintenance records reflecting condition of equipment;

(d) Dispersant plans on site and updated (if applicable);

(e) Past three years of personnel training records must be made available; and

(f) Past three years of exercise records must be made available.

(12) Logistics Narrative. An OSRO shall provide a written narrative outlining the logistics requirements for each resource site listed in the RRI. Narratives need to provide enough information to document that an OSRO has the myriad and complex logistics support requirements for the mobilization and delivery of the response equipment and

personnel from each resource site to each COTP zone or ACC requested. Narratives might contain, but are not limited to:

(a) Methods of personnel recall (if applicable);

(b) Methods of loading resources for mobilization;

(c) Methods of resource transport off-site to incident or staging;

(d) Methods of mobilizing, deploying, and supporting resources;

(e) Special response resources staging (e.g., prepackaging, palletizing, preloading); and

(f) Necessary site support services (e.g., tractors, trailers, drivers, cranes).

H. Preparedness Assessment Visit Results

1. During the PAV, the team may identify deficiencies within the OSRO's inventory or documentation. The PAV team will identify the specific deficiencies for the OSRO and notify the NSFCC. The OSROs will have sufficient opportunity (normally 30 days) to correct the deficiencies. This process will not affect classification as long as the deficiency does not significantly reduce the OSRO's overall response readiness.
2. The NSFCC will inform the OSRO's representative of the timeline to correct the deficiencies. The OSRO will provide the NSFCC with appropriate documentation of the corrections. However, if the severity of the deficiencies sufficiently indicate that an OSRO is not capable of meeting its classification requirements, the Coast Guard may immediately reduce or revoke the OSRO's classification until the deficiencies are corrected. OSROs unable to meet the NSFCC's predetermined deadline will have to be reevaluated through the full application process.
3. Once the OSRO has submitted proof of corrective action, the COTP/DRAT, in coordination with the NSFCC, shall conduct a PAV spot check on the recorded deficiencies within 60 days to ensure compliance. If the OSRO fails the PAV spot check, its classification will be removed.
4. For minor discrepancies, an in-person spot check may not be required. Some discrepancies may be able to be addressed via proper documentation and transmittal from the OSRO to the NSFCC.
5. If an OSRO disagrees with the results of a PAV, the OSRO may submit an appeal in writing to the Commanding Officer of the NSFCC within 30 days of the PAV. If the OSRO remains unsatisfied with the determination after the appeal, the OSRO may submit a second appeal to CG-MER.
6. An After Action Report (AAR) will be completed by the NSFCC after all PAVs or spot-checks and will be filed in the RRI and shared with internal Coast Guard stakeholders.

I. Other Reasons for Downgrading an OSRO's Classification

1. Other reasons for downgrading a classification can include, but are not limited to:
   a. The PAV team could not verify resources listed by the OSRO in the RRI and/or could not match the resources to the classification level requirements.

b. Response resources are unable to meet response times or do not function properly during drills, exercises, responses, and PAVs.

c. The OSRO fails to meet the training, maintenance, and exercise provisions of these guidelines.

CHAPTER 3. Mechanical Classification Requirements for OSROs

A. Overview

1. The Coast Guard classifies OSROs based on the location of their response resources and an assessment of their ability to mobilize those resources to the COTP zone or ACC. There are equipment standards and response times specific to each operating area within a COTP zone. Additional requirements are outlined for the Prince William Sound, Alaska COTP zone and shallow water environments. This chapter also discusses exercises, personnel training, and equipment maintenance specific to the OSRO classification program for Mechanical OSROs.

2. If an OSRO uses aircraft transport response resources, the resource must be linked to the appropriate aircraft in the RRI.

B. Resource Requirements

1. The Coast Guard separates core resources into five categories: protective boom, EDRC containment boom, TSC, response vessels, and personnel. Both protective and containment boom are measured in feet, EDRC is measured in barrels per day (bbls/day), and TSC is measured in barrels (bbls).

C. Protective Boom

1. VRP regulations require a plan holder to have a specific amount, size, and type of boom available for shoreline protection purposes for MMPDs and WCDs per 33 CFR § 155, Appendix B, Table 1. For classification purposes, it is assumed the OSRO has both vessel and facility clients. Since the protective boom requirements for VRP holders are more restrictive and specific, these requirements are used for OSRO classification per 33 CFR § 155 Appendix B, paragraph 5.6.

2. If an OSRO certifies that it only serves facility customers, it can submit, in writing to the NSFCC, a request to base its protective boom requirements on the amount specified in the ACP and FRP for the relevant COTP zone in accordance with 33 CFR § 154 Appendix C, paragraph 5.6.

D. Oil Recovery Device Operating Environment

1. Per 33 CFR § 155 Appendix B, Table 1, oil recovery devices must be at least capable of operating in wave heights up to and including the values listed in Table 1 of the regulation.

2. OSROs must ensure the skimmers they enter in the RRI are capable of operating within the environments for which they are seeking classifications, based on the manufacturer's listing.

E. EDRC and Containment Boom

1. EDRC, containment boom, and response vessels are interrelated for OSRO classifications. For planning purposes, the Coast Guard counts EDRC credit only toward an OSRO's classification if there is, at a minimum, 300 feet of containment boom available to be deployed in the applicable operating area to complete each skimming system.

2. Per 33 CFR § 154.1045, an OSRO must have 1,000 feet of containment boom or two times the length of the largest vessel that regularly conducts petroleum oil transfers to or from the facility, whichever is greater, in addition to the 300 feet per skimming system required to

complete a skimming system. OSROs must identify response vessels to support the recovery devices that also meet the specific FRP and VRP time requirements outlined in these guidelines.

F. Temporary Storage Capacity

1. An OSRO must identify TSC equaling twice the EDRC included in a classification application as required by 33 CFR § 154 Appendix C, paragraph 9.2 and 33 CFR § 155 Appendix B, paragraph 9.2. TSC and EDRC are interrelated. The regulation limits an OSRO's classification by the lowest-rated component of the recovery system. For example, if an OSRO has 10,000 bbls/day EDRC, but only has available 14,000 bbls TSC, then its recovery capacity is limited to 7,000 bbls/day (one half of the available TSC capability).

2. Non-dedicated TSC, for the purposes of this classification program, includes any TSC supplied by tank barge and mobile storage. Tank barges and mobile storage are assumed to be engaged in transporting oil between various locations and full of oil half of the time. Therefore, tank barges and mobile storage are only fully capable of supplying the total amount of TSC required half of the time. As a result, non-dedicated temporary storage would normally not qualify for the requirement specified by 33 CFR § 154.1045(g), which states that response equipment must mobilize within two hours for a MMPD and WCD1 classification. As an exception, the USCG's OSRO classification program allows non-dedicated tanker barges and mobile storage (i.e., vacuum trucks) to qualify for the MMPD and WCD1 mobilization if the non-dedicated TSC is provided at a 2:1 ratio, and the non-dedicated TSC is always capable of arriving at the COTP or ACC location within the time required for MMPD and Tier 1 classification.

3. OSROs can use dedicated mobilization offset times for non-dedicated TSC resources if the non-dedicated TSC resources are provided at two times the TSC requirement using mutually exclusive assets, also known as a 2:1 ratio. This exception is only available to tank barges and mobile storage and is not available to fixed storage. Mobile storage is limited to 45% of the total TSC and fixed storage is limited to 35% of the total TSC.

4. OSROs can identify fixed storage tanks ashore to meet the TSC requirements in limited circumstances. The NSFCC will accept them only for OSRO classifications covering the rivers/canals, Great Lakes, and inland operating areas. They are allowed for up to 35% of an OSRO's TSC, provided an OSRO certifies that it can transport recovered oil to the fixed tanks ashore and sustain the required EDRC. The Coast Guard does not allow shore-side fixed storage tanks in the near shore, offshore, or open ocean operating areas.

5. Vacuum trucks are limited to a maximum of 45% of the total TSC in the rivers/canals, Great Lakes, and inland operating areas. They are not permitted for EDRC and TSC credit in the near shore, offshore and open ocean operating areas. An OSRO may however provide proper documentation from the applicable COTP authorizing on-deck vehicle(s) transport of EDRC and TSC capability for all operating areas. All vacuum trucks receiving EDRC credit require 300 feet of containment boom as part of the system.

G. Response Vessels

1. Response vessels are integral to every response. OSROs should clearly identify the vessels intended for response services in the RRI. Although response vessels are not calculated programmatically into a classification, the NSFCC reviews available response vessels. If a

shortfall is perceived, further discussion with the OSRO is warranted before a classification is considered.

2. The Coast Guard will only consider response vessels that meet the response time requirements by tier as outlined in these guidelines. All response vessels identified must meet applicable Coast Guard regulations and policy guidelines (e.g., navigation lights, safety equipment, life vests).

H. Response Aircraft

1. Response aircraft, whether manned or unmanned, are essential for tracking oil spills and assessing the impact of the spill. Aircraft intended for response services should be clearly identified in the RRI. Plan holders must identify in their response plan, and ensure the availability through contract or other approved means, those response resources necessary to provide aerial oil tracking to support oil spill assessment and cleanup activities as per 33 CFR § 155.1050(l) and 33 CFR § 155.5050(k). Facilities operating exclusively on inland rivers are not required to comply with this paragraph.
2. OSROs should ensure response aircraft are capable of supporting oil spill removal operations continuously for three 10-hour operational periods during the initial 72 hours of the discharge.
3. OSROs should include appropriately located aircraft and personnel capable of meeting the response time requirement for oil tracking, and a sufficient number of aircraft, pilots, and trained observation personnel to support oil spill removal operations, commencing upon initial assessment, and capable of coordinating on-scene cleanup operations, specifically mechanical recovery operations in this case.
4. OSROs must train observation personnel in the protocols of oil spill reporting and assessment, including estimation of slick size, thickness, and quantity. These trained personnel must understand the use of assessment techniques in American Society for Testing and Materials (ASTM) Standard F1779, and be familiar with the use of other guides, such as the National Oceanic and Atmospheric Administration's (NOAA) *Open Water Oil Identification Job Aid for Aerial Observation* and *Characteristic Coastal Habitats* guides.
5. All response aircraft identified must meet applicable Coast Guard and FAA regulations and policy guidelines.

I. MMPD and WCD Tier 1 Classification

1. Only resources located at equipment sites capable of being mobilized and in route to the scene of a spill within two hours of notification are counted toward MMPD and WCD1 classifications. Because of the potential for non-dedicated resources to be committed to other functions, only dedicated resources are presumed to be able to mobilize within these time requirements.

J. WCD Tier 2 and WCD Tier 3 Classifications

Owned, contracted, dedicated, and non-dedicated equipment may be used for WCD2 and WCD3 classification.

K. Dedicated vs. Non-dedicated Resources

1. Since non-dedicated tank barges used for TSC credit may operate significant distances from their classification resource sites, an OSRO must further ensure the availability of non-dedicated barges by contract or other approved means in quantities equal to twice what the OSRO requires of the dedicated resources.
2. FRP and VRP regulations specify the quantity of resources required for specific planning volumes. The regulations categorize requirements as the MMPD and WCD (see below for planning volumes), and further divide WCD into Tiers 1, 2, and 3.
3. FRP and VRP regulations establish MMPD and WCD from a calculation using a facility's largest foreseeable oil discharge or a vessel's cargo volume, as shown in Table 3-1 below.

Table 3-1: Planning Volumes for Discharge Categories

Category	Facility	Vessel
MMPD*	1,200 bbls or 10% of WCD	2,500 bbls or 10% of WCD
WCD*	Largest foreseeable oil discharge in adverse weather conditions	A discharge in adverse weather conditions of a vessel's entire fuel or oil cargo, whichever is greater

**Defined in 33 CFR § 154.1020, § 155.1020, and § 155.5020*

4. Manufacturers design boom, oil recovery devices, and TSC equipment with certain operating areas in mind. In the response plan regulations, these operating areas are identified as rivers/canals, Great Lakes, inland, near shore, offshore, and open ocean. The OSRO classification program classifies OSROs based on these areas. The chapter on Specific Classification Standards by Operating Area (Chapter 4) lists specific requirements for boom, EDRC, and TSC for each of these areas. To receive an MMPD, WCD1, WCD2, or WCD3 classification, an OSRO must meet all boom, EDRC, and TSC requirements for the classification. Classification is determined independently for each operating area. See Tables 3-2, 3-3, and 3-4 on the following page for more details.

Table 3-2: Boom Amounts in Feet for OSRO Classifications

Area	Configuration	MMPD	WCD1	WCD2	WCD3
Persistent Oils (Groups II – IV)					
Rivers/Canals	Protective	4,000	25,000	25,000	25,000
Great Lakes	Protective	6,000	30,000	30,000	30,000
Inland	Protective	6,000	30,000	30,000	30,000
Near shore	Protective	8,000	30,000	30,000	30,000
Offshore	Protective	8,000	15,000	15,000	15,000
Open Ocean	Protective	-	-	-	-
Non-Persistent Oils (Group I)					
Rivers/Canals	Protective	-	15,000	15,000	15,000
Great Lakes	Protective	-	10,000	10,000	10,000
Inland	Protective	-	10,000	10,000	10,000
Near shore	Protective	-	10,000	10,000	10,000
Offshore	Protective	-	-	-	-
Open Ocean	Protective	-	-	-	-

Table 3-3: EDRC Amounts in Barrels per Day for OSRO Classifications

Area	MMPD	WCD1	WCD2	WCD3
Rivers/Canals	1,200	1,875	3,750	7,500
Great Lakes	1,200	6,350	12,500	25,000
Inland	1,200	12,500	25,000	50,000
Near shore	1,200	12,500	25,000	50,000
Offshore	1,200	12,500	25,000	50,000
Open Ocean	-	-	-	-

Table 3-4: TSC Amounts in Barrels for OSRO Classifications

Area	MMPD	WCD1	WCD2	WCD3
Rivers/Canals	2,400	3,750	7,500	15,000
Great Lakes	2,400	12,500	25,000	50,000
Inland	2,400	25,000	50,000	100,000
Near shore	2,400	25,000	50,000	100,000
Offshore	2,400	25,000	50,000	100,000
Open Ocean	2,400	25,000	50,000	100,000

L. Response Times

1. Due to the respective differences in FRP and VRP regulations, the Coast Guard's OSRO classification program uses two major categories for response times: one for facilities and one for vessels. A summary of response times is listed in Table 3-5 on the next page.

2. If a COTP zone contains an HVPA, then response times for the Mechanical OSRO classification are more stringent. HVPA requirements are listed in 33 CFR § 154.1045, 33 CFR § 155.1050, and

33 CFR § 155.5050 include any area within 50 NM seaward of the port. The NSFCC does not typically authorize departure from mandated response times; however, if an OSRO cannot meet the reduced response times listed for HVPAs in Tables 3-5, 4-2, 4-6, and 4-7 of these guidelines, they must coordinate directly with the NSFCC.

Table 3-5: Response Times in Hours for Containment Boom, EDRC and TSC Resources

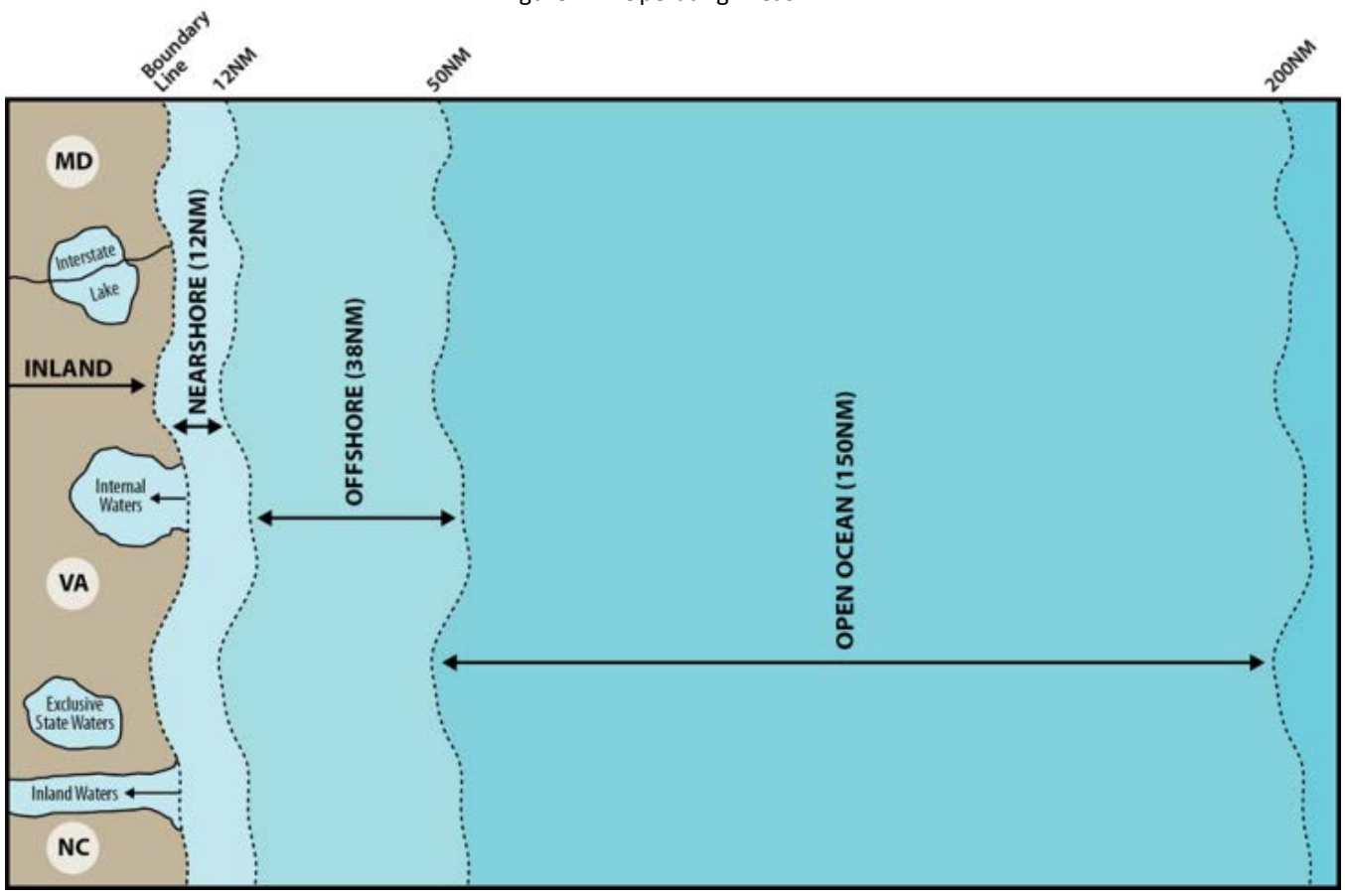
Area	Facility or Vessel	MMPD	WCD1	WCD2	WCD3
Rivers/Canals	Facility	12	12	36	60
	Vessel	24	24	48	72
	Facility HVPAs	6	6	30	54
	Vessel HVPAs	12	12	36	60
Great Lakes	Facility	6	12	36	60
	Vessel	12	18	42	66
	Facility HVPAs	N/A	N/A	N/A	N/A
	Vessel HVPAs	N/A	N/A	N/A	N/A
Inland	Facility	12	12	36	60
	Vessel	24	24	48	72
	Facility HVPAs	6	6	30	54
	Vessel HVPAs	12	12	36	60
Near shore	Facility	12	12	36	60
	Vessel	24	24	48	72
	Facility HVPAs	6	6	30	54
	Vessel HVPAs	12	12	36	60
Offshore	Facility	12	12	36	60
	Vessel	24	24	48	72
	Facility HVPAs	6	6	30	54
	Vessel HVPAs	12	12	36	60
Open Ocean	Facility	12	12	36	60
	Tank Vessel	24	24+	48+	72+
	Nontank Vessel	24	24	N/A	N/A

CHAPTER 4. Mechanical Classification Standards by Operating Area

A. Operating Areas

1. The operating areas for the Mechanical classification standard include inland, nearshore, offshore, and open ocean operating environments, as defined by 33 CFR § 154.2001 and 33 CFR § 155.1020 (see definitions in Appendix B of this document) and depicted in Figure 4-1 below.

Figure 4-1: Operating Areas



B. Adverse Weather Considerations

1. All equipment identified in a response plan must be capable of operating in the conditions expected within the geographic area in which a vessel operates. These conditions vary widely based on the location and season.

2. Vessels storing, handling, or transporting oil in more than one operating environment must identify equipment capable of successfully functioning in each operating environment. For example, vessels moving from the ocean to a river port must identify appropriate equipment designed to meet the criteria for transiting oceans, inland waterways, rivers, and canals. This equipment may be designed to operate in all of these environments or, more likely, different equipment may be designed for use in each area.

3. When identifying equipment, a vessel owner or operator must consider the inherent limitations in the operability of equipment components and response systems. The criteria in Table 1 of Appendix B to 33 CFR § 155 must be used for evaluating the operability in a given environment. These criteria reflect the general conditions in certain operating areas.
4. Table 1 of Appendix B to 33 CFR § 155 lists criteria for oil recovery devices and boom. All other equipment necessary to sustain or support response operations in a geographic area must be designed to function in the same conditions. For example, boats that deploy or support skimmers or boom must be capable of being safely operated in the significant wave heights listed for the applicable operating environment. The Coast Guard may require documentation that the boom identified in a response plan meets the criteria in Table 1 of Appendix B to 33 CFR § 155. Absent acceptable documentation, the Coast Guard may require that the boom be tested to demonstrate it meets the criteria in Table 1 of Appendix B to 33 CFR § 155. Testing must be in accordance with certain ASTM standards.
5. A vessel owner or operator must refer to the applicable ACP to determine if ice, debris, and weather-related visibility are significant factors in evaluating the operability of equipment. The ACP will also identify the average temperature ranges expected in a geographic area in which a vessel operates. All equipment identified in a response plan must be designed to operate within those conditions or ranges.

C. Shallow Water Requirements

1. Depending on the operating area, a certain percentage of OSRO resources must be capable of operating in waters of six feet or less as required by 33 CFR § 154.1045 and § 155.1050 (see Table 4-1 below). An OSRO must identify equipment in its application to meet this requirement.

Table 4-1: Percentage of Response Equipment Capable of Operating in Shallow Waters

Area	Facility	Tank Vessel
Rivers/Canals	20	20
Great Lakes	20	20
Inland	20	20
Near shore	20	20
Offshore	10	10
Open Ocean	None	None

D. Rivers and Canals

1. The following table summarizes the equipment standards and maximum response times for classifying OSROs for a planned response to spills in a river/canal operating area. All equipment to be used in this area must be capable of operating in 1-foot wave heights.

Table 4-2: Equipment Standards and Response Times for the Rivers/Canals Operating Area

Protective Boom (feet)	Containment Boom (feet)	Oil Recovery Equipment (bbls/day EDRC)	Recovered Oil Storage (bbls TSC)	Facility Response Times (hours)	Vessel Response Times (hours)
MMPD (1,200 bbls/day recovery)					
4,000	1,000 plus 300 per skimming system	1,200	2,400	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other locations
WCD1 (1,875 bbls/day recovery)					
25,000	1,000 plus 300 per skimming system	1,875	3,750	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other Locations
WCD2 (3,750 bbls/day recovery)					
25,000	1,000 plus 300 per skimming system	3,750	7,500	30 for higher volume ports	36 for higher volume ports
				36 for all other locations	48 for all other locations
WCD3 (7,500 bbls/day recovery)					
25,000	1,000 plus 300 per skimming system	7,500	15,000	54 for higher volume ports	60 for higher volume ports
				60 for all other locations	72 for all other Locations

d. Boom properties must include the following:

(1) Boom height (draft plus freeboard) (inches) = 6-18;

(2) Reserve buoyancy-to-weight ratio = 2:1;

(3) Total tensile strength (pounds (lbs)) = 4,500;

(4) Skirt fabric tensile strength (lbs) = 200; and

(5) Skirt fabric tear strength (lbs) = 100.

E. Great Lakes

1. The following table summarizes the minimum equipment standards and maximum response times for classifying OSROs for a planned response to spills in the Great Lakes operating area. All equipment used in this operating area must be capable of operating in 4-foot wave heights.

Table 4-3: Equipment Standards and Response Times for the Great Lakes Operating Area

Protective Boom (feet)	Containment Boom (feet)	Oil Recovery Equipment (bbls/day EDRC)	Recovered Oil Storage (bbls TSC)	Facility Response Times (hours)	Tank Vessel Response Times (hours)
MMPD (1,200 bbls/day recovery)					
6,000	1,000 plus 300 per skimming system	1,200	2,400	6	12
WCD1 (6,250 bbls/day recovery)					
30,000	1,000 plus 300 per skimming System	6,250	12,500	12	18
WCD2 (12,500 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	12,500	25,000	36	42
WCD3 (25,000 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	25,000	50,000	60	66

a. Boom properties must include the following:

(1) Boom height (draft plus freeboard) (inches) = 18-42;

(2) Reserve buoyancy-to-weight ratio = 2:1;

(3) Total tensile strength (lbs) = 15,000–20,000;

(4) Skirt fabric tensile strength (lbs) = 300; and

(5) Skirt fabric tear strength (lbs) = 100.

F. Inland

1. The following table summarizes the minimum equipment standards and maximum response times for classifying OSROs for the planned response to spills in the inland operating area. All equipment used in this operating area must be capable of operating in 3-foot wave heights.

Table 4-4: Equipment Standards and Response Times for the Inland Operating Area

Protective Boom (feet)	Containment Boom (feet)	Oil Recovery Equipment (bbls/day EDRC)	Recovered Oil Storage (bbls TSC)	Facility Response Times (hours)	Tank Vessel Response Times (hours)
MMPD (1,200 bbls/day recovery)					
6,000	1,000 plus 300 per skimming system	1,200	2,400	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other Locations
WCD1 (12,500 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	12,500	25,000	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other locations
WCD2 (25,000 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	25,000	50,000	30 for higher volume ports	36 for higher volume ports
				36 for all other locations	48 for all other Locations
WCD3 (50,000 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	50,000	100,000	54 for higher volume ports	60 for higher volume ports
				60 for all other locations	72 for all other locations

a. Boom properties must include the following:

(1) Boom height (draft plus freeboard) (inches) = 18-42;

(2) Reserve buoyancy-to-weight ratio = 2:1;

(3) Total tensile strength (lbs) = 15,000–20,000;

(4) Skirt fabric tensile strength (lbs) = 300; and

(5) Skirt fabric tear strength (lbs) = 100.

G. Near Shore

1. The following table summarizes the minimum equipment standards and maximum response times for classifying OSROs for the planned response to spills in the near shore operating area. With the exception of shoreline protection boom, all equipment used in this operating area must be capable of operating in 6-foot wave heights.

Table 4-5: Equipment Standards and Response Times for the Near Shore Operating Area

Protective Boom (feet)	Containment Boom (feet)	Oil Recovery Equipment (bbls/day EDRC)	Recovered Oil Storage (bbls TSC)	Facility Response Times (hours)	Tank Vessel Response Times (hours)
MMPD (1,200 bbls/day recovery)					
8,000	1,000 plus 300 per skimming system	1,200	2,400	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other Locations
WCD1 (12,500 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	12,500	25,000	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other locations
WCD2 (25,000 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	25,000	50,000	30 for higher volume ports	36 for higher volume ports
				36 for all other locations	48 for all other Locations
WCD3 (50,000 bbls/day recovery)					
30,000	1,000 plus 300 per skimming system	50,000	100,000	54 for higher volume ports	60 for higher volume ports
				60 for all other locations	72 for all other locations

a. Boom properties must include the following:

(1) Boom height (draft plus freeboard) (inches) = ≥ 42 containment; ≥ 18 shoreline protection;

(2) Reserve buoyancy-to-weight ratio = 3:1 to 4:1 containment; > 2:1 shoreline protection;

(3) Total tensile strength (lbs) = > 20,000 containment; > 15,000 shoreline protection;

(4) Skirt fabric tensile strength (lbs) = 500 containment; > 300 shoreline protection; and

(5) Skirt fabric tear strength (lbs) = 125 containment; > 100 shoreline protection.

H. Offshore

1. The following table summarizes the minimum equipment standards and maximum response times for classifying OSROs for the planned response to spills in the offshore operating area. All equipment used in this operating area must be capable of operating in 6-foot wave heights.

Table 4-6: Equipment Standards and Response Times for the Offshore Operating Area

Protective Boom (feet)	Containment Boom (feet)	Oil Recovery Equipment (bbls/day EDRC)	Recovered Protective Boom (feet)	Facility Response Times (hours)	Tank Vessel Response Times (hours)
MMPD (1,200 bbls/day recovery)					
8,000	1,000 plus 300 per skimming system	1,200	2,400	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other locations
WCD1 (12,500 bbls/day recovery)					
15,000	1,000 plus 300 per skimming system	12,500	25,000	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other locations
WCD2 (25,000 bbls/day recovery)					
15,000	1,000 plus 300 per skimming system	25,000	50,000	30 for higher volume ports	36 for higher volume ports
				36 for all other locations	48 for all other locations
WCD3 (50,000 bbls/day recovery)					
15,000	1,000 plus 300 per skimming system	50,000	100,000	54 for higher volume ports	60 for higher volume ports
				60 for all other locations	72 for all other Locations

a. Boom properties must include the following:

(1) Boom height (draft plus freeboard) (inches) = ≥ 42 containment; ≥ 18 shoreline protection;

(2) Reserve buoyancy-to-weight ratio = 3:1 to 4:1 containment; > 2:1 shoreline protection;

(3) Total tensile strength (lbs) = > 20,000 containment; > 15,000 shoreline protection;

(4) Skirt fabric tensile strength (lbs) = 500 containment; > 300 shoreline protection; and

(5) Skirt fabric tear strength (lbs) = 125 containment; > 100 shoreline protection.

I. Open Ocean

1. The following table summarizes the minimum equipment standards and maximum response times for classifying OSROs for the planned response to spills in the open ocean operating area. All equipment to be used in this operating area must be capable of operating in 6-foot wave heights.

Table 4-7: Equipment Standards and Response Times for the Open Ocean Operating Area

Protective Boom (feet)	Containment Boom (feet)	Oil Recovery Equipment (bbls/day EDRC)	Recovered Oil Storage (bbls TSC)	Facility Response Times (hours)	Tank Vessel Response Times (hours)
MMPD (1,200 bbls/day recovery)					
No requirements	1,000 plus 300 per skimming system	1,200	2,400	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other location
WCD1 (12,500 bbls/day recovery)					
No requirements	1,000 plus 300 per skimming system	12,500	25,000	6 for higher volume ports	12 for higher volume ports
				12 for all other locations	24 for all other location
WCD2 (25,000 bbls/day recovery)					
No requirements	1,000 plus 300 per skimming system	25,000	50,000	30 for higher volume ports	36 for higher volume ports
				36 for all other locations	48 for all other location
WCD3 (50,000 bbls/day recovery)					
No requirements	1,000 plus 300 per skimming system	50,000	100,000	54 for higher volume ports	60 for higher volume ports
				60 for all other locations	72 for all other location

a. Boom properties must include the following:

(1) Boom height (draft plus freeboard) (inches) = ≥ 42;

(2) Reserve buoyancy-to-weight ratio = 3:1 to 4:1;

(3) Total tensile strength (lbs) = > 20,000;

(4) Skirt fabric tensile strength (lbs) = 500; and

(5) Skirt fabric tear strength (lbs) = 125.

J. Prince William Sound Classification

1. The FRP and VRP regulations establish more stringent planning criteria for tank vessel plan holders loading cargo at a facility permitted under the Trans-Alaska Pipeline Authorization Act. The regulations also classify OSROs intending to respond in the Prince William Sound, Alaska COTP zone to the more stringent standard.

CHAPTER 5. OSRO Classification Dispersant Program

A. Introduction

1. NSFCC evaluates OSROs seeking classification for dispersants on their ability to apply safely set volumes of surface dispersant within set periods to the furthest 50 NM offshore areas within each COTP zone or ACC. This chapter provides guidance to OSROs concerning planning standards, core resource expectations, and how to meet the regulatory criteria of dispersant operations.

2. NSFCC separates core resources into four categories: dispersant product; EDAC; dispersant application platform; and aerial oil tracking and application capabilities. NSFCC calculates Dispersant classifications through the RRI and EDSP program.

3. NSFCC evaluates OSRO Dispersant classification levels, assesses the OSRO's dispersant plan, and estimates the EDAC for its dispersant application systems. The regulations (33 CFR § 155.1035, 33 CFR § 155.5035, and 33 CFR § 154.1035) only sanction the EDSP. The EDSP is available at https://www.bsee.gov/sites/bsee.gov/files/dispersants-cal.html. OSROs should contact the NSFCC prior to submitting their dispersant plan.

B. Response Plan Requirements

1. VRP and FRP regulations—specifically 33 CFR § 155.1035, 33 CFR § 155.5035, and 33 CFR § 154.1035—require a plan holder operating in any inland, near shore, or offshore area with pre-authorization for dispersant use to be able to apply enough dispersant to meet a WCD or the requirements in 33 CFR § 154.1045(i), 33 CFR § 155.1050(k), or 33 CFR § 155.5050(j), whichever is the lesser amount. The dispersant identified must be of a type listed on the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Product Schedule (400 CFR § 300.915). The plan must identify: specific dispersant application platforms and payloads; the primary dispersant staging site for each dispersant application platform; the platform type; resource provider; location; dispersant stockpiles and location; and trained personnel necessary to continue operation of the equipment and staff the OSRO and spill management team for the first seven days of the response.

2. If the Coast Guard has evaluated and classified an OSRO, then a plan holder may reference the classified OSRO in their response plan instead of listing all of the required dispersant resources.

C. Tier 1, 2, and 3 Worst Case Discharge (WCD) Classifications.

1. The Coast Guard categorizes Dispersant classifications by WCD Tiers 1, 2, and 3 and labels them WCD1, WCD2, and WCD3, respectively. The Dispersant classifications can be achieved independently of each other and each classification is determined separately for each COTP zone or ACC. The plan holder can then contract with multiple OSROs to fulfill its Tier 1, 2 and 3 requirements.

2. WCD1: To qualify for the WCD1 classification, an OSRO must be able to commence dispersant operations within seven hours and must be able to apply 8,250 gallons (gulf coast region)/4,125 gallons (all other U.S regions), within 12 hours of the FOSC's decision to use dispersants, as per 33 CFR § 155.1050(k) (1), 33 CFR § 155.5050(k) (1), and 33 CFR § 154.1045(i) (1). For planning

and classification purposes, the Coast Guard assumes that the FOSC's decision to use dispersants will occur at the time of spill notification. Therefore, an OSRO has seven hours to move dispersant stockpiles and commence dispersant operations. Dispersant-dedicated aerial oil tracking resources must be capable of being on-scene (50 NM offshore) within seven hours.

3. WDC2: To qualify for the WCD2 classification, an OSRO must be able to apply 23,375 gallons of dispersants in a 12-hour window within 36 hours of the FOSC's decision to use dispersants. For WCD2, planners can estimate the dispersant timeframe to begin at hour 24 and end at hour 36. To get credit for classification, 11,687 gallons of dispersant must arrive at the OSRO selected primary staging site within 24 hours of the FOSC's decision to use dispersants, and the remaining 11,688 gallons must arrive at the primary staging site within 30 hours. Aerial oil tracking resources must be capable of being on-scene (50 NM offshore) within 24 hours of the FOSC's decision to use dispersants.
4. WCD3: To qualify for the WCD3 classification, an OSRO must be able to apply 23,375 gallons of dispersants in a 12-hour window within 60 hours of the FOSC's decision to use dispersants. For WCD3, planners can estimate the dispersant application timeframe to begin at hour 48 and end at hour 60. To get credit for classification, all 23,375 gallons of dispersant must arrive at the OSRO selected primary staging site within 48 hours of the FOSC's decision to use dispersants. Aerial oil tracking resources must be capable of being on-scene (50 NM offshore) within 48 hours of the FOSC's decision to use dispersants.
5. WCD1, 2, and 3: To qualify for all Dispersant classifications, an OSRO must meet the total requirements for EDAC and response times as listed in Table 5-1 in Section D of this chapter.
6. Dispersant application requirements assume 12 hours of daylight in each tier period as a planning standard. For independent classifications, OSROs must be able to apply the EDAC for each tier within a 12-hour period.

D. Effective Daily Application Capacity

1. EDAC is the estimated amount of dispersant that can be applied to a discharge by an application system or multiple application systems, given the availability of supporting dispersant stockpiles. As per the regulations, EDAC is calculated for responding to a spill at the furthest 50 NM point offshore in the COTP zone from the staging or home airport. EDAC is evaluated by the following primary categories: aircraft and vessel delivery systems and payloads, the location (home base) of each identified platform, OSRO-selected primary staging airports, application pattern, and any other input parameters specified.
2. For dispersant application platforms not detailed in the EDSP, or for changes to listed values, adequacy of performance criteria must be documented by presentation of independent evaluation materials (33 CFR § 154.1045(i)(2)(ii)) and provided to the NSFCC. The EDAC requirements are listed in Table 5-1 below and can be found in 33 CFR § 154.1045(i), 33 CFR § 155.1050(k), and 33 CFR § 155.5050(j).

Table 5-1: Tiers for EDAC

Tiers	Response time for completed application (hours)	Dispersant application/Oil treated in gallons (Gulf Coast)	Dispersant application/Oil treated in gallons (All other U.S.)
Tier 1	12	8,250/165,000	4,125/82,500
Tier 2	36	23,375/467,000	23,375/467,000
Tier 3	60	23,375/467,000	23,375/467,000
Totals	60	55,000/1,100,000	50,875/1,017,500

3. For Tier 1, dispersant operations must commence at the site of a discharge within seven hours of the FOSC's decision to use dispersants. EDAC counted towards Tier 1 will be de-rated through the EDSP by completing the cascade information within the EDSP calculator. Aircraft and vessel platforms will observe 12-hour daytime operational periods during Tier 2 and Tier 3 dispersant operations.
4. Mobilization times for dispersant platforms are added in to EDAC calculations. For dispersant-applying aircraft, OSROs shall use the time specified in their contract with the aircraft to determine mobilization time. The OSRO must provide to the NSFCC a letter of attestation stating the times that the contracted aircraft can mobilize. Actual contracts must be available for review by the NSFCC during PAVs. For vessels, OSROs shall apply the times as listed in Table 5-2 in Section N of this chapter.
5. Aircraft which transit from their home location without dispersant application equipped and which must make a stop within the area of operations to fit equipment, refuel, or load dispersant payload must account for this time period during the EDAC calculation. If an aircraft deploys directly from its mobilization point and can dispense dispersants upon arrival on-scene, this additional equipment delay is not imputed.
6. If there are additional dispersant quantities that exceed a Tier's EDAC requirement, credit the excess dispersant quantities towards meeting the next Tier's EDAC requirements. For example, if an OSRO is trying to qualify for WCD2 and WCD3 classifications and can apply 30,000 gallons of dispersants to the site in 36 hours, then 23,375 gallons will go towards the WCD2 classification and the remaining 6,625 gallons will be applied towards the WCD3 classification.

E. Location and Documentation of Dispersant Resources

1. 33 CFR § 155.1035, 33 CFR § 155.5035, and 33 CFR § 154.1035 require that plans provide dispersant application platform, stockpile, and staging site locations. OSROs must enter these locations into the RRI. Furthermore, OSROs must maintain documentation that captures manufacturer-specific data, the type of dispersants at each stockpile and/or staging site location, and their shelf life and/or expiration date.

F. Captain of the Port Zones

1. The Coast Guard bases COTP zones and Marine Safety Unit (MSU) zones on the zones described in 33 CFR § 3.05-10 through 33 CFR § 3.85-15.

G. Travel Time

1. The standard speeds used for Dispersant classifications are the same as those used for Mechanical classifications for calculating travel time. Travel over water is calculated at 5 kts and travel over land is calculated at 35 mph as per 33 CFR § 154, Appendix C and 33 CFR § 155, Appendix B. The regulations use actual land and air routes and not a straight line between the staging and response locations.
2. Calculate aircraft speed for the transport of dispersant stockpiles at 100 kts, based on average speeds including delays, preparation time, and layovers. The EDSP designates aircraft speed used for calculating EDAC. If an OSRO adds a new aircraft to the EDSP, then an alternative speed request should be submitted to the NSFCC. With valid documentation, it is possible for an OSRO to request higher aircraft or vessel transit speeds for dispersant stockpile movement.

H. Dispersant Application Platform

1. Dispersant application platforms must be capable of delivering and applying dispersant on a discharge. At least 50% of each EDAC tier requirement must be achieved by fixed-wing aircraft application platforms.

I. American Society for Testing and Materials Standards

1. All dispersant application personnel must be trained in and capable of applying dispersants as outlined in ASTM F1413: “Standard Guide for Oil Spill Dispersant Application Equipment: Boom and Nozzle Systems” as per (i)(2)(iii).
2. Boom and nozzle dispersant application systems must be capable of applying dispersants in accordance with ASTM F1413.
    a. Minimum Equipment Performance Specifications, as per ASTM F1413 include:
        (1) Target Dosage: Dispersant spray equipment must provide a dispersant dosage between 2-10 gallons per acre. Five gallons per acre is the standard used for determining EDAC;
        (2) Droplet Size Distribution: The droplet size distribution of the dispersant reaching the target shall have a Volume Median Diameter (VMD) of 300-500µm; and
        (3) Maximum Delivery Variation over Swath Width: The equipment shall be capable of delivering dispersant with a maximum delivery variance of 10% over the swath width. Swath width is the length between the points at which the delivery drops below 90% of the design.
3. Document the adequacy of dispersant application systems not fully covered by ASTM F1413 by presenting independent evaluation materials (e.g., laboratory and field tests or reports of actual use). If an OSRO plans to use such a system, then the evaluation materials should be submitted to the NSFCC for evaluation.

4. NSFCC evaluates equipment for compliance with ASTM standards during the PAVs. OSROs must maintain manufacturer data on all dispersant spray equipment. If the manufacturer cannot supply the performance data, then the OSRO can perform independent testing of dispersant applicators; this testing should be done in accordance with ASTM F1738 when applicable. Documentation for performance data or equivalents should include:
    a. Performance data:
        (1) Droplet size: VMD;
        (2) Volumetric output distribution over the swath width;
        (3) A table of pump rates and dispersant injection rates or equivalent indices;
        (4) Nozzle design height for ship/boat systems;
        (5) Swath width;
        (6) Differential speeds for aircraft systems at various pump settings (or equivalents) and aircraft speeds; and
        (7) Recommended operating pressures at the inlet to the boom.
    b. Dosage chart: A chart of dosages achievable with different application vehicle speeds and different dispersant flow rates, boom pressures or other appropriate injection indicators.
5. OSROs must ensure routine maintenance is performed on all dispersant equipment. They should conduct calibration of oil spill dispersant application equipment per ASTM F1460 and testing of oil spill dispersant application equipment in accordance with ASTM F1738.

J. Aerial Oil Tracking and Application Capabilities for Dispersant Use

1. Per the VRP and FRP regulations—33 CFR § 155.1035, 33 CFR § 155.5035, and 33 CFR § 154.1035—plans must provide oil-tracking capabilities, and thus must identify a resource provider and the type and location of aerial surveillance aircraft that are ensured available through contract or other approved means. The aerial tracking resources must be capable of arriving at the site of a discharge in advance of the arrival of response resources identified in plans for WCD Tiers 1, 2, and 3 response times, and for a distance up to 50 NM from shore. Aircraft and personnel must be appropriately staged to meet the response time, number of aircraft pilots, and trained observation personnel requirements for supporting oil spill operations. This should commence upon initial assessment and aircraft and personnel must be capable of coordinating on-scene cleanup operations for dispersant operations. Observation personnel must be trained in the protocols of oil spill reporting and assessment and be familiar with the use of pertinent guides including, but not limited to, NOAA's *Open Water Oil Identification Job Aid for Aerial Observation* and the *Characteristic Coastal Habitats* guide.
2. As a planning standard for classification, aerial observation aircraft used for tracking the oil spill must be able to arrive at the site of the discharge (up to 50 NM offshore) within seven hours for Tier 1 WCD, 24 hours for Tier 2 WCD, and 48 hours for Tier 3 WCD.

3. Mobilization times are added to the calculated transit time from the home base to the primary staging site to determine the time of arrival on-scene. For oil tracking aircraft, mobilization times are listed in Table 5-2 under paragraph (M)(3) of this chapter.

4. OSROs shall provide the NSFCC with a list of their aerial oil tracking and application capabilities, to include: type of aircraft; aircraft transit speed; aircraft housing locations (address and latitude/longitude); mobilization times; and distances from the aircraft housing locations to the OSRO selected staging sites for each COTP zone.

K. Personnel

1. The number of personnel needed to support a response depends on numerous factors. OSROs seeking Dispersant classification shall ensure they have sufficient numbers of pilots, staging airport support and management personnel, and trained observation personnel to support aerial requirements.

2. OSROs must meet the personnel requirements for dispersant operations in 33 CFR § 154.1045(i)(2)(iv) and 33 CFR § 155.1050(k)(2)(iv). An OSRO must provide confirmation that personnel have received the proper training and are capable of applying dispersants according to the recommended procedures contained in ASTM 1737. PAV teams will review personnel training records and rosters to ensure compliance.

L. Response Times and Dispersant Stockpiles

1. In addition to dispersant resource quantities, OSROs are required to meet certain response times (33 CFR § 154.1045, 33 CFR § 155.5050, and 33 CFR § 155.1050). Dispersant application operations must commence within seven hours of the FOSC's approval to use dispersants. The dispersant provider has 12 hours to complete dispersant application for WCD Tier 1, 36 hours to complete dispersant application for WCD Tier 2, and 60 hours to complete dispersant application for WCD Tier 3. The amount that must be applied within the time frames is listed in 33 CFR § 154.1045(i) and 33 CFR § 155.1050(k).

2. Dispersant stockpiles are calculated within the RRI and arrival times are based on the distance from the stockpile location to the OSRO's selected primary staging location for an incident using the applicable transit speeds and routes. For WCD Tier 1, all required dispersants must arrive within seven hours of the FOSC's decision to use dispersants. For WCD Tier 2, 50% of the required dispersants (11,687 gallons) must arrive within 24 hours of the FOSC's decision to use dispersants and the remaining dispersants (11,688 gallons) must arrive within 30 hours. For WCD Tier 3, all required dispersants must arrive within 48 hours of the FOSC's decision to use dispersants.

3. Mobilization times for moving dispersant stockpiles are the same as oil tracking aircraft and are listed in Table 5-2 below.

Table 5-2: Resource Notification/Mobilization Response Times in Hours

Resource Status	Response Personnel Availability	
	On-Site	Recall
Owned/Dedicated	1	2
Contract or Dedicated	1.5	2.5
Owned/Non-dedicated	2.5	3.5
Contract/Non-dedicated	3	4

Note: Full-time personnel are a dedicated resource. Part-time personnel are a non-dedicated resource. On-site indicates a 24-hour staffed resource site, as opposed to personnel who have to be recalled.

M. Estimated Dispersant System Potential Calculations

1. The NSFCC requires that an OSRO records and maintains its EDSP calculations, as documentation, for each dispersant application resource for Tiers 1, 2, and 3 WCDs, and for each staging area within the COTP zone or ACC for which they are applying for classification.
2. OSROs should understand the requirements below to help facilitate the EDSP calculation process:
    a. The NSFCC requires an OSRO provide a screenshot of their EDSP calculations, as documentation, for each dispersant application resource for Tiers 1, 2, and 3 for each staging area within the COTP zone or ACC for which they are applying for a classification. Screenshots should display the mobilization time. If electronic means are not available then a hand-written mobilization time on the screenshot will suffice.
    b. Screenshots should be sent via email to the NSFCC at D05-SMB-NSFCC-RRI@uscg.mil.

CHAPTER 6. OSRO Classification Guidelines for Nonfloating Oils

A. Overview

1. Heavy oils and Group V oils, hereby merged and defined as nonfloating oils, exhibit qualities that could potentially cause the oils to submerge or sink, due to the oil characteristics, weathering, environmental factors, or how they are discharged. Examples of these types of oils include, but are not limited to, Diluted Bitumen (Dilbit), Group V Residual Fuel Oils, LAPIO (Low API Oil), Asphalt, and Asphalt Products. Regulations categorize certain Heavy oils within a different persistent oil grouping than Group V oils; however, due to the technical fact that environmental and geographic conditions can subject Heavy oils to submerge and sink, applicable plan holders and OSROs must be aware of and strongly consider the risk.
2. To capture the detection and response capabilities of OSROs more efficiently and enhance the response to nonfloating oils, the Coast Guard created the Nonfloating Oil classification. Previously, OSROs submitted Group V oil plans to the Coast Guard and, if deemed sufficient, would be listed as a Group V OSRO. The Group V OSRO classification is no longer valid. All OSROs seeking the Nonfloating oil classification must reapply through procedures outlined in this chapter.
3. OSROs that are already classified in the Mechanical classification program for a plan holder that handles, stores, or transports oils that are not Group V oils but that fall under the Heavy oil definition, should notify the NSFCC of their intention to classify as a Nonfloating Oil OSRO. An OSRO's current Mechanical classification will not be impacted. A Nonfloating Oil classification does not equate or supersede any other classification nor relieve the OSRO of any contractual responsibilities to their respective plan holders.
4. While this specific classification is focused on nonfloating oil spill response, the Coast Guard strongly emphasizes that oils with a higher specific gravity than 1.0 can still remain positively buoyant when discharged into the environment, given certain environmental conditions. While the Coast Guard is not requiring a certain type of Mechanical classification as a prerequisite to earn the Nonfloating Oil classification, the Nonfloating Oil classification has no bearing on the responsibility that each OSRO has to the plan holder for responding to what could become a positively buoyant or surface-oriented oil spill.
5. The underwater environment, poor visibility, and irregular behavior of nonfloating oils present significant response challenges to the oil spill response community in comparison to surface-oriented oil spills. Standard measures such as EDRC, and response techniques such as containment, have been proven to be inadequate and are difficult to apply for an oil spill where most of the oil is submerged below the surface or has sunk to the bottom, termed nonfloating oil. Therefore, to accommodate different ranges of technology and facilitate flexibility for each OSRO, the Coast Guard has created a detailed application for the Nonfloating Oil classification.
6. To earn a Nonfloating Oil classification, OSROs shall submit an application to the NSFCC requesting classification, along with nonfloating oil plan procedures. The NSFCC will ensure all proper documentation is included and will disseminate the plan to CG-MER. With assistance from subject matter expert reports (e.g., *the American Petroleum Institute's (API) Technical Report on Sunken Oil Detection and Recovery*), the NSFCC and CG-MER will then qualitatively

assess whether the OSRO has met the minimum level of safety and capability for the nonfloating oil classification. OSROs must demonstrate the capability to respond to all areas and conditions where nonfloating oil response operations may take place within the operating area and operating zone, and must demonstrate a level of equipment to work in a variety of water depths and conditions.

7. Upon delivery of the OSRO's Nonfloating Oil application to the NSFCC, the determination of the OSRO's Nonfloating Oil classification will occur no later than 60 days. This chapter provides further guidance to OSROs on how to apply for and attain the Nonfloating Oil classification and expectations of what information should be included in the Nonfloating Oil procedures.
8. The Nonfloating Oil classification meets the regulatory requirements of Group V oils in accordance with the criteria set forth by 33 CFR § 154.1047, 33 CFR § 155.1052, 33 CFR § 155.5052, and the OSRO classification guidelines.
    a. Plan holders who handle, store, or transport oils that are not Group V oils, but that fall under the nonfloating oil definition, are highly recommended to resource Nonfloating Oil OSROs in addition to OSROs already classified in the Mechanical classification program. Plan holders that handle, store, or transport oils that are Group V oils shall utilize Nonfloating Oil OSROs. The Coast Guard's classification program no longer recognizes the Group V OSRO listing, which was removed from the RRI.
9. OSROs should be aware of the types of oil that their plan holder's vessel or facility handles, stores, or transports, as each type of oil presents unique response challenges. Overall, this document and chapter emphasize the vital role that the COTP and the NSFCC/CG-MER maintain in oversight and examination of an OSRO's nonfloating oil response capabilities, planning, and execution. Guidance is provided to assist with the following field responsibilities:
    a. Conducting a review of the nonfloating oil application and procedures;
        a. Using GIUEs to evaluate Nonfloating Oil OSRO response capabilities;
        b. Employing existing field activities to validate overall nonfloating oil response capabilities.

B. Nonfloating Oils Classification Evaluation

1. The Coast Guard will evaluate equipment that is owned or contracted and used to respond to nonfloating oil spills based on its suitability and ability to respond to nonfloating oils.
2. Government and industry plan holders are responsible for screening OSROs to ensure they meet the planning standards for specific operating locations. Specifically, government and industry plan holders should compare the environments and depths in which they operate with the Nonfloating Oil OSROs' capabilities (and what depth they extend to).
    a. **Nonfloating Oil PAVs**: Upon concurrence of an OSRO's Nonfloating Oil application, the NSFCC will coordinate a PAV to verify certain or all capabilities. With respect towards mitigating excessive costs for the OSRO, the assessment may include testing certain equipment, training verification, and an audit of the OSRO's documentation with

contractors. PAVs will be conducted in accordance with NSFCC, cognizant COTP's frequency posture, and CG-MER policy.

3. The following are fundamental expectations for the NSFCC and CG-MER evaluation of an OSRO's Nonfloating Oil Procedure:

    a. Do they possess appropriate detection capabilities such as sonar, sampling equipment, or other methods for locating the petroleum oil on the bottom or suspended in the water column? The equipment must be sufficient to address a range of depths and bottom types.

        a. Do they possess appropriate recovery capabilities such as dredges, pumps, or other equipment necessary to recover petroleum oil from the bottom and shoreline?

        b. Do they possess appropriate equipment and processes necessary to assess the environmental impact of nonfloating oil discharges? Examples include detection equipment listed in Section (B)(1)(a) and Section (C) of this chapter and trained response personnel.

        c. Do they possess other appropriate equipment necessary to respond to a discharge involving the type of petroleum oil handled, stored, or transported?

        d. Is the equipment suitable for intended geographic of operations (e.g., restricted visibility, inland rivers, ice conditions in Alaska)?

        e. Are there any records of the OSROs past performance that should be taken into consideration?

C. Application for Nonfloating Oils Classification

1. To earn a Nonfloating Oil classification, OSROs shall send their application electronically (preferred) or by mail to the NSFCC using procedures listed in Chapter 1 (A) of these guidelines.

2. The application shall include the following information:

    a. OSRO Name;

        a. Address;

        b. Points of Contact;

        c. Basic Ordering Agreement Number (If applicable);

        d. The COTP zones or ACCs you intend to operate (if known):

        (1) The estimated deployment time for the detection and recovery assets for each location; and

        (2) [**Note**] In COTP zones or ACCs, resources must deploy within 24 hours for vessel response plans; for facility response plans, resources must be on site within 24 hours;

        e. The maximum depth or range of the OSRO's detection and recovery assets (List the lesser of the two, if different);

        f. Inventory list (Specify whether resources are dedicated or non-dedicated);

        g. Any contracts associated with nonfloating response assets;

h. Maximum capacity of fixed/temporary storage;

i. Location of fixed/temporary storage;

j. Training documentation, logs, records and/or professional certificates for all nonfloating oil spill response personnel (includes contracted response personnel such as divers);

k. General Logistics Narrative. The Coast Guard does not expect a logistics narrative for every COTP zone or ACC, but rather a universal logistics narrative. A logistics narrative should include, but not be limited to:

(1) Methods of personnel recall (if applicable);

(2) Methods of loading resources for mobilization;

(3) Methods of resource transport off-site to incident or staging;

(4) Methods of mobilizing, deploying and supporting resources;

(5) Special response resources staging (e.g., prepackaging, palletizing, preloading); and

(6) Necessary site support services (e.g., tractors, trailers, drivers, cranes);

l. Nonfloating Oil Procedures (reference Section D of this chapter).

3. A nonfloating oil application shall be submitted to the NSFCC prior to any entries into RRI. Doing so ensures that the NSFCC and CG-MER have time to review the application and confirm that the OSRO has met the minimum requirements to satisfy the regulations and challenges faced during a nonfloating oil discharge. After a successful submission and upon notification from the NSFCC, OSROs shall input their resources into the appropriate nonfloating oil categories in the RRI and ensure that the resource information is accurate to maintain classification and to service plan holders.

D. Nonfloating Oil Procedures and Core Equipment Standards

1. While each segment within the Nonfloating Oil classification application will increase the level of preparedness for the Coast Guard, OSROs, and plan holders, the nonfloating oil procedures are the heart of the application. 33 CFR § 154.1047(a)(1), 33 CFR § 155.1052(a)(1), and 33 CFR § 155.5052 state that plan holders must identify procedures and strategies for responding to a WCD of Group V petroleum oils to the maximum extent practicable.

2. In effect, the nonfloating oil procedures are an opportunity for the OSRO to present its concept of operations to the Coast Guard for nonfloating oil spills. Given the range of densities and properties of nonfloating oils, and the environments in which they are handled, stored, or transported, it is understood that response operations will be unique to the type of event; therefore, a prescriptive model is not expected within the plan. However, to establish a baseline model, the Coast Guard has established core resources and considerations, in alignment with the intent of 33 CFR § 154.1047 and 33 CFR § 155.1052, for the OSRO to connect its inventory, personnel, and contractual assets and elaborate on their capability to respond to nonfloating oil spills.

3. The regulations separate core resources and considerations into four categories: (I) Detection Capabilities, (II) Recovery Capabilities, (III) Storage Capabilities, and (IV) Environmental

Conditions and Operating Areas. A fifth optional category, (V) Containment, can be added to the nonfloating oil procedures if, whether through best practices or new technology, the OSRO deems it a necessary aspect of their operations. OSROs are encouraged to have all of their nonfloating oil related equipment listed within this section under each core resource. At the minimum, each OSRO should include the following within their nonfloating procedures.

a. **Detection Capabilities**: The timing of a nonfloating oil survey is essential to success in detection of nonfloating oil, because once the oil remobilizes; detection with any relative success becomes more difficult with passing time. OSROs shall identify equipment and methods used for locating the product on the bottom or suspended in the water column, and identify equipment necessary to assess the impact of such discharges. OSROs should include the depth to which these capabilities extend and what limitations may exist. OSROs should state how these capabilities complement their procedures and strategies for responding to a WCD of nonfloating oils to the maximum extent practicable. OSROs shall ensure that all strategies and capabilities follow industry standards and comply with local, state, and federal laws (e.g., contracted diver OSROs will comply with OSHA and Coast Guard regulations).

   (1) Examples of Detection Capabilities.

      (a) **Sonar systems**. Examples of capabilities include the side scan sonar, multi-beam echo sounder, sub bottom profiler, and 3D scanning sonar.

      (b) **Underwater visualization systems including cameras and video**. Examples of capabilities include cameras with resolutions of >15 megapixels, sediment profile imaging (SPI) cameras, and acoustic cameras.

      (c) **Diver observations**. OSROs should familiar with *API Technical Report 1154-1: Sunken Oil Detection and Recovery*. Specifically, section 6.0, titled “Diving in Contaminated Water,” should be referenced to protect the safety and health of the divers assigned to complete this work. OSROs shall specifically state the diving capabilities such as surface-supplied, mixed gas, saturation systems, one-atmosphere suits, or submersibles.

      (d) **Towed or stationary sorbents**. Examples of capabilities include sorbents attached to chains that are dragged on the bottom and sorbents suspended in the water column or placed in cages.

      (e) **Laser fluorosensors**. The unit is towed close to the bottom.

      (f) **Visual observations by trained observers**. Trained observers can be rapidly deployed and record vital data about nonfloating oil, as long as the oil is visible to the observer. Preferred capabilities are water surface and aerial observations.

      (g) **Bottom sampling**. Examples of capabilities include sediment grab, core samplers, wading-depth shovel pits, and agitation methods.

      (h) **Water sampling in-situ analysis**. Examples include fluorometers and mass spectrometers that are towed in the water column.

a. **Recovery Capabilities**: OSROs shall identify equipment and methods used to recover the product from the bottom and shoreline. OSROs should include the depth to which these capabilities extend and what limitations may exist. OSROs should state how these capabilities complement their procedures and strategies for responding to a WCD of nonfloating oils to the maximum extent practicable. OSROs shall ensure that all strategies and capabilities follow industry standards and comply with local, state, and federal laws (e.g., contracted diver OSROs will comply with OSHA and Coast Guard regulations).

(1) Examples of Recovery Capabilities.

(a) **Suction Dredge**. Dredging through use of hydraulic pumps to remove and transport the oil, oiled sediments, and oiled debris.

(b) **Diver-directed pumping and vacuuming**. Pumping capabilities refer to the use of a centrifugal or positive-displacement type pump at or below the water surface with a diver-directed suction hose. Vacuuming refers to a vacuum truck or unit above the water surface, either on shore or on a vessel/barge that creates a vacuum, with divers directing the hose attached to the vacuum. OSROs should be familiar with API *Technical Report 1154-1: Sunken Oil Detection and Recovery*. Specifically, section 6.0, titled "Diving in Contaminated Water," should be referenced to protect the safety and health of the divers assigned to complete this work.

(c) **Mechanical removal**. Examples of capabilities include excavators, clamshell dredges, environmental dredge buckets, or other machinery used to grab, scoop, or pick up sunken oil, oiled sediments, and oiled debris.

(d) **Sorbent/V-SORs**. Sorbents attached to chains that are dragged on the bottom to recover liquid oil.

(e) **Trawls and nets**. These are towed in the water column or on the bottom to recover viscous oil.

(f) **Manual removal**. Physical removal of viscous oil using hand tools, either by wading in shallow water or by divers in deeper water.

(g) **Agitation/refloat**. Agitation of oil on the bottom to get the oil to float to the surface for recovery.

b. **Storage Capabilities**: While fixed and temporary storage capabilities are not prescriptively listed in 33 CFR § 154.1047, 33 CFR § 155.1052, or 33 CFR § 155.5052, the regulations do require plan holders to identify appropriate equipment necessary to respond to a discharge. Storage resources are essential aspects of a response and fall within the intent of 33 CFR § 154.1047(c)(5) and 33 CFR § 155.1052(c)(4). Therefore, OSROs shall identify storage resources and methods used to store the recovered product. OSROs should state how these capabilities complement their procedures and strategies for responding to a WCD of nonfloating oils to the maximum extent practicable. OSROs shall ensure all strategies and capabilities follow industry standards and comply with local, state, and federal laws.

c. **Environmental Conditions and Operating Areas**: In accordance with 33 CFR § 154.1047(b) and 33 CFR § 155.1052(b), OSROs shall include a general description of the operating area (water depth included) to which their capabilities can extend and the environmental conditions in which their capabilities can operate without limitation. As OSROs may operate within multiple COTP zones or ACCs, only a general description is expected. OSROs should include any additional equipment that is critical to their nonfloating oil spill response during certain environmental conditions, such as specialized heating apparatuses during colder weather. OSROs should include methods used to mitigate the additional risks that each operating area and its environment, including seasonal conditions, may pose.

(1) Examples of Environmental Conditions and Operating Areas:

(a) Ice conditions;

(b) Debris;

(c) Temperature ranges;

(d) Weather and seasonal conditions; and

(e) Water salinity and visibility.

d. **(Optional) Containment**: OSROs may identify equipment and methods used for containing the product that may remain floating on the surface or to reduce spreading on the bottom. OSROs should include the depth to which these capabilities extend and what limitations may exist. OSROs should state how these capabilities complement their procedures and strategies for responding to a WCD of nonfloating oils to the maximum extent practicable. OSROs shall ensure all strategies and capabilities follow industry standards and comply with local, state, and federal laws (e.g., contracted diver OSROs will comply with OSHA and Coast Guard regulations).

(1) Examples of Containment Capabilities:

(a) Nets or curtains attached to the bottom and/or suspended from the surface;

(b) Physical barriers such as artificial depressions (e.g., trenching);

(c) Bottom boom;

(d) Sheet piling;

(e) Bubble curtain; and

(f) Sorbents in filter fences or cages.

E. Resource Requirements

1. To be classified as a nonfloating oil-capable OSRO, the OSRO must be able to demonstrate the minimum requirements listed in Section D of this chapter.

2. The number of personnel needed to support a response depends on numerous factors. For the OSRO classification program, the number of personnel required for a classification for each COTP zone or ACC is based on the location of resources. During the application process,

through the NSFCC and/or RRI, an OSRO will identify the number of personnel required to mobilize and operate the resources at each of its resource sites for a nonfloating oil discharge. Each site that meets the time requirements for a classification should have its personnel requirements totaled for that classification. If the OSRO has identified sufficient personnel to meet the response time requirements and concurrently can deploy and operate all equipment necessary for that level of classification, then an OSRO qualifies for that classification.

3. Resources counted for OSRO classification can be owned or contracted. All contracted assets must have a letter of agreement (LOA) between the OSRO and the contracting company on file at the NSFCC. FRP and VRP regulations require plan holders to ensure the availability of response resources by contract or other approved means. OSROs must meet these same requirements for all response resources (dedicated, non-dedicated, owned, and non-owned equipment and personnel) that they claim for classification purposes. All contracted equipment shall be listed in the RRI by the resource owner prior to an OSRO listing a resource as contracted.

APPENDIX A. List of Acronyms

AAR	After Action Report
ACC	Alternate Classification City
ACP	Area Contingency Plan
AMPD	Average Most Probable Discharge
AOR	Area of Responsibility
APC	Alternative Planning Criteria
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
bbl	Barrel; unit of volume
BSEE	Bureau of Safety and Environmental Enforcement
CDL	Commercial Driver's License
CFR	Code of Federal Regulations
CG-CVC	Coast Guard Office of Commercial Vessel Compliance
CG-MER	Coast Guard Office of Marine Environmental Response Policy
COTP	Captain of the Port
CPFR	Contingency Planning and Force Readiness
DOR	Dispersant-to-Oil Ratio
DRAT	District Response Advisory Team
Dilbit	Diluted Bitumen
EDAC	Effective Daily Application Capacity
EDRC	Effective Daily Recovery Capacity
EDSP	Estimated Dispersant System Potential Calculator

EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency
ERSP	Estimated Recovery System Potential
EV	Equipment Verification
FAA	Federal Aviation Administration
FI	Facility Inspector
FOSC	Federal On-Scene Coordinator
FRP	Facility Response Plan
FWPCA	Federal Water Pollution Control Act
GIUE	Government-Initiated Unannounced Exercise
HAZWOPER	Hazardous Waste Operations and Emergency Response
HVPA	Higher Volume Port Area
IMD	Incident Management Division
kts	Knots; unit of speed
LAPIO	Low API Oil
LOA	Letter of Agreement
lbs	Pounds
MMPD	Maximum Most Probable Discharge
mph	Miles Per Hour; unit of speed
MSU	Marine Safety Unit
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NM	Nautical Miles
NOAA	National Oceanic and Atmospheric Administration

NSF	National Strike Force
NSFCC	National Strike Force Coordination Center
OGA	Other Government Agency
OPA 90	Oil Pollution Act of 1990
OSHA	Occupational Safety and Health Administration
OSRO	Oil Spill Removal Organization
OSRV	Oil Spill Response Vessel
PAV	Preparedness Assessment Visit
PHMSA	Pipeline and Hazardous Materials Safety Administration
PREP	Preparedness for Response Exercise Program
RCP	Regional Contingency Plan
RRI	Response Resource Inventory
RRT	Regional Response Team
SPI	Sediment Profile Imaging
TSC	Temporary Storage Capacity
VMD	Volume Median Diameter
VRP	Vessel Response Plan
WCD	Worst Case Discharge

APPENDIX B. Glossary Terms

Adverse Weather	The weather conditions that will be considered when identifying response systems and equipment in a response plan for the applicable operating environment. Factors to consider include, but are not limited to, significant wave height, ice, temperature, weather-related visibility and currents within the COTP zone in which the systems or equipment are intended to function.
Alternate Classification City (ACC)	A designated geographic location along the U.S. coastline used in addition to or in lieu of a COTP zone for an OSRO classification.
Area Contingency Plan (ACP)	The plan prepared by an Area Committee that is developed to be implemented in conjunction with the NCP and RCP, in part to address removal of a WCD and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility or onshore facility operating in or near an area designated by the President of the United States.
Alternative Planning Criteria	Planning criteria approved by the Coast Guard when a planholder believes that national planning criteria in 33 CFR § 154, 155 are inappropriate for the areas in which the vessel intends to operate.
Captain of the Port (COTP) Zone	A zone specified in 33 CFR § 3 and, for coastal ports, the seaward extension of that zone to the outer boundary of the exclusive economic zone (EEZ).
Classification	A process for identifying OSRO capability within geographic locations on the basis of its ownership and/or control of specialized equipment and trained personnel used in the removal of oil from the area.
Containment Boom	Boom that is used to collect and hold oil on the surface of the water for recovery by skimmers or similar collection devices. The regulations require containment boom equal to 1,000 feet or twice the length of the largest vessel served, plus sufficient boom for the efficient operation of recovery devices. For classification, an OSRO is expected to have 1,000 feet of containment boom for each operating area in which it operates, plus 300 feet of containment boom for each recovery system used in its classification.

Contract	(1)A written contractual agreement between a vessel owner or operator and an oil spill removal organization. The agreement must identify and ensure the availability of specified personnel and equipment required under this subpart within stipulated response times in the specified geographic areas; (2) Certification by the vessel owner or operator that specified personnel and equipment required under this subpart are owned, operated, or under the direct control of the vessel owner or operator, and are available within stipulated response times in the specified geographic areas; (3) Active membership in a local or regional oil spill removal organization that has identified specified personnel and equipment required under this subpart that are available to respond to a discharge within stipulated response times in the specified geographic areas;
Dedicated Response Resources	Equipment and personnel dedicated primarily to oil spill response, cleanup and spill containment. Such equipment and personnel are not utilized for any other activity that would adversely affect their ability to provide oil spill response services.
Dispersant Application Platform	Vessels and aircraft outfitted with dispersant-application equipment acting as the delivery system for the dispersant onto the oil spill.
Dispersant	Chemical agents that emulsify, disperse or solubilize oil into the water column or promote the surface spreading of oil slicks to facilitate dispersal of the oil into the water column. Those products of a type that are listed NCP (40 CFR § 300), maintained by EPA.
Effective Daily Application Capacity (EDAC)	The estimated amount of dispersant that can be applied to a discharge by an application system given the availability of supporting dispersant stockpiles.
Estimated Dispersant System Potential Calculator (EDSP)	The Estimated Dispersant System Potential Calculator is a tool for OSROs seeking Dispersant classification. Regulations delineate the Planner requirements. The Planner uses dispersant-related input from the OSROs to evaluate and identify sufficient and appropriately trained personnel, vessels, delivery systems, dispersants and any other input parameters specified in the calculator. These values help the NSFCC with determining the Dispersant classification level of the OSRO.
Great Lakes	Operating area that includes Lakes Superior, Michigan, Huron, Erie and Ontario; their connecting and tributary waters; the Saint Lawrence River as far as Saint Regis; and adjacent port areas.
Gulf Coast Region	The region encompassing the following COTP zones: Corpus Christi, TX; Houston/Galveston, TX; Port Arthur, TX; Morgan City, LA; New Orleans, LA; Mobile, AL; and St. Petersburg, FL.

Heavy Oils	Includes all liquid petroleum products, whether refined, unrefined, diluted or weathered, which, at any point of its fate, possess an API gravity equal to or less than 20˚. This definition includes Dense Nonaqueous Phase Liquids (DNAPL), Diluted Bitumen (Dilbit), LAPIO (Low API Oil), Asphalt and Asphalt Products.
Higher Volume Port Areas (HVPA)	Ports listed in 33 CFR § 154.1020 and 33 CFR § 155.1020, including any water area within 50 NM seaward of the port.
Inland Area	The area shoreward of the boundary lines defined in 46 CFR part 7, except that in the Gulf of Mexico, it means the area shoreward of the lines of demarcation (COLREG lines) as defined in 33 CFR §§80.740 through 80.850. The inland area does not include the Great Lakes.
Maximum Most Probably Discharge (MMPD)	For a facility, a discharge of 1,200 barrels or 10% of the volume of a WCD, the lesser number. For a tank vessel with a capacity equal to or greater than 25,000 barrels of oil, a discharge of 2,500 barrels. For a tank vessel with a capacity of less than 25,000 barrels, a discharge of 10% of the tank vessel's oil cargo capacity.
Mobilization	The time it takes to get the resources assembled and prepared at the staging site. Mobilization begins when notification ends and ends when the resources are ready to move off-site.
Near Shore	The area extending seaward 12 NM from the boundary lines (except in the Gulf of Mexico) defined in 46 CFR § 7. In the Gulf of Mexico, it means the area extending seaward 12 NM from the line of demarcation (COLREG lines) as defined in Sections 80.740–80.850 of 33 CFR § Chapter I.
Non-dedicated Response Resources	Response resources with service that is not limited exclusively to oil or hazardous substance spill response-related activities.
Nonfloating Oils	All **Heavy oils** and **Group V oils** that have the propensity to move below the sea surface either because of their initial densities or because the changes in their densities as a result of weathering or interaction with sediments. Nonfloating oils may be below the water surface, suspended in the water column or deposited on the seabed.
Nonfloating Oil Plan	A comprehensive plan, owned by the OSRO, which outlines the characteristics of the OSRO's resources and capabilities for nonfloating oil spills in relation with the classification's core standards.
Non-persistent or Group I Oil	A petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions, at least 50% of which by volume distills at a temperature of 340°C (645°F) and 95% of which by volume distills at a temperature of 370°C (700°F).

Ocean	The near shore, offshore and open ocean operating areas as defined in these guidelines.
Offshore	The operating area up to 38 NM seaward of the outer boundary of the near shore area.
Oil Spill Removal Organization (OSRO)	An entity that provides oil spill response resources
Open Ocean	The area from 38 nautical miles seaward of the outer boundary of the nearshore area, to the seaward boundary of the exclusive economic zone (EEZ).
Operating Area	Rivers/canals, Great Lakes, inland, near shore, offshore or open ocean. These terms are used to define the geographic location(s) in which a facility or tank vessel is handling, storing or transporting oil.
Operating Environment	Rivers/canals, Great Lakes, inland, or ocean. These terms are used to define the conditions in which response equipment is designed to function.
Other Approved Means	For the purposes of these guidelines, means a Letter of Intent as defined in this Glossary.
Owned Resources	Equipment that belongs solely to the OSRO or personnel directly employed by the OSRO submitting an application for classification.
Preparedness Assessment Visit (PAV)	PAVs are a critical component of the oil spill response preparedness system, providing on-site verification of resources and their condition.
Persistent Oil	A petroleum based oil that does not meet the distillation criteria for non-persistent oil. For the purposes of these guidelines, persistent oils are further classified based on specific gravity as follows: **Group II**: Specific gravity less than 0.85 **Group III:** Specific gravity between 0.85 and less than 0.95 **Group IV**: Specific gravity equal to or greater than 0.95 and less than 1.0 **Group V:** Specific gravity equal to or greater than 1.0
Pre-authorization	Means an agreement, adopted by an RRT or Area Committee, which authorizes the use of dispersants at the discretion of the FOSC without the further approval of other federal or state authorities. These pre-authorization areas are generally limited to particular geographic areas within each region.
Primary Staging Site	Means a site designated within a COTP Zone that has been identified as a forward staging area for dispersant application platforms and the loading of dispersant stockpiles. Primary staging sites are typically the planned locations where platforms load or reload dispersants before departing for application at the site of the discharge and may not be the locations where dispersant stockpiles are stored or application platforms are home-based.

Protective Boom	Boom used for deflecting/diverting or otherwise influencing oil on the water surface away from sensitive environments, often but not always toward containment sites.
Resource Site	A location where personnel and pollution response equipment are staged.
Response Resource Inventory (RRI)	The database of oil spill response resources developed by the Coast Guard to meet requirements of OPA 90.
Response Resources	The personnel, equipment, supplies and other capabilities necessary to perform the response activities identified in an FRP or VRP.
Rivers/Canals	Operating area that includes bodies of water confined within the inland area, including the Intracoastal Waterways and other waterways artificially created for navigation, that have a project depth of 12 feet or less.
Skimming Systems	Devices used to remove spilled oil from the surface of the water through means of mechanical suction, adhesion, absorption, adsorption or some similar mechanism of action that allows separation and recovery of spilled oil from the water's surface. Skimmers may be self-propelled, towed or pushed through the water.
Temporary Storage Capacity (TSC)	Inflatable bladders, rubber barges, certificated barge capacity or other temporary storage that is capable of being utilized on-scene at a spill response and is designed and intended for storage of flammable or combustible liquids. It does not include tank vessels or barges-of-opportunity for which no prearrangements have been made. Fixed shore-based storage capacity, ensured available by contract or other approved means, is acceptable in limited circumstances.
Tiers 1, 2 and 3 Worst Case Discharge Classifications	The combination of response resources and the times within which the resources must be capable of arriving on-scene to meet WCD resource requirements as defined in 33 CFR § 154.1020 and 33 CFR § 155.1025.
Worst Cast Discharge (WCD)	As defined by 33 U.S.C. § 1321, means, "in the case of a vessel, a discharge in adverse weather conditions of its entire cargo" and, "in the case of an offshore facility or onshore facility, the largest foreseeable discharge in adverse weather conditions."

Sector Delaware Bay

OSROs and OSROs with BOAs

Sector Delaware Bay OSROs (March 2024)

(BOAs are followed by asterisk):

Accurate Marine Environmental, LLC*

ACV Enviro (former Clean Venture)*

Ardent Americas, LLC*

Atlantic Response*

Clean Harbors Environmental Services*

Delaware River & Bay Cooperative

Don Jon Marine Co, Inc.*

Environmental Restoration, LLC

EPS of Vermont, Inc

HEPACO, Inc.*

JMT Environmental Technologies, Inc.

Ken's Marine Services, Inc.*

Lewis Environmental*

Marine Pollution Control Corporation*

Marine Spill Response Corporation

Marion Environmental

Miller Environmental Group

Moran Environmental Recovery*

National Response Corporation

Northridge Group, Inc.

Northstar Marine, Inc.*

T&T Marine Salvage, Inc.

Weeks Marine*

Youngs Environmental Cleanup

The following link is where you should go to get the latest BOAs in effect: LOG-9 Office of Procurement and Contracting - BOA Library - All Documents (sharepoint-mil.us)

Annex OO

Hazardous Substance

Hazardous Substance Incident Annex – Sector Delaware Bay

Introduction

[Link to the Oil and Hazardous Materials Incident Annex in the NRF]

In accordance with the National Response Plan and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) the Coast Guard will serve as the Federal On-scene Coordinator (FOSC) for actual or potential releases of hazardous substances[1] within the coastal zone that would:

- Impact public health and safety AND
- Enter the environment and originate from:
  - Vessels or facilities [2]

Purpose

This Annex is written to provide initial response guidance upon notification of a hazardous substance release in the coastal zone which may have actual, potential, or perceived consequences to public health or the environment.

If the hazardous substance release is suspected or confirmed to be the result of a terrorist act, response to the incident should be initiated using this Annex, the Terrorism Incident Annex and the Area Maritime Security Plan.

Jurisdiction

The Coast Guard is the Federal On-scene Coordinator for any hazardous substance releases in the coastal zone that require emergency removal actions with the exception of incidents that:

- Occur from vessels or facilities owned, operated, or controlled by the Department of Defense (DOD) or Department of Energy (DOE)
- Are *non-emergency* removal actions of hazardous substance releases from vessels or facilities owned, operated, or controlled by Federal agencies *other than* the DOD or DOE

[1] The term hazardous substance is defined in CERCLA § 101. A list of hazardous substances can be found in 40 CFR 302.4

[2] The term *facility,* as defined under CERCLA Section 101(9), encompasses virtually any entity except vessels "where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise came to be located." This includes buildings, shipping containers, drums, vehicles, aircraft and drainage ditches. If hazardous substances were released from a vessel and sank to the bottom of the Delaware River, the vessel would not be considered a *facility*, but the affected area of the river bottom where the hazardous substance has accumulated would be considered as such.

Under the CERCLA the Coast Guard Incident Commander (acting under their FOSC authority) has the authority to:

- Initiate a time critical assessment of the threat
- Take the necessary steps to stabilize or control the immediately identified potential threat
- Begin activating Federal scientific support agencies necessary to conduct an assessment (air, water, soil, or specific substance sampling in accordance with the relevant published sampling protocols and guidelines)
- Initiate a response

Coast Guard Incident Commander Considerations

In most hazardous substance cases the On-scene Incident Commander will be from the local fire department or other local, county, or state agency. The Coast Guard Incident Commander's role is to:

- Determine if the incident requires the initiation of the Critical Incident Communications procedures [Link to Critical Incident Communications Procedures Section 1050]

- Determine if the response is being managed by appropriate local authorities in a timely manner (fire departments are normally lead agencies) and assess their need for Federal assistance.

If the response is being managed properly, provide Federal support as necessary to the On-scene Incident Commander through:

- Opening the CERCLA fund
- Activating Basic Ordering Agreements with contractors
- Providing technical support
- Deploying Coast Guard resources as needed (Atlantic Strike Team, vessels or aircraft)

If the response is not being managed properly by the Responsible Party[3] or is not managed in a timely manner, one of the following orders may be issued:

- An Administrative Order issued under CERCLA for "hazardous substance" releases when the FOSC has determined that there may be an imminent and substantial endangerment to the public health and welfare or the environment. The FOSC must be reasonably certain that the party to whom the Administrative Order is issued is in fact

[3] The owner and/or operator of a vessel or a facility. See 42 USC CH 103 Sec. 9607

the responsible party.[Example of a CERCLA Admin Order Section 9763]

- Captain of the Port Order[4] issued to insure the safety of vessels and waterfront facilities, and the protection of the navigable waters and the resources therein.

In the event that the Responsible Party:

- Cannot be identified, located, or contacted in a timely manner, or
- Is either unwilling or unable to take responsibility and initiate removal actions, or
- Is conducting removal actions which are inadequate, unsafe, and/or pose a hazard to public health and/or the environment, or
- Other agencies have not responded or are not available

Then: Commander Sector Delaware Bay will determine whether to federalize the removal actions. If federalized, the following actions should be taken:

- Engage in a coordinated and prompt response (The general rule for CERCLA is "First make it safe, then determine the extent of the hazard and Federal removal authorities")
- Contact the appropriate state agency
  - New Jersey Department of Environmental Protection
  - Pennsylvania Emergency Management Agency
  - Delaware Department of Natural Resources and Environmental Control
- Contact local/state authorities to secure the scene and establish exclusion zones
- Access CERCLA funding
- Consult the Base Plan Section 2000 for further Incident Commander actions [Link to Initial Considerations and Decisions of the Incident Commander/Unified Command Section 2000]
- Conduct a removal site assessment to include:
  - Identification of the source
  - Determination of the threat to public health (resources that can assist with this determination include)
    - Agency for Toxic Substance Disease Registry (ATSDR)
    - Local, County or State public health officials
  - Evaluation of the magnitude of the threat
  - Determination if actions have been taken to mitigate the release
  - Determination if there is potential of further release
- Designate the Potentially Responsible Party(s)
- Determine when removal actions are complete
- If the site requires continued cleanup under the remediation phase, AND IS NOT A VESSEL, transfer the role of OSC to EPA Region II or III as appropriate.

[4] See 33 CFR 160.101-109

Circumstances where the Coast Guard can Transfer OSC to the EPA

[Link to Guidance for Transitioning On-scene Coordinator from the Coast Guard to the EPA Section 9760]

The most common circumstances under which the Coast Guard OSC would transfer OSC responsibilities to the EPA for action are when:

- The release originates from a Hazardous Waste Management Facility.
- The release does not require an immediate removal action
- The site assessment determines that:
  - The release does not require immediate removal actions
  - Remedial actions are necessary to complete the cleanup
- The threat of further release has been eliminated, prior to the completion of the cleanup.
- Coast Guard policy requires that removal be secured when prompt action is no longer necessary and substantial remediation methods must be used to completely remove the remaining contamination.

When requesting a transfer of the OSC authority a "Statement of Agreement Transferring Federal On-Scene Coordinator Responsibility" shall document the transfer of authority. [Link to sample Statement Section 9761]

Under normal circumstances, the CG will not transfer OSC authority to the EPA whenever the source of a release is a vessel.

Notification

If the Coast Guard is receiving the initial notification:

- The information will be recorded in Sector Delaware Bay's Hazmat Incident Response Form [Link to Form Section 9762]
- Notify Tri-State Maritime Safety Association
- Contact the National Response Center (NRC)
- Contact appropriate local communications centers to activate local notification protocols

Dispatching Initial Coast Guard Response Personnel

Safety is *always* the *primary consideration* when the determination is made to dispatch response personnel.

Prior to dispatching personnel ensure that the following are completed:

- Obtain information on the hazardous substance (consider the following potential sources of information)
  - Responsible Party (RP)
  - Reference material sources (list not inclusive):

- CHRIS Manuals COMDINST 16465.12
- Material Safety Data Sheet (MSDS)
  - Supplied by PRP
  - Website http://www.cdc.gov/niosh/npg
- Department of Transportation' s Emergency Response Guidebook
- NIOSH Pocket Guide
- Atlantic Strike Team

- Collect existing and forecast environmental conditions (wind direction, speed, precipitation, temperature, inversions, etc)
- Determine nature of safety risk to responders consistent with environmental conditions. For example:
  - Inhalation hazards are directly related to wind conditions & inversions
  - Some chemicals, such as concentrated acids, react violently with water
  - Vapor pressure and off-gassing increase with temperature
- Determine, if established, the location of the Incident Command Post (ICP)
  - If there is no ICP established, contact appropriate local authorities to isolate the hazard and establish a safely located ICP
  - If locals are unable to isolate and/or control the hazardous substance release contact the Atlantic Strike Team to make entry and determine the exclusion, contamination reduction zone, and safe zone
- Get directions to the ICP that provide a safe approach to prevent inadvertent entry into a contaminated area – and check the approach against your own assessment of wind direction/speed.
- Conduct an operational risk assessment to evaluate safety concerns using either:
  - Green/Amber/Red (GAR) Model [Link to GAR form Section 9707]
  - Operational Hazard Work Sheet
    - [Link to ICS Compatible Site Safety Plan Section 9708]
    - [Link to Specific Hazard Attachments Section 9709]
- Ensure appropriate protective equipment is available
  - Emergency Escape Breathing Apparatus (EEBA)
  - Appropriate respirator and cartridge
  - Toxi-clip
  - Oxygen meter

Actions upon Arriving On-scene

- Meet with the On-scene Incident Commander at the Incident Command Post
- Determine the extent of the emergency (hazards) and actions taken to mitigate
- Determine with IC any need for Federal assistance
- Meet with PRP representative on scene and determine willingness to conduct removal actions on behalf of FOSC
- Obtain and record the following information on the unit's Hazmat Incident Response Form
  - Information on site security and control

- Availability of Emergency Response Plan
- Availability of Site Safety Plan
- Available and/or on scene Hazardous Materials response teams
- Appropriate use of personal protective equipment
- Air monitoring procedures
- Cleanup and disposal procedures

For all Federalized Removal Actions (at a facility or on a vessel)

The Unified Command should consider the following priorities, objectives and determinations when responding to a hazardous substance release.

Unified Command Priorities

- Responder safety
- Rescue of victims of the incident
- Source Control / Incident Stabilization
- Public safety and hazard mitigation
  - Protection from direct exposure, possible evacuations (evacuation determinations are generally a local government decision)
  - Protection of water intakes [Link to Water Intakes Notification List]
  - Protection of underground drinking water aquifers
  - Consider neutralizing agents prior to cleanup
- Removal, decontamination and treatment of injured or potentially exposed personnel
- Environmental cleanup/restoration
- Proper transportation, storage and disposal of contaminated debris & waste

Unified Command Considerations for an Incident Involving a Vessel

- Determine need to triage, treat, transport, decontaminate, and/or evacuate passengers and non-essential crew
- Establish a safety zone
- Vessel stability [Link to Salvage Section 3300]
- If vessel is underway, consult with states to determine whether to bring the vessel into port [Link to Port of Safe Refuge Document]
- Determine if Safe to Respond [Link to Safe to Respond]
- If vessel is on fire, consult the Marine Fire Fighting and SAR Plan [Link to Marine Fire Fighting Plan Executive Summary Section 8000]
  - Activate Tri-state Maritime Safety Association/MIRT Response Team

Unified Command Organization

The information in Figure 1 represents agencies that may support a hazardous substance release response operation and where they may potentially work in a Unified Command organization. If there is a suspected or actual terrorist threat associated with the incident, then

this information should be used in conjunction with the Unified Command organization structure outlined in the Terrorism Incident Annex.

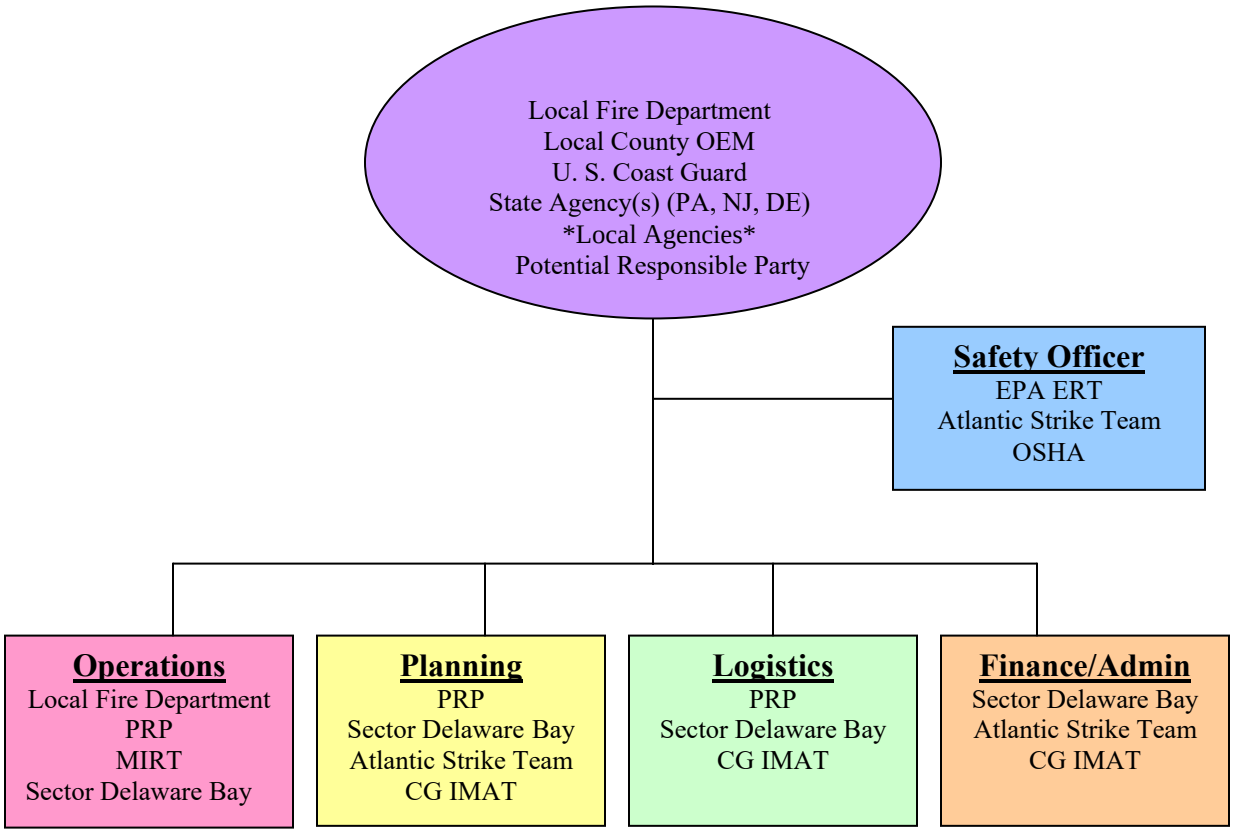


Figure 1. Depicts the potential agencies that may respond to a major hazardous substance release incident in the coastal zone. *Local governments are encouraged to contact the Unified Command through the Liaison Officer.*

Special Teams

The following special teams are equipped to respond to hazardous substance incidents, and should be considered as potential response resources:

- EPA Environmental Response Team (ERT)
- USCG Atlantic Strike Team (AST)
- OSHA (Region 2 New Jersey/Region 3 Pennsylvania and Delaware)
- ATSDR
- NOAA
- 3rd Civil Support Team (Pennsylvania)

Additional special teams can be found in the Special Teams Handbook [Link to the Handbook]
For local subject matter experts see:
[Link to Delaware Estuary Science Directory]

Annex PP

Biological Incident

Biological Incident Annex

Biological Incident Annex – Sector Delaware Bay

Introduction

[Link to the Biological Incident Annex in the NRP]

Response to a biological incident in the coastal zone can range from the illegal disposal of medical waste to the intentional release of a disease-causing organism. Initial response actions to a biological incident will depend on the type of incident and the cause or suspected cause of the incident (i.e. terrorist act).

The Coast Guard Incident Commander's response to biological incidents most likely will involve the use of both the Captain of the Port and Federal On-scene Coordinator (FOSC) authorities. The FOSC role is limited to disease causing agents that exist outside a host for a period of time and which can be physically removed from the environment.

Purpose

The purpose of this Annex is to provide initial response guidance upon notification of a suspected or actual report of a biological incident in the coastal zone.

If the biological incident is suspected or confirmed to be the result of a terrorist act, response to the incident should be initiated using this Annex, the Terrorism Incident Annex, and the Area Maritime Security Plan.

Using this Annex

The guidance in this Annex includes initial actions to be taken when responding to:

- Illegally dumped medical waste
- Quarantine (suspected or confirmed infectious disease on a vessel)
- Suspect or confirmed release of a biological agent involving:
  - Tainted, contaminated or otherwise suspect cargoes
  - Passengers and crew of a vessel
  - Buildings in the coastal zone

Illegally dumped medical waste

- Determine if competent authorities are taking appropriate action to remove the hazard (State and/or local health agencies are normally the lead agencies)
  - If yes,
    - Provide support as capabilities, authorities and safety of Coast Guard personnel allows
  - If no,
    - Contact local law enforcement and secure the area
    - Ensure that local health officials are aware of the incident
    - Determine if the medical waste presents an imminent and substantial danger to public health

- Initiate cleanup operations under CERCLA
- Hire a contractor authorized to handle medical waste to remove the hazard. Local cleanup contractors that can respond to a biological incident [Link to Contractor List Section 9751]

Quarantine (suspected or confirmed infectious disease on a vessel)

The intent of quarantine is to isolate the vessel involved, prevent those infected from going ashore without proper precautions, and to limit exposure to shoreside personnel (Marcus Hook Anchorage is the pre-identified quarantine station).

Upon notification that a vessel may have a possible or actual communicable disease onboard or is flying the quarantine flag the following actions should be taken:

- ❑ Immediately establish communications with the vessel to determine
  - Why the vessel is flying the quarantine flag
  - What disease is onboard
- ❑ Determine if the vessel has adequate crew to safely navigate the vessel
- ❑ Do not permit any Coast Guard personnel to board the vessel without approved safety precautions
- ❑ Immediately notify federal, state and local health departments
  - U.S. Public Health Department
  - Pennsylvania Department of Health
  - Philadelphia Department of Public Health
  - Delaware State Health Department
  - New Jersey State Health Department
- ❑ Gather medical information on affected crewmembers and passengers [Link to Medical Form Section 9750]
- ❑ Obtain a crew list
- ❑ Establish vessel security to control access (on and off the vessel)
- ❑ Maintain log of personnel that come on and off the vessel
- ❑ Ensure that Pilot's Association is notified
- ❑ Issue COTP order to
  - Implement a security plan
  - Prohibit cargo operations
  - Prohibit discharge of 'grey' water
- ❑ Notify unit's Public Health Doctor to advise the Command and provide liaison with local health officials
- ❑ Direct agent to get medical assistance for crew
- ❑ As directed by public health incident commander implement port quarantine plan [Link to Quarantine Policy Section 9754]
- ❑ Notification to the NRC will result in the NRC Notifying the Center for Disease Control requesting assistance from Agency for Toxic Substances and Disease Registry (ATSDR)
- ❑ Notify Customs and Border Protection

Biological Incident Annex – Sector Delaware Bay

Suspected or confirmed release of a biological agent

The actions that the Coast Guard Incident Commander takes in response to a suspected or confirmed release of a biological agent will be driven by many factors:

- Is the incident on a vessel? If yes,
  - Have the crew and/or passengers been impacted?; or,
  - Is it the vessel's cargo?
- Is the incident at a facility or building in the coastal zone?
- Is the intelligence credible?

For any suspected or confirmed biological incidents involving vessels

- Consult with appropriate agencies to determine details for issuing a Captain of the Port Order directing the vessel to remain offshore or go to a safe anchorage [Link to Port of Safe Refuge/Security Event on a Vessel Document]
- Work with the Philadelphia FIST to determine if threat is credible or non-credible
  - If credible, support the Department of Health and Human Services which is the Coordinating Agency and the Federal Bureau of Investigation [Refer to Terrorism Incident Annex]
- Initiate Critical Incident Communications procedures [Link to Critical Incident Communications Procedures Section 1050]
- Determine if Safe to Respond
  - Work with the Unified Command to determine the control zones (hot, warm, cold)
  - Ensure Unified Command communicates location of zones to response personnel
  - Document Safe to Respond determination
- Support designated public health officials to minimize the health risk of passengers and crew
  - Isolation of contaminated areas
  - Gross decontamination for exposed personnel (showers)
  - Minimize spread by securing contaminated articles (bag suspected clothing)
- Ensure all crew, pilot and passengers are accounted for and maintain positive control
- Determine if a safety zone will be required (waterside and landside)
- Determine any actions required for the safety of the crew and any passengers.
- Contact District-5 (marine safety) for determination if a Statement of No Objection (SNO) is required for law enforcement boarding
- If necessary, request a Crisis Exemption from the Environmental Protection Agency for the use of any chemical countermeasures that use products regulated by the Federal Insecticide, Fungicide, and Rodenticide

Act (FIFRA) of 1996 [Link to Guidance for Obtaining a FIFRA Crisis Exemption Section 9752]

- Crisis communications
  - Medical professionals should communicate with the public
  - Public health are the primary spokespersons for biological incidents
- Determine need to obtain CERCLA funding

If suspected source for the biological agent is cargo

The Unified Command should consider the following priorities, objectives and determinations when responding to a suspected biological agent that involve a vessel's cargo.

Unified Command Priorities

- Safety of boarding teams
- Public safety
- Selecting a location to offload suspected cargo/passengers
- Disposal of the cargo

Unified Command Objectives

- Conduct security boarding
  - Boarding team to examine ship's medical log to determine if any entries were made regarding crew's possible exposure to a biological agent
- Check for secondary devices (explosives)
- Conduct non-intrusive assessment of suspect cargo testing for:
  - Flammable
  - Radiological
  - Chemical
  - Biological
  - Explosives
- Ensure the preservation of evidence

Unified Command Determinations

- Determine the location where suspected cargo should be offloaded [Link to Port of Safe Refuge Document]
  - At anchorage
  - Pier side
- Determine need to establish a Science Team
- Determine where to dispose of the cargo
  - At sea

- On land – may require State permit for disposal, a problem may occur when crossing state boundaries

Unified Command Organization

The cooperation of many organizations will be required to successfully respond to and mitigate the threat posed by a biological incident. The information in Figure 1 represents agencies that may support a biological response operation and where they may potentially operate in a Unified Command organization. This information should be used in conjunction with the Unified Command organization structure outlined in the Terrorism Incident Annex.

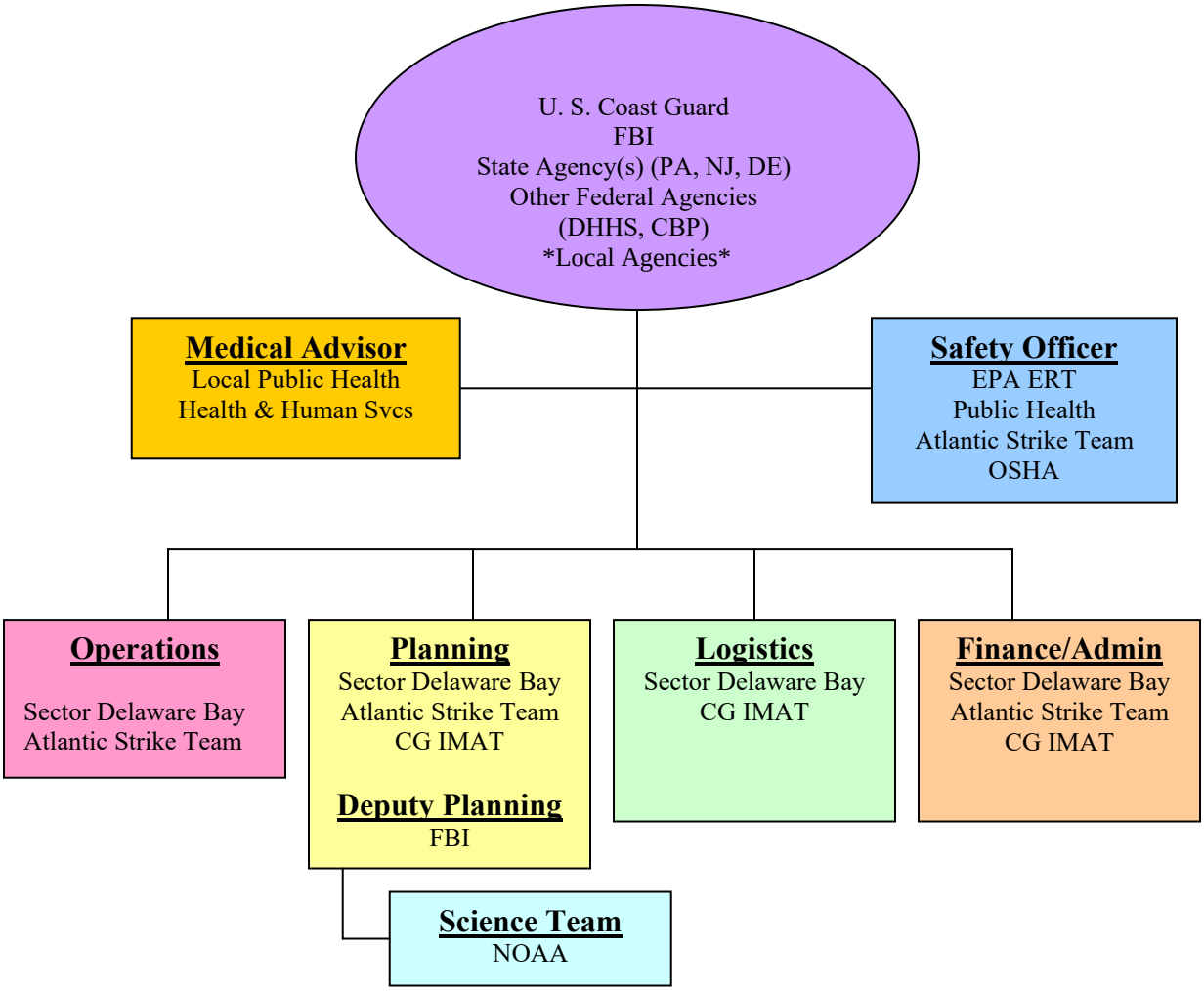


Figure 1. Depicts the potential agencies that may respond to a biological incident in the coastal zone. The information in this Figure should be used in conjunction with the ICS organization structure in the Terrorism Incident Annex.
Local governments are encouraged to contact the Unified Command through the Liaison Officer.

Science Team: The Science Team is led by NOAA's Scientific Support Coordinator and is responsible for:

- Determining appropriate entry procedures for inspecting the interiors of suspected containers of container cargo
- Developing a sampling plan
- Developing disposal protocols for unknown biological hazards
- Developing plan to transport and dispose of contamination

The Science Team may have representation from a wide variety of agencies and entities including but not limited to:

- Center for Disease Control and Prevention
- U.S. Department of Agriculture
- USCG Atlantic Strike Team
- Environmental Protection Agency Region II and III
- Request for EPA assistance made through their Regional Response Center 24-hour number
- Food and Drug Administration
- State Health Agencies
  - Delaware DHSS
  - New Jersey
  - Pennsylvania
- Animal Plant and Health Inspection Service (APHIS)
- State Departments of Environmental Protection
  - Delaware Department of Natural Resources and Conservation
  - New Jersey Department of Environmental Protection
  - Pennsylvania Department of Environmental Protection

A Building Structure in the Coastal Zone

Local and state health agencies have primary jurisdiction in responding to biological incidents. The Coast Guard Incident Commander will ensure that:

- Competent authorities are responding
- Notifications are made to the appropriate authorities:
  - Environmental Protection Agency Region II or III
  - Federal Bureau of Investigation
    - Philadelphia office
    - Newark Office
    - Baltimore Office
- The incident site is secured
- A site assessment is conducted
  - Sampling and analysis plan

- Once situation is stable the CGIC will begin transferring the role of Federal On-scene Coordinator to the appropriate EPA region [Link to Guidance for Transitioning On-scene Coordinator from the USCG to the EPA Section 9760]

Special Teams

The following special teams are equipped to respond to biological incidents, and should be considered as potential response resources:

- EPA Emergency Response Team (ERT)
- USCG Atlantic Strike Team (AST)
- OSHA
- ATSDR
- NOAA
- Pennsylvania Special Teams are accessed through PEMA
  - Local Hazmat Teams
  - 3rd WMD Civil Support Team
- Delaware Special Teams are accessed through DEMA
- New Jersey Special Teams are accessed through NJ OEM

Additional special teams can be found in the Special Teams Handbook [Link to the Handbook]

For Local subject matter experts see:
[Link to Delaware Estuary Science Directory]

Bio-Hazard Clean-up Contractors

9751 Biological Cleanup Contractors

Company Name	BOA Number	Phone Number
Clean Harbors Environmental Services	HSCG84-05-A-100085	800-914-1800 ext 5309 215-425-5144
Clean Ventures, Inc.	DTCG84-00-A-500115MOD0002	856-863-8778
Guardian Environmental Services	DTCG84-01-A-500103MOD0002	800-354-4395
HMTTC	DTCG84-04-A-500113	610-940-0124/973-770-6900
Miller Environmental Group	DTCG84-04-A-500111	856-224-1100
React Environmental	HSCG84-04-A 500118	800-326-2439 /215-729-2777

Guidance to Use

Insecticides

Fungicides

Rodenticides

9752 Guidance for Obtaining Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Crisis Exemption

Introduction

The use of a chemical agent (Pesticide) for a purpose for which it has not been approved by the Environmental Protection Agency will require a FIFRA Section 18 Crisis Exemption prior their use.

Purpose

The purpose of this section is to outline the U.S. Coast Guard's process for obtaining a FIFRA Crisis Exemption to allow for chemical decontamination of biological agents. When the Coast Guard Incident Commander (operating under their OSC authority) in consultation with the Unified Command and the Science Team makes the determination that the use of a chemical pesticide is warranted, a request to the EPA for a FIFRA crisis exemption will have to be made. This Crisis Exemption allows for the unregistered use of chemicals (pesticide) for a period of 15 days.

Procedures for FIFRA Crisis Exemption

- If there is no EPA representative on the incident command team, notify the appropriate EPA Regional Response Center.
  Region II - 732-548-8730
  Region III - 215-814-9016
- The Coast Guard in conjunction with EPA representative should contact the EPA Headquarters FIFRA office.
- Notify the appropriate state agencies.
- Develop a *Remedial Action Plan* (RAP) for EPA approval.
  - The *Remedial Action Plan* outlines:
    - The reasons for using an unconventional pesticide
    - Project planning
    - Health and safety concerns
    - The fumigation process

The RAP may be authored by the contractor and must be specific in nature to the incident.

- Develop an *Ambient Air Monitoring Plan* (AAMP) for monitoring fumigation operations for EPA approval.
  - The *Ambient Air Monitoring Plan* outlines:
    - The objectives
    - Implementation procedures
    - Equipment
- Develop a *Sampling & Analysis Plan* (SAAP) to address the type, number and procedures for collecting samples and laboratory procedures for analysis to ensure accurate consistent results.
- Develop an *Emergency Response Plan* (ERP), which is an incident specific safety plan, which must be submitted to state agencies.

    - The Emergency Response Plan outlines:
        - Hazards associated with operations
        - Safety precautions
        - Personal protective equipment
        - Contingencies
        - Safety concerns.
- Send a formal request letter from the Coast Guard requesting the FIFRA Crisis Exemption to the EPA. [Link to example FIFRA Request Letter Section 9753]
    - The letter must be written on United States Coast Guard letterhead and contain within:
        - The name of the proposed chemical
        - A brief reason for the urgency
        - Timeframe for the chemical's use
        - A contact point for the Coast Guard
        - The signature of the CGIC
- The Letter must be submitted to EPA Headquarters Office of FIFRA and Pesticide Program. In addition to the request Letter the RAP, AAMP, and SAAP must be attached.

Criteria for State approval

Depending on the state where the incident is occurring, the impacted state will have to issue an exemption in addition to EPA Crisis Exemption. Procedures for each state (New Jersey, Pennsylvania and Delaware are outlined below:

New Jersey

The New Jersey Department of Environmental Protection Pesticide Control Program issues the exemption.

- Contact NJDEP Bureau of Pesticides Operations
    - Phone# (609) 984-6647 Fax# (609) 984-6555 (Urgent)
- Submit a copy of the Request Letter along with the attached RAP, AAMP, SAAP and ERP.
- Provide information on contractor to be used, including contact information.
    - Contractor will need a Pesticide Applicator Business license & an employee with a Commercial Certified Pesticide Applicator license, in most cases.
    - If contractor does not have the required licenses then completion of training, certification exams & licensing forms, & payment of license fees will be required prior to issuance of licenses.
    - Contractor's licensed Commercial Certified Pesticide Applicator will be required to remain on-site during the course of any fumigation activities.
- After review and approval of requested documents & verification of required licenses, the Chief of the Bureau of Pesticide Operations for NJDEP will issue an approval letter.
- On-site monitoring by NJ DEP personnel may be required.

- After review and approval of requested documents, the Chief of the Bureau of Pesticide Operations for NJDEP will submit an approval letter.

Pennsylvania

The Pennsylvania Department of Agriculture Pesticides Section issues the exemption.

- Contact Pennsylvania Department of Agriculture (Pesticides) in regards to exemptions.
  - Phone# (717) 772-5217 Fax: (717) 783-3275 (Urgent)
- Submit a copy of the Request Letter along with the attached RAP, AAMP, SAAP and ERP.
- Ensure contractor is licensed in the Commonwealth of Pennsylvania.
  - This required registration might include forms and fees.
  - Contractor personnel were required to have Pesticide Application License and certification. This person had to remain on-Site during the course of fumigation activities.
- After review and approval of requested documents, the Pennsylvania Department of Agriculture Pesticides Section Administrator will submit an approval letter.

Delaware

The Delaware Department of Agriculture Pesticides Section issues the exemption.

- Contact Delaware Department of Agriculture (Pesticides) in regards to exemptions.
  - Phone# (302) 698-4570 Fax: (302) 697-4483 (Urgent)
- Submit a copy of the Request Letter along with the attached RAP, AAMP, SAAP and ERP.
- Ensure contractor is licensed and insured in the State of Delaware.
  - This required registration may include forms and fees.
  - Contractor personnel were required to have Pesticide Application License. This person had to remain on-Site during the course of fumigation activities.
- After review and approval of requested documents, the Delaware Department of Agriculture Pesticides Section Administrator will submit an approval letter.

Follow-up

In accordance with the FIFRA Section 18 Crisis Exemption, a final report is to be submitted to EPA. This document must be received within three months of the last date of fumigation. The contractor usually generates this documentation.

Bioterrorism

Communicable Disease

Quick Response Card

BIOTERRORISM/ COMMUNICABLE DISEASE

	Date/Time
Short Title:	**MISLE**
Watchstander:	**CIC**

INITIAL INFORMATION COLLECTION – AWARENESS:

Incident type:	**Location:**

REPORTING SOURCE INFORMATION:

Name:	**Phone:**	**Vessel name:**	**Official Number#:**
Address if calling from shore:			

VESSEL INVOLVED:

Type:			
Vessel Name:	**Doc/IMO#:**	**Flag:**	**POB:**
Length:	**Cargo:**	**Fuel onboard:**	**Hazards:**
LPOC:		**NPOC:**	
Vessel Owner/ Address/ Phone:			
Master's Name/ Phone #:			
Agent's' Name/ Phone #:			

INFECTED INDIVIDUALS:

1. Name/DOB:	**Symptoms:**
2. Name/DOB:	**Symptoms:**

3. Name/DOB:	**Symptoms:**
4. Name/DOB:	**Symptoms:**
5. Name/DOB:	**Symptoms:**
6. Name/DOB:	**Symptoms:**

ON SCENE WEATHER

VISIBILITY	WIND	SEA CONDITION		TEMPERATURE	
	Direction/ Speed	Height	Direction	Air	Water
SUNRISE/ SUNSET	**TIDAL CURRENT**	**NEXT TIDE**		**MISCELLANEOUS**	
	Direction/ Speed	High/ Low	Time/ height		

CRITERIA FOR IMPLEMENTION OF QRC:

1. Notification that a bioterrorism event or potential exposure to a quarantinable / communicable disease has occurred aboard a maritime interest (i.e. cruise ship, cargo vessel, ferry (inbound and/or shore-side)).
2. Notification that a CG unit or employee was the subject of a bioterrorism threat or potentially exposed to a quarantinable /communicable disease.
3. Request by an external government agency, including the DOD, for CG assistance in responding to a biological incident.
4. Request by the CG to an external government agency for assistance in responding to a biological incident: This includes EPA, CDC, HHS, local public health or other law enforcement agencies.

Note 1: If biological terrorism is suspected, establish a MOTR conference call (See FLAG 095 MOTR)

Note 2: Operational Commanders are only required to make USCG resources available to CDC for quarantine enforcement and assistance when such use and availability does not conflict with higher priority operations (e.g., emergent SAR, MARSEC 2/3 ops).

INITIAL ACTIONS:

_____ If MEDEVAC is needed, utilize MEDEVAC QRC

_____ Brief appropriate Sector Chain of Command

_____ Open MISLE notification/case

_____ Print Vessel Critical Profile, add to MISLE case

_____ Brief appropriate agencies:

- NRC: 1-800-424-8802
- CDC POC: Julie Sinclair Office: 215-365-6401, Cell: 404-429-4299
- CBP Office: 215-717-5951 or 215-717-5803

_____ Consider prompting a CIC notification (See CIC QRC)

_____ Notify Pilots if other vessel traffic impacted.

_____ Issue Safety Broadcast Notice to Mariners if necessary

_____ Utilize quarantine anchorage, Marcus Hook Anchorage

_____ Notify Gary Wolf from the U.S. Food and Drug Administration (if it involves a commercial fishing vessel or impacts food supply (609-287-2991).

_____

_____

PLANNING:

_____ Receive or develop tactical plan

_____ Conduct ORM

_____ Determine appropriate security/safety zone and impact to other commercial/recreational traffic

_____ Make notifications IAW briefing matrix

PEACE MODEL – IDENTIFY HAZARDS				
☐ **P**lanning	☐ **E**vent Complexity	☐ **A**sset Selection	☐ **C**ommunications	☐ **E**nvironment
STAAR MODEL – IDENTIFY OPTIONS				
☐ **S**pread out	☐ **T**ransfer	☐ **A**void	☐ **A**ccept	☐ **R**educe

OPERATIONAL EXECUTION:

_____ Dispatch appropriate unit

_____ GAR score from responding unit(s). _____ ☐ Green(0-23) ☐ Amber(24-44) ☐ Red(45-60)

Concerns_____

CC GAR				
Assets GAR Scores:	Supervision:	Planning:	Crew Selection	Total GAR Score:_____ ☐Green (0-23) ☐Amber (24-44) ☐Red (45-60)
	Crew Fitness:	Environment	Complexity:	

_____ Monitor case

CONCLUSION:

_____ Make notifications IAW briefing matrix

_____ Submit MISLE Case for review

POLICY/PROGRAM INFORMATION

Program Manager:

CG-532 – Counterterrorism and Defense Operations (Bioterrorism - WMD)
CG-533 – Incident Management and Preparedness (Communicable Disease & Disease-causing Agents)

Coordinating Divisions

CG-11 – Health and Safety Directorate
CG-0941 – Maritime & International Law

References:

Bioterrorism:

1. Weapons of Mass Destruction and Catastrophic Hazardous Materials Releases, COMDTINST 3400.3 (series)
2. FOSC Response to Incidents Involving Anthrax or Other Disease-Causing Agents, ALCOAST 555/01
3. Maritime Operational Threat Response Plan (MOTR)
4. Marine Safety Manual, COMDTINST M16000.12, Volume VII, Chapter 6

Communicable Disease:

5. HHS/DHS MOU regarding introduction, transmission & spread of quarantinable/serious communicable diseases, Oct. 2005
6. USCG Response to Quarantinable Communicable Disease Outbreaks of Operational Significance, COMDTINST 6220.11
7. Coast Guard Pandemic Influenza Force Health Protection Policy, COMDTINST 6220.12
8. Public Health and Communicable Disease Concerns Related to Alien Migrant Interdiction Operations (AMIO), COMDTINST M6220.9
9. National Contingency Plan (40 CFR 300)

General References:

10. Maritime Law Enforcement Manual, COMDTINST M16247.1, Chapter 4, Appendix J
11. U.S. Coast Guard Incident Management Handbook, COMDTPUB P3120.17

12. The National Response Framework (NRF)

Definitions:

1. Quarantinable Disease: Any of the communicable diseases listed in an executive order of the President, as provided under section 361 pf the Public Health Service Act (42 USC 264). The current list includes: Cholera, Diphtheria, Infectious tuberculosis, Plague, Severe Acute Respiratory Syndrome (SARS), Smallpox, Yellow fever, Viral hemorrhagic fevers, & Influenza caused by novel/reemerging virus with a potential to cause a pandemic
2. Communicable Disease: An illness due to a specific infectious agent or its toxic products which arise through the transmission of that agent or its products from an infected person or animal or reservoir to a susceptible host, either directly or indirectly through an intermediate host, vector or the inanimate environment.
3. Isolation: The separation of an infected person from healthy people and the restriction of an infected person's movement to stop the spread of the disease.
4. Quarantine: The separation and restriction of movement of persons who are not yet ill, but who have been exposed to an infectious agent and are therefore potentially infectious.

Background:

1. The responsibility within Coast Guard Headquarters (CGHQ) for the CGHQ coordination of all biological incidents is shared between the Commandant's Office of Counterterrorism and Defense Operations (CG-532) and the Office of Incident Management and Preparedness (CG-533). CG-532 will be the lead office for bioterrorism events. CG-533 will be the lead office for communicable disease events and for the release of disease-causing agents.* CG-532 and CG-533 shall be notified for all related events.
   Note: When a biological response is contemplated by armed, uniformed CG personnel aboard vessels and at shore facilities, the activity is considered an MLE mission and is governed by the policy established in the *Maritime Law Enforcement Manual (MLEM)*, COMDTINST M16247.1 (series). The policy for Coast Guard response to public health alerts and quarantines is in Appendix J of the *M*LEM. The policy for response to pollutants and contaminants, including disease-causing agents is found in the National Contingency Plan (40 CFR 300).
   Note: A suspected or actual bioterrorism event aboard a vessel is a trigger for the Maritime Operational Threat Response (MOTR) Plan. During a bioterrorism event where a biological agent is intentionally released, the CG could respond under auspices of the National Contingency Plan (NCP) and Area Contingency Plan (ACP) for the hazmat response and the Area Maritime Security Plan (AMSP) for the terrorism response.

2. The National Response Center (NRC) and CG National Command Center (CGNCC) are both part of the CGHQ Office of Current Operations. The NRC shall be notified of all significant biological incidents by calling **1-800-424-8802**. The NRC will also notify the Command Center Duty Officer of significant biological incidents. The Centers for Disease Control and Prevention (CDC) EOC **1-770-488-7100** and The National Strike Force Coordination Center (NSFCC) will be notified by the Command Center for biological incidents that require the attention of the National Strike Force and other federal agencies. The Public Information Assistance Team (PIAT) will be notified by the Command Center, through the NSFCC, whenever a request is made for their assistance.

*The term "disease-causing agent" is included in the definition of "pollutants and contaminants" as defined in the NCP (40 CFR 300.5)

Annex QQ

Contact Info for Government Agencies and Subject Matter Experts

ACP Contact List

Rev. 52/21/2024

Category	Agency	Last Name	First Name	Email	Phone Number	Fax Number	Comments
Federal	**Agency for Toxic Substance Disease Registry (ATSDR)**				404-639-0615 (Bio) or 215-814-3140		
Federal	**Alcohol Tobacco and Fire Arms (ATF)**				215--768-0075		
Federal	**USDA - Animal Plant Health Inspection Service (APHIS)**	Dura	Dennis	Dennis.Dura@usda.gov	301.851.3007 (O) 609.534.6500 (C)		Updated: 2/2024 Area Committee Member
Federal	**Center for Disease Control and Prevention Phila. Quarantine Station Phila. International Airport**	Torres	Jennifer	pzp2@cdc.gov	215-365-6401 (24 hrs)	215-365-5419	Updated: 2/2024 Area Committee Member
Federal	**Civil Air Patrol**				800-851-3051		
Federal	**Dept. of Energy** - Radiological Assistance Program	Centore	Steve		631-344-7309 or 2200		
Federal	**EPA Region 2, 24/7 Contact Number (Best way to reach EPA 2)**	Contact NRC			800-424-8802		Updated 2/2024
Federal	**EPA Region 2, Regional EOC**	24 hour number	Duty Officer		732-906-6850		Updated : 2/2024
Federal	**EPA, Region 2 NJ Enviro. Response Team (Regional response Team 2)**	Touw	Steve	touw.steve@epa.gov	732-906-6900	908-420-4458	Retiring 5/31/2024 Updated: 2/24
Federal	**EPA, Region 2 NJ Enviro. Response Team**	Pellegrino	Carl	pellegrino.carl@epa.gov	877-927-6337	908-420-4491	
Federal	**EPA Region 2, Deputy Regional Incident Coordinator (In case the Duty Officer cannot be reached)**	Jimenez	Chris	jimenez.christopher@epa.gov	908-420-4484 (cell)		Updated 2/2024
Federal	**EPA Region 2, Supervisor, Emergency Response Section (In case the Duty Officer cannot be reached)**	Hoppe	Shawna	hoppe.shawna@epa.gov	646-221-4321		Updated: 2/2024
Federal	**EPA Region 2, Government Initiated Unannounced Exercise (GIUE) Coordinator**	Staiger	Kim	Staiger.Kimberly@epa.gov	732-452-6415 (office) 908-420-4510 (cell)		Updated: 2/2024
Federal	**EPA Region 2, (Alternate) Government Initiated Unannounced Exercise (GIUE) Coordinator**	Banner	Ellen	banner.ellen@epa.gov	732-321-4348 (office)		Updated: 2/2024
Federal	**EPA Region 3, 24/7 Contact Number**	On Duty OSC			215-814-3255		Duty OSC and POCs below can help in getting any special teams: (Environmental Response Team, Bio-Emergency Response Team, Radiological Emergency Response Team) Updated 2/2024
Federal	**EPA Region 3, Executive Steering Committee Representative, OSC Eastern Response Section**	Rovira	Edwardo	Rovira.Eduardo@epa.gov	215-514-6887		
Federal	**EPA Region 3, Chief, Preparedness & Support Section, RRT Co-Chair**	Boyd	Kevin	boyd.kevin@epa.gov	215-814-3418		
Federal	**EPA - Region 3 FOSC**	Towle	Mike	towle.michael@epa.gov	215-814-3272 ext.3524		
Federal	**EPA - Region 3 Government Initiated Unannounced Exercise (GIUE) Coordinator**	Lindsey	Deborah		(304) 234-0249 / (304) 281-2569		Updated: 2/2024
Federal					215-492-4123		
Federal	**FBI Pennsylvania**	Philadelphia office 24/7 number	(215) 418-4000				
Federal	**FBI Pennsylvania**	Philadelphia Maritime POC:	George Husk	gjhusk@fbi.gov	Cell: 215-316-6055		
Federal	**FBI Delaware**	Baltimore office 24/7 number:	(410) 265-8080				
Federal	**FBI Delaware**	Baltimore Maritime POC:	Christopher Izant	clizant@fbi.gov	Cell: 443-904-3846		
Federal	**FBI New Jersey**	Newark office 24/7 number:	(973) 792-3000				
Federal	**FBI New Jersey**	Newark Maritime POC	John Montgomery	jemontgomery@fbi.gov	Cell: 609-462-5622		
Federal	**FBI - HQ**	FBI HQ Strategic Information & Operations Center (SIOC)	202-323-3300				
Federal	**FEMA II**						
Federal	**FEMA II**						
Federal	**FEMA II**						
Federal	**FEMA III**						

Federal	**Food and Drug Administration Division of Shellfish Sanitation**	Wolf	Gary	gary.wolf@fda.hhs.gov	Cell: 609-287-2991		
Federal	**National Response Center NRC**				800-424-8802		
Federal	**National Weather Service**				215-936-1212		
Federal	**Naval Surface Warfare Center**	Breeden	Paul	breeden@nswccd.navy.mil	215-897-8355		
Federal	**Navy Public Works - Philadelphia**	Grassia	Tony	grassiaap@pwcdetphil.navy.mil	215-897-2035		
Federal	**Navy Public Works - Philadelphia**	Myers	Joe	myersjh@pwcdetphil.navy.mil	215-897-2035		
Federal	**NOAA - Scientific Support Coordinator**	Csulak	Frank	frank.csulak@noaa.gov	732-371-1005		Updated: 2/2024
Federal		Bolke	Chriss	christoferboelke@noaa.gov	978-281-9131		
Federal	**Nuclear Regulatory Commission (NRC) (Lead Federal Agency)**				1-800-368-5642		
Federal	Local Agency Office				301-415-7000		
Federal	Laboratory Scientific Support (Customs and Boarder Protection)				407-975-1780 24Hrs		
Federal	Public Affairs				301-415-8200		
Federal	(Local Rep.)	Borse	Bob		610-337-5213		
Federal	*or contact NRC Rep at Salem/Hope Creek or Oyster Creek						
Federal	**OSHA**				800-321-OSHA		
Federal	**OSHA, Region 2 NJ**				212-337-2378		
Federal	**OSHA, Region 3 PA/DE**				215-597-4955		
Federal	**US Army Corp of Engineers**	Monsue	James	james.v.monsu@usace.army.mil	215-313-1135		
Federal	**US Bureau of Customs and Border Protection**				215-596-1972		
Federal	**US Bureau of Immigration**				215-596-1968/1969		
Federal	**US Dept. of Agriculture**				202-720-9522		
Federal	**US Dept. of Commerce**				215-814-3321 Day 206-617-5440 Night		
Federal	**US Dept. of Interior**						
Federal	OEPC Region 2	Raddant	Andrew	Andrew_Raddant@ios.doi.gov	Cell: 617-592-5444		
Federal	OEPC Region 3	Nelson	John	john_nelson@ios.doi.gov	215-597-5378 24hr 215-266-5155	215-597-9845	
Federal	Alternate OEPC Region 3	Darby	Valincia	valincia_darby@ios.doi.gov	Office: 215-597-5378 Direct: 215-597-6518 Mobile: 215-913-6238 Fax: 215-597-9845		
Federal	**US Fish and Wildlife Service**						
Federal	USFWS (DE)	McGowan	Peter	peter_c_mcgowan@fws.gov	410-573-4523		
	USUSFWS (NJ)	Scheaffer	Sarah	sarah_scheaffer@fws.gov	609-833-1476		
Federal	USFWS (PA)	Phillips	Brendalee	brendalee_phillips@fws.gov	610-521-0662		
Federal	See USFWS EMERGENCY RESPONSE CAPABILITIES AT NATIONAL WILDLIFE REFUGES						
Federal	**US Geological Survey**				610-321-2434	610-321-2509	
Federal	**USCG**						
Federal	**USCG Atlantic Strike Team**				609-724-0008	609-351-7155	
Federal	**USCG GRP/ Air Station - Atlantic City**				609-677-2230/ GDO 2225		
Federal	Air Station Atlantic City (Air OPS Branch Director)				609-677-2200 (or OPCEN)		
Federal	Aviation Operations Officer (Asst. Air OPS)				609-677-2213 (or OPCEN)		
Federal	**AUX AIR**	Redlawsk	Judy		717-554-6173		
Federal	Group Atlantic City Operations/Communications Center				609-677-2222/2225		
Federal	**USCG Sector Delaware Bay**				215-271-4940/4807		
Federal	**Response Documentation Specialist**	Anglin	Chuck		757-561-9276		
Federal	**CGC FINBACK (OinC)**				609-898-6208, 609-425-2535 (Cell)		
Federal	**CGC IBIS (OinC)**				609-898-6870, 609-425-0287 (Cell)		

Federal	**CGC MAKO (OinC)**				609-898-6992, 609-226-2414 (Cell)		
Federal	**Station Barnegat Light / OINC**				609 494-2661		
Federal	**Station Cape May**				609-898-6995		
Federal	**Station Manasquan Inlet / OINC**				(732) 899-0130		
Federal	**Prime Hook NWR Milton, DE**	Stroeh	Michael			302-684-8504	
Federal	**Fifth District Response Advisory Team (DRAT)**	Pugh	David	david.e.pugh1@uscg.mil	757-398-6585	757-274-4823	
Federal	**Fifth District Response Advisory Team (DRAT)**	Cook	Elisha	elisha.fs.cook@uscg.mil	Office: 571-608-5556 Cell: 757-630-1430		
Federal	**Shore Infrastructure Logistics Center (SILC)**	Dickson	Jackie		757-628-4108	cell 757-615-2135	
Federal		Baskins	Doug		757-628-4110	cell 757-647-6560	
Federal		Barker	Pamela		757-628-4123		
Federal		McElheney	Karen		757-628-4114	cell 757-615-2141	
Federal	**National Pollution Funds Center (NPFC)**	Overbeek	Maarten		703-872-6033		
Federal		Ryan	Pat		703-872-6088		
Federal		Peck	Lydia		703-872-6045		
Federal		Thuring	Allen		202-494-9115	Duty Cell: 202-494-9118	
Federal		Budelis	Louise	CERCLA	703-872-6038		
Delaware	CITY OF WILMINGTON OEM	GILES	GEORGE		302-420-3272	302-571-5491	
Delaware	CITY OF WILMINGTON FIRE BOAT	KEPISTA	JOE		302-530-5502		
Delaware	DEMA - Director						
Delaware	DNREC				800-662-8802		
Delaware	DNREC	ANDERSON	BEN	bennett.anderson@outlook.com	302-645-8556		
Delaware	DNREC						
Delaware	CITY OF DOVER Fire Dept	BASHISTA	BRIAN		302-736-7168	302-736-7199	
Delaware	DOVER AIR FORCE BASE Fire Dept	MARES	JOE		302-677-4420		
Delaware	STATE POLICE DOVER				302-739-5900		
Delaware	STATE POLICE KENT				911		
Delaware	STATE POLICE KENT NON EMER				302-739-4525		
Delaware	STATE POLICE SUSSEX				911		
Delaware	STATE POLICE SUSSEX NON EMER				302-855-2890		
Delaware	STATE POLICE CAMDEN				302-697-4454		
Delaware	STATE POLICE GEORGETOWN				302-856-5850		
Delaware	STATE POLICE BRIDGETOWN				302-337-1090		
Delaware	STATE POLICE LEWES				302-644-5020		
Delaware	STATE POLICE ODESSA				302-378-5218		
Delaware	STATE POLICE EMER REP				911		
Delaware	STATE POLICE NON-EMER				302-573-2800		
Delaware	STATE POLICE WILM				302-761-6677		
Delaware	STATE POLICE WILM				302-577-8500		
Delaware	STATE POLICE NEWARK				302-834-2620		
Delaware	KENT COUNTY OEM 24HR	METHENEY	ALLEN	allenmetheny@yahoo.com	302-734-6040		
Delaware	NEW CASTLE COUNTY OEM 24HR	LEONETTI	JOE		302-738-3131	302-999-0183	
Delaware	SUSSSEX COUNTY OEM	LARSON	HARRY		302-855-7803	302-855-7800	
Delaware	DIVISION OF PUBLIC HEALTH	LLEWELLYN	GERALD	gerald.llewellyn@state.de.us	302-744-4540	302-739-6617	
Delaware	STATE HISTORIC PRESERVATION	DAVIS	GWEN		302-736-7400		
Pennsylvania	**Bucks County- Fire/Rescue**	Dougherty	John	jddougherty@co.buck.pa.us	215-345-1411	215-957-0765	
Pennsylvania	**Delaware County - OEM**	Mulville	James		610-565-8700 24Hr	610-892-9583	
Pennsylvania	**PA Dept. of Environmental Resources**				717-787-3444		
Pennsylvania	**PA Game Commission**				717-787-5529		
Pennsylvania	**PA BIO-Special Teams - 3rd WMD Civil Support Team PA National Guard**				717-651-2001		
Pennsylvania	**PA State Police**	Waugh	Wesley		717-787-8596	717-772-1434	

Pennsylvania	**PADEP**	Bauer	Robert	rbauer@state.pa.us	(24-hr): 484-250-5900 Desk: 484-250-5132 Cell: 484-695-5984	484-250-5971	
Pennsylvania	**PEMA**				800-372-7362		
Pennsylvania	**PEMA**	Nervine	Tom	tnervine@state.pa.us	610-562-3003		
Pennsylvania	**PEMA**	Shannon	John	Jshannon@state.pa.us	610-562-3003		
Pennsylvania	**PEMA, Military Support for Civil Authority**				717-861-8932		
Pennsylvania	**Pennsylvania Emergency Operations Center**			www.pema.state.pa.us	717-651-2001	717-651-2021	
Pennsylvania	**Philadelphia County - OEM Dir.**	Phillips	Samantha	samantha.phillips@phila.gov	215-6864465		
Pennsylvania	**Assist. Manag.Dir**	O'Keefe	Liam	liam.o'keefe@phila.gov	215-686-1450		
Pennsylvania	**Dept. Dir. IT**	Maclean	John	john.maclean@phila.gov	215-686-1151		
Pennsylvania	**Human Services**	Green	Max	max.green@phila.gov	215-686-2123		
Pennsylvania	**Philadelphia County - Fire Board**	Moore	Michael		215-686-1397	215-592-5967	
Pennsylvania	**PA Dept. of Health**	Bedrick	Larissa		717-787-1783		
Pennsylvania	**State Historic Preservation Officer**	Cutler	Jean		717-705-4035		
New Jersey	**NJ State Police**	Dreher	Keith	kdd57@aol.com	609-561-1800 ext.3343		
New Jersey	NJSP South Region	Masciolly	Lou	masciolly@gw.njsp.org	609-561-1800 ext.3341		
New Jersey	NJSP Communications	Foglia	John	lpp.2860@gw.njsp.org	609-538-2974	609-882-1463	
New Jersey	NJSP OEM	Scaroiro	Tom-Sgt.	Lpp.Scart@GW.NJSP.org	609-561-1800		
New Jersey	**NJ Marine Police**				609-386-2395		
New Jersey		Atlantic City Station			609-441-3586		
New Jersey		Bivalve Station		Sgt. Jim Laspado	856-785-1330		
New Jersey		Burlington Station			609-387-1221		
New Jersey		HQ			609-633-6169		
New Jersey		Ocean Station			609-296-5807		
New Jersey		Point Pleasant Station			732-899-5050		
New Jersey	**NJSP K-9 Unit**				609-882-2000 X6311		
New Jersey	**NJSP Emergency Management**				609-882-2000	609-963-6900	
New Jersey	**NJ BIO-Special Teams- Local Hazmat Team**				609-561-1800		
New Jersey	**NJ DEP**	24/7 Hotline			609-292-7172		
New Jersey	**NJ DEP**	Van Fossen	Robert	robert.vanfossen@dep.state.nj.us	609-633-1446	609-780-6899	
New Jersey	**NJ DEP**	Manuel	Jim	james.manuel@dep.state.nj.us	609-963-6913	609-309-1743	
New Jersey	**New Jersey Emergency Operations Center**			www.state.nj.us/njoem/	609-882-4201	609-883-3862	
New Jersey		Gauidetti	Ray	lpp5062@gw.njsp.org	609-963-6787		
New Jersey		Schulz	Christian, MAJ.	lpp4657@gw.njsp.org	609-963-6932		
New Jersey	**NJ Dept. of Fish Game & Wildlife (Biologist)**				609-785-0455 609-292-9401		
New Jersey	**NJ Dept. of Fish Game & Wildlife (Director)**				609-292-9410		
New Jersey	**Burlington County - OEM**	Mathison	Jeff	jmatheson@co.burlington.nj.us	609-265-7124	609-265-0270	
New Jersey	**Burlington County - Fire/Rescue**				609-267-8300		
New Jersey	**City of Trenton Police**	Kanka	Donald	dkanka@trentonnj.org	609-989-3992	609-989-4009	
New Jersey	**Camden County - OEM**	Elmer	Donald		856-783-4808 X6200 24Hr	856-782-0466	
New Jersey	**Cape May – OEM**	McCall	Frank		609 463 6570 24HR	609-463-0252	
New Jersey	**Cumberland – OEM**	Sever	Joseph		856 455 8770 24HR	856-455-0084	
New Jersey	**Gloucester County - OEM**	Butts	Thomas		856-307-7157	856-881-4964	
New Jersey	**Mercer County - OEM**	Omland	Laurence		609-799-0110	609-799-0429	
New Jersey	**Salem County - OEM**	Wentzell	Carl		856 769 2959 24HR	856-769-3571	
New Jersey	**State Historic Preservation Officer**	Maresca	Vincent		609-633-2395		
New Jersey	**Delaware**						
New Jersey	**CCOEM**	Weisgerber	Melinda	melindawe@co.cumberland.nj.us	856-455-8770		
New Jersey	**Del. City LEPC**	Doyle	Edward	cdoyle@csert.com	302-993-9081		
New Jersey							
New Jersey	**Delaware River Port Authority**	Kain	Charles	cpkain@drpa.org	856-968-2098 ext:2098		
Local	**Colonial Pipeline**				1-800-926-2728		Updated 2/2024 27/7 Emergency Contact Number
Local	**Conectiv Millsboro**	Sadowski	Jim	james.sadowski@conectiv.com	302-934-3554		
Local	**Conectiv Wilmington**	Bacher	David	david.bachet@conectiv.com	302-429-3019		
Local	**ConocoPhillips**	Franks	Colin	colin.franks@conocophillips.com	610-364-8120		
Local	**ConocoPhillips**	McClure	Michael	Mmcclur1@ppco.com	610-364-8602	610-364-8601	

Local	**Del River Yachtsman League**	Williams	Bob	pacrat2@rcn.com	610-461-6621		
Local	**Del. Marine Fire Fighting Task Force**	Dillon	Douglas	ddillon@trimsa.org mfftf@msn.com	302-998-8599 302-530-7009 (24 hr)	302-993-9085	
Local	**Del. River Basin Commission**	Yagecic	John	john.yagecic@dbrc.gov	609-883-9500	609-883-9522	
Local	**Del. River Basin Commission**	Suk	Namsoo	Namsoo.Suk@drbc.gov	609-477-7235		
Local	**Delaware Estuary**	Klein	Kathy	kklein@delawareestuary.org	302-655-4990 x16		
Local	**Delaware River Keeper**	van Rossum	Maya	drkmaya@comcast.net	215-369-1188 Cell 215-801-3043	215-369-1181	
Local	**ECM/Hudson Maritime Services**	Virostek	Eric	ericv@ecmhudson.com	856-342-7500		
Local	**ECM/Maritime Services**	Doherty	Joe	mbdoherty@aol.com	203-761-6030		
Local	**HAZTEC Inc**	Jones	Steve	stevejones@haztecing.com	609-714-1003		
Local	**HAZTEC Inc**	Lubas	Robert	rlubas@earthlink.net	609-714-1003		
Local	**Hudson Marine Services**	Hudson	Cynthia	cah@hmms-usa.com	856-342-7800		
Local	**IEP**	Lynn	Jim	info@oilgone.net	610-644-4588		
Local	**Interstate Storage & Pipeline**	Humphreys	Gary	g-humphreys@hotmail.com	609-297-9100		
Local	**Motiva (Premcor)**	McQueen-Foster	Julie	mcqueja@motivaenterprises.com	302-834-6065		
Local	**Motiva (Premcor)**	Netsch	Herb	hwnetsch@motivaenterprises.com	302-293-2126	302-834-6236	
Local	**Koch Materials**	Partlow	Ben	partlowb@kochind.com			
Local	**NDI Engineering Company**	Samial	Jim	jas@hmms-usa.com	856-848-0033		
Local	**Phila. Water (Early Warning)**	Crockett	Christopher	chris.ckocket@phila.gov	215-685-6234	215-685-6043	
Local	**PSEG Nuclear**	Daly	Brendan	brendan.daly@pseg.com	856-339-1169	856-339-1448	
Local	**Regional IMS Team**	Condello	Albert	albert_condello@hotmail.com	610-993-0972		
Local	**Reinanuer Transportation, NY**	Peterson	Ken	kenp@reinaver	718-816-8167		
Local	**Rutgers**	Crowley	Mike	crowley@atlantic.rutgers.edu	732-932-6255 ext.543		
Local	**Sea Consultants**	Haywood Walker	Ann	ahwalker@seaconsulting.com	757-331-1787	757-331-1788	
Local	**Sunoco Philadelphia Refinery (PES)**	Sweeney	Russell	rsweeney@sunocoinc.com	215-833-3461		
Local	**Sunoco Philadelphia Refinery (PES)**	Bicho	Greg	JGBicho@sunocoinc.com	215-339-7370	215-339-7168	
Local	**Sunoco Logistics Marcus Hook**	Kelly	William		610-859-1304	610-859-5991	
Local	**PBF - Delaware City/Paulsboro Refining Company**	Robinson	William	william.robinson@pbfenergy.com	302-834-6229		
Local	**PBF - Delaware City/Paulsboro Refining Company**	Kennedy	Pat	pat.kennedy@pbfenergy.com	302-834-6225	302-834-6236	
Local	**PBF - Delaware City/Paulsboro Refining Company**	Merbach	Kurt	kurt.merbach@pbfenergy.com	856-224-4498	856-251-4259	
OSROs	**Ardent**				786-266-6396		
OSROs	**Clean Harbors**				856-589-5000		
OSROs	**Clean Ventures**				732-375-9988		
OSROs	**Delaware Bay & River Cooperative**	Poole	Bob	bob_poole@dbrcinc.org	610-859-2830 610-859-2830 / 24 hr.	302-462-0194	
OSROs	**Don Jon Marine**				908-353-2600 908-964-8812		
OSROs	**HEPA Co.**				704-598-9782 704-494-2111		
OSROs	**Ken's Marine**				201-339-0673	201-339-8029	
OSROs	**Lewis Environmental Group**	Plena	Steven	splena@discoverlewis.com	610-495-6695		
OSROs	**Miller Environmental**				631-369-4900		
OSROs	**Moran Environmental Recovery**				781-825-1116		
OSROs	**MSRC**	Wilkinson	Jay	wilkinson@msrc.org	Direct +1 410 885 3503 Mobil +1 410 808 5799		
OSROs	**Northstar Marine**	Risko	Phil		609-263-6666	609-602-1222	
OSROs	**NRC**	Hielscher	John	jhielscher@nrcc.com	631-236-2510		
OSROs	**Sea Tow**	CAPT Jack			1-800-473-2869	C: 609-827-7557	
OSROs	**Tow Boat US**				1-800-391-4869		
OSROs	**Weeks Marine**				908-272-4010		
SMT	**Maritime Solutions**	Constantine	Chris	cconstantine@martimesolutioninc.com	212-747-9044		
SMT	**Maritime Solutions, NY**	Fredricks	Dick	rfredicks@maritimesolutionsinc.com	212-747-9044		
SMT	**Gallagher Marine**	Wiker	Tom	twiker@chgms.com	215 817 3804 (Mobile) 856 642 2091 (Office) 856 642 3945 (Fax)		
SMT	**O'Brien & Gere**	Trumbull	Lyle	Trumbulv@obg.com	610-710-1919	215-628-9953	

SMT	**Witt O'Briens**				985-781-0804		
SMT	**Hudson Marine**	Gerland	Tim	timothy.gerland@hudsonmarine.com	24 Hr #: 856 342 7500	856-342-8888	
Marine Chemist - PA	Trimarine Testing 991 Delchester Rd. Newtown Square, PA	Bruce	Danny R.		610-296-0481		
Marine Chemist - NJ	Independent Testing & Consulting Inc. P.O. Box 539 Holmdel, NJ	Matthews	Anthony	E-mail tonym7150@aol.com	Off-732-583-2538	732-583-3222	
Marine Chemist - MD	Upper Chesapeake Chemist Co. 401 Poplar Grove Place Bel Aire, MD	Capen Sr.	David	marchem632@msn.com	Off-800-382-7447	410-838-5238	
Port Expert	**Wetland Ecology - Salt Marshes**						
	College of Marine Studies University of Delaware	Seliskar	Denise	seliskar@udel.edu	302-645-4366		
Port Expert	**Wetland Ecology – Freshwater Tidal Marshes and Shellfish – Ecology**						
	Delaware Estuary	Kreeger	Danielle	Danielle.Kreeger@DRBC.state.nj.us	609-883-9500 x217		
Port Expert	**Shellfish - Oysters**						
	Haskin Shellfish Research Laboratory Rutgers University	Powell	Eric	eric@hsrl.rutgers.edu	856-785-0074		
Port Expert	**Horseshoe crabs**						
	Department of Natural Sciences, Fordham University	Botton	Mark	botton@fordham.edu	212-636-6327		
Port Expert	**Finfish**						
	Patrick Center for Environmental Research, Academy of Natural Sciences	Horwitz	Richard	horwitz@acnatsci.org	215-299-1092		
Port Expert	**Shorebirds**						
	Endangered and Nongame Species Program, New Jersey Division of Fish and Wildlife, New Jersey Department of Environmental Protection	Niles	Larry	Larry.Niles@dep.state.nj.us	609-292-9101		
Port Expert	**Conservation Biology**						
	Vice President for Conservation and Stewardship, New Jersey Audubon Society	Stiles	Eric	eric.stiles@njaudubon.org	908-766-5787		
Port Expert	**Water Quality - Contaminants**						
	Delaware River Basin Commission	Yagecic	John	john.yagecic@drbc.gov	609-883-9500		
Port Expert	**Water Quality - Biogeochemistry**						
	College of Marine Science, University of Delaware	Sharp	Jonathan	jsharp@udel.edu	302-645-4259		
Port Expert	**Bird Cleaning and Rehab**						
	Tri-State Bird & Rescue	Hogan	Patrick	phogan@tristatebird.org	302-737-7241		
Port Expert	**Scientists**						
	See experts in 2005 Delaware Estuary Science Directory						
Port Expert	**Divers**						
	Global Diving & Salvage	Walsh	Kerry		206-623-0621	503-413-9059	
Port Expert	**Marine Mammal Rescue**						
Port Expert	MERR (Marine Education, Research, & Rehabilitation)	Thurman	Suzanne	merrinstitute@gmail.com www.merrinstitute.org	302-228-5029		
Indian Tribe	Delaware Nation	Alligood	Nekole	nalligood@delawarenation.com			
Indian Tribe	Delaware Tribe of Indians	Bachor	Susan	sbachor@delawaretribe.org	539-529-1671 (work) 610-761-7452 (personal)		
Indian Tribe	Stockbridge Munsee Community	Hartley	Bonney	Bonney.Hartley@mohican-nsn.gov	518-244-3164		

LAST	FIRST	EMAIL	REPRESENTING	PHONE
Anderson	Bennett	Bennett.Anderson@outlook.com	Delaware	302-645-8556
Bauer	Bob	rbauer@state.pa.us	Pennsylvania	484-250-5132 24/7: 484-250-5900
Butler	Kristina	Kristina.I.Butler@uscg.mil	D1 RRT Coordinator	617-406-9029 703-477-1288 (Cell)
Carpenter	Stan	scarpenter@colpipe.com	Pipelines	856-689-1427
Conrad	Gerald	Gerald.A.Conrad@uscg.mil	Executive Steering Committee (ESC) Secretary	Cell: 215-266-0176
Csulak	Frank	frank.csulak@noaa.gov	NOAA SSC	732-371-1005
Darby	Valincia	valincia_darby@ios.doi.gov	Alternate DOI Region 3 Representative	Office: 215-597-5378 Direct: 215-597-6518 Mobile: 215-913-6238 Fax: 215-597-9845
Cook	Elisha	Elisha.FS.Cook@uscg.mil	D5 District Response Advisory Team (DRAT)	Office: 571-608-5556 Cell: (757)630-1430
Gerland	Tim	timothy.gerland@hudsonmarine.com	Vessels	Tel: +1 856-342-7500 Fax: +1 856-342-8888
Gould	Scott	scott.gould@nscorp.com	Railroads	Hazmat Duty Phone: 855-514-8129 Cell: 717-461-6069
Greco	Michael	Michael.greco@Delaware.gov	Delaware	
Hanewich	Steven	steven.m.hanewich@uscg.mil	D5 - dxc	W: 757-398-6721 M: 757-615-2481
Higgins-Bloom (Captain)	Kate	Kate.f.Higgins-Bloom@uscg.mil	Sector Delaware Bay - FOSC	215-271-4800
Hogan	Patrick	phogan@tristatebird.org	Wildlife	302.737.9543 24hr: 800.261.0980
Kennedy	Andrew	Andrew.a.kennedy@uscg.mil	SDB - Emergency Management Force Readiness, EMFR Chief	
Krueger	Lynn	lynnkrueg@outlook.com	Local Emergency Planning Committee (LEPC)	302-547-3405
Monsu	James	james.v.monsu@usace.army.mil	US Army Corps of engineers (USACE)	215-313-1135
Nelson	John	john_nelson@ios.doi.gov	Department of the Interior (DOI) Region 3	O: 215-597-5012 Cell: 215-266-5155 (24/7)
Poole	Bob	bob_poole@dbrcinc.org	Oil Spill Removal Organization (OSRO)	Cell: 302-462-0194
Pugh, Dave	Dave	David.E.Pugh1@uscg.mil	D5 District Response Advisory Team (DRAT)	757-398-6376 757-373-4133
Raddant	Andrew	Andrew_Raddant@ios.doi.gov	Department of the Interior (DOI) Region Region 2	Cell: 617-592-5444
Rivera (Captain)	Roberto CAPT	roberto.rivera3@uscg.mil	Sector Delaware Bay - Alternate FOSC	215-271-4800
Robinson	William	william.robinson@pbfenergy.com	Facilities	302-834-6229
Rovira	Eduardo	rovira.eduardo@epa.gov	Environmental Protection Agency (EPA) Region 3	215-514-6887

Scalamere	Beverly	Beverly.Scalamere@dep.nj.gov	NJ - Bob Van Fossen's Admin Assistant	T: 609-633-2168 C: 609-954-8924 F: 609-777-0985
Scheaffer	Sarah	sarah_scheaffer@fws.gov	US Fish & Wildlife (USFWS)	609-833-1476
Sinclair	Andrew	asinclair@pa.gov	Pennsylvania Alternate	484.250.5192 Fax: 484.250.5971
Thorkilson	Kelly	Kelly.A.Thorkilson2@uscg.mil	D5 - Incident Management and Preparedness Advisor	206-815-3113
Touw	Steve	touw.steve@epamail.epa.gov	Environmental Protection Agency (EPA) Region 2	732-906-6900
Van Fossen	Bob	robert.vanfossen@dep.nj.gov	New Jersey	609-780-6899
Wardwell	Todd	Todd.m.wardwell@uscg.mil	SDB - Marine Firefighting Sub-Committee Secretary	610-715-2798
Yagecic	John	john.yagecic@dbrc.gov	Water Quality	609-883-9500

AGENCY	LAST NAME of Point of Contact	FIRST NAME of POC	EMAIL	PHONE	COMMENTS
Chiron k9 (Tarball detecting dogs)	Bunker	Paul	paul@chiron-k9.com www.Chiron-K9.com	Office: 571-608-5556 Cell: 757-630-1430	Gave demonstration 5/2023 on Slaughter Beach, DE. Dog succesfully found all sample jars filled with oil (holes in lids).
Absecon, NJ				609 978 1195	
Central Jersey Technical Rescue				800 334 0373	
East Penn Mountaineers Search & Rescue				888 276 7522	
Gloucester County Search & Rescue				856 623 0888	
Greater Philadelphia Search & Rescue				215 630 6744	
Maple Shade Rescue				609 265 7157	
Mid-Atlantic Search & Rescue of NJ				800 504 9134/ 9133 Emergencies	
Morris County Police Search & Rescue				973 285 2900	
New Jersey Initial Response Team				877 738 1936	
New Jersey Search & Rescue				908 850 7069	
Palisades Search & Rescue				800 545 6428	
Southern Monmouth Area Regional SAR				732 327 6811	
US Volunteers - Browns Mills, NJ	Beattie	Bruce		609 893 3850	
West Milford Search & Rescue				973 278 2800	
Cumberland County Bloodhound Group				609 455 8500	
Eric Holloway				609 869 0815; PGR: 609 756 7322	
Liberty K-9				800 218 2301	
Mr. Gil Langlois				609 785 1012	
Mr. Simons				609 726 2788; PGR: 800 612 3032	

AGENCY	LAST NAME of Point of Contact	FIRST NAME of POC	EMAIL	PHONE	COMMENTS
Ramapo Rescue Dogs				201 644 1111	
Search Group Director	Fischer	Paul			
West Jersey Canine Search Group				201 526 2500	
West Jersey K-9				215 891 3988	

Agency	Last Name	First Name	Email	Phone Number	Fax Number
ACV Enviro				856-863-8778	
Ardent				786-266-6396	
Atlantic Response	Dayke	Ralph	dayker@atlanticresponse.com	732-969-8555	
Budget Environmental Services	Hurst	Tom		732-899-6010	
Clean Harbors	Bobnick	Phil	bobnick.phillip@cleanharbors.com	856-589-5000	
Clean Ventures				732-375-9988	
Delaware Bay & River Cooperative	Poole	Bob	bob_poole@dbrcinc.org	302-645-7861 (24 hr) Bob's Cell: 302-462-0194	610-859-2834
Don Jon Marine				908-353-2600 908-964-8812	
HEPACO				800-888-7689 704-598-9782 704-494-2111	
Ken's Marine				201-339-0673	201-339-8029
Lewis Environmental Group	Plena	Steven	splena@discoverlewis.com	800-258-5585 610-495-6695	
Miller Environmental	Wallace	George	gwallace@millerenv.com	631-369-4900	
Moran Environmental Recovery	House	Tim	thouse@moranenvironmental.com	781-815-1111 781-825-1116	
MSRC	Wilkinson	Jay	wilkinson@msrc.org	Direct +1 410 885 3503 Mobil +1 410 808 5799	
Northstar Enviromental	Risko	Phil		609-263-6666	609-602-1222
NRC	Hielscher	John	jhielscher@nrcc.com	631-236-2510	
PPM	Wickersham	Dave	dlw@progressivepipe.com	908 309-5992	
Sea Tow	CAPT Jack			1-800-473-2869	C: 609-827-7557
Tow Boat US				1-800-391-4869	
Weeks Marine				908-272-4010	

Pennsylvania

Philadelphia office 24/7 number	(215) 418-4000		
Philadelphia Maritime POC	George Husk	Cell: 215-316-6055	gjhusk@fbi.gov

Delaware

Baltimore office 24/7 number	(410) 265-8080		
Baltimore Maritime POC	Christopher Izant	Cell: 443-904-3846	clizant@fbi.gov

New Jersey

Newark office 24/7 number:	(973) 792-3000		
Newark Maritime POC	John Montgomery	Cell: 609-462-5622	jemontgomery@fbi.gov

FBI HQ

FBI HQ Strategic Information & Operations Center (SIOC)	202-323-3300		

Tribal Name	Point of Contact	Email	Phone
Delaware Nation	Nekole Alligood	nalligood@delawarenation.com	
Delaware Tribe of Indians	Susan Bachor	sbachor@delawaretribe.org	539-529-1671 (work) 610-761-7452 (personal)
Stockbridge Munsee Community	Bonney Hartley	Bonney.Hartley@mohican-nsn.gov	518-244-3164

Three Tribes in the SecDelBay AOR that have a historical presence

Updated: Jan 2024

ACP Contact List

Revised/Updated: 2/2024

Agency	Last Name	First Name	Email	Phone Number	Fax Number	Notes
Agency for Toxic Substance Disease Registry (ATSDR)				404-639-0615 (Bio) 215-814-3140		
Alcohol Tobacco and Fire Arms (ATF)				215--768-0075		
USDA - Animal Plant Health Inspection Service (APHIS)	Dura	Dennis	Dennis.Dura@usda.gov	301.851.3007 (O) 609.534.6500 (C)		Updated: 2/2024 Area Committee Member
Center for Disease Control and Prevention Phila. Quarantine Station Phila. International Airport	Torres	Jennifer	pzp2@cdc.gov	215-365-6401 (24 hrs)	215-365-5419	Updated: 2/2024 Area Committee Member
Civil Air Patrol				800-851-3051		
Dept. of Energy - Radiological Assistance Program	Centore	Steve		631-344-7309 or 2200		
EPA Region 2, 24/7 Contact Number (Best way to reach EPA 2)	Contact NRC			800-424-8802		Updated 2/2024
EPA Region 2, Regional EOC	24 hour number	Duty Officer		732-906-6850		Updated : 2/2024
EPA, Region 2 NJ Enviro. Response Team (Regional response Team 2)	Touw	Steve	touw.steve@epa.gov	732-906-6900	908-420-4458	Retiring 5/31/2024 Updated: 2/24
EPA, Region 2 NJ Enviro. Response Team	Pellegrino	Carl	pellegrino.carl@epa.gov	877-927-6337	908-420-4491	
EPA Region 2, Deputy Regional Incident Coordinator (In case the Duty Officer cannot be reached)	Jimenez	Chris	jimenez.christopher@epa.gov	908-420-4484 (cell)		Updated 2/2024
EPA Region 2, Supervisor, Emergency Response Section (In case the Duty Officer cannot be reached)	Hoppe	Shawna	hoppe.shawna@epa.gov	646-221-4321		Updated: 2/2024
EPA Region 2, Government Initiated Unannounced Exercise (GIUE) Coordinator	Staiger	Kim	Staiger.Kimberly@epa.gov	732-452-6415 (office) 908-420-4510 (cell)		Updated: 2/2024
EPA Region 2, (Alternate) Government Initiated Unannounced Exercise (GIUE) Coordinator	Banner	Ellen	banner.ellen@epa.gov	732-321-4348 (office)		Updated: 2/2024
EPA Region 3, 24/7 Contact Number	On Duty OSC			215-814-3255		Duty OSC and POCs below can help in getting any special teams: (Environmental Response Team, Bio-Emergency Response Team, Radiological Emergency Response Team) Updated 2/2024
EPA Region 3, Executive Steering Committee Representative, OSC Eastern Response Section	Rovira	Edwardo	Rovira.Eduardo@epa.gov	215-514-6887		
EPA Region 3, Chief, Preparedness & Support Section, RRT Co-Chair	Boyd	Kevin	boyd.kevin@epa.gov	215-814-3418		
EPA - Region 3 FOSC	Towle	Mike	towle.michael@epa.gov	215-814-3272 ext.3524		
EPA - Region 3 Government Initiated Unannounced Exercise (GIUE) Coordinator	Lindsey	Deborah		(304) 234-0249 / (304) 281-2569		Updated: 2/2024
FBI Pennsylvania	Philadelphia office 24/7 number	(215) 418-4000				
FBI Pennsylvania	Philadelphia Maritime POC:	George Husk	gjhusk@fbi.gov	Cell: 215-316-6055		
FBI Delaware	Baltimore office 24/7 number:	(410) 265-8080				
FBI Delaware	Baltimore Maritime POC:	Christopher Izant	clizant@fbi.gov	Cell: 443-904-3846		

FBI New Jersey	Newark office 24/7 number:	(973) 792-3000				
FBI New Jersey	Newark Maritime POC	John Montgomery	jemontgomery@fbi.gov	Cell: 609-462-5622		
FBI - HQ	FBI HQ Strategic Information & Operations Center (SIOC)	202-323-3300				
FEMA II	Contact USCG-D5 Representative	Thorkilson, Kelly	kelly.a.thorkilson2@uscg.mil	O: 206-815-3113 C: 757-358-5007		
FEMA III	Contact USCG-D5 Representative	Thorkilson, Kelly	kelly.a.thorkilson2@uscg.mil	O: 206-815-3113 C: 757-358-5007		
Food and Drug Administration Division of Shellfish Sanitation	Wolf	Gary	gary.wolf@fda.hhs.gov	Cell: 609-287-2991		
National Response Center NRC				800-424-8802		
National Weather Service				215-936-1212		
Naval Surface Warfare Center	Breeden	Paul	breeden@nswccd.navy.mil	215-897-8355		
Navy Public Works - Philadelphia	Grassia	Tony	grassiaap@pwcdetphil.navy.mil	215-897-2035		
Navy Public Works - Philadelphia	Myers	Joe	myersjh@pwcdetphil.navy.mil	215-897-2035		
NOAA - Scientific Support Coordinator	Csulak	Frank	frank.csulak@noaa.gov	732-371-1005		Updated: 2/2024
	Bolke	Chriss	christoferboelke@noaa.gov	978-281-9131		
Nuclear Regulatory Commission (NRC) (Lead Federal Agency)				1-800-368-5642		
Local Agency Office				301-415-7000		
Laboratory Scientific Support (Customs and Boarder Protection)				407-975-1780 24Hrs		
Public Affairs				301-415-8200		
(Local Rep.)	Borse	Bob		610-337-5213		
*or contact NRC Rep at Salem/Hope Creek						
OSHA				800-321-OSHA		
OSHA, Region 2 NJ				212-337-2378		
OSHA, Region 3 PA/DE				215-597-4955		
US Army Corp of Engineers	Monsue	James	james.v.monsu@usace.army.mil	215-313-1135		
US Bureau of Customs and Border Protection				215-596-1972		
US Bureau of Immigration				215-596-1968/1969		
US Dept. of Agriculture				202-720-9522		
US Dept. of Commerce				215-814-3321 Day 206-617-5440 Night		
US Dept. of Interior						
OEPC Region 2	Raddant	Andrew	Andrew_Raddant@ios.doi.gov	Cell: 617-592-5444		
OEPC Region 3	Nelson	John	john_nelson@ios.doi.gov	215-597-5378 24hr 215-266-5155	215-597-9845	
Alternate OEPC Region 3	Darby	Valincia	valincia_darby@ios.doi.gov	Office: 215-597-5378 Direct: 215-597-6518 Mobile: 215-913-6238 Fax: 215-597-9845		
US Fish and Wildlife Service						
USFWS (DE)	Banda	Jo Anne	joann_banda@fws.gov	567-201-7687		
USUSFWS (NJ)	Scheaffer	Sarah	sarah_scheaffer@fws.gov	609-833-1476		
See USFWS EMERGENCY RESPONSE CAPABILITIES AT NATIONAL WILDLIFE REFUGES						
US Geological Survey				610-321-2434	610-321-2509	
USCG						
USCG Atlantic Strike Team				609-724-0008	609-351-7155	

USCG GRP/ Air Station - Atlantic City				609-677-2230/ GDO 2225		
Air Station Atlantic City (Air OPS Branch Director)				609-677-2200 (or OPCEN)		
Aviation Operations Officer (Asst. Air OPS)				609-677-2213 (or OPCEN)		
AUX AIR	Longenecter	Carl		717-344-8328		
Air Station Atlantic City Operations/Communications Center				609-677-2222/2225		
USCG Sector Delaware Bay				215-271-4940/4807		
Response Documentation Specialist	Request Typr 1 DOCL		Use ICS-213RR			
CGC HERON OIC				609-224-7685 (ship cell)		
CGC MAKO OIC				609-374-0824 (ship cell)		
Station Atlantic City CO				609-344-6595		
Station Barnegat Light OIC				609 494-2661		
Station Cape May CO				609-898-6995		
Station Indian River OIC				302-227-2440		
Station Manasquan Inlet OIC				732-899-0130		
Station Philadelphia OIC				215-218-1027		
Prime Hook NWR Milton, DE	Stroeh	Michael			302-684-8504	
Fifth District Response Advisory Team (DRAT)	Pugh	David	david.e.pugh1@uscg.mil	757-398-6585	757-274-4823	
Fifth District Response Advisory Team (DRAT)	Cook	Elisha	elisha.fs.cook@uscg.mil	Office: 571-608-5556 Cell: 757-630-1430		
Shore Infrastructure Logistics Center (SILC)				757-628-4243 757-628-4283		
National Pollution Funds Center (NPFC)	Overbeek	Maarten		202-795-6033		
	Peck	Lydia		202-795-6045		

Annex RR

Terrorism Incident

Terrorism

Weapon of Mass Destruction

COMMANDER
FIFTH COAST GUARD DISTRICT
431 CRAWFORD STREET
PORTSMOUTH, VA 23704-5004

24 July 2009

APPENDIX 29 TO ANNEX C TO CCGDFIVE OPLAN 9750-09 (U)
Terrorism / Weapons of Mass Destruction Response Operations (U)

(U) REFERENCES

(a) 14 USC
(b) 33 CFR
(c) 33 USC
(d) 50 USC
(e) CJCSI 3121.01 (series), Standing Rules of Engagement for U.S. Forces
(f) COMDTINST 3010.19 (series), Coast Guard Standard After Action Information and Lessons Learned System
(g) COMDTINST M16000.12 (series), Marine Safety Manual, Vol. VII, Port Security
(h) COMDTINST M16247.1 (series), Maritime Law Enforcement Manual
(i) COMDTINST M3010.14, US Coast Guard Civil Disturbance Support Plan (COGARD Garden Plot)
(j) COMDTINST M5000.3 (series), Coast Guard Regulations
(k) COMDTINST M5530.1 (series), Physical Security Program
(l) COMLANTAREA OPLAN 9700-06
(m) COMLANTAREA Standard Operating Procedures
(n) Homeland Security Presidential Directive (HSPD) 5
(o) Maintenance and Logistics Command (MLC) Atlantic, Contingency Support Plan, 9730-06
(p) Maintenance and Logistics Command (MLC) Atlantic, Standard Operating Procedures, MLCLANTNOTE 3120
(q) Memorandum of Understanding Between the Federal Bureau of Investigation and the U.S. Coast Guard, Concerning a Policy of Mutual Assistance in Support of CG/FBI Operations to Counteract Terrorist Activities in the Marine Environment, April 1979
(r) National Incident Management System
(s) National Response Framework (NRF)
(t) Presidential Decision Directive 39

1. (U) SITUATION

a. (U) General

(1) (U) This appendix provides guidance to Coast Guard District Five units for CG operations in response to terrorist acts and threats against the marine transportation system, critical assets and infrastructure, and the public. This includes CG response to conventional terrorist incidents as well as CG response to Weapons of Mass Destruction (WMD) incidents. CGD5 units may execute response operations within this appendix separately, or in conjunction with other appendices within this OPLAN.

(2) (U) Terrorism and the use of weapons of mass destruction (WMD) are asymmetric threats that may be initiated through a variety of means or delivery methods. In 1993 and 1995, respectively, terrorists used conventional explosive devices to attack the World Trade Center and the Murrah Federal Building. In March 1995, terrorists attacked subway riders in Japan with Sarin, a chemical warfare agent. On September 11, 2001, terrorists used hijacked airliners as powerful airborne bombs to attack the Pentagon and the World Trade Center. Clearly, terrorists have displayed the will and the means to attack our citizens and infrastructure and to cause significant damage and kill innocent civilians.

(3) The openness of U.S. ports, necessary for the free and effective movement of commerce, makes them particularly vulnerable to acts of terrorism. All terrorist incidents and attacks within the maritime domain require Coast Guard response. Potential terrorist targets include Coast Guard property and/or personnel; other Federal property; passenger vessels and terminals; port facilities; waterfront industries and infrastructure covered by the Critical Asset Assurance Program (CAAP); offshore terminals; petroleum production platforms; and merchant vessels.

(4) (U) With its unique capability as both a law enforcement agency and a military force, the Coast Guard is the lead Federal agency for maritime homeland security. This designation is particularly appropriate in that terrorism may be viewed as a criminal act or an act of war, if the act can be linked to a hostile nation.

b. (U) Definitions. The following definitions are important to an understanding of the Coast Guard’s response to terrorist threats and/or terrorist acts.

(1) (U) Consequence Management. Predominantly an emergency management function, includes measures to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses, and individuals affected by the consequences of terrorism.

(2) (U) Crisis Management. Predominantly a law enforcement function, includes measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and/or resolve a terrorist act or threat.

(3) (U) Enemy

(a) (U) Any person, group, or organization who kills or injures, or threatens to kill or injure, persons for personal, religious, ideological or political gain.

(b) (U) Any person, group, or organization who damages or destroys, or threatens to damage or destroy, property or the environment for personal, religious, ideological, or political gain.

(4) (U) Incident. An occurrence or event, natural or human-caused, that requires an emergency response to protect life or property. Incidents include, for example, major disasters; emergencies; terrorist threats; terrorist attacks; wildland and urban fires; floods; hazardous materials spills; nuclear accidents; aircraft accidents; earthquakes; hurricanes; tornadoes; tropical storms; war-related disasters; public health and medical emergencies; and other occurrences requiring an emergency response.

(5) (U) National Incident Management System (NIMS). NIMS provides a consistent doctrinal framework for incident management at all jurisdictional levels, regardless of the cause, size, or complexity of the incident. The activation of the NRF and its coordinating structures and protocols — either partially or fully — for specific Incidents of National Significance provides mechanisms for the coordination and implementation of a wide variety of incident management and emergency assistance activities. Included in these activities are Federal support to state, local, and tribal authorities; interaction with nongovernmental, private donor, and private-sector organizations; and the coordinated, direct exercise of Federal authorities, when appropriate.

(6) (U) National Response Framework (NRF). The NRF is an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the domestic incident management. It provides the structure and mechanisms for the coordination of Federal support to state, local, and

tribal incident managers and for exercising direct Federal authorities and responsibilities. The NRF assists in the important homeland security mission of preventing terrorist attacks within the United States; reducing the vulnerability to all natural and man-made hazards; and minimizing the damage and assisting in the recovery from any type of incident that occurs.

(7) (U) Terrorism

(a) (U) Any activity that (1) involves an act that (a) is dangerous to human life or potentially destructive of critical infrastructure or key resources; and (b) is a violation of the criminal laws of the United States or of any State or other subdivision of the United States; and (2) appears to be intended (a) to intimidate or coerce a civilian population; (b) to influence the policy of a government by intimidation or coercion; or (c) to affect the conduct of a government by mass destruction, assassination, or kidnapping.

(8) (U) Terrorism Counter-Action. Actions taken to prevent and counter terrorist attacks / incidents. The two components of terrorism counter-action are anti-terrorism and counter-terrorism.

(a) (U) Anti-terrorism. Proactive measures taken to prevent terrorist incidents from occurring, including hardening potential targets and developing procedures to detect planned terrorist actions.

(b) (U) Counter-terrorism. The tactical reaction to a terrorist event, including direct contact with the terrorist force to end the incident with minimum loss of life. Tactics include negotiation and, if necessary, the use of armed forces.

(9) (U) Terrorist

(a) (U) An individual, group, or subgroups that use unlawful force, violence, or terror against persons or property to intimidate or coerce a Government, the civilian population, or any segment thereof, to achieve a result or the furtherance of political or social objectives.

(10) (U) Weapon of Mass Destruction (WMD)

(a) (U) Any explosive, incendiary, or poison gas, bomb, grenade, rocket having a propellant charge of more than 4 ounces, or missile having an explosive or incendiary charge of more than one-quarter ounce, or mine or similar device.

(b) (U) Any weapon that is designed or intended to cause death or serious bodily injury through the release, dissemination, or impact of toxic or poisonous chemicals or their precursors.

(c) (U) Any weapon involving a disease organism.

(d) (U) Any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.

c. (U) Assumptions

(1) (U) In general, terrorist threats / acts will come from / be carried out by a small group that will engage in a series of terrorist acts or a single, high-visibility act to focus attention on a cause and to communicate a sense of vulnerability to the general population.

(2) (U) An incident(s) will involve a U.S. citizen(s), U.S. vessel(s), and/or occur within U.S. territory or U.S. territorial seas.

(3) (U) An incident(s) will be significant enough to require the commitment of Federal forces.

(4) (U) The Coast Guard will continue to perform all statutory duties during response operations. While responding to requests for assistance from the Department of Defense and other Federal agencies, the Coast Guard will continue to meet mission requirements.

(5) (U) A sufficient number of Coast Guard Reservists will be involuntarily recalled to active duty to meet contingency personnel requirements for response operations.

(6) (U) Coast Guard Auxiliary personnel can backfill for active duty personnel conducting Coast Guard response operations.

(7) (U) The Coast Guard will remain within the Department of Homeland Security.

d. (U) Legal Considerations

(1) (U) 14 USC 2 provides the Coast Guard authority to engage in planning for terrorist incidents. One of the Coast Guard's primary duties is enforcing or assisting to enforce all applicable federal laws upon the high seas and waters subject to United States jurisdiction.

(2) (U) 14 USC 141 authorizes the Coast Guard to utilize its personnel and facilities to assist, upon request, other Federal, state, and local agencies.

(3) (U) 14 USC 89 authorizes the Coast Guard to make inquiries, examinations, inspections, searches, seizures, and arrests upon the high seas and waters over which the United States has jurisdiction, for the prevention, detection, and suppression of violations of U.S. laws.

(4) (U) The Magnuson Act, 50 USC 191, provides Coast Guard District Commanders and Captains of the Port (COTP) with broad authority in situations which may affect the safety and security of vessels, harbors, ports, and waterways.

(5) (U) The Ports and Waterways Safety Act, 33 USC 1221 through 1236, gives the Coast Guard jurisdiction to control vessel or waterfront facility operations to prevent physical or environmental damage to any U.S. port.

(6) (U) In 1986, terrorists hijacked the Achille Lauro and murdered a U.S. citizen. This incident provided the impetus for the United States and the International Maritime Organization to establish international measures to help prevent subsequent occurrences. In addition, the International Maritime and Port Security Act (46 USC Appendix 1801-1809) and the amended Ports and Waterways Safety Act authorize the Coast Guard to carry out or require measures, including inspection, port and harbor patrols, the establishment of security and safety zones, and the development of contingency plans and procedures to respond to acts of terrorism.

e. (U) Pre-Incident Conditions

(1) (U) Training and Security. Coast Guard personnel maintain a level of training necessary to carry out statutory law enforcement duties to ensure, through the use of appropriate and sufficient force, physical security at Coast Guard facilities. This preparedness increases the possibility terrorists may be apprehended, making many Coast Guard facilities less attractive targets.

(a) (U) Coast Guard tenant commands (those located on Coast Guard facilities for which another command is responsible) are not responsible for facility

security preparations. However, tenant commands are responsible for security within their command's spaces.

(b) (U) Coast Guard commands housed in GSA-controlled buildings or facilities the Coast Guard leases must make prior arrangements for enhanced security. Coast Guard personnel are not to be used for facility / building security. Coast Guard commands are responsible for security within their assigned spaces.

(2) (U) Regulatory Functions. The Coast Guard Captain of the Port (COTP), as the Federal Maritime Security Coordinator (FMSC), is charged with enforcing the Maritime Security regulations found in Subchapter H to reference (b). These regulations are aimed at deterring threats and preventing damage to vessels and facilities within U.S. ports. The FMSC also heads local Area Maritime Security Committees within the port areas for the purpose of coordinating security planning and operations.

f. (U) Support from other Agencies. Coast Guard District Five Sector and unit commanding officers shall establish and maintain relationships, for anti-terrorism planning, with other military services and Federal, state, and local agencies. These entities may play a major role in terrorism response operations; the Coast Guard may receive support from, or provide support to, one or more of the following:

(1) (U) Federal

(a) (U) Department of Defense (DOD)

1. (U) Commander in Chief, Joint Forces Command (CINCJFCOM), Joint Task Force for Civil Support (JTF-CS). JTF-CS can deploy to the scene of a weapons of mass destruction incident to provide command and control over other responding DOD forces.

2. (U) Secretary of Defense. The Secretary of Defense is responsible for all military preparations and operations, including, when directed, the employment of military forces at the scene of an actual or potential terrorist incident. In the event of a terrorist incident involving a nuclear weapon from the DOD's inventory, DOD will assume responsibility as lead federal agency (LFA) in accordance with reference (g). DOD responsibilities are carried out principally through the Department of the Army. Reference (h)

provides for the provision on Coast Guard resources to assist Army counter-terrorism operations.

(b) (U) Department of Homeland Security (DHS)

1. (U) Coast Guard Intelligence Coordination Center (ICC). The ICC provides Coast Guard specific security and threat assessment information and analysis. Intelligence assessments are produced on a scheduled basis, but spot reports in response to special situations may be provided upon request. The function of the ICC and the intelligence assessment process are discussed in detail in Volume VII of reference (g).

2. (U) Federal Emergency Management Agency (FEMA). Under the terrorism incident annex to reference (s), FEMA is the designated lead federal agency for consequence management. Additionally, reference (s) directs FEMA to ensure that existing policies and procedures are adequate to respond to the consequences of terrorism (e.g., widespread damage, multiple personnel casualties, disruption of transportation or communications systems, etc.). FEMA will take measures to protect public health and safety, restore essential government services, and provide emergency relief to state and local governments, businesses, and individuals.

(c) (U) DEPARTMENT OF JUSTICE (DOJ)

1. Federal Bureau of Investigation (FBI). The FBI is the lead Federal agency for criminal investigations of terrorist acts or terrorist threats, as well as intelligence collection activities within the United States. The FBI manages these activities from an FBI command post or Joint Operations Center (JOC). The command post or JOC coordinates the necessary Federal law enforcement assets required to respond to and resolve the threat or incident with state, local, and tribal law enforcement agencies.

The Coast Guard and FBI maintain a Memorandum of Understanding regarding mutual assistance in support of CG/FBI operations to counteract terrorist incidents in the maritime environment. See reference (q).

2. (U) Attorney General. The Attorney General is responsible for coordinating all Federal activity during major domestic terrorism crises and advises the President whether to commit military forces in response to a terrorism situation. This includes coordinating the activities of state and local agencies and the administration of justice in the affected area.

3. (U) Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). ATF is a law enforcement organization within the United States Department of Justice with responsibilities dedicated to reducing violent crime, collecting revenue, and protecting the public. ATF enforces Federal laws and regulations relating to alcohol, tobacco, firearms, explosives and arson by working directly and in cooperation with others to support and assist Federal, state, local, and international law enforcement. ATF's four National Response Teams can respond, within 24 hours, to major bombing and arson scenes anywhere in the United States. The teams combine special agents, forensic scientists, and technical specialists. ATF can also provide vital resources to local communities in the wake of an explosives incident.

(d) (U) Department of State (DOS). The DOS is designated Lead Federal Agency for terrorism response outside U.S. territory involving U.S. persons, property, or interests and is responsible for collection of information and intelligence on terrorist activities overseas.

(e) (U) Department of Transportation (DOT) MARITIME ADMINISTRATION (MARAD). MARAD provides emergency port operations under national emergency conditions, through the National Shipping Authority and the Federal Port Controller Network.

(2) (U) State

(a) (U) State Governor. State governors have command authority over all state resources, including State Police, National Guard (which governors may activate in response to a terrorist act), and the state emergency management agency.

(b) (U) State Law Enforcement Authorities. State Police, which may include a marine division, have concurrent jurisdiction over coastal and inland state waters. Many State Police organizations have special weapons

and tactics (SWAT) teams to respond to hostage or barricaded-subject situations.

(3) (U) Local

(a) (U) Local Law Enforcement Authorities. Local law enforcement authorities have primary responsibility for maintaining law and order within their jurisdictions. They often will be among the first called and first to respond to a terrorist incident. Many local police forces in large urban areas have SWAT teams for responding to hostage or barricaded-subject situations.

(b) (U) Local Fire Departments. Many local urban fire departments have specialized hazardous material (HAZMAT) units for responding to incidents involving hazardous materials. Firefighting assets may be staged during the crisis management phase of an incident and will respond during the consequence management phase. Many of these units have received Federally-sponsored WMD response training.

(c) (U) Local Emergency Medical Services (EMS). Local EMS organizations are responsible for responding to requests for medical assistance, depending upon the severity of the incident in terms of number of casualties and extent of physical/property damage (i.e., cause of incident, such as a weapon of mass destruction involving nuclear, biological, and/or chemical (NBC) agents). EMS personnel may be restricted from responding to a site by the Lead Federal Agency (LFA) until protective capabilities for responders are available.

(4) (U) Private

(a) (U) Facilities and Vessels. In accordance with maritime security regulations found in Subchapter H of reference (b), vessel and facility owners and operators are responsible for the security of their vessels and facilities respectively. Facility owners will often hire civilian security services; these services have no law enforcement authority.

(5) (U) Area Maritime Security Committees (AMSC). In accordance with part 103 of reference (b), AMSCs are responsible for identifying critical port infrastructure; identifying threats and vulnerabilities; determining mitigation strategies; communicating changes in maritime security levels; and communicating other security-related

information to port stakeholders. AMSC members can be invaluable assets during response operations.

2. (U) Mission. In response to a terrorist threat or a terrorist act, CGDFIVE forces will conduct operations to protect Coast Guard resources from terrorist acts, contain the threat to public safety in the maritime domain, stabilize the incident(s), and support the lead Federal agency for terrorism response.

3. (U) Execution

a. (U) Concept of Operations

(1) (U) Commander's Intent. Coast Guard commands will effectively use available resources through risk-based decision making to safely and effectively respond to terrorist threats / incidents within their assigned operating areas; or provide support to other Federal, state, or local entities. The desired end-state is a response operation concluded in a safe, secure, and successful manner, followed by a smooth transition to normal operations.

(2) (U) General. A Coast Guard-designated Terrorism Response Coordinator (TRC) will coordinate Coast Guard response efforts. The TRC may also serve as an Incident Commander (IC).

Commanders may employ COTP authority to establish and enforce security zones around vessels or facilities at risk of terrorist acts or that have received terrorist threats. Implementing facility and vessel security measures will involve concurrent execution of the Terrorism Response, Facility Security, and/or Vessel Security Appendices of 9700 series OPLANs.

(3) (U) Crisis Management. In response to a terrorist threat or act, CGDFIVE units will assign tasking in priority order. Coast Guard response objectives are to preserve lives, protect the public by securing an incident scene, and obtain the safe release of hostages. Secondary and enabling objectives are to protect property and the environment; enforce applicable laws and preserve the integrity of evidence gathered; manage the flow of information to the press and public during the incident to protect hostages and response personnel from premature or ill-advised media disclosure that may adversely impact response effectiveness; and avoid giving the impression that the government can be intimidated by terrorists.

The Coast Guard may maintain incident command and may also coordinate with and/or support another entity by providing law enforcement and logistics support. Multi-agency responses will include state and local law enforcement agencies, which represent multiple jurisdictions. In response situations which require or involve multi-agency, multi-jurisdictional participation, responding agencies shall adhere to existing memorandums of agreement / understanding (MOAs/MOUs), which in the post-9/11 environment should incorporate the National Incident Management System (NIMS) and standardization dictated by the Incident Command System (ICS).

Should a terrorist threat or act result in an incident of national significance, the Attorney General is responsible for criminal investigations of terrorist threats or terrorist acts. The FBI will execute its role as Lead Federal Agency.

The FBI will likely establish a Crisis Management Team (CMT) to coordinate incident response. A Federal Forces Commander (FFC), usually the senior FBI agent on scene, will coordinate operations. The FBI will likely establish a Command Post and/or a Joint Operations Center (JOC) to coordinate and direct law enforcement and criminal investigation activities related to the incident.

b. (U) Employment. CCGDFIVE commands will act to protect themselves; continue to execute statutory missions; and respond, as able, to requests for assistance concerning a terrorist incident upon the high seas or waters subject to U.S. jurisdiction. If the Coast Guard is first to respond, the Coast Guard Incident Commander shall endeavor to contain and stabilize the incident.

(1) (U) Threat Evaluation. If a threat against a maritime asset or operation is received, the cognizant Captain of the Port or Sector Commander shall investigate to determine if the threat is credible. The FBI conducts formal threat credibility assessments in support of operations. Sector Commanders should report to CGDFIVE with results and recommendations.

(2) (U) Statutory Response. Standing Coast Guard law enforcement and port security missions and authorities apply to terrorism situations. Captain of the Port authority may be employed to establish and enforce safety or security zones around threatened or damaged port facilities and vessels.

(a) (U) Counter-Terrorism. The Coast Guard’s role in counter-terrorism operations is to support a

designated Lead Federal Agency or to serve as the lead.

1. (U) Crisis Management. During the crisis management phase of an incident response, the appropriate Sector Commander, as the TRC/IC, shall coordinate Coast Guard actions. The TRC may also designate an On-Scene Commander (OSC).

The TRC/IC has, at his/her disposal, the Maritime Security Response Teams (MSRT). Based in Chesapeake, Virginia, the MSRT provides the Coast Guard with an on-call counter-terrorism response capability.

The TRC/IC, if in a support role to a lead Federal agency, may provide support, to include providing such resources as personnel, vessels, aircraft, or other Coast Guard assets.

(b) (U) Assistance to State and Local Governments. State and local governments may require Federal assistance to perform disaster assistance missions following a terrorist incident. Section 141 of reference (a) authorizes the Coast Guard to utilize its personnel and facilities to assist Federal and state agencies upon request. Local Coast Guard units will cooperate with other responding agencies, but such cooperation shall neither compromise the safety of Coast Guard personnel nor affect the availability of boats and equipment for standard Coast Guard missions.

(3) (U) Reconstitution. If a Coast Guard facility is damaged or destroyed, necessary steps will be taken to restore the unit's capability and return the unit to service. MLCLANT can provide Damage Assessment Teams (DAT) to determine the long-term impacts and prioritize necessary repairs. See references (o) and (p).

c. (U) Rules of Engagement and Use of Force

(1) Although the Standing Rules Of Engagement (see Chapter 4 of reference (e)) are specifically not applicable within the territorial jurisdiction, Commandant has adopted them for Coast Guard operations within the U.S. Territory (shoreward of the outer edge of the 12 nautical mile territorial sea). They provide for individual and unit self-defense.

The Commandant’s Use of Force policy (see chapter 4 of reference (h)) provides guidance for the use of force necessary to accomplish the assigned mission when under

Coast Guard OPCON or TACON and applies to law enforcement situations as well as situations which involve the protection of U.S. property and/or personnel. Accordingly, commanding officers shall use the minimum force necessary to accomplish the mission.

DOD forces under Coast Guard OPCON or TACON will use reference (h) for employing warning shots and disabling fire, and use reference (e) for all other purposes. Coast Guard units under DOD OPCON or TACON shall follow the guidance in reference (e) for all purposes. Note that under such circumstances, actions may be governed by use of force rules contained in other DOD directives or as determined on a case-by-case basis for specific missions.

Commanders should ensure that units operating in the vicinity of each other but under different OPCON have compatible use of force guidance.

When Coast Guard unit commanders shift OPCON or TACON to a non-Coast Guard command or accept OPCON or TACON for a non-Coast Guard unit, they shall ascertain the applicable use of force policy in effect. They may request, via the chain of command to COMLANTAREA or the Commander of the Joint Task Force Commander (or other applicable Commander), supplemental Rules of Engagement, as appropriate.

The message formats contained in Appendix F to Enclosure J of reference (e) are appropriate for such requests and shall be used whenever practical. Incident Commanders may seek use of force guidance from the CCGDFIVE (IMT), as necessary.

Nothing in this appendix or this OPLAN limits a commander’s inherent authority and obligation to use all necessary means available and to take all appropriate actions in self-defense of the commander’s unit and other U.S. forces in the vicinity.

d) (U) Deployment

(1) (U) CGDFIVE and ISC Portsmouth will coordinate assets deployed within the Fifth District. The Coast Guard Incident Commander must provide adequate berthing, messing, and operational support for temporarily assigned personnel.

(2) (U) Inter-district deployment of personnel and equipment to units supporting response operations is not anticipated. However, if/when required, the Maintenance

and Logistics Command, Atlantic will coordinate transportation.

(3) (U) When transit times between Coast Guard units and response operating areas are too long, personnel may be deployed to a forward operating base. The Coast Guard Incident Commander must provide adequate berthing, messing and operational support for these personnel. Assets and personnel will remain within the Fifth District.

e) (U) Tasks

(1) (U) CCGDFIVE shall:

(a) (U) Take overall responsibility for CCGDFIVE units' terrorism counter-actions.

(b) (U) Establish liaison with FBI and Federal Emergency Management Agency (FEMA) regional offices and appropriate Federal and state law enforcement agencies and civil authorities for terrorism response planning and operations.

(c) (U) Monitor current intelligence for possible threats against Coast Guard facilities or activities within the Fifth District.

(d) (U) Serve as TRC for incidents within the Fifth District but beyond the territorial sea (three nautical miles).

(e) (U) When deemed appropriate for tactical response to a terrorist threat / incident, request the use of the MSRT.

(2) (U) CCGDFIVE AIR STATION COMMANDING OFFICERS shall:

(a) (U) In accordance with reference (k), ensure their units' security.

(b) (U) Respond to tasking as directed by CCGDFIVE.

(c) (U) Set threat conditions when ordered by higher authority. See Chapter 5 of reference (k).

(d) (U) Assist Coast Guard Incident Commanders conducting terrorism response operations, if requested.

(3) (U) COMMANDING OFFICERS, CCGDFIVE VESSELS (including VESSELS UNDER CCGDFIVE OPCON) shall:

(a) (U) In accordance with reference (k), ensure their units' security.

(b) (U) Respond to tasking as directed by CCGDFIVE.

(c) (U) Set threat conditions when ordered by higher authority. See Chapter 5 of reference (k).

(d) (U) Assist Coast Guard Incident Commanders conducting response operations, if requested.

(4) (U) COAST GUARD DISTRICT FIVE SECTOR COMMANDERS, as Coast Guard TRC/IC for crisis management operations, shall:

(a) (U) Assume tactical control (TACON) of assigned forces to perform the assigned response operation.

(b) (U) Ensure their units' security in accordance with reference (k).

(c) (U) As appropriate, establish safety and/or security zones for the protection of persons, vessels, and/or property.

(d) (U) Respond to tasking as directed by CCGDFIVE.

(e) (U) Set threat conditions when ordered by higher authority, and direct subordinate units to set threat conditions. See Chapter 5 of reference (k).

(f) (U) Coordinate the operations of responding Coast Guard forces for incidents within the AOR and not under Fifth District OPCON.

(g) (U) Assist Coast Guard Incident Commanders conducting response operations, if requested.

(h) (U) Upon request and as operations permit, provide assistance to other Federal, state, and local authorities conducting terrorism response operations. Coordinated with the appropriate Incident Commander, Coast Guard assistance may include:

1. (U) Enforcing safety and/or security zones established by the Captain of the Port.

2. (U) Providing law enforcement and logistic support.

3. (U) Providing personnel to the FBI Crisis Management Team (CMT), Joint Operations Center and/or Incident Commander to facilitate coordination of

Coast Guard assets supporting response operations.

4. (U) Collecting and accounting for evidence found at the scene.

5. (U) Provide, if necessary, a platform for a Regional Command Post (RCP) at or near the incident scene.

f. (U) Coordinating Instructions

(1) (U) All subordinate commands shall be prepared to commence operations without notification from CCGDFIVE or the operational commander.

(2) (U) Execute this appendix:

(a) (U) Upon occurrence of a terrorist incident.

(b) (U) When current intelligence indicates the potential for a terrorist act at, in the vicinity of, or affecting a Coast Guard unit.

(c) (U) When DOJ (FBI), FEMA, DOD, or other Federal, State, or local authorities request Coat Guard counter-terrorism assistance.

(d) (U) When ordered by COMLANTAREA or CCGDFIVE.

(3) (U) Coast Guard Use of Force Policy applies to Coast Guard forces under Coast Guard OPCON. DOD Use of Force Policy applies to forces under DOD OPCON.

(4) (U) The terrorism incident annex to reference (s) establishes policies, procedures, and guidelines for the employment of the Coast Guard when federal forces are committed to terrorist incidents.

(5) (U) If, under emergent circumstances, the Federal Forces Commander requires the TRC to designate a member of his staff as the Federal Forces Coordinator (FFC), strictly adhere to the parameters of reference (g), paragraph 6.b.3.d.

g. (U) Special Guidance

(1) (U) Incident Site / Crime Scene Preservation. In the course of response operations, it is possible that Coast Guard personnel will come into contact with the incident / crime scene. Personnel should make every attempt not to disturb the scene of the incident.

(a) (U) Secure the Scene. Once injured personnel and fatalities have been evacuated from the scene, Coast Guard personnel should, as far as practicable, control site access by establishing a perimeter or security zone. Document, via a log, all personnel who enter the secured area and maintain site control until properly relieved, i.e., until another agency or competent authority assumes site control.

(b) (U) Debriefing by Law Enforcement Officials. As the incident progresses from a response phase to the investigatory phase, response personnel may be asked to provide statements. Coast Guard personnel shall speak only of those activities of which they have first-hand knowledge.

(c) (U) Evidence Collection. Coast Guard personnel may also be asked to assist with evidence collection. The complexity and duration of this task will vary. CCGDFIVE unit commanders shall, operations permitting, provide personnel to assist.

4. (U) Administration and Logistics

a. (U) Concept of Support. Normal channels of logistics and administrative support remain in place; reference (o) applies. ISC Portsmouth will provide support for terrorism / WMD response operations. When requested, ISC Portsmouth will assign personnel to head the logistics / finance section on each Coast Guard Incident Command staff activated within the D5 AOR. All personnel, logistics, and finance requirements shall be coordinated through ISC Portsmouth. CCGDFIVE units will request equipment and supplies that cannot be handled through normal channels via SITREPs to the District. Requests for logistics support beyond District or ISC Portsmouth's capabilities will be forwarded to Maintenance and Logistics Command, Atlantic (MLCLANT) for action.

b. (U) Personnel. As far as practicable, personnel support procedures in reference (o) will remain in effect.

(1) (U) CCGDFIVE shall make to LANTAREA requests for the involuntary recall of Selected Reserve personnel. See Appendix 7 to Annex E to this OPLAN for sample messages.

(2) (U) CGDFIVE commands requiring additional operational or support personnel shall make requests to CCGDFIVE (IMT) via the chain of command. This includes requests for personnel to backfill for active duty personnel reassigned TAD. CCGDFIVE will work with ISC Portsmouth to coordinate these requests. CCGDFIVE (IMT) will consolidate requests

to MLCLANT for additional personnel that are beyond District or ISC Portsmouth's capabilities.

(3) (U) If threat conditions are sustained for an extended period, local units may require additional personnel to maintain expanded security watches.

(4) (U) Redeployment of active duty and reserve personnel may be required to maintain primary Coast Guard mission capability. Coast Guard Selected Reservists and Auxiliarists may be used to backfill the active duty personnel involved in response operations.

(5) (U) For additional information, see Annex E to this OPLAN.

c. (U) Funding. MLCLANT may track extraordinary expenditures for terrorism / WMD response operations in a separate account for potential reimbursement; therefore, Incident Commanders shall submit financial reports with sufficient detail to facilitate such tracking. See Annex D to this OPLAN and references (o) and (p). Guidance will be available from MLCLANT.

d. (U) Public Affairs

(1) The Fifth District is responsible for coordinating all public affairs activities. CCGDFIVE will deploy public affairs staff (officers and petty officers) to assist the Coast Guard Incident Commander, as necessary. See Annex F to this OPLAN for additional information.

(2) Media coverage is important to terrorists attempting to incite public fear or gain attention for their cause. The principal public affairs objective related to terrorism counter-action is to limit the media exposure terrorists seek.

(3) (U) Public affairs staff should:

(a) (U) Identify terrorist activities as criminal acts not justifying public support.

(b) (U) Support the lead agency's public affairs strategy regarding the release of information pertaining to counter-terrorism plans, operations, or response force makeup.

(c) (U) Use pool reporters to minimize intrusions at the scene.

(d) (U) Limit the use at the scene of high intensity lighting, obtrusive camera equipment, and other special newsgathering technologies.

(e) (U) Limit media requests for interviews with barricaded or hostage-holding subjects or other incident participants.

(f) (U) Restrict and/or limit the distribution of information that would:

1. (U) Inflame or aggravate the situation.

2. (U) Compromise official tactical planning or law enforcement efforts.

3. (U) Disclose the incident location when it is not likely to become public knowledge and when the potential for the incident to grow or spread is high.

4. (U) Emphasize the spectacular qualities of the incident or the presence of spectators.

(g) (U) Assure that self-serving statements by the subjects are fairly balanced with contrasting information from official sources reflecting the risks to innocent persons the incident has created.

e. (U) Administrative Reports

(1) (U) Situation Reports (SITREPs)

(a) (U) Coast Guard units assisting with counter-terrorism operations shall, to keep CCGDFIVE informed, submit SITREPs at least twice daily, at 1100Z and 2300Z, or as directed.

(b) (U) Coast Guard forces assigned to a DOD task force shall submit reports in accordance with the DOD task force commander’s direction.

(2) (U) After Action Reports. Subordinate commands shall submit after action reports/lessons learned within 30 days following the conclusion of terrorism / WMD response operations. These reports shall be submitted to CCGDFIVE in accordance with Annex W of this OPLAN.

f. (U) Safety

(1) (U) Detection and Protection. Coast Guard personnel responding to terrorist incidents, including those involving WMD, assume a great risk of exposure to incapacitating or lethal chemical agents, a hazardous situation, or direct tissue contact with extremely infectious organisms. Accordingly, early detection of and protection from the effects of such toxic agents is vital for personnel safety. If possible, Coast Guard personnel should defer the response to specifically trained and equipped Federal, state, local, or private organizations.

(2) (U) Environmental Protection Agency (EPA) Environmental Response Team (ERT). The EPA ERT has the capability to conduct on-site health and safety assessments (including chemical, biological and physical treatment and monitoring) to determine if immediate threats to personnel safety exist. Coast Guard commanders who have reason to suspect threats to physical safety exist shall contact the ERT via the National Response Center (NRC) at 1-800-424-8802.

(3) (U) Personnel Protective Equipment. See paragraph 4.c. to Appendix 26 and Tab A to Appendix 9 to Annex D.

g. (U) Meteorological and Oceanographic Support Services. See Annex H to this OPLAN.

5. (U) Command and Control

a. (U) Command Relationships

(1) (U) For terrorism/WMD response operations, the operational chain of command will flow from CCGDFIVE to the Coast Guard Commanders designated as Incident Commanders. Sector Commanders (or Sector Field Office Commanders) shall be pre-designated Coast Guard Incident Commanders for terrorism / WMD response operations within each geographic area.

(2) (U) Coast Guard elements assisting other Federal, state, and local authorities will remain under Coast Guard OPCON.

(3) (U) Coast Guard elements committed to terrorism / WMD response operations may be under the operational control of an assigned task force commander. Assignment of Coast Guard resources to a DOD task force requires Commandant approval. COMLANTAREA and/or CCGDFIVE will coordinate.

(4) (U) CGDFIVE units shall make requests for logistics and personnel support directly to ISC Portsmouth.

(5) (U) For all other operations, the normal chain of command will be followed. All normal reporting requirements (MOVREPS, etc.) shall be followed in addition to requirements contained herein.

(6) (U) See Annex J to this OPLAN for additional information.

b. (U) Command Posts

(1) (U) The Fifth District command center is located in Portsmouth, VA. CGDFIVE will establish an Incident Management Team (IMT) for response operations, as necessary.

(2) (U) For Coast Guard operations, Sector / Sector Field Office or other command locations shall be used. Coast Guard Incident Commanders shall include command post locations in their supporting plans. Command posts may be moved to facilitate response operations. Keep CCGDFIVE informed of command post establishment or relocation.

(3) (U) Coast Guard mobile command posts may be established, and response operations may be integrated with civil command posts, as necessary, to facilitate command, control, and coordination of multi-agency response assets.

c. (U) Succession to Command. The Coast Guard Incident Commander may be changed, with the approval of CCGDFIVE, during the course of the response operation.

d. (U) Command, Control, and Communications

(1) (U) LANTAREA / CCGDFIVE may impose MINIMIZE in the affected area when response operations begin.

(2) (U) Transportable Communication Centrals (TCC) are available from LANTAREA / CGDFIVE for use as emergency command centers. All requests for contingency communication assets will be in accordance with reference (o).

(3) (U) For additional information, see reference (o) and Annex K to this OPLAN.

TABS:

TAB A – Terrorism Response Organization and Responsibilities of Operations Groups

TAB X - Terrorism Response Check List

COMMANDER
FIFTH COAST GUARD DISTRICT
431 CRAWFORD STREET
PORTSMOUTH, VA 23704-5004

24 July 2009

TAB A TO APPENDIX 29 TO ANNEX C TO CCGDFIVE OPLAN 9750-09 (U)
TERRORISM RESPONSE ORGANIZATION AND RESPONSIBILITIES OF OPERATIONS GROUPS (U)

(U) REFERENCES:

(a) COMDTINST M16000.12 (series), Marine Safety Manual, Vol. VI, Port and Waterways Safety
(b) COMDTINST M16000.12 (series), Marine Safety Manual, Vol. VII, Port Security
(c) COMDTINST M16247.1 (series), Maritime Law Enforcement Manual
(d) COMDTINST M3010.12B, Contingency Preparedness Planning Manual, Volume II

1. Response Organization. A terrorist incident is likely to draw significant attention, bring many different organizations together, and call for the establishment of an incident command organization. See Appendix 5 to Annex J.

   a. (U) Duty Descriptions and Responsibilities of Response Personnel. See Appendix 7 to Annex J.

2. (U) Operations Section of the Incident Command. Use of the incident command system requires the operations section to be tailored to the operation at hand. For terrorism response operations, establishing the following groups is recommended.

   a. (U) Terrorism Response Group. This group carries out the tactical response and directly supports the operation by assisting other Federal, state, and local agencies responding to the incident. Small boats and vessels provide transportation to the scene and serve as operating platforms while on scene.

   b. (U) Law Enforcement Group. This group can provide security to the responders and at the scene. Forces maintain the integrity of the zone against intrusions, intentional or unintentional. See references (a), (b), and (c).

   c. (U) Physical Security Group. This group patrols designated perimeters and controls access to the unit. Persons desiring to enter should be identified and reported to the command. See references (a), (b), and (c).

d. (U) Medical Group. The Medical Group conducts victim triage, provides first responder care, and coordinates transport to a casualty collection point or directly to a medical facility. This group will work closely with local emergency medical services personnel.

3. (U) General Duties of Groups. Groups shall:

a. (U) Obtain a briefing from operations / command center to determine specific tasking prior to getting underway.

b. (U) Know the identity of other assets employed in the area.

c. (U) Remain under the tactical control of the operations / command center while assigned.

d. (U) Ensure methods of communications – plan, modes, equipment, frequency plan, etc. – are understood.

e. (U) Coordinate activities with adjacent assets.

f. (U) Inform the operations / command center regarding events, occurrences and activities. Report special occurrences or activities (e.g., accidents) immediately.

g. (U) Advise the operations / command center of any changes in status of assigned resources.

COMMANDER
FIFTH COAST GUARD DISTRICT
431 CRAWFORD STREET
PORTSMOUTH, VA 23704-5004

24 July 2009

TAB X TO APPENDIX 29 TO ANNEX C TO CCGDFIVE OPLAN 9750-09 (U)
TERRORISM / WMD RESPONSE OPERATIONS CHECK LIST (U)

(U) REFERENCES:

a. COMDTINST M5530.1 (series), Physical Security Program
b. COMDTINST M16000.12 (series), Marine Safety Manual, Vol. VII, Port Security

1. (U) This tab lists incident-specific actions to be taken during terrorist / weapons of mass destruction response operations. These actions are not all inclusive. Coast Guard commands shall evaluate the steps necessary to physically secure units in the event of a terrorist threat (barriers, security lighting, etc.). These preparations and courses of action will be reviewed and updated periodically to ensure all necessary preparations are included. Counter-terrorism measures will be implemented with a view to contain and stabilize the incident prior to arrival of the lead agency's representatives.

   During a stand-off (e.g., hostage-taking) or gesture-type (e.g., bombing) terrorist incidents, Coast Guard forces will support the FBI’s counter-terrorism actions.

   For each action, commands or staffs responsible appear within brackets.

ALL	All units involved in response operations
CCGDFIVE	Commander, Fifth Coast Guard District
CGIC	Coast Guard Incident Commander
Dcs	District Five Chief of Staff
Dri	District Five Intelligence
Drmc	District Five Command Center
IMT	Incident Management Team
ISC	Integrated Support Command

2. (U) Awareness Phase

   a. (U) Receive initial incident notification; record information; notify chain of command. [ALL]

b. (U) Command Center: notify and brief Chief of Staff and (Ai) Division Chief on threat / incident. [drmc]

c. (U) Notify the Federal Bureau of Investigation of the threat received. Provide as much information as possible. [ALL]

d. (U) Determine the threat. Determine the steps that can be taken to gather additional threat analysis information. [dri]

e. (U) Obtain an estimate of terrorist intentions and capabilities. [dri]

f. (U) Determine if the threat has local, regional, or national implications. [dri]

g. (U) Assess the need for additional physical security, both short and long-term. [ALL]

h. (U) Assess the need for additional assets: surface, air, communications, and personnel. [ALL]

i. (U) Consider requirements for weapons, equipment, and/or additional security personnel. [ALL]

j. (U) Brief all hands; advise them of the situation and what information may be passed on to dependents. Notify unit Ombudsmen; keep them apprised of situation. Their network provides a flow of information between families and the Ombudsmen coordinator without interrupting official communications. [ALL]

k. (U) Secure classified material. [ALL]

l. (U) Safeguard essential records. [ALL]

m. (U) Set appropriate THREATCON. [ALL]

n. (U) Review bomb threat procedures. [ALL]

3. (U) Initial Response Phase

a. (U) Consider activating the Incident Management Team (IMT) if the incident is of large magnitude and may last several days. [dcs]

b. (U) Act to contain the incident (e.g., establish safety or security zone(s), dispatch response forces, etc.). [CGIC]

c. (U) Notify civil response agencies and request emergency assistance from local responders (fire, police, medical, etc.). [ALL]

d. (U) Notify the chain of command and CGHQ Command Center of the incident by the fastest means possible (i.e., via Critical Incident Communications (CIC) procedures). Follow-up with a SITREP at first opportunity. [CGIC]

e. (U) Raise the THREATCON. Request additional personnel and assets, as required, via the chain of command. Activate Regional Command Post, request PAO assistance. [CGIC]

f. (U) Gather information and documentation to assist the Incident Management Team's response. [CGIC]

g. (U) Notify chain of command of impacts on mission capability. [CGIC]

h. (U) Establish communications link pending arrival of the lead agency. The Coast Guard point of contact will be a mature senior petty officer or junior officer. THE POC MUST BE SUFFICIENTLY JUNIOR TO AVOID GIVING TERRORISTS THE IMPRESSION HE CAN SPEAK FOR THE COAST GUARD OR FEDERAL GOVERNMENT. See reference (a), paragraph 6.B.4.b.(6). [CGIC]

4. (U) Negotiation Phase

a. (U) Support the lead agency's negotiation team (with boat or air transport and communications). [CGIC]

b. (U) Direct Coast Guard action in cooperation with the Federal Forces Commander (FFC). [CGIC]

c. (U) Through the Coast Guard Incident Commander: [ALL]

(1) (U) Maintain the waterside perimeter.

(2) (U) Provide logistic support to the Federal Forces Commander (FFC) as appropriate.

d. (U) During this phase, the Incident Management Team will direct the planning for an assault, if negotiations fail. The assault phase will commence only upon decision of the lead agency's representative. Ensure the qualifications and limitations of Coast Guard personnel are communicated to the Federal Forces Commander (FFC) prior to employment of Coast Guard personnel in any capacity. [CGIC]

5. (U) Assault Phase

a. (U) Support the Federal Forces Commander's designated assault personnel, if requested. The lead agency will coordinate all planning among organizations that may be involved in any assault. [CGIC]

6. (U) Incident Conclusion Phase

a. (U) See to the well-being of hostages by providing or arranging emergency medical care, transportation to medical facilities, notification of relatives, and other ancillary services if requested by Incident Management Team. [CGIC]

b. (U) Assist the lead agency to contact Explosive Ordnance Disposal team(s), if necessary. [CGIC]

c. (U) Provide necessary demobilization support, including refueling and re-provisioning of Coast Guard resources, with capture of costs. [CGIC]

d. (U) Provide other support and conduct debriefings and case documentation if requested by the Incident Management Team. See reference (a), paragraph 6.b.4.e. [CGIC]

e. (U) Provide lessons learned to CCGDFIVE within 45 days. [CGIC]

f. (U) Working with the Integrated Support Command, capture extraordinary costs for possible FEMA reimbursement if the National Response Plan is activated. [IMT]

Terrorist Incident

Quick Response Card

TERRORIST INCIDENTS
(Imminent / In Progress)

Short Title:	**MISLE**
Watchstander:	**CIC**

INITIAL INFORMATION COLLECTION – AWARENESS

Incident type:	**Location:**

REPORTING SOURCE INFORMATION

Name:	**Phone:**	**Vessel name:**	**Doc/IMO#:**
R/S Address if calling from shore:			

VESSEL INVOLVED

Type:			
Name:	**Flag:**	**Doc/IMO#:**	**POB:**
Vessel Master Name:	**Address:**	**Phone:**	
Length:	**Hull Material:**	**Color:**	**Make:**
Homeport:	**LPOC:**	**NPOC:**	

FACILITY INVOLVED

Name:	**Address:**	**Contact Name:**	**Phone:**

ON SCENE WEATHER

VISIBILITY	WIND	SEA CONDITION		TEMPERATURE	
	Direction/ Speed	Height	Direction	Air	Water
SUNRISE/ SUNSET	**TIDAL CURRENT**	**NEXT TIDE**		**MISCELLANEOUS**	
	Direction/ Speed	High/ Low	Time/ height		

INITIAL ACTIONS

_____ Complete Initial SAR Check sheet/related QRC(s) (if applicable)

_____ Initiate CIC (if applicable)

_____ Contact 911

_____ Brief National Response Center (NRC)

_____ Contact FBI/ JTTF: 215-418-4000

_____ Open MISLE case

_____ Consider any special events and vessel traffic._____

_____ Contact Sector Intelligence Officer and / or MIFC

_____ Establish safety/security zone as appropriate _____

_____ Collect and distribute information from all LE databases (if applicable)

_____ Contact Area Maritime Security Committee

_____ Make initial notifications IAW briefing matrix (CGIS & INTEL)

PLANNING

_____ Receive or develop tactical plan

_____ Conduct ORM

_____ Make notifications IAW briefing matrix

STAAR MODEL – IDENTIFY OPTIONS

☐ **S**pread out	☐ **T**ransfer	☐ **A**void	☐ **A**ccept	☐ **R**educe

OPERATIONAL EXECUTION

_____ Dispatch appropriate unit

_____ Risk vs. Gain (formerly GAR score) from responding unit. R: _____ G:_____

Concerns_____

PEACE MODEL – IDENTIFY HAZARDS

Planning:	Asset - Crew:	Communications/Supervision:	Risk:_____
Event:	Asset – cutter/boat:	Environment:	Gain:_____

_____ Reevaluate plan for asset concerns as needed

_____ Monitor case

CONCLUSION

_____ Make notifications IAW briefing matrix

_____ Submit MISLE Case for review

POLICY/PROGRAM INFORMATION

References:

(a) Maritime Security Response Operations (MSRO) Manual, COMDTINST M16600.6 (series)

Annex SS

Lessons Learned

Sector Delaware Bay - Lessons Learned

Report in Gallons	Whether it's the amount spilled, potentially spilled, or collected - Reprt the amounts in Gallons.
Environmental Unit Products	* I dentify and prioritize Resources at Risk. * Initiate SCAT. * Initiate ESA Section 7 consultations. * Initiate HPA Section 106 consultations (Tribal & SHPOs). * Initiate air, water and sediment sampling. * Develop a Wildlife Plan. * Recommend clean-up methods & endpoints. * Source the Pollution - coordinate gov and RP samples. * Engage seafood safty experts. * Identify a Natural Resource Advisor (NRA) to monitor and enforce BMPs. * Coordinate with RP, CG, States, for overflights with goal to identify locations and size of oil slicks. * Assertain chemistry and toxicity of of spilled product. * Continue Trajectory Modeling - include fate and effect (weathering). * Engage ERMA support. * Provide Weather reports from Mount Holly NWS. * Develop a submerged Oil/Sunken Oil Plan.
NRDAR	NRDAR should have a workspace near the Environmental Unit.
Unified Command Make-up	Depending on the size of the incident and concerns, States may have more than one representative in the UC. For example, an environmental representative and an emergency management representative.

Annex TT

Volunteer Use, Management, Responsibilities & Training

Volunteer Information Form

9725 Volunteer Information Form

INSTRUCTIONS

Please fill in the information below and submit form to the Volunteer Coordinator

PERSONAL CONTACT INFORMATION

First Name_____**Last Name**_____ **M.I.**_____

Address_____

_____

City_____**State**_____**Zip Code**_____ **County**_____

Day Phone_____**Evening Phone**_____ **Cell Phone**_____

Volunteer Affiliation_____

Staff_____**Volunteer**_____

EMERGENCY CONTACT INFORMATION

Name_____**Relationship**_____

Day Phone_____**Evening Phone**_____

SKILLS (1-No Experience, 2-Performaned Once, 3-Some Experience, 4-Extensive Experience)

Animal Handling (Check Skills and Circle Animal)	**Non-animal Handling**
_____**Avian / Marine Mammal Bleeding**	_____**Clerical**
_____**Avian / Marine Mammal Intake**	_____**Communication System**
_____**Avian / Marine Mammal Stabilization**	_____**Computer Data Entry**
_____**Washing Oiled Avian / Marine Mammals**	_____**Construction**
_____**Avian Food Preparation**	_____**Electrician**
_____**Avian / Marine Mammal**	_____**IT**
_____**Avian / Marine Mammal Gavaging**	_____**Plumber**
_____**Avian / Marine Mammal Drying Room**	_____**Heavy Equipment Operator**
_____**Avian / Marine Mammal Pools**	_____**Medical Laboratory Technician**
_____**Other**	_____ **Other**

ADDITIONAL TRAINING COMPLETED

_____**Basic Skills Training**	**Date Completed**_____
_____**Advanced Skills Training**	**Date Completed**_____
_____**Continued Education Training**	**Date Completed**_____
_____**Health and Safety Training**	**Date Completed**_____
_____**HAZWOPER 24 Hr. Training**	**Date Completed**_____
_____**8 Hr. Refresher (HAZWOPER)**	**Date Completed**_____
_____**Oil Spill(s)** _____	_____ _____

SDB Volunteer Use Plan

Sector Delaware Bay – Volunteer Use Plan

1000 Volunteer Use

This document provides a Volunteer Coordinator, Volunteer Unit Leader, or Volunteer Officer, as decided upon by the FOSC and UC, basic guidance in volunteer use and management during an oil spill. However, it is applicable in all any hazard type response. In addition to this section, the Incident Commander/Unified Command (IC/UC) may refer to any guidelines developed by National Response Team (NRT) for volunteer use.

A volunteer is any individual accepted to perform services by the lead agency which has authority to accept volunteer services. The decision to accept volunteer services, affiliated or unaffiliated, is made by the IC/UC. The Sector Delaware Bay, Federal on Scene Coordinator (FOSC) may use the services of volunteers in accordance with his/her authorities when determined to be appropriate. The IC/UC will make that decision on a case-by-case basis; weighing the interest of the local volunteer community; benefit of volunteer efforts against health and safety concerns; resources needed for volunteer supervision and training; the concerns of a Responsible Party (RP), and other relevant issues. If the incident includes a RP, the input of the RP regarding the use of volunteers should be given strong consideration, but ultimately, the FOSC (along with any state or local commanders in the IC/UC) may make the decision to accept volunteers even if the RP objects. However, the FOSC should consult his/her agency counsel if considering using volunteers on the RP's property in order to determine the applicability of federal liability coverage to those volunteers. Useful definitions are below:

- **Affiliated Volunteer**: An individual who comes forward following an incident to assist with response activities during the response or recovery phase without pay or other consideration and has a pre-existing formal or informal arrangement with either a governmental agency or non-Governmental Organization (NGO) and who has been trained for a specific role or function in incident response or disaster relief during the preparedness phase.
- **Unaffiliated Volunteer**: An individual who comes forward following an incident to assist a governmental agency or NGO with response activities without pay or other consideration. Unaffiliated volunteers are also sometimes referred to as "Convergent," "Emergent," or "Spontaneous". By definition, unaffiliated volunteers are not initially affiliated with a response or relief agency or pre-registered with an accredited disaster council.
- **Employee**: An "employee" is described for each agency in specific laws and regulations. These laws and regulations can vary across agencies. These requirements may also specify to what extent an agency may accept volunteer services and to what extent volunteers may be considered "employees" of that agency for specific purposes, such as work hours and compensation for injuries.

It is recognized that the presence of affiliated and/or unaffiliated volunteers may be a challenging management issue for the IC/UC. Due to the logistical requirements of coordinating and training volunteers, the response organization must be large enough to support volunteer participation. That is why the use of volunteers, or using every person that volunteers for a response, may not be appropriate during all incident responses.

It is also important to note that USCG and EPA have different authorities to use volunteers. Depending on whether the USCG or the EPA is providing the federal OSC for a specific incident, the relevant agency's authorities to use volunteers would apply and need to be considered by the IC/UC. Therefore, the decision to use or keep volunteers engaged in a response could change if the lead federal agency changes.

2000 Volunteer Management

Depending on the interests of the volunteer community, the media, and the public, the IC/UC may decide to manage volunteers by assigning a Liaison Officer (LNO), or a designated Volunteer Officer (VO), a Volunteer Coordinator (VC) under the Resource Unit, or establishing a Volunteer Unit. The Sector

Liaison Officer (LNO) will generally be the first to receive external reports of volunteer interest due to the outreach responsibilities of that position. If volunteer interest exists, the LNO will advise the IC/UC. It is recommended that a Federal or State Agency Representative fill the selected management position (Volunteer Officer, Volunteer Coordinator, or Volunteer Unit Leader). Additionally, a representative from the Corporation for National and Community Service (CNCS) could be called upon to fill the volunteer manager's role. Ensure that the Finance Section Chief is aware that the CNCS is being requested by the IC/UC as the Finance Section would prepare the Pollution Removal Funding Authorization (PRFA) for obtaining CNCS representative. Interested unaffiliated volunteers may be encouraged to join affiliated volunteer organizations. However, the USCG, nor the Sector Delaware Bay Area Committee, nor any other federal or state governments, endorse one organization over another. Once volunteers are processed into the response organization, they may be assigned directly to an appropriate unit in the Operations Section, Planning Section or other appropriate section within the Response Incident Command System. If, and as necessary, they may be trained, provided safety and/or protective equipment, and be informed where, when, and to whom they should report.

Volunteers that do not possess required training will not be permitted to participate in UC sanctioned response activities. Volunteers will not be used in the physical removal of oil and or hazardous substances from the environment.

In some incidents, state or local governments or NGOs may be prepared to establish a volunteer operations or reception center to be the focal point for unaffiliated volunteer recruitment, registration, orientation, and training. The Volunteer Manager (Volunteer Officer/Coordinator/Unit) would be responsible for coordinating with the volunteer operations center established by another organization. If the response will include significant numbers of unaffiliated volunteers but states/locals do not have this capability, it may be advisable for the IC/UC to have the Volunteer Officer/Coordinator/Unit work with Logistics to establish a temporary federal volunteer operations center for these purposes. This center would provide a location separate from the ICP for volunteers to converge and prepare to deploy. If a center is established by the IC/UC, the Volunteer Officer/Coordinator/Unit would work with the Resource Unit to have appropriate personnel and resources assigned to manage and staff the center. The IC/UC should assign a federal or state official to manage the volunteer center.

3000 Volunteer Management Responsibilities

Regardless of how volunteers will be managed (Volunteer Officer; Volunteer Coordinator under the Resource Unit; or by a Volunteer Unit in the Planning Section), management responsibilities include but are not limited to the following:

- Provide a point of contact for all volunteers as well as for all units/agencies needing volunteers;
- Establish a communication system, including the use of toll-free phone numbers, emails, cell phones, a website, and social networking tools. Recruitment of an Amateur Radio Operator should be considered for remote locations.
- Process all volunteers interested in assisting the response organization [Link to Volunteer Information Form 9725];
- Ensure volunteers are identified and documented;
- Develop a cost/benefit standard for selecting volunteers that provides the maximum benefit to the response at minimum cost. For example, a volunteer that can fill an assigned role for a longer period of time after training, is more beneficial to the response organization than a volunteer who can only contribute a few hours after completing training.
- Develop a volunteer participation standard. Depending on the volunteer's assignment, criteria includes but is not limited to the following:
    - Minimum volunteer age.
    - Minimum health condition (no reparatory or immuno-compromising illnesses).

    - Proof of current tetanus inoculations.
    - Current driver's license, registration, and proof of insurance if transporting, personnel, wildlife, or equipment in one's personal vehicle or vessel.
    - Minimum health condition (no respiratory or immuno-compromising illnesses).
- Create a credentialing system allowing designated volunteers access to the scene. This may come in the form of accountability tags, wrist bands, a letter from the FOSC, or a picture ID. Some RPs may have developed their own credentialing system. The system to be used will be developed and implemented on a case by case basis.
- Prepare Organizational Assignment List (ICS 203) and prepare or obtain Organizational Charts (ICS 207) for the Affiliated Organizations
- Provide briefings to supervisors on the status of volunteer interest, use, and management.
- Provide briefings to volunteers on the current incident situation and response organization expectations.
- Coordinate with the Public Information Officer (PIO) or Joint Information Center (JIC) to provide media with types of volunteer jobs available and the process to volunteer.

4000 Affiliated Agency and/or Volunteer Manager Responsibilities

Volunteers will either regard their participation in the response as rewarding or frustrating based upon their personal experiences. It is imperative that they be safely utilized, and their needs are met. Some of the responsibilities of agencies or response supervisors that are managing volunteers include but are not limited to:

- Be respectful and provide an environment in which the volunteer can work.
- Provide proper briefings to the VO, VC, Volunteer Unit Leader.
- Oversee operations as assigned.
- Provide and ensure the proper use of PPE.
- Ensure health and safety of volunteers.
- Ensure that logistics requirements are met.
- Maintain all required documentation.
- Maintain volunteer credentialing.
    - Track volunteers.

5000 Volunteer Participant Responsibilities

Once a volunteer has accepted an assignment, it is imperative that the volunteer take the assignment seriously. Assigned volunteers will be told where, when, and to whom to report. The volunteer will have to agree to standard work conditions and Code of Conduct for the benefit of the response and for his or her own safety. If a volunteer or volunteer agency becomes a distraction, the volunteer or volunteer agency will be asked to discontinue their participation in the response. Some of the responsibilities of volunteers include but are not limited to:

- Complete all "worker" information forms.
- Realistically evaluate their ability to participate in the response.
- Arrive where and when they are supposed to and check in.
- Be respectful to others.
- Refrain from alcohol or illegal drug use.
- Immediately report any injuries, exposures, illness, or insect or animal bites to a supervisor.
- Immediately report any broken or lost equipment to their supervisor. Immediately report any hostile work conditions to their supervisor or the Safety Officer.

- Report to their supervisor when they are departing and if they will not be returning for their next scheduled Operational Period.

6000 Volunteer Liability and Considerations

In many cases, the Responsible Party (RP) is responsible for the funding of the response. In this active role, it is critical that their concerns and limitations on using volunteer organizations are considered. Often RP's are hesitant to utilize volunteers due to liability and legal considerations. However, the advantages and disadvantages will be discussed and decided upon by the IC/UC, with advice from legal representatives. If a unilateral Coast Guard IC or UC decision is made to use affiliated or unaffiliated volunteers, the RP generally has no regulatory obligation to provide support or management resources.

Often, when affiliated volunteers are used, the volunteers are covered under the affiliated organizations' liability coverage. The Oil Spill Liability Trust Fund (OSLTF) is available up to 50 million dollars annually for federal response costs under the Clean Water Act. The OSLTF may be used to pay for volunteer expenses consistent with this authority. FOSCs should communicate with the Coast Guard Commandant office of CG-533 and the National Pollution Funds Center when dealing with issues regarding funding for volunteers.

State requirements for Volunteer Management can be provided by or within

- New Jersey: State Incident Commander
- Delaware: State Incident Commander
- Pennsylvania: [Link to: PEMA Directive 2006-1 – Official Enrollment of State Emergency Management Volunteers]*

* These resources are available for general disaster response, but some may be available for support during oil spill response operations.

7000 Health and Safety Training Standards Needed for Volunteer Participation

Elements of required and recommended training will vary depending on the tasks of the individuals involved in the response. Training requirements and specific courses vary with level of involvement, agency policy, UC requirements, OSHA and state regulations. Volunteers that do not possess the required training will not be permitted to participate in UC sanctioned response activities. Generally, volunteers who respond to an oil spill incident will not be used in the physical removal of the hazardous substance. The acceptable level of training is outlined below:

- Managers or supervisors of volunteers shall meet the state and Occupational Safety and Health Administration (OSHA) requirements for the area where they will be used and for the position which they will fill. The National Contingency Plan (40 CFR 300), Appendix E, paragraph 6.0, addresses the use of volunteers and OSHA pamphlet 3172 outlines the training required.

Although volunteers are not employees of the federal government, state governments, responsible party, or volunteer organizations, they will be considered workers and will be required to complete or possess required hazardous substances, safety, and health hazard training per 29 CFR 1910.120(e) if participating in hazardous waste operations (HAZWOPER). This regulation dictates that post-emergency response workers engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of HAZWOPER training. These 40 hours of training would be difficult and expensive to set up for volunteers. Instead, volunteers can fall under a "De Minimis" exception. Under OSHA Directive CPL 2-2.51 and OSHA Standards Interpretation and Compliance Letters (dated 02/13/1992), "a minimum of four hours [of training] would be appropriate in most situations." The criteria for De Minimis are:

- The job site is in an area where a qualified person has decided that the exposure potential is expected to remain under Permissible Exposure Limits (PEL),
- Health risks from skin absorption are minimal;
- Workers have been trained on procedures in the event of an emergency and hazards associated with the hazardous substance in the workplace;
- Workers have completed training including topics such as decontamination procedures, heat stress, hypothermia, water safety, and operating procedures; and,
- Supervisors have received a minimum of 24 hours of training.

It is the intent of the UC to keep volunteers away from the hazardous substances: however, there may be a time when certain volunteers possess unique skill sets that warrant potential contact with the hazardous substance. The minimum training required for volunteers involved in removal operations should be consistent with the hazardous waste operations standards set forth in 29 CFR 1910.120(e) and (q). If select volunteers are deemed appropriate by the UC to further their services and wish to take a more direct role in spill response operations, they will have to meet the requirements listed below:

- **29 CFR 1910.120(e)(1)(i)** states that all employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards. They shall receive review training as specified in this paragraph.
- **Management and supervisor training, 29 CFR 1910.120(e)(4):** On-site management and supervisors directly responsible for, or who supervise employees engaged in hazardous waste operations shall receive 40 hours initial training, three days of supervised field experience (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by paragraphs (e)(3)(ii) and (e)(3)(iii)), and at least eight additional hours of specialized training at the time of job assignment. Specialized training will include topics such as, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.
- **General site workers, 29 CFR 1910.120(e)(3)(i):** General site workers require 40 hours of instruction off the site and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. Volunteers should not be put in situations where they would be considered a general site worker.
- **Occasional site workers, 29 CFR 1910.120(e)(3)(ii):** Occasional site workers require 24 hours of instruction off the site, and a minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor. An example of this category worker is a field observer.

Note: Some states have federally approved state plans outlining health, safety, and training requirements based on HAZWOPER standards. These states are called State-Plan states. New Jersey is a State Plan state but its Plan covers public sector employment only. Pennsylvania and Delaware are not State Plan states. State Plans and their volunteer safety training standards shall have precedence since these plans are approved by OSHA. If volunteer tasks do not require HAZWOPER training, such training should not be conducted or mandated. A list of State-Plan states and POCs can be found at: http://www.osha.gov/dcsp/osp/index.html.

8000 Safe Use of Volunteers

The assignments provided to volunteers should be “low risk”. In certain circumstances, volunteers may be used for “higher risk” activities. Common uses of volunteers for man-made or natural disasters include

activities such as wildlife cleaning, or removal of beach or shoreline debris. These activities, however, require specialized training and in some cases licensing. The National Oil and Hazardous Pollution Contingency Plan (NCP) 40 CFR 300 discourages volunteer participation in physical removal activities and limits them to non-hazardous tasks due to the extensive medical surveillance, training and equipment required to participate in physical removal activities. Sector Delaware Bay's policy is that volunteers shall not have direct contact with oil or other hazardous substances. However, volunteers may be used to support the following pre-designated activities with IC/UC approval:

Habitat Surveyor: Volunteers may be deployed to assist in the habitat survey of pre and post spill shoreline and riverbank wildlife. Interested volunteers must be able to identify oil on the ground, structures, or on plants versus a non-oiled environment, have a valid driver's license, be familiar with the local area, and must attend HAZWOPER training.

Pre-impact Shoreline and Riverbank Cleanup: Volunteers may be deployed to assist with the ongoing pre-event maintenance and clean-up of coastal areas in an effort to minimize the potential amount of contaminated debris. Interested volunteers must be physically capable of walking, stooping, lifting, and carrying debris repositories. Volunteers must also be very familiar with the local area without the use of street signs, have a valid driver's license and must attend incident specific USCG orientation.

Delivery / Runners: Volunteers may be deployed to carry supplies, transport personnel, and other associated duties as assigned, to and from oil-impacted areas or other locations. Interested volunteers must be in good physical condition, have a valid driver's license, be very familiar with the area without the use of street signs, and must attend incident specific USCG orientation.

Coast Watcher: Volunteers are community members who are very familiar with local beaches and can report any changes that may be attributed to the oil spill incident. Interested volunteers must be familiar with the local area and attend an on-site safety training program.

Volunteer Coordination: Volunteers may be deployed to set up and manage a Volunteer Reception Center (VRC) or Volunteer Congregation Site. Interested volunteers need experience in dealing with convergent, unaffiliated volunteers. Volunteers must also be in good physical condition, have a valid driver's license, be very familiar with the local area, and must attend incident specific USCG orientation as well as three hour VRC training.

Wildlife Recovery and Rehabilitation: Volunteers may be deployed to assist professional organizations such as Tri-State Bird Rescue and Research in wildlife recovery and rehabilitation. Often these organizations are hired by the RP and work closely with the U.S. Fish and Wildlife Service and similar state agencies. Volunteers must fulfill training required by these organizations.

9000 Affiliated Volunteer Organizations

Interested unaffiliated volunteers may be encouraged to join affiliated volunteer organizations. However, the Sector Delaware Bay Area Committee federal and state governments do not endorse one organization over another. Affiliated volunteer organizations that may be called on to support response operations include but are not limited to:

- Tri-State Bird Rescue & Research 302-737-7241
- The Marine Mammal Stranding Center, Brigantine, NJ 609-266-0538
- Marine Education, Research & Rehabilitation Institute, Nassau DE 302-228-0529
- The DelawareRiverKeeper Network 215-369-1188
- U.S. Coast Guard Auxiliary

10000 Not Recognized Volunteers

There may be cases where the RP and UC determine that select Affiliated volunteers will be recognized and included in a response. However, at the same time, the RP and UC may wish to "discourage" other Affiliated and Unaffiliated volunteers from participating in the response. The official position would be

the volunteers are “not recognized” and therefore, are officially not part of the response. However again, the volunteers (or their organization(s)) that are not recognized, may be gathering critical information as part of their normal interests in protecting the waterways. These volunteers may wish to provide that information to the response organization. In cases as described, the volunteers can gather the information and pass the information to a Liaison Officer, Volunteer Manager, or the Environmental Unit Leader. It is important to emphasize, however, that the “officially not recognized” volunteers are not part of the response organization and therefore, the federal, states, local governments, and Responsible Party nor their employees, have any responsibility or liability for any injury or death incurred by the volunteers who are not recognized as part of the response.

Annex UU

Radiological Incident Annex

Radiological Incident Annex

Radiological Incident Annex – Sector Delaware Bay

Introduction

The Coast Guard's jurisdiction as the Coordinating Agency[1] for a radiological incident is limited in both geographic area and authority.

Figure 1, illustrates the two most important criteria (jurisdiction and terrorism) that determine the Coast Guard's role as either a Coordinating Agency or as a cooperating agency during a radiological incident.

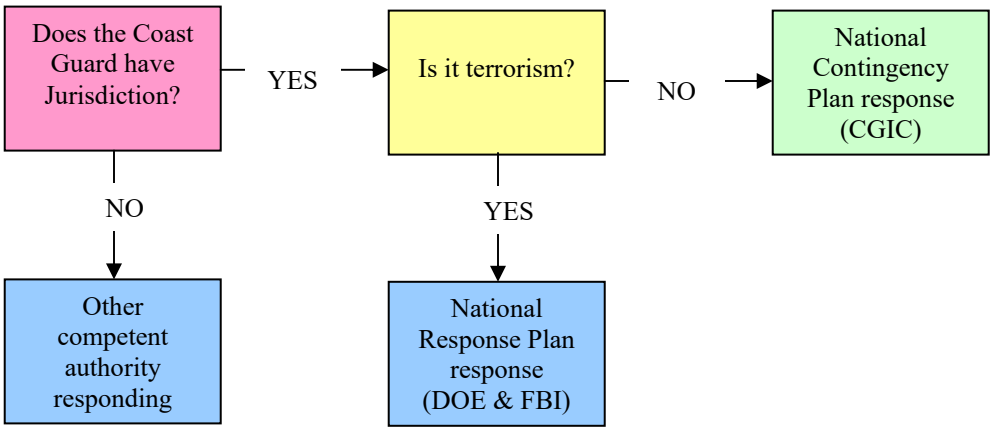


Figure 1. In radiological incidents where the Coast Guard has jurisdiction and there is no involvement of terrorism the Coast Guard Incident Commander responds under the NCP. For any radiological incidents where terrorism is involved, the Department of Energy is the Coordinating Agency responding under the NRP and the Coast Guard is a cooperating agency.

Purpose

The purpose of this Annex is to provide guidance to the Coast Guard Incident Commander (CGIC) and their Maritime Security and Area Committee partners in responding to radiological incidents that have actual, potential, or perceived radiological consequences.

A radiological incident involves the release or potential release of radioactive material that poses an actual or perceived hazard to public safety, national security and or the environment.

The role of the Coordinating Agency for radiological incidents in the maritime environment can reside with several different federal agencies depending on geographic location, accountability for the radiological source, and the suspected or actual involvement of terrorism.

[1] The Coordinating Agency is that Federal agency which owns, has custody of, authorizes, regulates, or is otherwise deemed responsible for the radiological facility or activity involved in the incident.

Radiological Incident Annex – Sector Delaware Bay

Coast Guard Jurisdiction [Link to Flow Chart 9780]

The National Response Plan limits the Coast Guard's Coordinating Agency role for radiological incidents to "*certain areas of the coastal zone*" which is defined as radiological incidents that occur on:

- Any type of vessel,[2]
- Waters seaward of the shoreline to the outer edge of the Exclusive Economic Zone,[3] and,
- Specified waterfront facilities[4]
    - For the Captain of the Port Sector Delaware Bay these specified facilities are listed in the following link [Waterfront facilities]

The type of incidents the Coast Guard Incident Commander will respond to are:

- Transportation of radioactive materials
    - Shipment of materials that are not licensed or owned by a Federal agency or Agreement State[5]
- Foreign, unknown or unlicensed material[6]
    - Incidents involving foreign or unknown sources of radioactive material or radioactive material which does not have appropriate licenses
- Space vehicles containing radioactive materials
    - Not managed by DOD or NASA (i.e. commercial satellite)

In addition to geographic limitations, the scope of the Coast Guard's jurisdiction as the Coordinating Agency is limited to those radiological incidents that do not involve a terrorist act.

For any terrorist event involving non-Department of Defense or non-Nuclear Regulatory Commission (NRC) radioactive material, the Department of Energy (DOE) will assume the

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[2] Vessels as defined in 33 CFR 160.5. Exception: Department of Defense vessels.
[3] Exception: Department of Energy is the Coordinating Agency for radiological material shipped by or for them and for any nuclear weapon in their custody.
[4] Facilities regulated by 33 CFR 105, 126, 127, 128, 140, 154, 155, 156
[5] For non-agreement states such as New Jersey the Coast Guard is the Federal Coordinating Agency and will assist the state if necessary.
[6] **Foreign or unlicensed** source may be a reactor, a spacecraft containing radioactive material, imported radioactively contaminated material, or a shipment of foreign-owned radioactive material. **Unknown** sources of radioactive material, also termed "orphan sources" are those materials whose origin and/or radiological nature are not yet established. These types of sources include contaminated scrap metal or abandoned radioactive material. **Licensed material:** The Nuclear Regulatory Committee (NRC) issues licenses to operators and facilities under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended. "Licensed material" refers to byproduct, source or special nuclear material associated with these facilities regulated by the NRC. It is most likely that the only way to determine if something is a "Licensed Material" is by contacting the NRC or the Responsible Party (Source NRP).

role of Coordinating Agency to address the radiological aspects of the response [Link to the NRP Nuclear/Radiological Incident Annex]

Using this Annex

Notification of a possible or actual radiological incident can occur in several ways. To facilitate initial actions to be taken and to determine jurisdiction choose the link that matches your method of notification.

- Passive detection from radiation pagers (Level I)
- Intelligence source(s)
- Notification of a radiological release -- NCP response
- Actual terrorist incident involving radiation

Passive Detection (Level I)

A radiological incident may be first discovered while conducting routine operations in the port (discovery may be made by Customs and Border Protection) or through intelligence gathering. The guidance in the Unit's Radiological Response SOP will be used when Level I detection indicates the presence of a radiological source. Depending on the method of discovery and whether the incident is on a vessel or facility, the CGIC should make some initial determinations as to which course of action to take:

- **On a Vessel:** While on board a vessel (underway or moored), if a Level I Team detects either neutron or gamma radiation and has determined that the source is illegitimate or unknown, the Coast Guard Incident Commander, in consultation with the States, should determine the safest location for the vessel to be located. Safe location options are to:
  - If at sea, keep the vessel at sea
  - If vessel is transiting in the port or is moored, direct the vessel to a safe location. Options include: if moored remain at moorings, anchorage, or send out to sea. Take into account the following
    - Proximity to population centers
    - Critical infrastructure
    - Vessel traffic in the vicinity of suspect vessel
    - Ability to get teams on and off the vessel
    - Source is emitting neutrons (may indicate the presence of spent nuclear material)
    - Consult Port of Safe Refuge Document [Link to Port of Safe Refuge]
- **On a Facility:** If a Level I Team detects either neutron or gamma radiation and has determined that the source is illegitimate or unknown while at a facility:
    - Determine whether to limit facility operations adjacent to the isolation perimeter established by the Level I Team

- If source is emitting neutrons may indicate the presence of spent nuclear material (Note: Neutron sources rarely occur naturally and are usually produced in a reactor. Although they are generally associated with special nuclear material (SNM), there are some legitimate sources of neutron radiation).
- In conjunction with the Facility Security Officer evaluate the need to limit access into the facility or evacuate the facility

For both vessels and facilities:
If radiation source is illegitimate, unknown or exceeds the safe exposure limits for a Level I Team, the Level I Team is to notify the chain of command requesting Level II support. Upon receiving the request, Commander Sector Delaware Bay should consider the following:

- ❑ Deploy Level II Team to localize and characterize the radiation source. Level II resources:
  - Atlantic Strike Team
  - Sector Delaware Bay
  - Customs and Border Protection
- ❑ Notify Philadelphia Field Intelligence Support Team (FIST)
- ❑ Contact the Coast Guard Investigative Service (CGIS) Liaison Agent to the Joint Terrorism Task Force (JTTF) to notify the local FBI Office when Level II Team is deployed:
  - Philadelphia
  - Baltimore
  - Newark
- ❑ If necessary, Level II Team to coordinate with CBP Laboratory Scientific Support (LSS).
  - LLS radiological officer 24-hour number is: (407) 975-1780.
- ❑ Notify the State(s)
- ❑ Determine need to shift to secure communications
- ❑ Consider establishing Safety/Security Zones
- ❑ Determine Safe to Respond [Link to Safe to Respond Document]
- ❑ If Level II Team cannot identify the source as legitimate, request assistance from the DOE Radiological Assistance Program (RAP) Team at the Brookhaven Area Office
  - Emergency number (631) 344-2200
  - Notify the National Response Center if RAP support requested
- ❑ Determine need to initiate Critical Incident Communications procedures [Link to Critical Incident Communications Procedures Section 1050]

Intelligence Sources

When the Coast Guard receives notification of possible intelligence regarding a potential radiological incident it is critical to determine if the intelligence is credible.

- Work with the Philadelphia FIST and CGIS to determine if threat is credible or non-credible
  - If credible, support the Department of Energy, which is the Coordinating Agency and the Federal Bureau of Investigation. [Link to Terrorism Incident Annex]
  - If not credible,
    - Does the Coast Guard have jurisdiction? [Link to Section 9780 Flow Chart]
    - If yes, conduct follow-up to determine if there is public health threat

Actual terrorist incident involving radiation

In the event of an actual terrorist incident involving radiation the Coast Guard's role is as a cooperating agency using primarily the authorities of the Captain of the Port. Initial actions to be taken

- Initiate Critical Incident Communications procedures [Link to Critical Incident Communications Procedures Section 1050]
- Account for all field deployed teams, individuals and assets
- If first federal on scene, implement the Terrorism Incident Annex until relieved by the Department of Energy [Link to Terrorism Incident Annex]

Notification of a Radiological Release responded to under the National Contingency Plan

This section of the Annex discusses non-terrorist radiological incidents where the Coast Guard has jurisdiction and where response operations are conducted under the National Contingency Plan.

[Link to Sector Delaware Bay Radiation Incident Report Form]

Unified Command Organization

The actual make-up of the Unified Command in response to a radiological incident conducted under the National Contingency Plan will depend on the incident location and complexity. Figure 2 lists potential agencies and entities that would most likely respond to a non-terrorist radiological incident in the Captain of the Port Sector Delaware Bay zone.

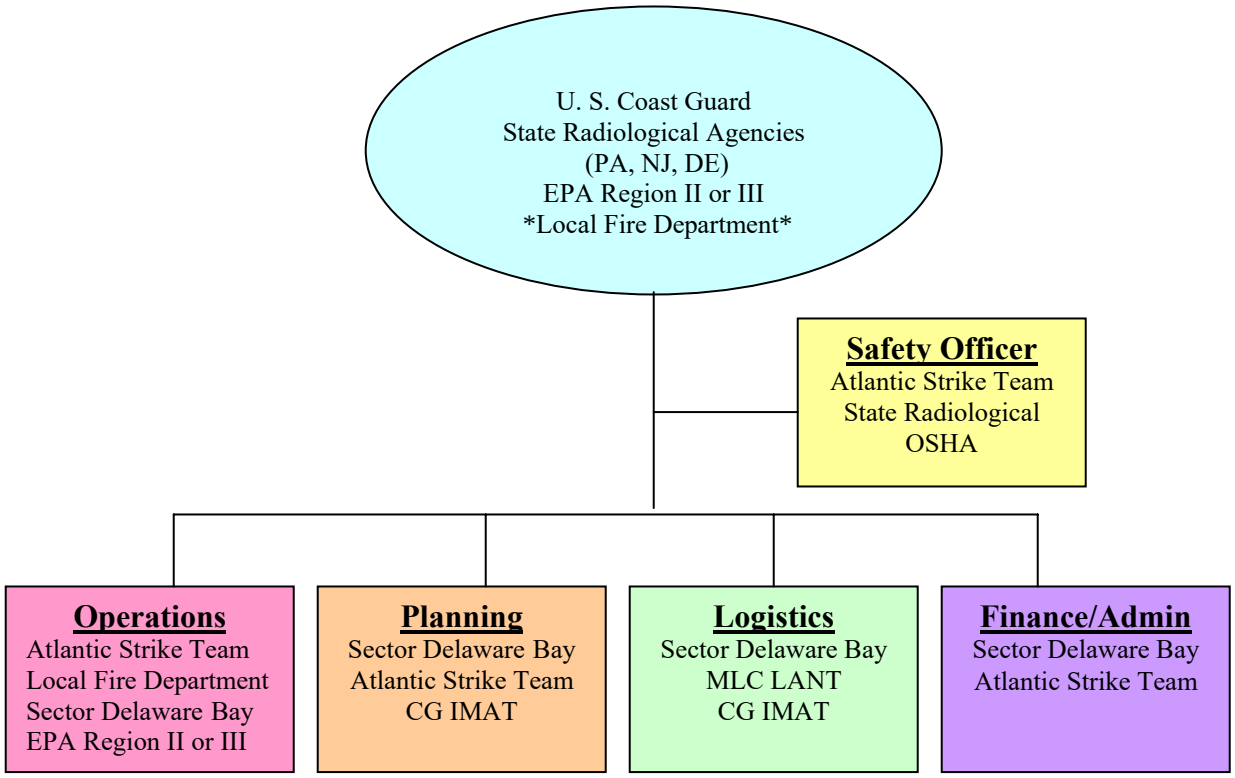

Figure 2. The actual makeup of the Unified Command organization in response to a radiological incident will depend on incident location and complexity. The agencies and entities listed in the ICS organization chart represent those most likely to respond to a radiological incident under the National Contingency Plan in Captain of the Port Sector Delaware Bay zone.

For the Operations Section Chief, consider:

- Complexity of the incident
- Knowledge and experience in responding to radiological incidents
- Agency with the greatest jurisdiction, involvement, and statutory authority

Incident Commander/Unified Command Response Objectives

Incident Commanders/Unified Command should use this Annex in conjunction with the Base Plan [Link to Incident Commander/Unified Command Section 2050] when responding to a radiological incident in "certain areas of the coastal zone."

Local governments are encouraged to contact the Unified Command through the Liaison Officer.

- Ensure the safety of responders through the use of radiation detection equipment and monitoring devices
- Establish incident site control zones (exclusion, contamination reduction zone, support zone) based on active surveillance:
- Determine the extent of the contamination
- Minimize the spread of contamination
- Isolate hazard from the public and non-responders
- Determine need to establish public health monitoring
- Stabilize the source
- Prevent the spread of radiological material from the incident site
- Implement effective communications with state Emergency Operations Centers
- Coordinate incident security
- Access Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) funding
- Ensure coordination of technical data (collection, analysis, storage, and dissemination)

Safety Officer

The two radiation concerns at an incident are exposure and contamination by radioactive material.

- List of hospitals capable of accepting radiation casualities:
  - Delaware [Link to the ICS-206, Medical Plan Section 9704]
  - New Jersey [Link to the ICS-206, Medical Plan Section 9705]
  - Pennsylvania [Link to the ICS-206, Medical Plan Section 9706]

- Conduct active surveillance
  - Air monitoring
  - Visual
  - Ground truthing

Actions that can be taken to minimize exposure involve Time, Distance, and/or Shielding:

- Decrease the amount of TIME spent in close proximity to the radiation source.
- Keep as much DISTANCE away from the source as feasible
  - As a rule of thumb, every time you double the distance away from a radiological source, you reduce the exposure rate by four times.
- Use available means of SHIELDING to lower the amount of exposure to the source.

State Radiological Emergency Contacts

- Pennsylvania Emergency Management Agency
- New Jersey Department of Environmental Protection
- Delaware Emergency Management Agency

Special Teams

The following special teams are equipped to respond to radiological incidents, and should be considered as potential response resources:

- EPA Radiological Emergency Response Team (RERT)
- USCG Atlantic Strike Team (AST)
- DOE Radiological Assessment Program (RAP) Team
- USACE Rapid Response
- NOAA Scientific Support Coordinator
- 3rd Civil Support Team
- Delaware Department of Natural Resources and Environmental Control Radiological Response Team (Level II capable)
- New Jersey Department of Environmental Protection

Additional special teams can be found in the Special Teams Handbook [Link to the Handbook]
For local subject matter experts see:
[Link to Delaware Estuary Science Directory]

Medical Plan for Radiation Incidents

Delaware

9704 Medical Plan for Radiological Incident in Delaware

MEDICAL PLAN	1. Incident Name **Radiation Release Delaware**	2. Date Prepared	3. Time Prepared	4. Operational Period

5. Hospitals

Name	Address	Travel Time Air	Travel Time Ground	Phone	Helipad Yes	Helipad No
Christiana Hospital	4755 Ogletown-Station Rd. Newark, DE			302-733-1000	X	
Wilmington Hospital	501 W.14th St Wilmington, DE			215-481-2000		X

6. Medical Emergency Procedures

- Medical personnel to attend to the needs of personnel suffering from the effects of acute exposure to radiation or whose exposure has exceeded **5 mrems per hour.** Also personnel who have ingested or inhaled radioactive material exceeding 50 % of the TLV should be given an Acute Exposure Exam with the Information entered on the Acute Exposure Form (CG-5447A) and physical examination forms DD 2807-1 and 2808. Document all incident related injuries/illnesses
- Safety and Occupational Health Coordinator (SOHC) and/or Safety Petty Officer will collect the Thermoluminescent dosimeters (TLD film badges) from the Group Supervisors (North, South and Air Ops Safety Zone Group) enforcing the safety zone and the Emergency Worker Radiological Exposure Records immediately following a radiation release incident or in the event that the limits of exposure (**5 mrems per hour)** are exceeded. Send them to the *NJ Radiological Calibration Lab, Princeton, NJ (609-924-5650),* to be read, copies of the Emergency Worker Radiological Exposure Records will be given to the HS1.
- Medical Personnel to evaluate any personnel for acute exposure to radiation levels **5 mrems per hour and above or who have ingested or inhaled radioactive material exceeding 50% of the TLV** and send them to Health Mark at the Methodist Hospital, Broad St. Philadelphia. Any personnel suffering symptoms of acute exposure (i.e. nausea, vomiting, dizziness, burns, etc.) or have been exposed to **radiation levels exceeding 100 mrems per hour** will be immediately sent to the nearest hospital that is able to treat radiation exposure. Levels of exposure will be recorded on the Emergency Worker Radiological Exposure Record.
- In the event of a radiological incident contact the Command Duty Officer (CDO) to gain access to the medical spaces to obtain the Potassium Iodide (KI) tablets. The key to the medical spaces will be kept in lock box at the front desk. The KI tablets will be kept in medical until such an incident occurs. **and will be taken only with the approval of the Sector Delaware Bay Medical Officer.** (*See attachment for instructions in the use and side effects of the KI Tablets.*)
- Communicate any and all loss or degradation of medical services/resources to the Incident Commander (IC)

9704 Medical Plan for Radiological Incident in Delaware

Note: For acute dosages of 5 to 100 mrems per hour there are generally no observable effects, however personnel should be examined for any changes in blood chemistry, 100% recovery expected within 24 hours. For exposure of 100 mrems personnel may experience vomiting, fatigue, loss of appetite and moderate blood changes, 100% recovery expected within one week. Doses of 200 mrems or more will require recovery of up to one year and in some cases could be lethal.

7. Prepared by (Medical Unit Leader)	8. Reviewed by (Safety Officer)

Medical Plan for Radiation Incidents

New Jersey

9705 Medical Plan for Radiological Incident in New Jersey

MEDICAL PLAN	1. Incident Name **Radiation Release New Jersey**	2. Date Prepared	3. Time Prepared	4. Operational Period

5. Hospitals

Name	Address	Travel Time Air	Travel Time Ground	Phone	Helipad Yes	Helipad No
Memorial Hospital of Salem County	310 Woodstown Rd Salem, NJ (Salem County)			856-935-1000	X	
Southern Ocean County Hospital	1140 West Bay Ave (Rt. 72) Manhawkin, NJ (Ocean County)			609-978-8900 Ext. 2205	X	
Community Medical Center	99 Highway 37 West Toms River, NJ (Ocean, County)			732-557-8000	X	
Burdette Tomlin Hospital	Rt. 1 Stone Harbor Blvd. Cape May County Court House (Cape May County)			609-463-2000	X	
Kessler Memorial Hospital	White Horse Pike Hammonton, NJ (Camden County)			609-561-6700	X	
Helen Fuld Medical Center	720 Brunswick Ave Trenton, NJ (Mercer County)			609-394-6000	X	
Bayshore Community Hospital	727 North Beers St. Holmdel, NJ (Monmouth County)			908-739-5900	X	
Shore Memorial Hospital	1 East New York Ave Somers Point, NJ (Atlantic County)			609-653-3500 outbound	X	
Memorial Hospital of Burlington County	175 Madison Ave Mount Holly, NJ (Burlington County)			609-267-0700		X
Monmouth Medical Center	300 Second Ave Long Branch			908-222-5200	X	

6. Medical Emergency Procedures

9705 Medical Plan for Radiological Incident in New Jersey

- Medical personnel to attend to the needs of personnel suffering from the effects of acute exposure to radiation or whose exposure has exceeded **5 mrems per hour.** Also personnel who have ingested or inhaled radioactive material exceeding 50 % of the TLV should be given an Acute Exposure Exam with the Information entered on the Acute Exposure Form (CG-5447A) and physical examination forms DD 2807-1 and 2808. Document all incident related injuries/illnesses
- Safety and Occupational Health Coordinator (SOHC) and/or Safety Petty Officer will collect the Thermoluminescent dosimeters (TLD film badges) from the Group Supervisors (North, South and Air Ops Safety Zone Group) enforcing the safety zone and the Emergency Worker Radiological Exposure Records immediately following a radiation release incident or in the event that the limits of exposure (**5 mrems per hour)** are exceeded. Send them to the *NJ Radiological Calibration Lab, Princeton, NJ (609-924-5650),* to be read, copies of the Emergency Worker Radiological Exposure Records will be given to the HS1.
- Medical Personnel to evaluate any personnel for acute exposure to radiation levels **5 mrems per hour and above or who have ingested or inhaled radioactive material exceeding 50% of the TLV** and send them to Health Mark at the Methodist Hospital, Broad St. Philadelphia. Any personnel suffering symptoms of acute exposure (i.e. nausea, vomiting, dizziness, burns, etc.) or have been exposed to **radiation levels exceeding 100 mrems per hour** will be immediately sent to the nearest hospital that is able to treat radiation exposure. Levels of exposure will be recorded on the Emergency Worker Radiological Exposure Record.

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- Communicate any and all loss or degradation of medical services/resources to the Incident Commander (IC)

Note: For acute dosages of 5 to 100 mrems per hour there are generally no observable effects, however personnel should be examined for any changes in blood chemistry, 100% recovery expected within 24 hours. For exposure of 100 mrems personnel may experience vomiting, fatigue, loss of appetite and moderate blood changes, 100% recovery expected within one week. Doses of 200 mrems or more will require recovery of up to one year and in some cases could be lethal.

7. Prepared by (Medical Unit Leader)	8. Reviewed by (Safety Officer)

Medical Plan for Radiation Incidents

Pennsylvania

9706 Medical Plan for Radiological Incident in Pennsylvania

MEDICAL PLAN	1. Incident Name **Radiation Release Pennsylvania**	2. Date Prepared	3. Time Prepared	4. Operational Period

5. Hospitals

Name	Address	Travel Time Air	Travel Time Ground	Phone	Helipad Yes	Helipad No
Brandywine Hospital	201 Reeceville Rd Coatesville, PA (Chester County)			610-383-8000	X	
Abington Hospital	1200 Old York Rd Abington, PA (Montgomery County)			215-481-2000	X	
Lehigh Valley Hospital	1200 S. Cedar Crest Blvd Allentown, PA (Lehigh County)			610-402-8000	X	
Holy Redeemer Hospital	1648 Huntington Pike Meadowbrook, PA (Montgomery Cty)			215-947-3000	X	
Reading Area Hospital and Medical Center	Sixth Ave and Spruce St Reading,PA (Berks County)			610-988-8000	X	

6. Medical Emergency Procedures

- Medical personnel to attend to the needs of personnel suffering from the effects of acute exposure to radiation or whose exposure has exceeded **5 mrems per hour.** Also personnel who have ingested or inhaled radioactive material exceeding 50 % of the TLV should be given an Acute Exposure Exam with the Information entered on the Acute Exposure Form (CG-5447A) and physical examination forms DD 2807-1 and 2808. Document all incident related injuries/illnesses
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- Medical Personnel to evaluate any personnel for acute exposure to radiation levels **5 mrems per hour and above or who have ingested or inhaled radioactive material exceeding 50% of the TLV** and send them to Health Mark at the Methodist Hospital, Broad St. Philadelphia. Any personnel suffering symptoms of acute exposure (i.e. nausea, vomiting, dizziness, burns, etc.) or have been exposed to **radiation levels exceeding 100 mrems per hour** will be immediately sent to the nearest hospital that is able to treat radiation exposure. Levels of exposure will be recorded on the Emergency Worker Radiological Exposure Record.
- In the event of a radiological incident contact the Command Duty Officer (CDO) to gain access to the medical spaces to obtain the Potassium Iodide (KI) tablets. The key to the medical spaces will be kept in lock box at the front desk. The KI tablets will be kept in medical until such an incident occurs. **and will be taken only with the approval of the Sector Delaware Bay Medical Officer.** (*See attachment for instructions in the use and side effects of the KI Tablets.*)
- Communicate any and all loss or degradation of medical services/resources to the Incident Commander (IC)

9706 Medical Plan for Radiological Incident in Pennsylvania

Note: For acute dosages of 5 to 100 mrems per hour there are generally no observable effects, however personnel should be examined for any changes in blood chemistry, 100% recovery expected within 24 hours. For exposure of 100 mrems personnel may experience vomiting, fatigue, loss of appetite and moderate blood changes, 100% recovery expected within one week. Doses of 200 mrems or more will require recovery of up to one year and in some cases could be lethal.

7. Prepared by (Medical Unit Leader)	8. Reviewed by (Safety Officer)

Radiological Emergency Response

QRC

RADIOLOGICAL EMERGENCY RESPONSE
(Imminent / In Progress)

	Date/Time
Short Title:	**MISLE**
Watchstander:	**CIC**

INITIAL INFORMATION COLLECTION – AWARENESS

Incident type:	**Location:**

REPORTING SOURCE INFORMATION

Name:	**Phone:**	**Vessel name:**	**Doc #:**
R/S Address if calling from shore:			

VESSEL INVOLVED

Type:			
Name:	**Flag:**	**Doc/IMO#:**	**POB:**
Vessel Master Name/ Address/ Phone:			
Length:	**Hull material:**	**Color:**	**Make:**

Homeport:	**LPOC:**	**NPOC:**

FACILITY INVOLVED

Name:	**Address:**	**Contact name:**	**Phone:**

ON SCENE WEATHER

VISIBILITY	WIND	SEA CONDITION		TEMPERATURE	
	Direction/ Speed	Height	Direction	Air	Water
SUNRISE/ SUNSET	**TIDAL CURRENT**	**NEXT TIDE**		**MISCELLANEOUS**	
	Direction/ Speed	High/ Low	Time/ height		

INITIAL ACTIONS

_____ Complete Initial SAR Check sheet/related QRC(s) (if applicable)

_____ Initiate CIC (if applicable)

_____ Contact 911

_____ Brief National Response Center (NRC)

_____ Contact FBI/ JTTF: 215-418-4000

_____ Open MISLE case

_____ Consider any special events and vessel traffic._____

_____ Contact Sector Intelligence Officer and / or MIFC

_____ Establish safety/security zone as appropriate _____

_____ Collect and distribute information from all LE databases (if applicable)

_____ Contact Area Maritime Security Committee

_____ Make initial notifications IAW briefing matrix (CGIS & INTEL)

PLANNING

_____ Receive or develop tactical plan

_____ Conduct ORM

_____ Make notifications IAW briefing matrix

STAAR MODEL – IDENTIFY OPTIONS

☐ **S**pread out	☐ **T**ransfer	☐ **A**void	☐ **A**ccept	☐ **R**educe

OPERATIONAL EXECUTION

_____ Dispatch appropriate unit

_____ Risk vs. Gain (formerly GAR score) from responding unit. R: _____ G:_____

Concerns_____

PEACE MODEL – IDENTIFY HAZARDS

Planning:	Asset - Crew:	Communications/Supervision:	Risk:_____

Event:	Asset – cutter/boat:	Environment:	Gain:_____

_____ Reevaluate plan for asset concerns as needed

_____ Monitor case

CONCLUSION

_____ Make notifications IAW briefing matrix

_____ Submit MISLE Case for review

POLICY/PROGRAM INFORMATION

References:

(a)

Annex VV

Places of Refuge

Decision Making Guide

NRT Port of Refuge

Guidelines

NRT

Guidelines for Places of Refuge Decision-Making

July 25, 2007

Available on the NRT Web site at http://www.nrt.org

THE NATIONAL RESPONSE TEAM

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Acknowledgement

The National Response Team (NRT) acknowledges the NRT member agencies, and state and Federal

agencies participating on the Regional Response Teams (RRTs), for their contributions in preparing this document. We invite comments or concerns on the usefulness of this document in all-hazard planning for responses. Please send comments to:

U.S. National Response Team
NRT Response Committee
U.S. Environmental Protection Agency
(Mail Code 5104A)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

U.S. National Response Team Member Agencies:

Chair: U.S. Environmental Protection Agency
Vice Chair: U.S. Coast Guard

U.S. Department of Agriculture
U.S. Department of Commerce
U.S. Department of Defense
U.S. Department of Energy
U.S. Department of Health and Human Services
U.S. Department of the Interior
U.S. Department of Justice
U.S. Department of Labor
U.S. Department of State
U.S. Department of Homeland Security
U.S. Federal Emergency Management Agency
U.S. General Services Administration
U.S. Nuclear Regulatory Commission
U.S. Department of Transportation

For more information on the NRT, please visit *www.nrt.org*.

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Executive Summary

Over the past decade, finding places of refuge for stricken vessels has become a significant issue deserving the attention of Area Committees, Regional Response Teams (RRTs), and the National Response Team (NRT). In December 2003, the International Maritime Organization (IMO) adopted Resolution A.949(23), *Guidelines on Places of Refuge for Ships in Need of Assistance*. Being a signatory to this agreement, it is incumbent upon the United States through the National Response System to develop protocols and procedures to address places of refuge for vessels in distress.

The IMO resolution was developed in response to three major overseas oil spills; namely, the M/T ERIKA (December 1999), the M/T CASTOR (December 2000), and the M/T PRESTIGE (November 2002). Each of these incidents involved tank ship structural failures at sea. In the case of the ERIKA and PRESTIGE, both tank ships eventually broke apart and sank, releasing millions of gallons of crude oil, which resulted in significant contamination to coastal states. These incidents clearly demonstrated that in some cases, the coastal states actually increased their risk to significant contamination by denying a vessel the opportunity to make repairs in relative safety, or by delaying a decision until no options remained. The port states' refusal to allow vessels in distress to find "safe refuge" ultimately became decisions that resulted in significant adverse environmental and economic consequences. The decision of whether to allow a distressed vessel into a place of refuge, including cases of force majeure[1], should be reached after consideration of the full range of potential impacts, rather than being based on a policy of wholesale denial of entry.

The purpose of these guidelines is to provide: (1) an incident-specific decision-making process to assist U.S. Coast Guard Captains of the Port (COTPs) in deciding whether a vessel needs to be moved to a place of refuge and, if so, which place of refuge to use; and (2) a framework for pre-incident identification of potential places of refuge for inclusion in appropriate Area Contingency Plans.

This document emphasizes the inclusion of USCG COTPs, Unified Commands, RRTs, Area Committees, natural resource trustees, and other stakeholders and technical experts in the identification of potential places of refuge during pre-incident planning. It also emphasizes consultation with appropriate stakeholders and other technical experts from multiple disciplines to assist the COTP in the decision-making process during an incident, including when an evaluation of potential places of refuge may be only one of several response activities taking place.

[1] Force majeure is defined as an overwhelming force or condition of such severity that it threatens the loss of the vessel, cargo, or crew unless immediate corrective action is taken.

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Introduction

1. Purpose and Scope

The purpose of the *Guidelines for Places of Refuge Decision-Making (Guidelines[2])* is to provide:

(1) An incident-specific decision-making process (Appendix 1) to assist U.S. Coast Guard (USCG) Captains of the Port (COTPs) in deciding whether a vessel needs to be moved to a place of refuge and, if so, which place of refuge to use; and

(2) A framework for developing pre-incident identification of potential places of refuge for inclusion in appropriate Area Contingency Plans (ACPs)

These *Guidelines* address places of refuge decision-making in waters subject to U.S. jurisdiction. They are consistent with the December 2003 International Maritime Organization "Guidelines on Places of Refuge for Ships in Need of Assistance" and USCG Commandant Instruction 16451.9, "U.S. Coast Guard Places of Refuge Policy."
These *Guidelines* provide COTPs with a process that will help (1) expedite place of refuge decision-making, and (2) ensure stakeholders and other technical experts are consulted as appropriate. This in turn, helps ensure that COTPs have appropriate input, and the best available information, prior to making a place of refuge decision.

2. Overview

A "place of refuge" is defined as a location where a vessel needing assistance can be temporarily moved to, and where actions can then be taken to stabilize the vessel to: (1) protect human life, sensitive natural and cultural resources, historic properties, national defense, security, economic interests, and critical infrastructure; and (2) reduce or eliminate a hazard to navigation. A place of refuge may include constructed harbors, ports, natural embayments, or offshore waters with the necessary maritime support infrastructure.

Imperiled, structurally damaged, or leaking vessels (including vessels that have sunk and been refloated) may need to be brought into a harbor or anchored or moored in protected waters to make repairs to prevent or stop the loss of oil or other hazardous substances. Likewise, vessels that have lost power or steerage may need to be brought into a place of refuge for repairs to prevent a shipwreck that could result in the loss of fuel, hazardous substances, or other cargo. Taking these actions would
help prevent or minimize potential adverse effects to the public, the environment, resource users,

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[2] "Guidelines" mean the decision-making guidelines and matters set forth in this document. Notwithstanding any such words as "may," "should," "will," or "would," these guidelines are intended solely as factors that may be considered with respect to the exercise of judgment in deciding whether, where, and when to direct or permit a vessel to seek a place of refuge, as well as considered during the execution and implementation of any such decisions.

and national defense, security, economic interests, and critical infrastructure. These incidents may (or may not) involve force majeure; i.e., an overwhelming force or condition of such severity that it threatens the loss of the vessel, cargo, or crew unless immediate corrective action is taken.

There are no places of refuge that are suitable for all vessels and all situations; therefore the National Response Team (NRT) does not support the pre-approval of places of refuge in waters subject to U.S. jurisdiction. Decisions relating to places of refuge need to be made on an incident-specific basis because they encompass a wide range of issues that vary according to each situation, such as:

- Each incident is unique (e.g., vessel size, fuel carried, and reason assistance is needed).
- Information relevant to a specific location may be incomplete or out-of-date.
- Weather and sea conditions are variable.
- Fish and wildlife resources are mobile and may or may not be in an area as anticipated.
- The locations of other activities (e.g., commercial fishing and recreational boating) vary over time.
- Resources (e.g., salvage vessels) available to respond to the incident vary over time.

The NRT does support pre-incident identification of potential places of refuge (PPORs) (see Appendix 3), which would then receive incident-specific evaluations if the location(s) is being considered as a PPOR for an actual incident. It is important to note that identifying PPORs during pre-incident planning does not require that those locations be used as a place of refuge. Likewise, it does not eliminate the need to review and refine (as appropriate) during the incident, information specific to the PPORs.

The best location for a place of refuge at any given point in time is dependent on incident-specific characteristics and real-time input by appropriate stakeholders (see Appendix 2) and other technical experts. When considering places of refuge decisions, COTPs typically need to consider multiple interests, which will include one or more of the following: (1) protecting human life, sensitive natural and cultural resources, historic properties, national defense, security, economic interests, and critical infrastructure; and (2) reducing or eliminating a hazard to navigation.

If time allows and if appropriate, the COTP will activate a Unified Command under the Incident Command System for the decision-making process. When an incident has the potential to involve more than one COTP zone, the cognizant USCG District Commander may assist in the decision-making process. The decisions to direct or permit a vessel to seek a place of refuge, as well as the decisions and actions implementing those decisions, will be based on best available information and sound professional judgment.

When a vessel is in need of assistance, each of the following vessel options should be considered, as appropriate:

- The vessel remaining in the same position.
- The vessel continuing on its voyage.

- The vessel moving farther from shore.
- The vessel being intentionally scuttled in deep water.
- The vessel being intentionally grounded.
- The vessel moving to a place of refuge.

The incident-specific place of refuge decision-making process, outlined in Appendix 1, recognizes that while the timeframe for COTPs to make decisions regarding places of refuge varies, it may be divided into the following three categories:

(1) The vessel's situation requires immediate action, leaving no time for "pre-decision" notification of, or consultation with, appropriate stakeholders and/or other technical experts.

(2) The vessel's situation requires rapid action, leaving time for notification of, and consultation with, some, but not all, appropriate stakeholders and/or other technical experts.

(3) The vessel's situation allows time for notification of, and consultation with, all appropriate stakeholders and/or other technical experts.

COTP response activities will occur within an Incident Command System. For incidents that include response activities (e.g., responding to an oil discharge from the vessel) in addition to places of refuge decision-making, the COTP should consider forming a "places of refuge" unit within the Planning Section, headed by the Deputy Planning Chief, to conduct the place of refuge evaluation. This unit would include appropriate stakeholders and other technical experts from the Operations and Planning Sections and the Command Staff. In addition, the unit would consult with other appropriate stakeholders and technical experts who are not represented in the Operations Section, Planning Section, and/or the Unified Command.

3. Selected Authorities and Responsibilities

The following is a description of selected authorities and responsibilities for Federal agencies, U.S. States, and U.S. possessions, territories, and commonwealths that may be involved in places of refuge decision-making as described in these *Guidelines*:

- The U. S. Coast Guard COTP (who is also the designated Federal On-Scene Coordinator) has authority to order vessels into and out of ports, harbors and embayments in order to protect the public, the environment, and maritime commerce.[3] While the COTP retains ultimate authority for places of refuge decision-making, the COTP is responsible, as outlined in the *Guidelines*, for consulting with appropriate natural resource trustees, Federally-recognized tribes, State On-Scene Coordinators, and other stakeholders and

[3] It should be noted that there may be some maritime homeland security situations where the COTP has Sensitive Security Information and/or classified information that may affect places of refuge decision-making. In those situations, the COTP will use appropriate protocols (e.g., the Maritime Operational Threat Response protocols) to relay information (as appropriate) to appropriate stakeholders and/or other technical experts .

technical experts, and activating (as appropriate) a Unified Command.

- The U.S. Department of the Interior, the U.S. Department of Commerce, and U.S. Department of Agriculture each have authority to represent and protect their respective interests for incidents that may threaten or affect lands (including submerged lands), shorelines, waters, or other resources within their respective jurisdiction; e.g., units of the national park system, national wildlife refuges, national forests, national marine sanctuaries, migratory birds, marine mammals, threatened and endangered species and their critical habitats, essential fish habitat, cultural resources, and historic properties. Representatives of these agencies are responsible, as outlined in the *Guidelines*, for providing timely input to the COTP/Unified Command on interests under their respective authorities and jurisdiction.

- U.S. States and U.S. possessions, territories, and commonwealths have authority to represent and protect their respective interests for incidents that may threaten or impact their respective land, waters, and other resources within their jurisdiction; e.g., State-owned submerged lands and State-owned shorelines. U.S. States and U.S. possessions, territories, and commonwealths each provide a designated State On-Scene Coordinator to represent their respective interests, who in turn, is responsible, as outlined in the *Guidelines*, for providing timely input to the COTP/Unified Command on interests under their respective authorities and jurisdiction.

It should be noted that there are other agencies (e.g., the U.S. Department of Homeland Security, U.S. Immigration and Customs Enforcement, and U.S Customs and Border Protection; U.S. Department of Health and Human Services, Centers for Disease Control and Protection; and U.S. Department of Justice, Federal Bureau of Investigation) that may also provide input to, or otherwise be involved in, places of refuge decision-making, based on their respective authorities and jurisdiction.

Appendix 1

Incident-Specific Places of Refuge Decision-Making Process

Step 1. Place of Refuge Requested.

The U.S. Coast Guard Captain of the Port (COTP)[4] receives a request from a vessel master or his/her representative[5] to move a vessel to a place of refuge. The COTP will request the following information from that individual:

- List of crew members, including:
  - names
  - date of birth
  - nationality
  - vessel particulars (e.g., length and gross tonnage)
- The location(s) of the place of refuge (if a specific location is requested).
- The reasons the vessel needs assistance and the specific assistance required.
- Alternatives (if any) in addition to moving the vessel to a place of refuge.
- A summary of medical and/or life safety issues associated with the incident, including the need to evacuate individuals from the vessel.
- Time when the problems began.
- Status of the vessel and its systems, including:
  - steering
  - propulsion
  - bilge pumps
  - lifesaving (e.g., lifeboats)
  - firefighting capability
  - service generator and emergency generator
  - watertight integrity
  - number of people onboard
- Status of the vessel's pumping system (if the vessel is flooding).
- Types, quantities, hazards, and condition of petroleum products, hazardous substances, and/or other cargo onboard (including animal, plant, or food cargo).
- Length of time the crew has been awake.
- Presence (or suspected presence) of rats or other invasive species and/or animal, plant, or human diseases onboard the vessel.
- On-scene weather and water conditions and marine forecast.

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[4] When an incident has the potential to involve more than one COTP zone, the cognizant USCG District Commander may assist in the decision-making process.

[5] In the event there are no individuals on board the vessel authorized to make the request, or the vessel has been abandoned, the COTP will be responsible (to the extent possible) for obtaining appropriate information identified in Step 1.

- Status of notifications completed by master (e.g., owners, operators, agents, Qualified Individual, and class society).
- Measures already taken by the crew, including:
  - repairs
  - ballasting
  - cargo shifts
- Status of actions taken.
- Nation of Origin.
- Vessel's last port of call.
- Current position.
- Vessel owner's name, address, and contact information.
- Financial Responsibility Certificate.
- Oil Spill Response Organization (person in charge name and contact information).

Step 2. Immediate Action Required by COTP[6].

If the vessel's situation requires immediate action, leaving no time for consultation with appropriate stakeholders or other technical experts, the COTP will:

❒ Evaluate the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.

❒ Determine, if moving to a place of refuge is an option, whether potential places of refuge have been identified in the area where the vessel may be moved to, and if so, whether any potential places of refuge locations are appropriate for this incident.

❒ Permit or direct the vessel to stay in place, continue on its voyage, move farther from shore, intentionally ground, move to a place of refuge, or prepare for scuttling in deep water.

❒ Inform appropriate stakeholders and other technical experts (see Appendix 2) of the decision.

❒ Activate, if necessary, a Unified Command to address any remaining issues.

[6] It is important to note that Step 2 should only be used when an incident truly requires immediate action, since selection of a place of refuge without incident-specific consultation with appropriate natural resource trustees, Federally-recognized tribes, State On-Scene Coordinators, and other stakeholders and technical experts may result in a decision based on incorrect and/or incomplete information.

Step 3. COTP/Unified Command[7] requests input from stakeholders and other technical experts on vessel options.

If the vessel's situation does not require immediate action, the COTP will:

- ❒ Activate a Unified Command, if appropriate.
- ❒ Require, if appropriate, the vessel master or owner/operator to contract with a salvor and/or pollution response contractor.
- ❒ Consider dispatching, if safety considerations and time allow, an appropriate inspection team to board the vessel to evaluate the vessel's condition.
- ❒ Determine whether potential places of refuge have been identified in the area where the vessel may be taken, and if so, whether any are appropriate to consider for this incident.
- ❒ Contact the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC) to request that the NOAA SSC identify the following information, as appropriate, for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge:
  - Weather and sea states, including prevailing winds.
  - Tides and currents.
  - Largest scale navigational charts of the area.
  - Seasonal considerations, such as ice.
  - Potential temporary grounding locations (if intentional temporary grounding is an option).
  - Trajectories for products already released or potentially discharged from the vessel.
  - Oil or chemical fate analysis.
- ❒ Contact (depending on the incident) appropriate Federal, State, and/or local safety and public health entity representatives to request that they:
  - Identify any public health and/or safety issues, or potential issues, related to individuals still onboard, individuals responding to the incident, and to the general public for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.

[7] While information in Steps 3 through Step 10 refers to the COTP/Unified Command, if the COTP determines that activation of a Unified Command is not appropriate or necessary, the reference to "Unified Command" in Step 3 through Step 10 will not be applicable.

- ❒ Contact natural resource trustee representatives to request that they:
  - ➢ Identify any impacts, or potential impacts, to natural and cultural resources and historic properties at risk for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.
- ❒ Contact (depending on the incident) representatives of Federally-recognized tribes to request that they:
  - ➢ Identify any impacts, or potential impacts, to interests of Federally-recognized tribes related to the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.
- ❒ Contact (depending on the incident) Federal, State, and/or local critical infrastructure and/or security entities to request that they :
  - ➢ Identify any security issues, or potential issues, related to individuals still onboard, individuals responding to the incident, and to the general public, and/or any critical infrastructure considerations for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.
- ❒ Contact (depending on the incident) Federal, State, and/or local agricultural and animal entity representatives to request that they:
  - ➢ Identify any issues, or potential issues, related to animal or plant disease and/or invasive species and disposal or salvage of animal, plant, and/or food cargo for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.
- ❒ Contact (depending on the incident) Federal, State, and/or local economic entity representatives to request that they:
  - ➢ Identify any Federal, State, and/or local economic impacts, or potential impacts, for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.
- ❒ Contact other appropriate stakeholders (see Appendix 2), as time allows, to request that they:
  - ➢ Identify other stakeholder impacts/concerns, or potential impacts/concerns, for the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, being intentionally grounded, or moving to a place of refuge.

- ❒ Contact the vessel master, vessel owner, and salvage experts to request that they provide, as appropriate, information on:
  - Vessel status/seaworthiness, in particular buoyancy, stability, availability of propulsion and power generation, docking ability, and any progressive deterioration.
  - Any impending threat to the vessel or its product.
  - Availability of rescue tugs/tow vessels of sufficient size and power to aid the vessel in distress.
- ❒ Contact appropriate oil spill response organizations to request that they provide information on:
  - Ability and/or feasibility to respond to discharges/releases from the vessel.

Step 4. COTP/Unified Command selects vessel option based on input from stakeholders and other technical experts.

Based on the input received in Step 3, the COTP/Unified Command will evaluate the considerations listed below and will then determine whether the vessel should remain in the same position, continue on its voyage, move farther from shore, be intentionally scuttled in deep water, be intentionally grounded, or move (or be taken to) a place of refuge:

Vessel Status and Risk Considerations

- The kind and size of the vessel.
- The status/seaworthiness of the vessel, in particular buoyancy, stability, watertight integrity, availability of propulsion and power generation, docking ability, and any progressive deterioration.
- Types, quantities, hazards, and condition of petroleum products, hazardous substances, and/or other cargo onboard.
- The presence (or suspected presence) of rats or other invasive species onboard the vessel.
- Any impending threat to the vessel or its product.
- Weather conditions and forecasts.
- Master's ability to navigate the vessel or need for a pilot.
- Vessel traffic in the area.
- Ability of vessel to move from its current location, and estimated distance it could transit without further incident.
- Other vessel status or risk considerations, if any.

Response and Salvage Resources Considerations

- Availability of rescue tugs/tow vessels of sufficient size and power to aid the vessel in distress, including towing.
- Salvage and spill response resources on-scene with the vessel and available during transit.
- Vessel traffic in the area.
- Access to pier or dock with repair and/or cargo handling facilities.

- Access to vessel by emergency service equipment (e.g., ambulances, fire fighting equipment, and radiological gear).
- Other response or salvage resources considerations, if any.

Public Health and Safety Considerations

- Safety, or potential safety issues for individuals (if any) still onboard.
- Safety, or potential safety issues for individuals performing salvage/response activities.
- Impacts, or potential impacts, on public health and safety (e.g., from human diseases and/or cargo onboard).
- Closure, or potential closure, of water intakes (e.g., for drinking water supplies and/or power plants).
- Other considerations, if any, identified by Federal, State, and/or local safety and public health entity representatives.

Natural and Cultural Resources and Historic Properties Considerations

- Impacts, or potential impacts, on sensitive resources (e.g., migratory birds, marine mammals, fish, shellfish, threatened or endangered species, cultural resources, and/or historic properties).
- Impacts, or potential impacts, on sensitive areas (e.g., designated essential or critical habitats, sea grass beds, mangrove swamps, marshes, marine sanctuaries, parks, refuges, and/or forests).
- Other considerations, if any, identified by natural resource trustee representatives.

National Defense, Security, and Economic and Critical Infrastructure Considerations

- Impacts, or potential impacts, to national security interests and defense readiness.
- Economic, or potential economic, impacts resulting from:
  - Port closures (e.g., loss of perishable goods and/or delays in transportation of goods and people)
  - Disruption of recreational activities (e.g., beach closures), commercial fisheries, mariculture, and other activities
  - Other considerations, if any, identified by Federal, State, and/or local economic entity representatives

Other Considerations

- Liability, insurance, and compensation issues and limits.
- Requirements of port or harbor authorities for financial responsibility and bonding.
- Media and public interest.
- Contamination of private property.
- Other considerations (not already identified).

If the COTP/Unified Command selects the option of moving the vessel to a place of refuge, the remaining steps in this appendix should be completed. If the COTP/Unified Command selects another vessel option (i.e., remaining in the same position, continuing on its voyage, moving farther from shore, being intentionally scuttled in deep water, or being intentionally grounded), no additional steps in this appendix need to be taken.

Step 5. COTP/Unified Command requests input from technical experts on operational considerations for potential places of refuge locations.

To help identify one or more potential places of refuge locations based on operational considerations, the COTP/Unified Command will:

- ❒ Request from the NOAA SSC, the following information, as appropriate for all potential places of refuge locations being considered:
  - Weather and sea state including prevailing winds.
  - Tides and currents.
  - Seasonal considerations, such as ice.
  - Trajectories for products already released and/or potentially discharged from the vessel.
  - Oil or chemical fate analysis.

- ❒ Request from appropriate Pilots Association or other mariners, the following applicable port or anchorage criteria:
  - The type and size of the vessel and required "swing room" relative to the size of the place of refuge site.
  - Adequate water depth at mean lower low water (MLLW) to accommodate the vessel.
  - Navigational approach, including vessel traffic and associated risks.
  - Pilotage requirements.
  - Anchoring depth and ground, or suitable docking facilities.
  - Availability of repair facilities.
  - Availability of cargo reception and storage facilities.
  - Land and/or air access.
  - Availability of required emergency response capabilities (e.g., firefighting, pollution. prevention, law enforcement, and/or State or Federal food inspectors).
  - Other pertinent port or anchorage information, if any.

- ❒ Request from appropriate salvage experts (e.g., USCG and vessel salvage representatives), the following information, as appropriate, for all potential places of refuge locations being considered:
  - Any new information on the status/seaworthiness of the vessel, in particular buoyancy, stability, watertight integrity, availability of propulsion and power generation, docking ability, and progressive deterioration.
  - Any new information on the impending threat to the vessel or its product.
  - Availability of rescue tugs/tow vessels of sufficient size and power to aid the vessel in distress, including towing.

- Available salvage and spill response resources.
- Availability of appropriate and compatible lightering equipment and receiving vessels.
- Availability of product storage (e.g., tanker barge, other vessels).
- Availability of skilled labor and trained personnel.
- Access to repair equipment and facilities.
- Availability of cargo reception and storage facilities.
- Salvage and response vessel access.
- Other pertinent salvage-related information, if any.

❒ Request (if applicable) from appropriate oil spill response organizations, the following information for all potential places of refuge locations being considered:

- Ability and/or feasibility to respond to discharges/releases from the vessel.
- Other pertinent oil spill response information, if any.

❒ Request (if applicable) from appropriate port or harbor authorities and/or land owners and land managers, the following information for all potential places of refuge locations being considered:

- Permits or other requirements, or other pertinent information, if any.

Step 6. COTP/Unified Command selects potential place(s) of refuge location(s) based on operational considerations.

Based on input received from technical experts in Step 5, the COTP/Unified Command will select one or more potential places of refuge locations based on the following operational considerations:

Port or Anchorage Area Criteria

- The type and size of the vessel compared to the size of the place of refuge site.
- Adequate water depth at MLLW to accommodate the vessel.
- Navigational approach, including vessel traffic and associated risks.
- Pilotage requirements.
- Tides and currents.
- Seasonal conditions, such as ice.
- Anchoring depth and bottom characteristics, or suitable docking facilities.
- Availability of repair facilities.
- Availability of cargo reception and storage facilities.
- Land and/or air access.
- Weather and sea state including prevailing winds.
- Requirements from port authorities and/or area landowners/managers.
- Ability to adequately secure the area from subsequent threats and/or contain shipboard threats.
- Availability of necessary emergency response capabilities (e.g., fire fighting, pollution response, law enforcement, rat prevention, and/or State or Federal food inspections).

- Other pertinent port or anchorage information, if any.

Response, Salvage, and Repair Resources

- Available salvage and spill response resources.
- Salvage and response vessel access.
- Availability of appropriate and compatible lightering equipment and receiving vessels.
- Availability of product storage (e.g., tanker barge or other vessels).
- Availability of skilled labor and trained personnel.
- Access to repair equipment and facilities.
- Availability of cargo reception and storage facilities.
- Other pertinent response, salvage, or repair resource information, if any.

Other Command Management Factors

- Liability, insurance, and compensation issues and limits.
- Requirements of port or harbor authorities for financial responsibility and bonding.
- Required notifications such as marine pilots, if applicable.
- Public expectations and media outreach.
- Other pertinent command management factors, if any.

Step 7. COTP/Unified Command provides stakeholders with potential place(s) of refuge location(s) based on operational considerations.

The COTP/Unified Command will provide the following information to natural resource trustee and other appropriate stakeholder representatives:

- The list of potential place(s) of refuge.
- Principal reasons for selecting each location (e.g., the vessel cannot travel far without sinking; or location of repair facilities).
- How the vessel will transit to the area (e.g., on its own power or assisted by a tug) and transit route.
- Amount, location, and type of petroleum products and/or other hazardous substances remaining on the vessel; the likelihood of discharge/release; and the anticipated trajectory for any products released at any point along the vessel's intended transit route.
- The presence (or suspected presence) of animals, plants, food products, invasive species, and/or animal or plant diseases onboard.
- What incident-related activities will occur in the place of refuge (e.g., lightering and underwater welding).
- What support vessels/aircraft will be required (e.g., salvage vessel).
- The estimated duration the vessel will be in that location.
- Transit route of the vessel upon leaving the location.
- Anticipated weather and sea states (including prevailing winds), tides and currents, and seasonal considerations relevant to places of refuge locations.
- Other pertinent information, if any.

Step 8. Stakeholders provide ranking of potential place(s) of refuge location(s) to COTP/Unified Command.

Based on information provided to them in Step 7, natural resource trustees and other appropriate stakeholder representatives will:

- Review the information provided to them in Step 7.
- Rank the potential places of refuge locations, providing a consensus ranking where possible.
- Identify any special considerations or constraints and/or any permits or other authorizations required for any potential places of refuge locations.
- Provide the COTP/Unified Command with the ranking of potential places of refuge locations and any identified special considerations or constraints and/or any permits or other authorizations required.
- Provide, as appropriate, the COTP/Unified Command with documentation of considerations taken into account when arriving at a consensus position.

Note: In the event the COTP/Unified Command provides stakeholders in Step 7 with only one potential place of refuge location based on operational considerations, stakeholders will provide consensus input to the COTP/Unified Command regarding the location; any identified special considerations or constraints and/or any permits or other authorizations required; and documentation of considerations taken into account when arriving at the consensus position.

Step 9. COTP/Unified Command selects place of refuge based on input from stakeholders and other technical experts.

Based on input received from stakeholders and other technical experts, the COTP/Unified Command will:

- ❒ Direct or allow the vessel to move to a place of refuge, in accordance with any identified special considerations or constraints and any permits or other authorizations.
- ❒ Inform stakeholders and other technical experts of the decision and of any additional response-related assistance required.
- ❒ Continue overseeing or directing, as appropriate, response activities until the case is closed.

Note: In the event that potential place(s) of refuge location(s) identified in Step 7 and evaluated by stakeholders in Step 8 are not workable and/or circumstances have changed and moving the vessel to a particular place of refuge location is no longer an option, the COTP/Unified

Command will re-analyze vessel options using the appropriate steps in these guidelines.

Step 10. The COTP/Unified Command prepares documentation of the places of refuge decision-making process.

Appendix 2

Potential Stakeholders

- Federal and State natural resource trustees, when the vessel is within, or may enter, U.S. waters.
- Federally-recognized tribes, if the interests of Federally-recognized tribes have been, or may be affected.
- U.S. possessions, territories, and commonwealths, if the vessel will, or could be, directed to waters of a U.S. possession, territory, and commonwealth.
- Foreign governments (e.g., Canadian Federal and Provincial, Mexican Federal and State, and Russian Federal), if the vessel is, or could be, in a trans-boundary area.
- State On-Scene Coordinators, when the vessel is within, or may enter, State waters.
- Federal, State, and local safety and public health entities, if there is, or may be, a risk to public safety and/or health.
- Federal, State, and local critical infrastructure entities, if there is, or may be, a risk to critical infrastructure.
- Federal, State, and local security entities, if there is, or may be, a security risk.
- Federal, State, and/or local economic entities, if there are, or may be, economic impacts.
- Federal, State, and local agricultural entities, if there are, or may be, invasive species, animal or plant disease onboard and/or if there is animal, plant, or food cargo onboard.
- Local governments, if there is, or may be, a risk to their jurisdiction.
- Port authorities, if the vessel will, or may be, taken to their port.
- Private landowners and business owners, if their property will, or may be, affected.

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Appendix 3

Process for Pre-Incident Identification of Potential Places of Refuge

Purpose

At stated above in Section 2, there are no places of refuges that are suitable for all vessels and all situations; therefore the National Response Team (NRT) does not support the pre-approval of places of refuge in waters subject to U.S. jurisdiction. At the same time, the NRT supports the identification of potential places of refuge (PPOR), which would receive incident-specific evaluations if the location(s) is being considered as a PPOR for an actual incident. It is important to note that identifying PPORs during pre-incident planning does not require that those locations be used as a place of refuge. Likewise, it does not eliminate the need to review and refine (as appropriate) during the incident, information specific to the PPORs.

This appendix provides the framework for identifying PPORs, which would then be included in the appropriate Area Contingency Plan. Following this framework will ensure that both the process for identifying PPORs and the resulting PPOR documents are consistent with the NRT *Guidelines for Places of Refuge Decision-Making (Guidelines).*

PPOR Document Development

Steps recommended for identifying PPORs include the following:

- Establish an Area/Sub-area Contingency Plan PPOR Work Group of interested and knowledgeable stakeholders and other technical experts for the geographic area to be addressed.

- Identify the casualty risks, including the types of vessel (e.g., oil tankers, LNG tankers, tank barges, and/or cruise ships) and the anticipated transit routes of those vessels.

- Identify physical and operational characteristics of the vessels and PPOR locations to be included.

- Identify candidate PPOR locations.

- Identify, for PPOR locations, public health and safety, natural and cultural resources and historic properties, response and salvage resources, and other stakeholder considerations.

- Identify land owners and land managers for PPOR locations.

- Prepare PPOR chart/table sheets for each PPOR location (see next section below).

- Include the resulting documents in the Area/Sub-Area Contingency Plan following public review and any revisions based on that review.

PPOR Document Contents:

Recommended contents of PPOR documents include:

- Purpose and Scope – A narrative introducing PPORs and describing how the regional PPOR document is used in conjunction with, and tiers off, the NRT Guidelines.

- How Document Was Developed – A narrative outlining the process used to identify PPOR locations and who participated in the process.

- How to Use the PPOR – A narrative briefly describing how regional PPOR information is used in conjunction with, and tiers off, the NRT Guidelines.

- Site Assessment Matrix – A summary of PPOR locations in one matrix, which includes information such as: location name, type of berthing, latitude/longitude, available swing room, dock face, water depth, bottom type, wind exposure, conflicting uses, ability to boom, geographic response strategies/plans, sensitive resources, distance to population centers, and distance to alternative PPORs.

- Index of PPOR Map – A map showing all PPOR locations.

- PPOR Chart/Table Sheets – One-page (two-sided) sheeting containing, for each PPOR location:

    - Side one: One or more color navigation charts of the PPOR location showing information, such as: approaches, anchorages, moorings, docks/piers, existing geographic response strategies/plans, and other relevant infrastructure; a color aerial photograph of the location; and a chart legend.

    - Side two: Tables containing information for each PPOR location describing physical and operational characteristics (e.g., maximum vessel size, navigational approach, minimum and maximum water depths, maximum vessel draft, types of berthing, swing room/dock face, bottom type, moorings, anchorages [including those for firefighting], docks, piers, prevailing winds, currents, tides, sea conditions, shelter from severe storms, fog, and ice); and other locational considerations (e.g., public health and safety [such as distances to communities], natural and cultural resources and historic properties considerations [such as threatened or endangered species and sensitive habitat areas and whether (or not) rats or other invasive species are present at the port], response and salvage considerations [such as ability to boom vessel and closest alternative PPOR]); other stakeholder considerations (such as fisheries, tourism/recreation, and waterfront public facilities); and land owners/land managers for the location.

NRT Abandon Vessel Authorities

NRT

Abandoned Vessel Authorities and Best Practices Guidance

April 22, 2014

Chair

Vice Chair

Member Agencies

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Executive Summary

This National Response Team (NRT) document provides guidance for federal On-Scene Coordinators (OSCs) and Area Committees developing solutions for the abatement of pollution from abandoned vessels. This document also examines options applicable to the removal and disposition of abandoned vessels, including existing state programs. Developed in response to growing concerns over abandoned vessels throughout United States (U.S.) waterways, the *Abandoned Vessel Authorities and Best Practices Guidance* is designed to provide OSCs with information about the regulatory and policy authority of each agency having a major nexus to abandoned vessels; roles and responsibilities of each agency pursuant to those authorities; best practices used for responding to abandoned vessels; and options for removal and ultimate disposition of abandoned vessels.

This document offers a wide array of solutions to abandoned vessels including abatement of pollution, removal of the abandoned vessels through a variety of alternative programs, or application of navigable waterway solutions (e.g., Notice to Mariners or Markings). Based on previous case studies, it has been observed that a combination of both federal and state authorities and programs may provide the most effective and comprehensive approach for addressing abandoned vessels. This document is designed to be a living document and is intended to provide OSCs with the most current technological and programmatic developments and information regarding abandoned vessel abatement and disposition. This document will be periodically reviewed and updated by the NRT as appropriate.

Acknowledgements

The NRT acknowledges the NRT member agencies and state and federal agencies participating on the Regional Response Teams (RRTs) for their contributions in preparing this document. We invite comments or concerns on the usefulness of this document in all-hazard planning for responses. Please send comments to:

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U.S. Department of Transportation
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U.S. Department of Labor
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U.S. Department of Energy
U.S. General Services Administration
U.S. Nuclear Regulatory Commission

For more information on the NRT, please visit *www.nrt.org*.

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How to Use This Guidance

This document is designed for the federal OSC and USCG Captain of the Port (COTP) to use as a desk reference tool for abandoned vessel response.[1] Developed jointly by the NRT's 15 member agencies, this document includes key information pertinent to addressing legal authorities to act, as well as best practices and lessons learned from previous responses. Case studies from a variety of responses have been included, such as small marina vessels, larger abandoned commercial vessels, and post-Stafford Act disaster responses, such as post-hurricane debris and vessel removal operations.

The *Abandoned Vessel Authorities and Best Practices Guidance* is divided into six key sections, and is formatted to follow the same general phases of response employed during pollution abatement and removal operations.

- ***Section 1.0 – Definition of Terms*** provides information on the terms associated with abandoned vessels.
- ***Section 2.0 – Background and Overview*** includes information on the purpose and background of this Guidance, assumptions, and the overarching pattern of response for abandoned vessels.
- ***Section 3.0 – Initial Assessment*** describes the steps involved in abandoned vessel assessment, including documentation and safety considerations.
- ***Section 4.0 – Response Authorities*** provides an overview of the applicable laws and regulations relating to abandoned vessels, wrecks, and hazards to navigation.
- ***Section 5.0 – Funding Authorities*** provides information on the use of federal funds for the removal of abandoned vessels, when funds can be used, when they cannot, and under what authorities.
- ***Section 6.0 – Vessel Removal and Options for Ultimate Disposition*** describes response options based on federal authorities and funding established in previous sections. This section discusses various removal methods, constraints, and documentation procedures for response activities.

Best practices are incorporated, as appropriate, into these sections and into the Case Studies in Appendix A, which consider both smaller abandoned vessels as well as larger submerged legacy wrecks.

This document also includes a series of appendices designed to provide additional reference materials and tools. These include:

- ***Appendix A: Abandoned Vessel Response Case Studies*** provides a synopsis of a variety of vessel removal cases, including state removal, removal after a natural disaster, dismantling for recycling, scrapping, and/or disposal on land, and removal by other federal agencies.
- ***Appendix B: Technical Specialist and Special Teams*** includes additional information on special teams available to the OSC/COTP for assistance with abandoned vessel operations.
- ***Appendix C: State Abandoned Vessel Programs*** provides a summary of state abandoned vessel programs (if applicable), including whether they are funded and any applicable

[1] Under 40 C.F.R. §300.120(b), USCG COTPs serve as the designated OSCs for areas in the coastal zone for which an Area Contingency Plan (ACP) is required.

statutes. This section is developed to assist OSCs in capitalizing on existing programs in addition to federal resources.

- ***Appendix D: Pollution Mitigation of Legacy Wrecks*** provides a primer on submerged legacy wreck abatement. This section focuses primarily on pollution abatement, rather than removal of submerged wrecks.
- ***Appendix E: Abandoned Vessel Program Development*** offers examples of programs that have been successful in abandoned vessel removal and makes recommendations for local and regional abandoned vessel program development.
- ***Appendix F: EPA Ocean Disposal Permitting Program*** provides regulations applicable to EPA's ocean disposal general permit process.
- ***Appendix G: References and Additional Reading Materials*** provides references, worksheets, and samples of products and other materials to assist OSCs in performing their responsibilities.
- ***Appendix H: Acronyms*** identifies acronyms and abbreviations.

Section 1.0 Definition of Terms

The following terms are those most commonly associated with abandoned vessel removal and pollution abatement activities by OSCs, RRTs, state officials, first responders, and other stakeholders. These terms and definitions may vary among different federal and state laws, regulations, and guidance. **The use of these terms in this Guidance is not intended to, nor does it supersede any legal determinations under federal or state law.**

Abandoned Vessel

The Rivers and Harbors Appropriation Act of 1899 (RHA) contains several sections known as the Wreck Act that addresses sunken vessels.[2] There is a statutory presumption under the Wreck Act that sunken vessels that are not removed within 30 days are abandoned. [3] Under the implementing regulations of the Wreck Act, "'Abandonment' means the surrendering of all rights to a vessel (or other obstruction) and its cargo by the owner, or owners if vessel and cargo are separately owned."[4] These implementing regulations specifically note that they are applicable to the removal of wrecks or other obstructions within the navigable waters of the U.S., but they do "not apply to the summary removal or destruction of a vessel by the USCG under authority of the Clean Water Act (CWA)."[5] Accordingly, the requirements below for establishing "abandonment" are generally applicable to the U.S. Army Corps of Engineers' (USACE) application under the RHA.

> "In all cases other than emergency, abandonment will be established as a precondition to Corps removal, to avoid a "taking" of private property for public purposes. Abandonment is established by either:
>
> (1) Affirmative action on the part of the owner declaring intention to abandon, or
>
> (2) Failure to commence immediate removal of the obstruction and prosecute such removal diligently."[6]

In its policy statement on "Removal of Wrecks and Other Obstructions," USACE defines "abandonment" as follows: "Abandonment is an owner's giving up the exclusive right to salvage and an indication of no intent to claim the vessel. Abandonment DOES NOT relieve the owner of his/her legal obligation to remove the wreck or of liability for damages caused by the wreck (unless he or she is a non-negligent owner of a wreck which sank before enactment of PL 99-662, 17 November 1996).[7] "Abandon," as defined by the Abandoned Barge Act of 1992, means "to moor, strand, wreck, sink, or leave a barge of more than 100 gross tons…unattended for longer than forty-five days."[8]

"Abandoned vessels" has also been defined by the USCG in its October 2011 Commandant Instruction 16465.5 addressing "Vessel Removal/Destruction under the Federal Water Pollution Control Act [FWPCA] or Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]" to mean "any craft designed for navigation that has been moored, stranded, wrecked, sunk, or left unattended for longer than 45 days. A vessel is not abandoned if it is on private property with the

[2] 33 U.S.C. §§ 409, 411, 412, 414 & 415.
[3] 33 U.S.C. § 414(a).
[4] 33 Code of Federal Regulations (C.F.R.) § 245.5
[5] 33 U.S.C. § 1321
[6] 33 C.F.R. § 245.45
[7] Department of the Army, Regulation No. 1130-2-250, Chapter 4, 26 November 1996
[8] 46 U.S.C. § 4701(1)

permission of the owner." See also Commandant Instruction M16465.43, 5 April 1996, which includes the same definition of "abandoned vessel."[9]

Coastal Waters

"Coastal waters" means "…the waters of the coastal zone except for the Great Lakes and specified ports and harbors on inland rivers."[10]

Coastal Zone

"Coastal zone" means "all [U.S.] waters subject to the tide, [U.S.] waters of the Great Lakes, specified ports and harbors on inland rivers, waters of the contiguous zone, other waters of the high seas subject to the NCP [National Oil and Hazardous Substances Pollution Contingency Plan], and the land surface or land substrata, ground waters, and ambient air proximal to those waters. The term coastal zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional [and area] contingency plans."[11]

Inland Waters

"Inland waters" means "the waters of the inland zone, waters of the Great Lakes, and specified ports and harbors on inland rivers."[12]

Legacy Wreck

"Legacy Wreck" is a term of art used in this document to generally describe sizeable and long-submerged shipwrecks. The term "Historic Wreck," where used in this document, applies to those wrecks applicable under the National Historic Preservation Act (NHPA), Abandoned Shipwreck Act (ASA), and Sunken Military Craft Act.[13]

Navigable Waters

The CWA at 33 U.S.C. § 1362(7) defines "navigable waters" as "the waters of the United States, including the territorial seas." The NCP in 40 C.F.R. Part 300.5 and the implementing regulations for the CWA interpret the term to include:

(1) All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;
(2) Interstate waters, including interstate wetlands;
(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    (i) That are or could be used by interstate or foreign travelers for recreational or other purposes;
    (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce;
    (iii) That are used or could be used for industrial purposes by industries in interstate commerce;
(4) All impoundments of waters otherwise defined as navigable waters under this section;
(5) Tributaries of waters identified in paragraphs (a) through (d) of this definition, including adjacent wetlands; and
(6) Wetlands adjacent to waters identified in paragraphs (a) through (e) of this definition: Provided, that waste treatment systems (other than cooling ponds meeting the criteria of this paragraph) are not waters of the [U.S.]

[9] The USCG's guidance definition of abandoned vessel does not apply to EPA's implementation of its authority under the CWA or CERCLA.
[10] 40 C.F.R. § 300.5
[11] *Ibid*
[12] *Ibid*
[13] http://www.history.navy.mil/branches/org12-12a.htm

(7) Waters do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the [CWA], the final authority regarding [CWA] jurisdiction remains with EPA."[14]

Navigable Waters of the U.S., Navigable Waters, and Territorial Waters [15]

Under Title 33 C.F.R. § 2.36, these terms are defined as follows: "(a) Except as provided in paragraph (b) of this section, *navigable waters of the [U.S.], navigable waters, and territorial waters* mean, except where Congress has designated them not to be navigable waters of the [U.S.]:

> (1) Territorial seas of the [U.S.];
> (2) Internal waters of the [U.S.] that are subject to tidal influence; and
> (3) Internal waters of the [U.S.] not subject to tidal influence that:
>
> > (i) Are or have been used, or are or have been susceptible for use, by themselves or in connection with other waters, as highways for substantial interstate or foreign commerce, notwithstanding natural or man-made obstructions that require portage, or
> >
> > (ii) A governmental or non-governmental body, having expertise in waterway improvement, determines to be capable of improvement at a reasonable cost (a favorable balance between cost and need) to provide, by themselves or in connection with other waters, as highways for substantial interstate or foreign commerce.

(b) *Navigable waters of the [U.S.] and navigable waters*, as used in sections 311 and 312 of the [FWPCA], as amended, 33 U.S.C. § 1321 and 1322, mean:

> (1) Navigable waters of the [U.S.] as defined in paragraph (a) of this section and all waters within the [U.S.] tributary thereto; and
>
> (2) Other waters over which the Federal Government may exercise Constitutional authority."

Further, under Title 33 C.F.R. § 329.4: "A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity." This definition is used by USACE for the RHA, including the Wreck Act.

Marine Debris

"(a) Marine debris. For the purposes of the Marine Debris Act of 2012 (33 U.S.C. § 1951–1958) only, marine debris is defined as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes.

(b) NOAA [National Oceanic and Atmospheric Administration] and USCG have jointly promulgated the definition of marine debris in this part. NOAA's regulation may be found in 15 C.F.R. Part 909." [16]

When the final rule was published, in response to comments about the definition of "marine debris," USCG and NOAA explained that "an item or piece of an item originally placed or permitted in the marine

[14] 40 C.F.R. § 110.1 and 40 C.F.R. § 300.5
[15] 33 C.F.R. § 2.36
[16] 33 C.F.R. § 151.3000

environment, but that subsequently breaks apart, becomes lost, or is no longer actively monitored, could be considered disposed of or abandoned and would meet the definition of marine debris.[17]

Ship

"Ship" means a seagoing vessel of any type whatsoever, and *any floating* craft, except an installation or device engaged in the exploration and exploitation of the resources of the seabed and the ocean floor and the subsoil thereof.[18]

Vessel

Generally, under CERCLA, CWA and NCP, the term "vessel" means every description of watercraft or artificial conveyance used, or capable of being used, as a means of transportation on water. Specifically, the NCP explains that "'vessel' as defined by section 101(28) of CERCLA, means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water; and, as defined by section 311(a)(3) of the CWA, means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel."[19]

[17] 74 Fed. Reg. 45555, 45558 (3 September 2009)
[18] 33 U.S.C. § 1471(5)
[19] 40 C.F.R. § 300.5

Section 2.0 Background and Overview

2.1 PURPOSE

At the 2011 NRT-RRT Co-Chairs conference, a session on abandoned vessels was held where representatives from NOAA and USCG gave presentations. Based on issues presented and discussed during the session, the NRT Executive Secretariat agreed on the need for the NRT to identify interagency best practices when responding to abandoned vessels.

The *Abandoned Vessel Authorities and Best Practices Guidance* is designed to provide OSCs with:

- Information about the regulatory and policy authority of each agency having a major nexus to abandoned vessels;
- Roles and responsibilities of each agency pursuant to those authorities;
- Best practices used for responding to abandoned vessels; and
- Options for removal and ultimate disposition of abandoned vessels.

The workgroup was convened under the NRT Preparedness Committee and co-chaired by USCG and NOAA.

The NRT urges OSCs to actively engage with members of federal, state, local, tribal, and industry groups to assess this Guidance and identify areas for improvement. This Guidance is a living document, and changing technologies, accumulated experience, and operational improvements are expected to bring about revisions to the document. Please provide recommendations for improvements and updates to this Guidance to your RRT co-chairs. RRT co-chairs may forward recommendations to the chair of the NRT Preparedness Committee.

2.2 BACKGROUND

The NRT developed this document to establish a compendium of key laws and authorities relating to abandoned vessel mitigation, as well as special teams and best practices available to the OSC/COTP to mitigate these cases. Currently, a variety of federal, and in some cases state, statutes address different aspects of the abandoned vessel problem. Yet in no case is there comprehensive policy to address the growing issue. Although there is funding available to remove pollutants and vessels posing a hazard to navigation, these characteristics are not inclusive of all abandoned vessels. Throughout the U.S. and its territories, thousands of vessels remain abandoned, either left to deteriorate by the owner or operator or as the product of a catastrophic event resulting in the loss of the vessel. Generally unsightly, some abandoned vessels pose a significant threat to the environment, human health, and navigational safety as an obstruction to navigation, either through vessel deterioration, physical damage to the surrounding ecosystems, through the proliferation of marine debris, or the threat of discharge of oil and/or hazardous substances into the marine environment, including materials left on the vessel when abandoned and the potential use of the vessel as an illegal dumping site for oil and other hazardous substances.[20]

The foremost challenges in addressing abandoned vessels will be identifying vessels throughout various regions of the U.S., prioritizing the threat posed to public health and the environment, determining

[20] The M/V Kimton in Puerto Rico demonstrated that simply removing oil from a grounded vessel in not necessarily the best alternative and may unintentionally enable illegal dumping of oil and hazardous substances. See Kauffman, M and Mosley, D. (2003). *M/V Kimton: A Case Study of The U. S. Coast Guard's Abandoned Vessel Program*. International Oil Spill Conference Proceedings: April 2003, Vol. 2003, No. 1, pp. 571-753.

jurisdictional authority, identifying an owner/operator or lessee, and evaluating the potential for removal.[21] Additional challenges include the demanding nature of vessel removal and/or mitigation of the wrecks and abandoned vessels. Because no single law exists that comprehensively addresses abandoned vessels, OSCs/COTPs in many cases will need to work collaboratively with other agencies, paying careful attention to each law's limitations.

The ultimate disposition of the vessel and/or wreckage is also a challenge. While some intact vessels may retain positive value and could be sold at auction, another insolvent owner may take possession and create another problem at a later time. Proper vessel disposal and management options are limited and costly, resulting in some vessels being seized and auctioned, rather than being dismantled for recycling or scrapping, used for an artificial reef, or disposed of on land. Several high profile vessels, including the F/V DEEP SEA in Whidbey Island, Washington, went through a series of insolvent owners before sinking and ultimately being dismantled and disposed of by the Washington State Department of Natural Resources (DNR). Environmental concerns about the fate of the wastes are an important consideration when determining the ultimate disposition option for a specific abandoned vessel, as many older vessels contain oily sludge, asbestos, and other hazardous substances.

2.3 CONSIDERATIONS AND ASSUMPTIONS

Regional and geographic concerns were considered in the development of this document, including environmental sensitivity, threat to public and maritime commerce, stakeholder concerns, and frequency of occurrence of incidents. Case studies and technical reports from across the U.S. and its territories were evaluated to address the topic as broadly and accurately as possible. This Guidance examines existing international treaties and federal and state statutes to create a broader awareness of the range of requirements currently applicable to abandoned vessels. Awareness of these laws also promotes partnerships in the mitigation and removal of these potential threats from the navigable waters of the U.S.

It is assumed that vessels discussed within this document are abandoned. Abandoned and derelict are two terms commonly used to describe vessels of significant disrepair and without ownership. Although the definition of each term can vary, especially in state programs, for the purposes of this document, the terms are as follows:

- ***Abandoned*** refers to "the surrendering of all rights to a vessel (or other obstruction) and its cargo by the owner, or owners if vessel and cargo are separately owned." See Section 1.0 for specific language.
- ***Derelict*** refers to a vessel with an identifiable owner that has been left unattended and is in significant disrepair, such that may affect the seaworthiness of the vessel or affect the safety of the public or the environment. The term derelict is most commonly used in state statutes and varies from state to state. Derelict should be considered as a stage along the vessel's lifespan decline toward abandonment.

Although some of the authorities discussed in this guidance may also be used to respond to "derelict" vessels where there may still be a viable owner/operator, the focus of this guidance is on the management of abandoned vessels because they create additional challenges due to the lack of an owner/operator. The term "abandoned" is what nearly all federal statutes use to authorize removal if it relates to a navigational hazard. CERCLA and CWA do not use the term "abandoned." Rather, the trigger for taking a response action to address a "vessel" (abandoned or not) under these Acts is generally based on the risk to public health or the environment from the release or substantial threat of a release of a hazardous substance, or discharge or substantial threat of a discharge of oil.

[21] This activity is consistent with recommendations by the 1992 Government Accountability Office (GAO) Report "Abandoned Vessels Are Polluting the Waterways."

Section 3.0 Initial Assessment

3.1 INTRODUCTION

The initial assessment of an abandoned vessel is the first and arguably most critical element of the response. The information gathered during this phase will help determine which authorities are applicable, the most appropriate action to be taken, what funding can be used, and, if necessary, what methods of vessel removal or pollution mitigation are most appropriate under the circumstances. It should be noted that OSCs may need to gain access to the abandoned vessel to conduct the initial assessment and, later, the response. While Section 4.0 describes various access authorities under the federal response authorities, it is beyond the scope of this Guidance to address physical access authorities in significant detail. Additional information and detail is available in EPA and USCG internal guidance documents.

Abandoned vessels may range considerably in size and type of service, with the complexity of the response generally increasing proportionately with the size of the vessel. Notwithstanding, there are common initial assessment questions that would help responders characterize the response complexity and resources at risk, regardless of the vessel's size.

3.1.1 Initial Field Assessment

Initial Assessment Considerations

- Vessel location (moored, stranded, at anchor, or submerged)
- Vessel load and threat of pollution
- Is the vessel posing an obstruction to navigation? [22]
- Owner/operator or lessee information (some vessels are well known, long-time derelicts)
- Physical construction and condition (wood, steel, fiberglass, or composite)
- Potential link to illegal activities
- Vessel type (fishing vessel, yacht, etc.)
- Size/vessel tonnage (over or under 100 displacement tons)
- Propulsion type (e.g., sail or motor)
- Flag state of vessel (foreign flagged vessels may need to be assessed under international regimes)
- Sensitive habitat or protected resources
- Potential historic preservation and gravesite status[23]

Below is an expanded discussion of some of these initial assessment elements.

Vessel Location

The OSC/COTP should obtain a latitude/longitude for the vessel, accurate depth (if submerged), and a general geographic description of the area where the vessel is located. Coordination with the local USACE district office will provide much of this information. USACE districts have survey equipment and other resources needed for this determination. If the vessel lies in or is immediately adjacent to a federal navigation channel and poses a potential hazard to navigation, removal oversight is provided by the USCG or USACE within their specific navigation authorities. Both agencies will collaborate and determine who leads the removal oversight and the appropriate action(s) to be taken.

[22] See 33 U.S.C. § 245.20(b) for a list of factors used by USACE to determine whether a wreck is a hazard to navigation.
[23] The State Historic Preservation Officer and any relevant tribes should be contacted about potential impacts to historical and cultural resources.

The OSC/COTP should study the area and become familiar with geographic and bathymetric features (including cable areas or submerged piping), environmentally sensitive areas, infrastructure (including nearby piers and haul-out facilities), and port facilities that could be impacted or be of use in a response and/or removal of the vessel. Determine whether the vessel is within state waters because state/local agencies may not be able to assist if outside of state waters.

In the case of a beached vessel, determine whether the vessel needs to be secured to shore to keep it from drifting away on the next tide. If the vessel appears in danger of becoming adrift, the owner, operator, or lessee should be notified that the vessel should be secured (within safe means).[24] Further, identify navigational concerns and proximity to navigational channels/byways, mooring fields, marinas, and any other higher traffic areas. These factors may affect the urgency of the response or the need to warn the public of the location of the vessel. Beached vessels are an attraction to persons who can access the vessel and may pose significant safety issues. An immediate assessment of the risk the vessel presents to human health should also be conducted. In non-emergency situations, it may be necessary to conduct periodic environmental and site assessments in the vicinity of abandoned vessels, performing these activities during routine harbor patrols.

In any case, responders should be aware of the issue of access to private property. If there is any question as to rights of access, ensure that appropriate law enforcement officials accompany response personnel during assessment activities. Entry to spaces that are locked should only be conducted in accordance with specific agency policies regarding private property access.

Vessel Load and Threat of Pollution

The OSC/COTP should identify the capacity of the fuel tanks, as well as other cargo aboard that may be considered oil or hazardous substances—for example: batteries, paint, hydraulic fluid in gear or stored, engine/generator crank case oil, propane tanks, and/or packaged cleaners. A lack of oil or hazardous substances aboard may limit response and removal options, which is discussed further in later sections of this Guidance. It is essential to consult with partner agencies, such as harbormasters, state marine patrol, state environmental responders, local fire departments, and federal partners such as EPA, NOAA, USCG, and USACE. These agencies may already have detailed information about the vessel in question or the resources needed to obtain this detailed information. Local fish and game wardens may also be a potential resource.

Obstruction to Navigation

To the extent authorized by statute or regulation,[25] OSCs/COTPs should consider whether the abandoned vessel poses an actual obstruction to navigation or poses a potential hazard to navigation under conditions that may be reasonably anticipated to occur. In a 2004 District Court opinion, the District Court examined the Wreck Act, which allows USACE to remove a wreck without liability for any damage to the owner thereof when, in its sound discretion, it determines that navigable waters of the U.S. are obstructed or endangered by any wreck.[26] The court explained that "the Corps may act if a sunken vessel endangers, i.e.., poses a potential hazard to navigation under conditions which may be reasonably anticipated to occur… "[27] The USCG and USACE signed a Memorandum of Understanding (MOU) on October 5, 2012, which outlines procedures for making determinations of hazards to navigations and coordinating mitigation actions when a hazard to navigation exists. The 2012 MOU replaces a Memorandum of Agreement (MOA) of October 1985 between USCG and USACE to mitigate hazards to navigation. USACE issued regulations, 33 C.F.R. Part 245 (Removal of Wrecks and Other Obstructions), describing the administrative procedures and policy it uses in exercising its authority for wreck removal. The procedures are intended to ensure that the impacts of obstructions are minimized, while recognizing

[24] USCG should not, as a general practice, engage in anchoring vessels.
[25] See, e.g. 33 C.F.R. 110.
[26] U.S. v. Rafael, 349 F. Supp. 2d 84, 95 (D. Mass. 2004)
[27] Id.

certain rights of owners, operators, and lessees.[28] The jurisdiction to exercise authority under this statute extends inland on navigable waters as defined in 33 C.F.R Part 329, beyond what are traditionally the coastal and inland OSC zones under CWA. (An EPA OSC addressing an abandoned vessel in the inland zone would coordinate with USACE and USCG, as appropriate, on the evaluation of whether the vessel poses an obstruction to navigation.)

Owner/Operator Information

Identifying the owner, operator, or lessee is a critical part of the removal effort. Responders should get the name, address, e-mail (if available), and phone/cell numbers for the owner and any relevant operators if possible. Insurance is another key piece of information to seek as quickly as possible. In the case of fishing vessels, the local USCG courtesy commercial fishing vessel safety examiner may have detailed information on the vessel and crew. Owner or operator information may be captured from law enforcement databases and programs such as Accurint®, Lexis Nexis®, and Marine Information Safety and Law Enforcement (MISLE), and may also be compiled from local marina operators and municipal law enforcement. If the craft at issue is a qualifying "abandoned barge," USCG may take action under the Abandoned Barge Act as discussed in the next chapter, including assessing penalties and removing the barge.

Physical Construction and Condition

The OSC/COTP should ascertain the hull material--wood, fiberglass, steel, or composite--and its condition. Determining the hull material, condition of the vessel, and its stability and structural integrity are vital components in assessing the overall safety of any response operation. This applies to floating as well as grounded and submerged vessels. Divers investigating the wreck and responders conducting cleaning operations will need to know the condition of the vessel in order to determine whether it is safe to go in or aboard the vessel.

Assessing the overall structural integrity of the vessel may be important in determining what type and capacity of equipment may be needed and whether it is feasible to successfully raise and/or remove a vessel, especially if the vessel is water-logged or full of sediment. Responders should be prepared for an intact vessel to come apart when raised or moved, so they can deal appropriately with the changed circumstances that come with floating or submerged debris. Debris and vessel gear such as fishing rigging and nets may pose a risk to responders, divers, and wildlife.

Potential Link to Illegal Activities

Responders should be mindful that abandoned vessels can be havens for illegal activity. Typically, this means that abandoned vessels could serve as sites to illegally discard pollution or other waste materials, but this could also mean other illegal activities. During the 2012 grounding of the foreign freight vessel M/V JIREH on Mona Island, Puerto Rico, the vessel was found to be carrying numerous illegal immigrants as well as drugs smuggled in ballast tanks. If there are any concerns, responders should contact local law enforcement for any information that can be obtained about the vessel prior to sending investigators or responders aboard.

The government has a broad range of enforcement tools. Frequently, a decision on the best enforcement option can be made only after all of the key facts are known and evaluated. Evidence from abandoned vessel investigations may later be used in a criminal case. The decision as to whether there is evidence of a criminal offense might not be made until after the initial boarding has taken place. Therefore, the federal official removing an abandoned vessel should ensure that any potential evidence is collected and maintained in such a manner as to preserve any evidence that may be useful in any subsequent criminal investigation or civil proceeding.

[28] 53 FR 27511-02, 1988 (21 July 1988) (Final Rule on Removal of Wrecks and Other Obstructions)

Sensitive Habitat or Protected Resources

In certain situations, oil pollution may not be the primary environmental concern. For example, grounded vessels may damage coral, sea grass, other sensitive marine habitats, and irreplaceable historical and cultural marine resources. Resource trustees should be incorporated into any response planning to help educate others and help protect sensitive species and ecosystems. Other threats from abandoned vessels may include antifouling paints, invasive species, nutrient enrichment from rusting steel, dispersion of fishing gear that may entangle marine life, and/or marine debris if the vessel is allowed to deteriorate in place.

In the aforementioned circumstances, natural resource trustees should ensure key response priorities are established and objectives met, which include:

- *Identify and Prioritize Resources at Risk* – Resource trustees can act as a supplement to the applicable ACP information on sensitive resources. Trustees provide local knowledge relevant to area natural resources and the risks posed to them.
- *Evaluate Protective Measures and Cleanup Strategies* – During a discharge or threatened discharge, resource trustees are ideal members for Shoreline Cleanup Assessment Teams and are vital to the development of cleanup endpoints.
- *Post-Cleanup Evaluations* – Trustee input in final sign-off during post-cleanup evaluation is desired in a response. Trustees should provide information pertinent to federal lands and resources under their care.
- *Manage Endangered Species Act (ESA) Consultation and Essential Fish Habitat (EFH) Issues* – Trustees should ensure any applicable consultation issues with regards to ESA and EFH are addressed in a timely manner.
- *Consultations Requirements* – OCSs should ensure consultations are conducted for the Marine Mammal Preservation Act (MMPA), National Marine Sanctuaries Act (NMSA) and NHPA.
- *Wildlife Rehabilitation* – Trustees should work with OSCs to ensure appropriate permits are obtained and organizations are contacted when working with injured wildlife and resources during a response. Trustees should provide guidance to OSCs to ensure wildlife response plans are implemented appropriately.[29]
- *Invasive Species* – Trustees can help determine the possible presence of invasive species in cases where foreign or domestic vessels are abandoned within U.S. protected waters. Invasive species include not only species introduced from ballast water, but also rats and other non-aquatic nuisance species that may be found on the hull. Some inland areas could have significant concerns about invasive plants and mussels that could be inadvertently transported if a vessel or debris is transported out of the immediate watershed.[30]

Through federal action and by encouraging the establishment of state programs, ESA[31] provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. The Act:

- Authorizes the listing of species as endangered and threatened;
- Prohibits unauthorized taking, possession, sale, and transport of endangered species;

[29] NRT. (1998). *Federal Natural Resource Trustees and the ICS [Incident Command System]/UC [Unified Command]*. Retrieved from http://www.nrt.org/Production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/A-51FRNT/$File/FNRT.pdf?OpenElement

[30] The Aquatic Nusiance Species Taskforce is chaired jointly by the NOAA and the U.S. Fish and Wildlife Service (USFWS).

[31] 16 U.S.C. § 1531, et seq.

- Provides authority to acquire land for the conservation of listed species;
- Authorizes establishment of programs for endangered and threatened wildlife and plants; and
- Authorizes the assessment of civil and criminal penalties for violating the Act or regulations.

Section 7(a)(2) of the ESA requires OSCs to ensure any action authorized, funded, or carried out is not likely to jeopardize the continued existence of any listed species or destroy or adversely modify their critical habitat. Under ESA implementing regulations at 50 C.F.R. Part 402, consultation with the National Marine Fisheries Service (NMFS) and/or the USFWS is required for actions that may affect listed species or designated critical habitat.[32,33]

Potential Historic Preservation Status

Written approval from the appropriate State Historic Preservation Office (SHPO) is a requirement for vessels over 50 years old. An established Programmatic Agreement provides detailed guidance on protection of historic properties during emergency responses under the NCP.[34] The provisions of the Programmatic Agreement and implementing plans will apply in lieu of the provisions of 36 C.F.R. Part 800.

3.1.2 Government Collaboration

There are a host of federal, state, local, and tribal resources available to assist with the initial assessment of abandoned vessels. The USCG maintains vessels capable of transporting responders and investigators to the scene of a vessel. Use of these assets *may be available* depending on current operations, and can be coordinated via the nearest USCG Sector Command Center. The USACE district office has survey vessels for federal navigation channel condition surveys. OSCs should coordinate with their local USACE district office to determine whether an abandoned vessel is in or adjacent to a federal navigation channel. NOAA may be able to provide more detailed bathymetry than available on the chart, or arrange sonar surveys of wrecks. NOAA vessels run surveys of coastal areas, and responders may be able to have a NOAA ship in the vicinity of a wreck divert to survey the site. NOAA's six Navigation Response Teams are highly mobile and can be deployed to do specialized surveys for emergencies such as opening ports or in support of a response or salvage activity. Other federal agencies or offices (such as the Navy Supervisor of Salvage and USACE) have agreements to assist in federal navigation channel vessel or obstruction removal and disposal as needed.

State environmental responders and law enforcement (e.g., departments of environmental protection, state marine patrol, and state police) typically maintain vessels capable of investigating vessel sites as well. In particular, they may have shallow draft vessels with trailer capability that can bring investigators to very shallow areas not accessible from shore. Local harbormasters, police, and/or fire departments are also available resources. Further, state and local law enforcement or other agencies may have dive teams available to assist with the investigation. For example, the City of Boston Police Department has aided in the investigation of submerged barges in Boston Harbor in conjunction with the USCG.

[32] 16 U.S.C. § 1536.(a)(2). The lead action agency is responsible for ESA compliance. In accordance with *Inter-agency [MOA] Regarding Oil Spill Response Activities under FWPCA, NCP, and ESA*, NOAA NMFS, and [U.S. Department of Interior] DOI USFWS would be consulted where the response may affect listed species/critical habitat. The NOAA Scientific Support Coordinator (SSC) often helps the federal OSC determine what resources are at risk and what consultations need to be conducted.

[33] ESA consultation can also include the Office of National Marine Sanctuaries in the National Ocean Service in NOAA when actions are either in or could impact national marine sanctuaries.

[34] "Programmatic Agreement on Protection of Historic Properties During Emergency Response Under the NCP," June 1997.

Section 4.0 Response Authorities

4.1 INTRODUCTION

When the initial assessment discussed in Section 3.0 is complete, the OSC/COTP should have a better understanding of the threat posed to public health, the environment, and navigation and can select the appropriate authorities under which the vessel problems/dangers/damage can be mitigated. Several federal statutes and regulations govern the mitigation of pollution from and the removal of abandoned vessels and wrecks posing a threat to the navigable waters, including the territorial seas of the U.S. This section explains how the relevant federal laws and regulations relate to the OSC/COTP's authority to mitigate pollution and remove abandoned vessels.

4.2 FEDERAL STATUTES AND REGULATIONS

The statutes and regulations listed below are the primary authorities that facilitate federal action in addressing abandoned vessels. Depending on the circumstances at hand, other authorities may be relied on to mitigate damage from or otherwise address abandoned vessels. The synopses provided below offer a brief explanation of how the authorities relate to abandoned vessel response and should not be relied on as complete summaries of the listed authorities, nor relied upon to interpret these authorities. In any case where these authorities are relied upon, legal counsel should be consulted.

Title	Statute	Lead Agencies					
		DOD	DOI	EPA	NOAA	USACE	USCG
Abandoned Barge Act	46 U.S.C. § 4701					√	√
ASA	43 U.S.C. § 2101		√				
CERCLA	42 U.S.C. § 9601			√			√
CWA	33 U.S.C. § 1251			√			√
Intervention on the High Seas Act (IHSA)	33 U.S.C. § 1471						√
Marine Debris Act	33 U.S.C. § 1951			√	√		√
Marine Protection, Research and Sanctuaries Act (MPRSA)	33 U.S.C. § 1401			√	√		
NMSA	16 U.S.C. § 1431				√		
Oil Pollution Act of 1990 (OPA 90)	33 U.S.C. § 2710-2761			√	√		√
Wreck Act	33 U.S.C. § 414, 415					√	√
Salvage Facilities Act	10 U.S.C. § 7361	√					
Saving Life and Property	14 U.S.C. § 88						√

Table 1 – List of Federal Statutes Related to Abandoned Vessel Response and Disposition Options

46 U.S.C. § 4701-4705: *Abandoned Barge Act*

The Abandoned Barge Act authorizes USCG OSCs to remove an abandoned barge under specific circumstances. This statute applies to navigable waters of the U.S. including territorial seas as provided in Section 1 of this Guidance. Pursuant to § 4701, "abandon means to moor, strand, wreck, sink, or leave a barge of more than 100 gross tons unattended for longer than forty-five days." Further, the Act initiates civil penalties and outlines removal and destruction procedures. The authority to remove a barge under this statute does not include the removal of pollutants.

43 U.S.C. § 2101-2106: *Abandoned Shipwreck Act*

Under the ASA, the U.S. declares title to abandoned shipwrecks located in the submerged lands of a state. The federal government then transfers the title to the state whose submerged lands contain the shipwreck.[35] Protected shipwrecks under state care can provide opportunities to recreational divers, tourists, and researchers. Public access to the shipwrecks may be encouraged by states through the creation of underwater parks.

The National Park Service (NPS) publishes guidelines for states and agencies for the development of shipwrecks as cultural resources. The effort facilitates access and utilization of the shipwrecks by a variety of organizations and interest groups including divers and research organizations. The OSC/COTP should consult with the NPS before conducting removal of pollutants from protected wrecks. Consultation is required of all federal agencies undertaking an "action" under Section 106 of the NHPA. USCG has a specific programmatic agreement that addresses this consultation process. Consultation under Section 106 is with the State and Tribal Historic Preservation Officers and may also include the Advisory Council on Historic Preservation, DOI, NOAA, the U.S. Maritime Administration (MARAD), and Department of Defense (DOD). In addition, there may be additional requirements under the Sunken Military Craft Act.

42 U.S.C. § 9601-9675: *Comprehensive Environmental Response, Compensation, and Liability Act*

CERCLA, like the CWA, provides for the removal of hazardous substances when there is a release or substantial threat of a release to the environment, including from abandoned vessels. CERCLA § 104(a)(1) directly authorizes responders to remove or arrange for the removal, or take any other response measures to remove or mitigate a hazardous substance, pollutant, or contaminant when:

> (a) any hazardous substance is released or there is a substantial threat of such a release into the environment, or
>
> (b) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare. [36]

In situations when a facility or vessel, which is the source of a release, is under the jurisdiction, custody, or control of DOD or the Department of Energy (DOE), the response authority resides within that agency.[37] For other federal agencies, the response authority resides with that agency, except for emergencies.

The federal OSC's CERCLA response authorities are detailed within the NCP.

33 U.S.C. § 1251-1387: *Federal Water Pollution Control Act , commonly known as Clean Water Act, as amended by the Oil Pollution Act of 1990*

CWA Sections 311 (c) and (e) provide authority to remove pollutants from potentially polluting sources, including abandoned vessels. CWA has been amended a number of times. The amendments, in addition to the NCP implementing regulations, all contribute to the OSC's authority. This section explains the pertinent provisions from each amendment. The NCP will also be discussed further below.

CWA authority described here applies to a discharge or substantial threat of a discharge of oil and/or hazardous substances. It is important to note the removal of oil and hazardous substances is conducted using separate funding mechanisms – the Oil Spill Liability Trust Frund (OSLTF) and the CERCLA fund, respectively.

[35] Except when the wreck is located on public or Indian land, or is a U.S. warship that has not been affirmatively abandoned.
[36] 42 U.S.C. § 9604
[37] Executive Order (E.O.) 12580 (1987)

Removal authority for oil pollution threats comes from CWA § 311(c), as amended by OPA 90 § 4201, and in accordance with the NCP, 40 C.F.R. Part 300.305(d)(1) to:

- Remove or arrange for the removal of a discharge, and mitigate or prevent a substantial threat of a discharge, at any time;
- Direct or monitor all federal, state, and private actions to remove a discharge; and
- Remove and, if necessary, destroy a vessel discharging, or threatening to discharge, by whatever means are available.

The removal authority for the inland zone has been delegated to the EPA Administrator under E.O. 12777.[38] EPA has further re-delegated this authority to the EPA Regional Administrators (RAs). The RAs have re-delegated the authority to the Regional Division Directors that manage the removal programs and, in most cases, have re-delegated the authority directly to the individual OSCs. E.O. 12777 also delegated the removal authority for the coastal zone to the Secretary of the Department in which the USCG is operating. This authority has been further delegated to the Commandant and re-delegated further to pre-designated OSCs under 33 C.F.R. Part 1.01-80. However, it should be noted that under 33 C.F.R Part 1.01.-80 the Commandant has not delegated authority to remove or destroy a vessel and such OSC/COTP actions require Commandant approval.

Under the NCP, EPA and the USCG have the same authority for response to abandoned vessels, but EPA generally has the lead for discharges or releases into or threatening the inland zone and USCG has the lead in the coastal zone, as agreed upon between an EPA Region and the USCG District for a given area and identified in federal Regional Contingency Plans (RCPs).[39,40] The specific delineation is known as a Response Boundary and the geographical area as an Area of Response. CWA authorizes the OSC to remove or arrange for "the removal of a discharge or a substantial threat of a discharge of oil or a hazardous substance into navigable waters; on the adjoining shoreline; into or on the waters of the Exclusive Economic Zone (EEZ); or that may affect natural resources of the U.S."

Under Section 404 of the Clean Water Act, Department of Army authorization is required for the discharge of dredged and/or fill material into waters of the U.S., including wetlands. Cleanup, vessel removal, excavation, and vessel disposal activities may require the discharge of fill material which may result in temporary or permanent impacts to waters of the U.S. It may be necessary for the OCS to obtain any required authorizations from the relevant USACE district regulatory office under Section 404 of the CWA, and/or any other applicable laws and regulations unless otherwise exempted.

40 C.F.R. Part 300: *National Oil and Hazardous Substances Pollution Contingency Plan*

The purpose of the NCP, under 40 C.F.R. Part 300.3(b), is:

> "[Providing] for efficient, coordinated, and effective response to discharges of oil and releases of hazardous substances, pollutants, and contaminants in accordance with the authorities of CERCLA and the CWA." It provides for: "(b)(3): Procedures for undertaking removal actions pursuant to Section 311 of the CWA."

Except in a case when the OSC is required to direct the response to a discharge of oil, the OSC may allow the responsible party (RP) to voluntarily and promptly perform removal actions, provided the OSC determines such actions will ensure an effective and immediate removal of the discharge or mitigation or prevention of the substantial threat of discharge. The OSC is also authorized to direct all response actions, including arranging for the removal, by whatever means available, of the substantial threat of discharge

[38] Section 3 of E.O. 12777 delegated removal authority for both coastal and inland zones to USCG and EPA, respectively.
[39] 40 C.F.R. § 300.120(a)
[40] 40 C.F.R. § 300.210(b)

(including from a wreck).[41] The NCP provides clear response direction, specifically authorizing the OSC to address and remove a vessel, if necessary, to mitigate or prevent substantial threats of discharge.[42]

To stabilize the situation and limit further damage, the NCP directs OSCs to ensure proper measures are taken to secure the source of the spill and remove any remaining oil to prevent additional discharge, minimize continued response action in the future, and lessen the impacts to the environment.[43,44]

33 U.S.C. § 1471-1487: *Intervention on the High Seas Act*

IHSA provides that "federal intervention actions" occur "Upon determination of a grave and imminent danger to the coastline or related interest of the [U.S.]," and authorizes the USCG to ". . . remove or eliminate threatened pollution damage" and "…remove, and if necessary, destroy the ship and cargo which is the source of danger."[45] "Ship" is defined as "(A) a seagoing vessel of any type whatsoever, and (B) any floating craft, except an installation or device engaged in the exploration and exploitation of the resources of the seabed and the ocean floor and the subsoil thereof."[46] CERCLA authorizes funds for high seas intervention activities. High seas refers to waters seaward of the territorial seas of the U.S.[47]

The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties was adopted in 1969 and allows a coastal nation to take defensive action against a vessel on the high seas where pollution by oil is threatened. IHSA gives USCG intervention authority in circumstances when a ship is threatening to spill crude oil, fuel oil, diesel oil, or lubricating oil into the seas. Further, USCG has the authority to take measures on the high seas to mitigate such dangers.

The U.S. has implemented the Intervention Convention by enacting IHSA, which authorizes actions that may be taken in the case of imminent danger to the coastline or related interests of the U.S. from pollution or threat of pollution. The measures taken to abate the pollution must be proportionate to the damage (actual or threatened).[48] If actions are not proportionate to the threat, the U.S. or other coastal nations will be liable for damages caused.

Before intervening, the Secretary of the Department of State must consult with the flag state of the ship involved. Also, the Secretary must consult with any other agency or persons whose interests can be reasonably expected to be affected by the proposed measures, except in cases of extreme emergency.

The Commandant is charged with coordinating and directing all public and private efforts designed to remove or eliminate the threatened pollution; to undertake the whole or any part of any salvage operation of the polluting vessel; and to remove and destroy the ship and the cargo that is the source of the damage.

33 U.S.C. § 1951-1958: *Marine Debris Act*

The Marine Debris Act is a key statute for studying and addressing the problem of marine debris in all of its forms. "Marine debris" is defined in the Act to include abandoned vessels as follows: "any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes." The Act establishes a program within NOAA to address the adverse impacts of marine debris on the U.S. economy, the marine environment, and navigation safety through identification, determination of sources, assessment, prevention, reduction, and removal of marine debris. The Act mandates that through the Program, and

[41] 40 C.F.R. § 300.305(d)
[42] 40 C.F.R. § 300.305(d)(1)(iii)
[43] In most oil spill response and removal cases, an OSC will have an identifiable RP and will be responsible for monitoring the response actions of the RP.
[44] 40 C.F.R. § 300.317
[45] 33 U.S.C. § 1474
[46] See 33 U.S.C. § 1471(5)
[47] 33 C.F.R. § 2(c)
[48] The OSLTF, established by CWA, is available for intervention activities under the IHSA.

subject to the availability of appropriations, NOAA shall undertake marine debris identification, assessment, reduction, prevention, and removal activities, as well as provide outreach and education on marine debris. NOAA primarily meets the mandate for removal via community-based removal grants. The Act also establishes a program within USCG to reduce violations and improve implementation of the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V, as well as plans to improve ship-board waste management. NOAA administers the Act and responds to marine debris, including debris generated by natural disasters. NOAA responds by providing scientific support, coordination, and information sharing along with limited removal.

The Marine Debris Act re-establishes the Interagency Marine Debris Coordinating Committee (IMDCC), of which NOAA is the Chair and EPA is the Vice-Chair. IMDCC is an interagency body responsible for developing and recommending comprehensive and multi-disciplinary approaches to reduce the sources and impacts of marine debris to the nation's marine environment, natural resources, public safety, and economy. The IMDCC ensures the coordination of federal agency marine debris activities both nationally and internationally, as well as recommends research priorities, monitoring techniques, educational programs, and regulatory action.

33 U.S.C. § 1401-1445: *Marine Protection, Research, and Sanctuaries Act (Title 1)*

The MPRSA, also known as the Ocean Dumping Act, regulates the dumping of all types of materials into ocean waters and strictly limits the dumping of any material that would adversely affect human health, welfare or amenities, marine environment, ecological systems, or economic potentialities.[49] Title I of the Act generally prohibits (1) transportation of material from the U.S. for the purpose of ocean dumping; (2) transportation of material from anywhere for the purpose of ocean dumping by U.S. agencies or U.S. flagged vessels; and (3) dumping of material transported from outside the U.S. into the U.S. territorial sea. A permit is required to deviate from these prohibitions. Under MPRSA, the standard for permit issuance is whether the dumping will "unreasonably degrade or endanger" human health, welfare, or the marine environment. Evaluation of whether degradation would be unreasonable or cause endangerment requires consideration of alternatives to ocean disposal, including land-based alternatives.[50]

EPA is the MPRSA permitting agency for all materials except dredged material. (In the case of dredged material, the decision to issue a permit is made by USACE, using EPA's environmental criteria and subject to EPA's concurrence.) EPA has issued a general permit under the MPRSA for the transportation and disposal of vessels. The MPRSA implements the requirements of the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention), the international ocean dumping treaty. The U.S. Government reports the ocean dumping of vessels to the International Maritime Organization pursuant to the London Convention. [51]

16 U.S.C. § 1431 et seq: *National Marine Sanctuaries Act*

Under the NMSA, NOAA manages a system of 14 marine protected areas in U.S. waters. The statute provides NOAA the authority to address any activities that are likely to destroy, cause the loss of or injure sanctuary resources. For some sites within the system, this authority includes activities that occur outside the boundaries but that could enter and injure sanctuary resources.

Within these sanctuaries, NOAA can seek damages from responsible parties to cover response, injury and damage assessment, restoration, and replacement of the injured habitat or acquisition of equivalent habitat, and compensation of the public for the value of the injured resources until full recovery. Under the NMSA, NOAA may have financial resources available to assist with the response, particularly if there is no longer a nexus to OPA 90 or CERCLA.

[49] 33 U.S.C. § 1402(b)
[50] 33 U.S.C. § 1412(a)
[51] The USCG's role under the MPRSA is primarily related to certain enforcement activities. See, 33 U.S.C. 1417.

The NMSA also requires consultation under Section 304(d) for any activities that are "likely to destroy, cause the loss of or injure a sanctuary resource." During consultation, NOAA may recommend reasonable and prudent alternatives to protect sanctuary resources and to address activities that conflict with site-specific activities such as disturbance of the seabed, and discharge or deposit of materials that could occur during assessment or removal activities.

33 U.S.C. §409, 411, 412, 414, and 415: *Wreck Act*

The Rivers and Harbors Appropriation Act of 1899 (RHA) contains several sections known as the Wreck Act, which provides USACE the authority to remove sunken vessels that pose an obstruction to navigation. This statute applies to navigable waters of the U.S. as provided in Section 1 of this Guidance and provides authority to respond beyond traditional OSC/COTP inland and coastal zones as provided by the NCP. Under the Wreck Act, the owner, operator, or lessee of a submerged vessel is responsible for immediately marking the vessel with a buoy or beacon during the day and a lighted lantern at night.[52] The markings must remain until the vessel is removed. The owner, operator, or lessee is also required to "diligently" commence "immediate" removal of the submerged vessel. If the vessel is not removed within thirty (30) days, it will be considered abandoned and USACE may take action to remove the vessel from the navigable waters.[53] The determination of whether a wreck poses an obstacle to navigation rests initially with USACE and a reviewing court will only overturn the determination if the decision is found to be arbitrary and capricious.

If USACE determines the existence of the submerged or wrecked vessel in the navigable waters of the U.S. is creating an emergency situation, the vessel owner, operator, or lessee will be given twenty-four (24) hours to begin removal of the vessel using the most expeditious method available.[54] If the vessel is not removed or steps are not taken in an expeditious manner to secure the vessel's removal, USACE may intercede to remove, sink, or destroy the vessel to alleviate the situation. The vessel owner, operator, or lessee will then be liable to the U.S. for all costs associated with the government's action. If the owner fails or refuses to reimburse the government within thirty (30) days after notification, the vessel may be sold with the proceeds going to the U.S. Treasury.[55]

Under Section 10 of the Rivers and Harbors Appropriation Act of 1899, Department of Army authorization is required for work or structures in, over, or under navigable waters of the U.S. or that otherwise affects the course, location, or condition of such waters. In addition, the cleanup, vessel removal, and vessel disposition activities may be regulated. The entity proposing to undertake the activity may need to apply for and receive authorization from the relevant USACE district regulatory office prior to commencing these activities.[56] It may be necessary for the OCS to obtain any required authorizations from the relevant USACE District Regulatory Office under Section 10 of the RHA, and/or any other applicable laws and regulations unless otherwise exempted.

33 C.F.R. Part 245: *Removal of Wrecks and other Obstructions*

33 C.F.R. Part 245 implements provisions of the Wreck Act, as amended by the Water Resources Development Act of 1986, and also reflects the procedures from an interagency agreement between USACE and USCG. The Water Resources Development Act of 1986 (Pub. L. No. 99-662 §939) amended the Wreck Act by extending jurisdiction to non-negligent sinkings, extending the obligation for marking and removal to vessel operators and lessees (in addition to owners), and providing for reimbursement to the U.S. Treasury for full costs of federal removal and disposal.

[52] 33 U.S.C. § 409
[53] 33 U.S.C. §§ 409 & 414
[54] 33 U.S.C. § 415: *RHA, (*b) Removal Authority
[55] Cases such as HOVIC III, Steel oil barge. M/V Baltic Sun, Steel hull freighter. Both removed from Christiansted, U.S. Virgin Islands (USVI) in 1992.
[56] 33 U.S.C. § 403

The USACE criteria for determining a hazard to navigation when evaluating the removal of an abandoned or wrecked vessel under these regulations are found below.

Upon receiving a report of a wreck or other obstruction, District Engineers will consult with the USCG District to jointly determine whether the obstruction poses a hazard to navigation. The factors considered in determining a hazard to navigation may, at a minimum, include:

- Location of the obstruction in relation to the navigable channel and other navigational traffic patterns.
- Navigational difficulty in the vicinity of the obstruction.
- Clearance or depth of water over the obstruction, fluctuation of water level, and other hydraulic characteristics in the vicinity.
- Type and density of commercial and recreational vessel traffic, or other marine activity, in the vicinity of the obstruction.
- Physical characteristics of the obstruction, including cargo, if any.
- Possible movement of the obstruction.
- Location of the obstruction in relation to existing aids to navigation.
- Prevailing and historical weather conditions.
- Length of time the obstruction has been in existence.
- History of vessel accidents involving the obstruction.

After a determination has been made that an obstruction presents a hazard to navigation, District Engineers will consult with the USCG District to determine the appropriate remedial action for the specific situation. Any combination of the following, as noted in 33 C.F.R. § 245.25, may be considered:

- *Charting*
- *Marking*
- *Redefinition of navigational area* (e.g., channel, fairway, or anchorage)
- *Removal*[57]
- *Broadcast notice to mariners and publication of navigational safety information* (regarding location of abandoned vessel or wreck)
- *No Action*

The marking of wrecks, regulated under 33 C.F.R. Part 64, is the responsibility of the USCG while removal is at the discretion of USACE.[58] The USCG and USACE signed a MOU on October 5, 2012 that outlines procedures for making determinations of hazards to navigations and coordinating mitigation actions when a hazard to navigation exists. The 2012 MOU replaces an October 1985 MOA between USCG and USACE to mitigate hazards to navigation.

10 U.S.C. § 7361 et seq: *Salvage Facilities Act*

The Salvage Facilities Act authorizes contracting of U.S. Navy Supervisor of Salvage (SUPSALV). The Salvage Facilities Act, enacted after World War II, has several objectives, including:

- To provide salvage resources to protect the redeployment of government-owned war material on chartered ships (but not in excess of national defense needs).

[57] There are several instances where USACE has removed vessels posing a hazard or at risk of posing a hazard to navigation even though the RP has the first responsibility to remove a wreck.
[58] The marking and removal of wrecks is governed by sections 15, 19 and 20 of the Wreck Act, as amended (33 U.S.C. §§ 409, 414, & 415).

- To foster (but not subsidize) the commercial salvage industry.
- To allow (but not require) the Navy to render salvage services to private vessels when commercial salvors are not available, charging for those services to support the Navy's Salvage facilities.

14 U.S.C. § 88: *Saving Life & Property*

For the protection of persons and property on the high seas and under the waters over which the U.S. has jurisdiction, 14 U.S.C. § 88 authorizes USCG to "destroy or tow into port sunken or floating dangers to navigation." This law applies to scenarios such as the Japanese F/V RYOU-UN MARU, which was intentionally destroyed by USCG in 2012.[59] The vessel, having drifted for more than a year as a result of an earlier tsunami in Japan, posed a significant danger to safe navigation and threatened to impact Alaskan shores, potentially discharging significant amounts of oil.

Other Federal Authorities

Other government agencies may have authorities when abandoned vessels are on their land or threaten lands under their care, e.g., NOAA National Marine Sanctuaries (NMS), NPS, USFWS refuges, and DOD facilities.

4.3 POST-DISASTER RESPONSE AUTHORITIES

The Robert T. Stafford Act as amended[60] (Stafford Act) provides a systematic and organized process for providing federal assistance in support of major disasters and emergencies. The Stafford Act gives the Federal Emergency Management Agency (FEMA) the responsibility for coordinating federal government-wide relief efforts.

In this section, the authorities for abandoned vessels as they apply to a major disaster or emergency, such as a major hurricane or other catastrophic event or emergency, will be defined. In a major disaster, a large number of vessels of varying sizes and types may require mitigation, and in some instances, removal. Assessments will need to be completed to accurately prioritize removal activities. To support these efforts, state programs will likely require federal assistance. In these instances, the President, at the request of the governor of the affected state and/or Chief Executive of a federally-recognized Indian tribe or nation, can make a declaration enabling access to federal aid and support under Mission Assignments. FEMA Mission Assignments will largely govern which responding agency will be responsible for the coordination of these efforts. Authorities under the Stafford Act and funding avenues are detailed in this section.

In an effort to add clarification to federal emergency assistance for removal of debris in waterways under the Stafford Act, FEMA issued Recovery Policy 9523.5, "Debris Removal from Waterways" on 30 October 2012, which states:

> "FEMA may fund the removal and disposal of eligible disaster-generated debris, wreckage, and submerged vessels from the coastal zone or inland zone, non-federally maintained navigable waterways, and wetlands by an eligible applicant, if (1) the debris, wreckage, or submerged vessel is the direct result of a Presidentially-declared disaster,[61] (2) the removal is in the public

[59] Although this case was within U.S. waters, the variables surrounding the case are comparable to those that may require invocation of IHSA.
[60] 42 U.S.C. 5121-5207
[61] 44 C.F.R. § 206.223(a)

> interest *(defined as referring actions taken for the "common well-being" or "general welfare")*,[62] and (3) another federal agency does not have specific authority to perform or fund the work."[63]

Further, FEMA Recovery Policy notes,

> "FEMA may determine that a storm-damaged vessel can be treated as eligible debris if the vessel cannot be salvaged or returned to seaworthiness and it is floating or submerged in the coastal or inland zones, a non-federally maintained navigable waterway, or wetland. However, if any part of the damaged vessel can be used to identify an owner, the applicant should contact the owner and follow its local ordinances and state laws to demonstrate legal responsibility to remove and dispose of the vessel."[64]

Oil and Hazardous Materials Response – Emergency Support Function (ESF)-10

When a Presidential Emergency or Major Disaster Declaration is made, FEMA may activate EPA and USCG to coordinate activities under ESF-10 of the National Response Framework (NRF) to address responses to hazardous substances and oil incidents caused by or threatened to be caused by a major disaster or emergency. As requested by a state or tribe, FEMA may provide a Mission Assignment to support oil and hazardous substances response and related activities, including sampling, classification, packaging, transportation, treatment, and disposal of oil or hazardous materials. The NCP generally serves as the basis for actions taken when ESF-10 is activated. During Stafford Act responses; however, some procedures in the NCP may be streamlined or may not apply. When ESF-10 is activated, an EPA OSC is typically assigned as the on-scene ESF-10 EPA Incident Commander (IC). For USCG activities, the federal OSC of the affected zone may act as the IC or may designate an incident-specific IC.

OSCs should also be aware that if a Stafford Act incident occurs involving a chemical, biological, radiological, or nuclear (CBRN) blast or explosion, which results in a CBRN-contaminated debris field that includes abandoned vessels, EPA, USACE, and FEMA have signed a MOU that delineates roles and responsibilities for contaminated debris management between ESF-3 and ESF-10.

During Stafford Act responses, if Resource Conservation and Recovery Act (RCRA) hazardous wastes, polychlorinated biphenyls (PCBs) covered by the Toxic Substances Control Act (TSCA), or other regulated wastes are generated as a result of abandoned vessel operations, then additional requirements under the relevant laws may apply.

Public Works and Engineering – ESF-3

USACE has primary responsibility for the removal of debris from federally-maintained navigable channels and waterways. Section 202 of the Water Resources Development Act of 1976 (PL 94-587) authorizes USACE to remove debris from federally-maintained commercial harbors and water areas immediately adjacent thereto. Sections 15 and 19 of the Wreck Act, authorize USACE to remove sunken vessels. Section 20 of the Wreck Act also allows USACE to remove certain other obstructions from navigable waterways under emergency conditions. A navigable waterway is one that has been authorized by Congress, and which USACE operates and maintains for general (including commercial and recreational) navigation.

USACE's policy under these authorities is to oversee removal of sunken vessels by an identifiable owner, operator, or lessee if the sunken vessel is in or likely to be moved into a federal navigation channel. USACE will remove a vessel using its emergency authorities only if the owner, operator, or lessee cannot be identified or they cannot effect removal in a timely and safe manner. Vessel removal operations

[62] 44 C.F.R. § 206.224(a)
[63] 44 C.F.R. § 206.208(c)(2)
[64] FEMA. (2012). Recovery Policy 9523.5, *Debris Removal from Waterways*. Section X.

conducted under ESF-3 will be coordinated through USACE as the primary agency and the USCG as a supporting agency, if required to assist. The Mission Assignments issued by FEMA for the removal of these vessels prescribe specific areas of operation that include navigable waterways and adjoining shorelines, as noted above in FEMA Recovery Policy 9523.5. During the recovery of debris and damaged vessels post-storm, thorough documentation of owner/operator and vessel identification information, as well as method of removal and disposal, if required, becomes vitally important.

4.4 ADDITIONAL STATUTES APPLICABLE TO ABANDONED VESSEL DISPOSITION

15 U.S.C. § 2601 – 2697: *Toxic Substances Control Act*

TSCA, among other things, provides EPA with authority to require reporting, record-keeping, and testing, and imposes restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA including, among others, food, drugs, cosmetics, and pesticides. TSCA specifically addresses the production, importation, use, and distribution in commerce of PCBs.

Note: The reefing of a vessel containing PCBs is not authorized under TSCA or EPA's implementing regulations without an approval from EPA. If the OSC/COTP believes that reefing may be the best approach for a vessel containing PCBs, she should contact the EPA's office for PCB ship disposal issues.

42 U.S.C. § 6901 – 6992: *Resource Conservation and Recovery Act*

RCRA gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. Although RCRA is a federal statute, EPA authorizes states to operate the hazardous waste program in lieu of the federal program. Currently, 48 of 50 states implement the hazardous waste program. RCRA also sets forth a framework for the management of non-hazardous solid wastes. The OSC/COTP should consult with state RCRA Coordinators for application of all relevant RCRA regulations from generation of the waste to final disposal. OSCs should also be aware that under RCRA, waste from a vessel is considered "generated" when waste is removed from the vessel (point of generation) and RCRA-specific waste management requirements may apply at the point of generation.

16 U.S.C. § 4711: *The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), as amended*

OSCs overseeing pollution removal operations should also be aware of the potential dangers to the marine environment from the introduction of nonindigenous aquatic invasive species due to either biofouled hulls/debris or the release of untreated ballast water. The threat of invasive species may be of particular concern from a recently abandoned vessel originating from a foreign port. Careful consideration should be given to the discharge of ballast into U.S. waters from these vessels.

4.5 DETERMINATION OF RESPONSE AUTHORITIES

In general, the same response authorities that apply during any other pollution threat or hazard to a navigation situation also apply to abandoned vessels and wrecks. The decision regarding what authorities can and should be used when removing an abandoned vessel or submerged wreck should be based on several criteria, including the location of the vessel, threat it poses (e.g., is it a hazard to navigation or does it pose a substantial environmental or public health threat due to pollution?), and state and/or federal statutes or regulations that may apply. In many cases, both state and federal agencies may have statutory authorities to address abandoned vessels or submerged wrecks. In these situations, the best response is a joint effort because it will allow for the sharing of resources, enforcement authorities, local environmental knowledge, and salvage expertise.

Section 5.0 Funding Authorities

Making monetary commitments on behalf of the U.S. Government before there is an appropriation or that causes an agency to exceed the amount of appropriated funds results in a violation of the Anti-Deficiency Act (31 U.S.C. § 1341). The Anti-Deficiency Act generally requires that funding be available prior to any expenditure, with possible disciplinary action resulting from violating the Act. The OSC/COTP must always be mindful of the availability and commitment of funds prior to exercising his or her authorities.

5.1 FEDERAL FUNDING

Funding available for abandoned vessels is directly related to the authorities that may apply to mitigating pollution and removing abandoned vessels, as discussed in Section 4.0. However, funding expressly for the removal of abandoned vessels is minimal among both federal and state agencies. Although there are some provisions in current law that make allowances for the removal of abandoned vessels, these provisions often have caveats that hinder the funding and thus delay prompt removal. Below is information on contracting and funding authorities and limitations for the key federal agencies involved in responding to abandoned vessels.

CERCLA Funding

CERCLA funding, which is generally limited to $2 million and 12 months per removal action unless certain statutory criteria are met, is managed by EPA and may be used to respond to a vessel if there is a release or substantial threat of a release of a hazardous substance into the environment, or if there is a release or substantial threat of a release of a pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare. There are petroleum exclusions under CERCLA, but oil is covered under CWA/OPA 90 (see CWA/OPA 90 and OSTLF section below). Subject to EPA's CERCLA response delegations, once EPA determines that a removal action is appropriate, EPA OSCs have no specific delegated or internal guidance restrictions limiting their ability to remove and destroy a vessel.[65] USCG OSCs cannot make the final decision, absent further approval, to use CERCLA funding to remove a contaminated vessel from the coastal environment or destroy it.[66,67] The USCG OSC must have the Commandant's approval before using CERCLA funding to remove or destroy a contaminated vessel. However, USCG OSCs can take other types of response actions under CERCLA to address releases or potential releases of hazardous substances as well as contaminated debris that threatens the environment. In any case, the use of CERCLA funding for the purpose of removal should be carefully documented to clearly justify the use of CERCLA funds.

Section 104 of CERCLA authorizes a federal removal action for a pollution incident in the following instances:

- Whenever any hazardous substance is released or there is a substantial threat of a release into the environment; or
- Whenever there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to public health or welfare.

[65] EPA Delegations Manual, Delegation 14-2 (CERCLA Response), 7 November 2001
[66] 33 C.F.R. §1.01-70
[67] (U.S. Coast Guard) Commandant Instruction (COMDTINST) 16465.29. (1983). *CERCLA Response Authorities and Associated USCG Policies.*

CWA/OPA 90 and OSLTF

Similar to CERCLA, the OSLTF, also known simply as the Fund, is available to OSCs pursuant to National Pollution Funds Center (NPFC) policies and procedures when there is a discharge or substantial threat of discharge of oil to waters and shorelines or natural resources as described under CWA 311(c).

When using CWA 311(c) authority in respect to oil discharges or substantial threats, OSCs should coordinate planned activities, including any planned assessment activities, closely with NPFC case managers to ensure appropriate funding of activities to remove a discharge or prevent or mitigate a substantial threat of discharge. This is especially important where mixed purposes are being achieved in removing or destroying a vessel, e.g., CERCLA, CWA, navigation safety, disaster, or vessel debris threats to the environment.

The decision by an OSC to remove a discharge of oil or prevent or mitigate a substantial threat of discharge is based on several factors including proximity to environmentally sensitive areas, risk versus gain and other economic impacts, whether adequate response actions are being taken by the polluter or other responder, and whether the oil is deemed a substantial threat to the public health or welfare. The OSC's authority and substantial threat determination are further defined below. For USCG OSCs, if deemed to be the most practical or cost effective method for pollution removal activities, a vessel may be removed or destroyed when approved by the Commandant.[68] Similar to the differences under CERCLA, EPA OSCs do not have any special limitations on their ability to remove or destroy a vessel under Section 311(c) of the CWA as amended by OPA—in fact that authority may be directly delegated to the OSC.[69]

Stafford Act and Other Funding Authorities

Stafford Act Funding - In accordance with Recovery Policy 9523.5, Debris Removal from Waterways, published 30 October 2012, "FEMA may fund the removal and disposal of eligible debris, wreckage, and sunken vessels from non-federally maintained navigable waterways, the coastal or inland zones, or wetlands only when another federal agency does not have the specific authority to fund the activity."[70]

FEMA has determined the following vessel removal activities are ineligible under Stafford Act:

- The removal of wreckage and sunken vessels from federally maintained navigable channels and waterways; and
- The removal of debris from privately owned canals, waterways and banks.[71]

FEMA may issue a Mission Assignment under ESF-3 to USACE to conduct salvage and debris management activities under the Stafford Act. Stafford Act funding may also be provided to EPA and USCG through ESF-10 Mission Assignments to conduct oil and hazardous materials response related to abandoned vessels.

Congressional Supplemental Appropriations to the NOAA Marine Debris Program (MDP) and the NOAA Office of Coast Survey – Following extreme storm events, Congress has passed supplemental appropriations to NOAA to survey nearshore waters, map items found, disseminate survey information to assist with removal, and inform the public. This occurred after Hurricanes Katrina and Rita as well as after Hurricane Sandy, and is dependent upon congressional approval.

NMSA – As noted in Section 4, under the NMSA, funding may be made available for removal activities within sanctuaries for removal of derelict and abandoned vessels, depending on the fiscal health of the

[68] COMDTINST 16465.5, Vessel Removal and Destruction Under CWA and CERCLA
[69] EPA. (1993). *Delegations Manual 2-89, Removal of Discharge or Threat of Discharge*.
[70] 44 C.F.R. § 206.208(c)(2))
[71] There are limited exceptions to the above ineligibilities noted in *RP9523.5, Debris Removal from Waterways*, Section VII.B.6.

fund and whether there is significant injury to sanctuary resources. Similar funds may be available through DOI bureaus, including NPS and USFWS. These funds would be made available to the respective resource trustee and are not used by OSCs. Oil and hazardous substance removal would remain the responsibility of the OSC.

5.2 STATE FUNDING

There are a variety of state programs for abandoned and derelict vessels. *Appendix C: State Abandoned Vessel Programs* describes these state programs, provides citations, and indicates whether funding is available. Many states may have programs for the removal of abandoned vessels but lack adequate or continuing funding. In many cases, the vessel can be claimed by the state after a requisite period, removed, and the costs may be partially recouped by public auction. However, as noted earlier in this document, auctioned vessels in poor condition may be abandoned again later.

5.3 DETERMINATION OF FUNDING SOURCE(S) FOR SUBMERGED WRECKS

The figure on the following page outlines specific funding considerations for abandoned wrecks and mitigation of pollution from submerged wrecks. Decision points along the continuum will help OSCs determine the most appropriate funding source for the removal of abandoned vessels. The order of the questions is not intended to represent a preference in using one funding source over another. Further guidance on this subject can be found in Appendix D of this document.

Within USACE, federal removal of submerged wrecks and other obstructions within a federal channel (if determined to be a hazard to navigation and a responsible owner, operator, or lessee is not located) is funded under Maintenance and Operations of Dams. This is a category within the annual USACE Civil Works Appropriation, the "Energy and Water Development and Related Agencies Appropriations Act."

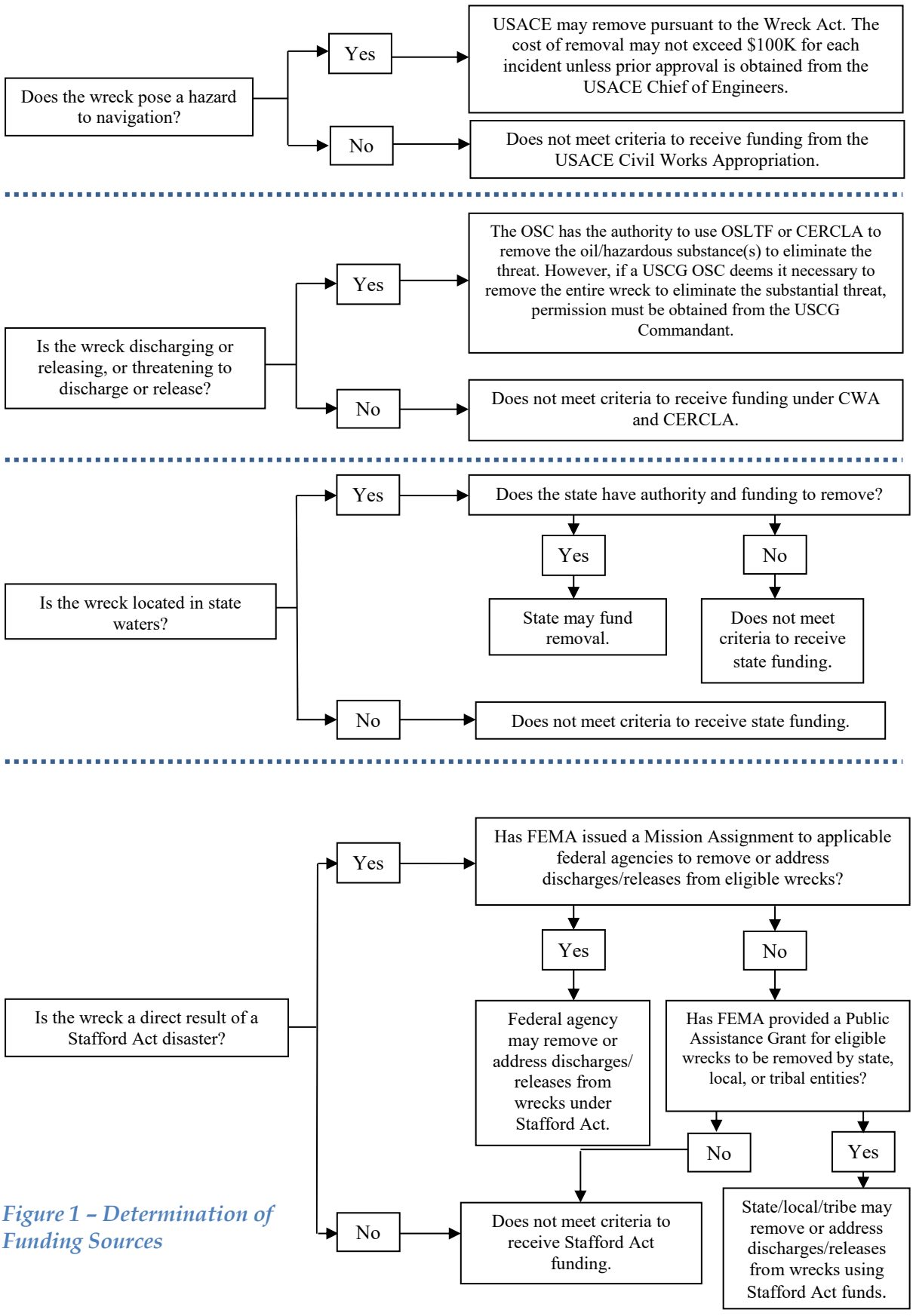


Figure 1 – Determination of Funding Sources

5.4 NAVY ASSETS AND SUPSALV STANDING CONTRACTS

SUPSALV maintains a small cadre of government employees who manage and provide technical assistance for salvage, deep search and recovery, towing, and oil spill response operations. These operations can be accomplished using civilian contractors, military assets, or a combination of both. All Navy assets, SUPSALV, and military can be accessed by EPA or USCG OSCs, when available, and at the approval of the Chief of Naval Operations (CNO) or appropriate Fleet Commander. In the case of USCG, this is done through an established Navy-USCG MOU, which is described in Appendix B. Military assets are under the operational control of Combatant Commanders and subject to military tasking but have often been made available to support USCG missions. All military assets (to include Military Sealift Command ships) are mission funded, which means that operation costs for the OSC acting under CWA 311(c) are limited to directly-related incidentals like travel and consumables. SUPSALV civilian personnel are likewise mission funded. SUPSALV contracts require funding to activate, but in cases where SUPSALV contractors operate government equipment in support of USCG missions, only direct mission costs are charged. All SUPSALV standing contracts are competitively bid. Several may be used in a single operation. The most pertinent SUPSALV contracts are:

- *Emergency Ship Salvage Material (ESSM)* – Maintains and operates a very large array of government-owned, contractor-operated (GOCO) oil spill response and salvage equipment from manned bases in Virginia, California, Alaska, and Hawaii to unmanned facilities in Italy, Bahrain, Singapore, and Japan.
- *Deep Search and Recovery* – Maintains and operates an array of GOCO remotely operated vehicles (ROVs).
- *East Coast Salvage Contract* – Contractor owned and operated (COCO) salvage and towing for the Atlantic and Mediterranean Oceans.
- *West Coast Salvage Contract* – COCO salvage and towing for the Eastern Pacific Ocean.
- *Western Pacific Salvage Contract* – COCO salvage and towing for the Western Pacific and Indian Oceans.

Section 6.0 Vessel Removal and Options for Ultimate Disposition

6.1 INTRODUCTION

The response to abandoned vessels for the purposes of removing pollution, potential threats to public health and the environment, and removing the remaining wreckage is predicated on the results of the initial assessment, determination of relevant response authorities, and applicable funding. At this point, the assessment results have been used to determine the appropriate authority and funding mechanisms. The assessment has prepared the OSC/COTP with a realistic picture of the breadth of activities required and potential stakeholders that may be involved in further decision making, e.g., those members that may make up the UC, if one is established.

The information below details tactics that were developed based on case studies of joint federal, state, and local actions to mitigate and remove abandoned vessels and cases where the use of CERCLA or OSLTF was used in conjunction with other agency or jurisdiction efforts. For USCG responders acting under CWA 311(c), removal or destruction of a vessel is a rare occurrence and must be done in accordance with USCG policy, which requires Commandant-level concurrence.

Finally, this Section contains guidance for operations where CERCLA or OSLTF may not be applicable. Processes for abandoned vessel evaluation, management and disposition are presented, although not all steps are applicable under all circumstances.

6.2 DISCHARGE/RELEASE OR SUBSTANTIAL THREAT OF DISCHARGE/RELEASE OF OIL AND/OR HAZARDOUS SUBSTANCES[72]

If not being immediately addressed, OSCs should incorporate known abandoned vessel and legacy wrecks of significance into their ACPs and regional Abandoned and Derelict Vessel Tracking Databases. This advanced planning will help OSCs prioritize, plan, and prepare for future response activities relating to abandoned vessels and legacy wrecks. To assist in this effort, NOAA has initiated a comprehensive catalog of legacy wrecks posing a significant threat to inland and coastal zones. This activity is described further in *Appendix D: Pollution Mitigation of Legacy Wrecks.*

When a determination is made that an NCP removal action is appropriate and vessel removal is likely, response should be conducted in a manner that will assist vessel removal operations.[73] Although state and local jurisdictions may have the authority to remove vessels regardless of whether they have pollution aboard, they may not have the funding or staff to accomplish the task. Use of NCP or other federal authorities in conjunction with state or local authorities often provides the best chance for a complete elimination of the offending vessel. Case studies of OSLTF- and CERCLA-funded responses consistently underscore this fact.

Abandoned vessels should be continuously monitored by agencies with jurisdiction because waste and other materials may be illegally discarded at these sites. Many abandoned vessels are used repeatedly as receptacles for oil and hazardous substances. Abatement activities should be carefully documented to help demonstrate a pattern of repeated mitigation efforts. Consistent documentation will help articulate the need for expedited removal.

[72] Discharge includes substantial threat of discharge, and release includes substantial threat of release in accordance with the NCP, 40 C.F.R. § 300.5, Definitions.

[73] To keep their historic integrity intact after oil removal, legacy wrecks should not be moved or removed. Most of the wrecks will be in such depths that they are not threats to navigation.

If an OSC exercises authority under CERCLA or the CWA to remove and destroy a vessel, the NCP provides the protocol for safely managing and disposing offsite any hazardous substances or oil that may be encountered during the removal action, consistent with any applicable laws.

6.3 NO DISCHARGE/RELEASE OR THREAT OF DISCHARGE/RELEASE OF OIL AND/OR HAZARDOUS SUBSTANCES

If a determination is made that a removal action, whether coastal or inland, is not appropriate, OSLTF/CERCLA funding will not be available and the authorities to respond will be far more limited. In particular, the USCG may still have a few tools and can work the safety and navigational hazard issues involved. The following are other options:

- As noted in Section 4.0 of this document, USACE has the authority to remove certain obstructions to navigation, including submerged vessels. Depending on the cost of the removal, such an operation may be approved at the District Engineer level. Certain criteria will have to be met before USACE will undertake such an operation. Responders seeking their involvement should consult with them early to ascertain whether they can assist. Aside from contacting the local USACE District, guidance can be found in 33 C.F.R. Part 245 and the "[MOU] between [USACE] and [USCG] Regarding the Mitigation of Obstructions to Navigation (2012)."
- Federal land owners may have authorities. Other government agencies (e.g., NOAA NMS, NPS, USFWS refuges, DOD) may have authorities that they can enact when abandoned vessels are on their land or threaten lands under their care. This has been accomplished on several occasions within the Florida Keys, Channel Islands, Monterey Bay and Gulf of the Farallones National Marine Sanctuaries.
- State and local means of removal remain options. State and local methods that have been successful include utilizing state law that authorizes the removal of abandoned vessels, or even seeking a court order locally. As with the USACE process above, these methods are available regardless of whether oil or hazardous material (hazmat) is aboard. Please see *Appendix C: State Abandoned Vessel Programs* for a list of applicable state statutes.

6.4 POST-DISASTER RESPONSE OPERATIONS

During post-disaster response operations such as after a hurricane, severe storm, or tsunami, vessels often have a registered owner or operator, unlike traditional abandoned vessel cases where there is usually no known RP. Authorities managing vessel recovery operations should not delay in identifying the vessel owner, operator, or lessee. If a vessel is found in a precarious location, likely to refloat and become a hazard to navigation, it is advisable that the vessel be promptly removed and relocated to a temporary staging area. Additionally, in the event the owner, operator, or lessee is located, it is good practice to ensure that a definitive date of removal is established (usually associated with a legal determination that the vessel is abandoned). If the owner is not able to remove the vessel, or unable to do so in a timely manner, the OSC/COTP should document the date and the vessel identification (ID), location, brief description, condition, and disposition prior to removing and relocating the vessel, if required.

Unless emergency conditions exist, a vessel should not be removed without prior arrangement for disposal, dry storage, or temporary moorage. State governments can request federal support for staging/storage areas from FEMA for Mission Assignments to appropriate ESFs under the NRF (e.g., ESF-3 or ESF-10, depending on the situation). Both EPA and USCG OSCs are encouraged to engage with local and state government officials to arrange for staging areas in support of significant natural disasters, when appropriate.

The following figure briefly depicts the process of post-disaster salvage and debris recovery operations.

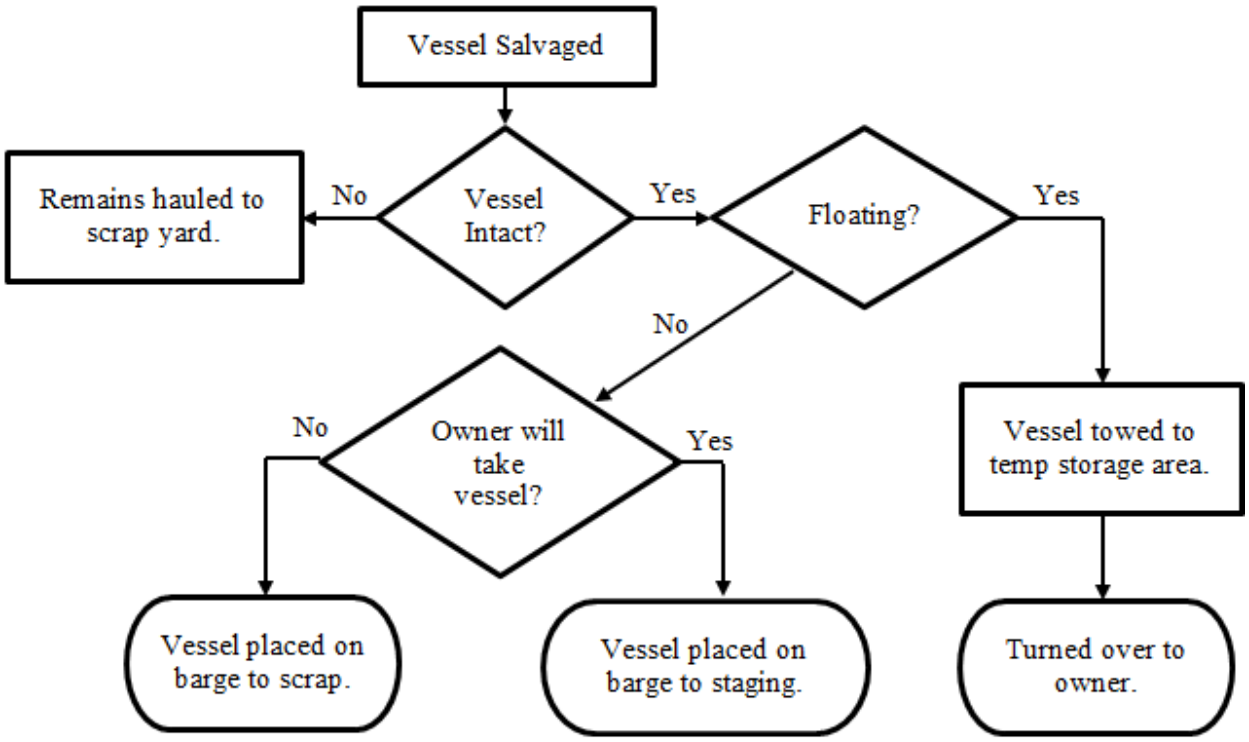


Figure 2 – Post-Disaster Salvage Vessel Disposition Process

Movement and/or potential disposal of displaced vessels is only authorized under an established Mission Assignment requesting federal support in this capacity. In cases where ESF-3 is not authorized for removal activities, other federal options may include USACE authorities, as noted above, or ESF-10, if a Mission Assignment exists for oil and hazardous substances. The coordination of vessel end-state becomes increasingly important in this case so as to preclude vessels becoming abandoned in the marine environment.

The following general flowchart supports OSC decision making with regard to vessel removal operations under FEMA Mission Assignments in post-disaster response operations in the event removal operations are authorized through an ESF-3 Mission Assignment.[74]

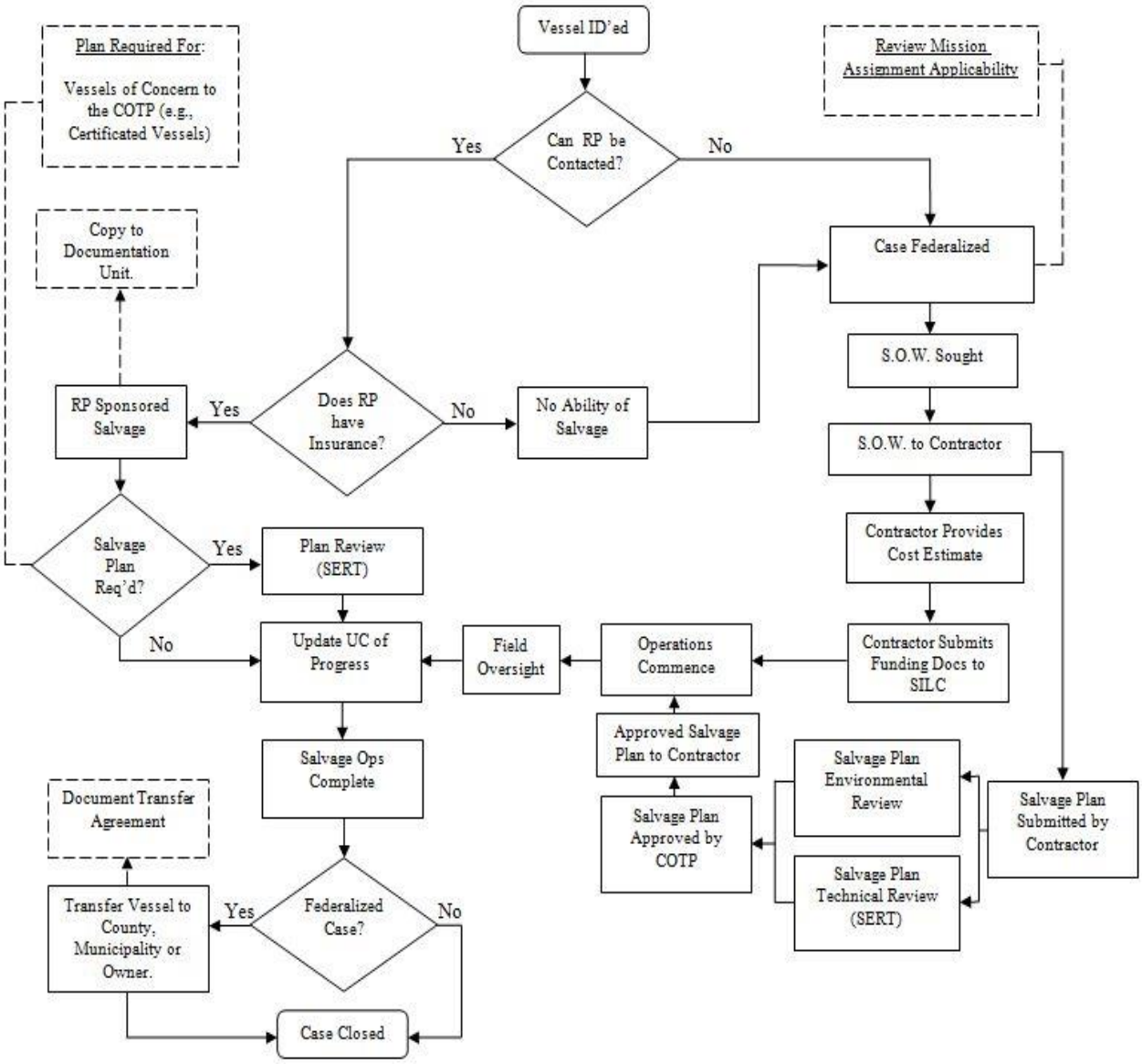


Figure 3 – Post-Disaster Vessel Removal Operations[75]

6.5 GENERAL PROCESS FOR ABANDONED VESSELS MANAGEMENT

Based on a combination of federal and state requirements (as well as USCG Commandant Policy, for USCG OSCs), the following are benchmark activities that should be conducted when pursuing removal

[74] In very rare circumstances, the Treasury forfeiture fund might be available to fund destruction of vessels engaged in criminal enterprises.
[75] OCMI (Officer in Charge, Marine Inspection); DOJ (U.S. Department of Justice); SERT (Salvage Emergency Response Team); SOW (Statement of Work); SILC (Shoreside Infrastructure Logistics Command)

and disposition of abandoned vessels. Several management options may be available for abandoned vessels, including vessel turn-in programs, donation of vessels, recycling, dismantling, artificial reefing, and ocean disposal.

General Progression for Abandoned Vessel Management

1. **Identify vessel owner or establish abandonment.**
   Can the owner be identified through state registration, insurance, or other means to determine title?
2. **Notify vessel owner in writing of intent to remove/destroy.**
   Once a vessel is determined to be abandoned, a best effort should be made to notify the last known owner of the intent to remove the vessel, and the possible disposition of the vessel post-removal.
3. **Provide public notification if owner cannot be contacted/identified.**
   If the owner cannot be identified, the proposed vessel removal and disposition should be advertised.
4. **Determine state jurisdiction/state programs available for removal.**
   Some state programs are funded and can assist with the removal of abandoned vessels, providing removal funding where federal funds may not be viable.
5. **Obtain State Historic Preservation Officer approval if vessel is over 50 years old and has potential "historical significance."**
   Once removal authority has been determined, reference should be made to the NHPA. Contact the SHPO to implement Sec. 106 consultation under the NHPA and to determine whether any restrictions exist regarding removal.
6. **Initiate other federal consultations/approvals under ESA, EFH, MMPA, NMSA, NHPA, Section 404 of the CWA, Section 10 of the RHA, Section 103 of the MPRSA, and the Park System Resource Protection Act[76] as necessary.**
7. **Determine appropriate federal and/or state response authority and funding source, as discussed in earlier sections.**
   Determine whether a discharge or release, or substantial threat of discharge or release exists, in accordance with the NCP. The ability to obtain OSLTF or CERCLA funding is directly contingent on the previous items respectively. NPFC should be consulted and engaged in the removal process where OSLTF funds will be used to fund the response. Consider actions under USACE authority to remove obstructions to navigable waters under the Wreck Act.
8. **Obtain Statement of No Objection (SNO) from flag state if foreign flagged.**
   If the vessel is foreign flagged and in U.S. territorial waters, a SNO should be obtained from the flag state prior to commencing removal.
9. **Identify management options.** Includes options for ultimate disposition of vessels. Includes options discussed in Section 6.6.
10. **Complete a Vessel Removal/Destruction Request Memorandum package (USCG Only).**[77]
    This package must be completed by USCG OSCs pursuing the removal and destruction of any vessel (except under the post-disaster conditions discussed in section 6.4).

[76] 16 U.S.C. § 19jj
[77] The requirement for USCG Commandant approval is an internal USCG requirement under *COMDTINST 16465.5, Vessel Removal and Destruction Under CWA and CERCLA*.

6.6 OPTIONS FOR ULTIMATE DISPOSITION OF ABANDONED VESSELS

Once the authority for the federal OSC/COTP to assume custody of the vessel has been established, disposition options for managing these vessels include dismantling for recycling or scrapping (as well as land disposal), creating artificial reefs, vessel turn-in programs, donation of vessels, and disposal at sea. Each disposition management option is unique to the abandoned vessel, the locality in which the vessel is grounded or moored, the construction and size of the vessel, and the physical state of the vessel. There are statutory requirements and associated regulations, as well as permit processes applicable to the disposition management options mentioned above. These requirements and regulations, as well as the amount and types of materials of environmental concern that may be present on an abandoned vessel, the amount of economically salvageable parts of the vessel, and the condition of the vessel should be considered before choosing a disposition management option for an abandoned vessel. Descriptions of the following options are provided below:

- Vessel Turn-In Programs
- Donation of Vessels
- Dismantling for recycling or scrapping (as well as land disposal)
- Artificial Reefing
- Ocean Disposal

When selecting the appropriate disposition management option for an abandoned vessel, the OSC/COTP should consider the efficiency, expedience, and stewardship of the method proposed. Is time of the essence? If not, more time may be available to seek alternative methods of mitigation that provide the greatest benefit to public health and the environment. Vessel disposition management options that provide the least impact on public health and the environment from operations are preferred—assuming they are good options when considering the following factors as well. Is the proposed method expedient or will the operation be labor intensive and slow due to limited logistics availability and infrastructure support? The OSC using federal funding (either CERCLA and/or OSLTF) should also determine whether the abandoned vessel disposition management action demonstrates best use of the funding source. Although this is not the sole determining factor, it is one that should be taken into account when reviewing options in their totality. Other factors include, when appropriate:

- Threat of pollution
- Hazard to navigation/potential hazard to navigation
- Impact to the environment and human health
- Proximity to environmentally sensitive areas
- Cost of management option
- Availability of needed resources or facilities (programs, dismantling yards, etc.)

Finally, state programs may be able to assist in the removal of a vessel as discussed earlier, sometimes making it far easier to respond to abandoned vessels.[78]

Vessel Turn-In Programs

Some states such as the State of California have programs that allow an owner to turn over custody of a vessel in lieu of abandonment. Disposal options vary, but may include scrapping and recycling. This action alleviates the penalty that may otherwise be incurred by abandonment. Programs such as these are

[78] For example, the State of California Division of Boating and Waterways offers a robust program for the mitigation of abandoned vessels, including the Abandoned Watercraft Abatement Fund and the Vessel Turn-In Program. Washington State recently passed legislation authorizing a similar program.

appropriate for small recreational vessels and are not intended for larger commercial vessels. Further, not all states have a vessel turn-in program.

Donation of Vessels

For vessels in acceptable condition and still retaining their seaworthiness, donation to charity may be an option for the vessel.

Dismantling for Recycling or Scrapping

According to the Occupational Safety and Health Administration (OSHA), ship dismantling or ship breaking is defined as "any breaking of a vessel's structure for the purpose of scrapping the vessel, including the removal of gear, equipment, or any component of a vessel."[79] Both small recreational vessels as well as large commercial vessels may be candidates for dismantling for recycling or scrapping (both of which will likely include land disposal of remaining ship materials and waste). Dismantling a vessel will generally be done at a ship breaking facility for larger vessels or at an approved shore facility for smaller vessels. On rare occasions, a vessel's condition may require it to be dismantled in place in the waterway. There may also be occasions when after a vessel is dismantled, recycling or scrapping is not an option. In such instances, an option for small recreational vessels or portions of larger vessels might be disposal in appropriate disposal facilities capable of handling a given type of waste.

During the dismantling process, ships are taken apart and broken down into components and pieces of equipment that can be recycled/reused on other boats, or sold as scrap metal. Remaining pieces/materials of the ship are then disposed of at appropriate reception facilities. The sales of recycled and scrapped materials can help offset the cost of dismantling and disposal. Part of the dismantling process includes the proper disposal of waste from the vessel.

It is illegal for vessel owners to conduct ship breaking activities except in licensed areas. If a responder is developing a plan to dismantle an abandoned vessel in place or at a ship breaking facility for recycling or scrapping, then all appropriate federal, state, and local agencies should be consulted to ensure that all permitting requirements are met for the operation. Responders should consult with subject matter experts such as marine operators, salvage masters, and crane operators to determine the most safe and effective method for dismantling a vessel.

Ship breaking facilities have the equipment and expertise necessary to dispose of an abandoned vessel. However, responders should ensure that ship breaking facilities are reputable and in compliance with all federal and state regulations. Responders should ensure that measures are in place to mitigate potential pollution prior to commencing any operation.

Recycling

Recycling is the re-use of the vessel or parts of the vessel. Recycling is reserved for vessels that have some residual value as a result of their construction material or parts remaining on board. Salvors and vessel parts dealers may buy the vessel for the cost of dismantling the vessel minus the revenue generated from recycled parts.

Scrapping

The scrapping of abandoned vessels can be a source of steel. Depending on the current market value of ferrous metals, a great deal of cost can be recovered by the resale of steel from a larger recycled vessel. Further, both the copper and the machinery can be sold for a notable return.

[79] 29 C.F.R. § 1915.4

EPA developed a guide for ship scrappers that provides a process-by-process approach for the removal and disposal of asbestos, PCBs, oil and fuel, paint, miscellaneous ship machinery, as well as metal cutting and metal recycling. This guide is intended to provide the site supervisor of a ship scrapping facility with a good understanding of the most pertinent *federal* environmental and worker safety and health requirements affecting ship scrapping/ship breaking operations. The guide can be accessed at: http://www.epa.gov/compliance/resources/publications/civil/federal/shipscrapguide.pdf.[80]

Artificial Reefing

Sinking a vessel to serve as an artificial reef may be a management option for an abandoned vessel, if the vessel can be appropriately prepared and cleaned so that its use as an artificial reef will be environmentally sound. Artificial reefing can enhance the marine environment for fish habitat and/or recreational diving, if vessels are properly cleaned prior to sinking and the vessel is sunk at a location properly sited. EPA and MARAD jointly released national guidance in 2006 regarding the preparation of vessels intended to serve as artificial reefs.[81] This Guidance identifies materials or categories of materials of concern that may be found aboard vessels and specifically identifies where they may be found. For each material or category of material, this document provides a narrative cleanup performance goal and information on methods for achieving those goals in preparation of the vessel prior to sinking. Materials of concern include, but are not limited to: oil and fuel, asbestos, PCBs, paint, and solids/debris/floatables. If the narrative cleanup goals provided in the EPA/MARAD guidance cannot be economically achieved, for example, because of significant amounts of materials of concern present on the vessel, then the vessel would not be a good candidate for reefing. The preparation process for reefing of a vessel contains requirements and regulations that must be met, including permit processes, such as Section 10 of the RHA and/or Section 404 of the CWA, and appropriate disposal of waste generated during vessel cleanup.

Ocean Disposal

Under MPRSA Section 102, EPA issued a general permit for the transportation and ocean disposal of vessels. The general permit is published in EPA's ocean dumping regulations at 40 C.F.R. Part 229.3 (See Appendix F). Under the general permit, vessel sinking cannot occur unless EPA concurs that the proposed action complies with the conditions of the permit, including removal of all toxic or hazardous substances that may degrade the marine environment prior to disposal to the maximum extent practicable. The general permit includes notification, cleanup/vessel preparation, disposal and reporting requirements. The general permit requires demonstration of the need for the disposal of the vessel and documentation of an adequate evaluation of alternatives to ocean disposal (i.e., scrap, salvage, and reclamation). The general permit also includes provisions for emergency situations.

If ocean disposal of a vessel is a potential option, it is recommended that the EPA Ocean Dumping Program in the appropriate EPA Region be contacted as soon as possible. In addition, depending on the scope of work, authorization may be required under Section 103 of the MPRSA.

6.7 COST RECOVERY AND DOCUMENTATION

Cost documentation for abatement of pollution threats from abandoned vessels using OSTLF and CERCLA is conducted using standard agency policies, Technical Operating Procedures, and for USCG OSCs, associated USCG Commandant's policy. For abandoned vessel activities associated with Stafford Act funding, OSCs will generally conduct cost documentation and recovery activities in the same manner as established in the NCP.

[80] EPA. (2000). *A Guide for Ship Scrappers – Tips for Regulatory Compliance*. Office of Enforcement and Compliance Assurance. EPA 315-B-00-001. Retrieved from http://www.epa.gov/compliance/resources/publications/civil/federal/shipscrapguide.pdf

[81] The joint EPA/MARAD guidance document entitled *National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs, May 2006* can be accessed at http://water.epa.gov/type/oceb/guidance.cfm.

Appendix A: Abandoned Vessel Response Case Studies

Case Study	Description and Final Vessel Disposition
1. Barge DAVY CROCKETT	Highlights pollution abatement and dismantling in place for land disposal/scrapping of abandoned barge.
2. M/V SEA WITCH	Cooperative multi-contractor effort managed by federal OSC for the abatement of significant pollution from abandoned vessels.
3. M/V JIREH	Underscores the use of OSLTF to mitigate the substantial threat of a discharge and potential impacts to protected ecosystems and threatened/endangered species.
4. M/V SEA BREEZE	Demonstrates cooperative state and federal efforts to remove abandoned vessels from near shore environments.
5. Hurricane Ike	Demonstrates involvement of SUPSALV in debris recovery in post-disaster operations.
6. Petaluma Precedent Site	Emphasizes EPA's application of CERCLA for removal of abandoned vessels and wrecks from the inland zone.
7. Sacramento Lighter Aboard Ships (LASH) Barges	Underscores cooperative operations toward the abatement of significant pollution threats from derelict vessels.

Table 2 – List of Abandoned Vessel Case Studies

Barge DAVY CROCKETT, Portland, Oregon

Vessel Description: 432-foot converted Liberty Ship built in 1942 located on the northern bank of the Columbia River near Camas, Washington.

Incident: During the timeframe between December 2010 and January 2011, illegal scrapping operations caused the number 3 hold on the DAVY CROCKETT to buckle, resulting in a sheen emanating down river. Additional high tides further degraded the structural integrity of the barge and weakened the keel, resulting in further oil discharges. On 27 January 2011, USCG Sector Columbia River federalized the response and established a UC with both Oregon and Washington State OSCs. Due to the lack of structural integrity of the barge coupled with the unknown holds containing oil and contaminants, a destruction memo was drafted and approved by USCG Commandant for removal of the barge.

Removal Actions Included:

- Dive operations for pollution and structural integrity assessments
- USCG SERT assistance to ballast and stabilize barge
- Implementation of safety zone
- Implementation of Geographic Response Plans (GRP)
- The construction of an 850-foot metal cofferdam lined with impermeable oil and silt barriers along with sorbent oil collection boom, preventing oil sheen from discharging
- Diving teams and salvage crews to dismantle barge
- Cranes, barges, filtration systems, and other heavy equipment to remove sections of the barge, conduct dredging operations, and treat the contaminated water

Total Products Recovered:

- 1.6 million gallons of oily water
- 4.5 million pounds of steel, 7,500 pounds of scrap metal
- 842,000 pounds of oily debris
- 4,850 pounds of asbestos

Cost: $23.3 million

Funding Mechanism for Removal: CERCLA and OSLTF

Final Vessel Disposition: Dismantled in place for disposal on land/scrapping.

Significant Challenges and Solutions:

- Illicit scrapping of structure resulted in bow sunk and stern afloat creating significantly unstable structure.
    - UC brought in USCG SERT for consultation of plan to sink stern and cut from bow to stabilize the structure.
- Initial plan was to refloat stern and bow and move to a shipyard for disposal. Due to current Superfund site issues for facilities along the Willamette River, shipyards wanted indemnification for disposal and contractor liability.
    - The UC was not able to legally provide indemnification and this became a roadblock for the initial plan. The UC then had to change strategy to remove the barge by

building a steel pile cofferdam and impermeable barrier around the barge and dismantling it in the river system.

- River current and high river levels resulted in water running over the cofferdam, which made operations challenging.
    - A break wall was constructed to reduce current and stress on structure.
    - Impermeable barrier helped limit water entering cofferdam when river level rose over the cofferdam sheet pile.
- Major safety concerns with unstable structure, dermal, and inhalation risks (asbestos, oil, lead, and PCBs), movement of heavy equipment and steel sections, dive operations, slips/trips/falls, and decontamination operations.
    - Employed contractor and USCG National Strike Team Safety Officers to develop, implement, and monitor comprehensive Site Safety Plan.
- Implementation of additional GRPs for protection of natural and cultural resources.
    - Conducted consultation with Advisory Council on Historic Preservation (ACHP) and SHPO and reached out to tribal representatives to protect cultural resource interests.
    - Developed additional on-water protection strategies and monitored for effectiveness.

M/V SEA WITCH, Baltimore, Maryland

Vessel Description: 700-foot container ship constructed at the Bath Iron Works in Maine.

Incident: In August 2003, the Maryland Port Administration requested assistance from the Maryland Department of the Environment (MDE) to mitigate an ongoing oil release from a shell of a container ship. Kurt Iron and Metal, a salvage yard in the Fairfield section of Baltimore City, was charged with scrapping the USS CORAL SEA, a World War II era aircraft carrier. Scrapping the carrier required the removal and proper disposal and treatment of oil and oil sludge. Kurt Iron and Metal reportedly acquired the bow half of the SEA WITCH to use as a vehicle to separate the oil on the CORAL SEA from the water. However, despite this history, there was no clear record of the ownership of the M/V SEA WITCH that could be established.

During the 2003 Tropical Storm Isabel, the M/V SEA WITCH took on water and sank in the Patapsco River, where it discharged an unknown quantity of oil. USCG and MDE took responsibility and created a UC to jointly make decisions on the best options to clean up and mitigate pollution from the M/V SEA WITCH. USCG agreed to use funds from the NPFC for the cleanup. A contractor was hired and the ship was cleaned. Once divers from the U.S. Navy SUPSALV declared that the bottom of the ship was clean, the USCG recommended that the vessel be kept in place.

Removal Actions Included: Employment of pollution removal and salvage elements (commercial oil spill removal organization (OSROs) and marine salvage), as well as SUPSALV. Operations included an initial assessment and removal of pollutants followed by re-mobilization, refloating, and removal of fuels from bottom tanks.

Total Products Recovered:

- No. 6 oil and oil-contaminated water: 478,787 gallons
- Oily mud: 50,969 gallons
- Oily sludge and debris: 161 tons
- Scrap metal: 44,700 pounds

Cost: $16 million

Funding Mechanism for Removal: OSLTF

***Final Vessel Disposition*:** Dismantled in place and recycled.

Significant Challenges and Solutions: In 2008, after initial activities had been completed, an investigation revealed a double bottom, between which oil had begun leaking. It was unknown how much potential oil was present and recoverable. To further complicate matters, the M/V SEA WITCH was resting in the middle of the future Masonville Dredge Containment facility. Again, USCG agreed to pay for the cleanup through the NPFC. After much patching and welding, M/V SEA WITCH was refloated in September 2008. Once the ship was refloated, oil, oily water, and oily sludge removal began. Once the cleanup was 90 percent complete, the vessel was towed to Sparrows Point graving dock where the vessel was cut up and recycled. This project is a remarkable example of a successful federal and state cooperation to contain a large oil spill and prevent further pollution to Maryland's waterways and wildlife.

M/V JIREH, Mona Island Wildlife Preserve, Puerto Rico

Vessel Description: 202-foot Honduran flagged freight ship, 979 gross tons, built in 1963.

Incident: On 21 June 2012, the M/V JIREH ran hard aground on the southwest side of Mona Island, located 40 miles west of the Commonwealth of Puerto Rico. At the time of the grounding, there were six crewmembers and 78 passengers aboard. The vessel was carrying legitimate cargo reportedly bound for St. Maarten, as well as contraband hidden aboard the vessel. In the absence of an RP, the OSC accessed the OSLTF to mitigate potential pollution impacts to the wildlife reserve. The vessel was deemed a substantial threat to the environment due to quantities of oil and hazardous substances on board as well as its quickly deteriorating condition.

Removal Actions Included: The removal of petroleum products, as well as all contaminated cargo and debris in the vessel's main hold. Additionally, substantial damage to the vessel's hull required repair. In this case, the vessel was to be scuttled at sea. However, structural stability of the vessel after several storms did not allow this action. Consequently, the vessel was dismantled in place and transported by barge to neighboring Puerto Rico for disposal on land.

Total Products Recovered:

- No. 6 oil and oil-water: estimated 3,000 gallons No. 6 oil and 5,000 gallons of oil-water
- Contaminated/wasted cargo: 60+ tons
- Scrap metal: 22.3 tons

Cost: $13 million

Funding Mechanism for Removal: CERCLA and OSLTF

Final Vessel Disposition: Dismantled in place for disposal on land.

Significant Challenges and Solutions:

Sensitive Area surrounding Mona Island – Mona Island Wildlife Reserve is one of the more sensitive areas in the region with regards to the number of threatened and endangered species present. There was some variance in opinion over what constitutes a substantial threat of discharge with regards to abandoned vessels. The NOAA SSC was consulted to help inform the determination of substantial threat in accordance with the NCP. Immediate impacts by oil and other hazardous substances to species were determined to pose an unacceptable risk.

Hurricane Season and Procedural Delays – Significant weather patterns in the Caribbean during late summer present a significant threat of tropical disturbances and hurricanes. Numerous weather delays hindered operations, causing shutdowns on several occasions and driving up the final removal cost. Contingency plans were developed to run ground tackle from the stricken vessel, thereby preventing it from running further ashore. In areas that face significant weather patterns, planning in support of pollution removal and vessel disposal activities should be done expeditiously with consideration of continued vessel deterioration.

Remote Location – Operations in remote locations are more complex. The movement and staging of equipment, as well as the sourcing of specialty equipment and disposal of wastes and recyclable materials, was found to be more difficult due to the remote location of Mona Island, 40 miles west of Puerto Rico. In these cases, it is vitally important that preplanning consider all possible contingencies, such that requisite resources are available in advance of their need.

M/V SEA BREEZE, Spruce Head, Maine

Vessel Description: 35-foot lobster boat.

Incident: The M/V SEA BREEZE, a wooden vessel, sank in a mooring field off Spruce Head, Maine in December 2011. Maine Marine Patrol (MMP) had been working with the owner (to no avail) for some time on repairing or removing the vessel. The vessel sank with an unknown quantity of diesel (estimated 50 gallons), other engine oils, batteries, and other packaged hazmat aboard.

Removal Actions Included: USCG and Maine Department of Environmental Protection (DEP) discussed response options, and determined that removal of the vessel was the best option. USCG explained that although it could arrange for the vessel to be raised and the pollution removed, it could not remove or destroy the vessel. The state did have a statute in place that allowed for the removal of abandoned vessels after due process requirements were met (see Title 12 Maine Revised Statute Annotated (MRSA) § 1866), but could not cover the entire cost of the cleanup.

Funding Mechanism for Removal: A plan was developed to use OSLTF/CERCLA funds to raise and clean the vessel, and utilize Title 12 MRSA § 1866 to remove the vessel. The actual salvage of the vessel to remove oil and hazmat had to be scheduled in conjunction with due process notice requirements under the state law allowing for removal, but the process was expedited under an emergency exception in the state law. Essentially, responders had to wait until the statutory amount of time under the state law had passed, otherwise the state would not have been able to complete the removal of the vessel after USCG raised and cleaned the boat.

Final Vessel Disposition: Dismantled in place for disposal on land.

Significant Challenges and Solutions: At the time of the sinking, the owner had no address and was not answering his cell phone. The USCG Sector responded in conjunction with Maine DEP, which placed boom around the vessel to contain sheening. USCG utilized MMP officers to attempt to contact the owner and deliver case paperwork, including a Notice of Federal Interest. The owner was never heard from.

On the day of the response, divers noted the vessel was coming apart underwater, so it ultimately was raised in pieces. Fuel tanks were pumped dry and batteries were located and removed. The vessel was brought by barge to a nearby concrete pier approximately 100 yards away from the mooring field station where the state then removed the pieces under its authority.

Notes:

- Before engaging in this type of joint operation, OSCs need to ensure the NPFC has approved the operations. Moving a vessel after it has been cleaned so that others can remove it may run afoul of the OSLTF or CERCLA. In the case of a beached vessel or one floating at a pier, this often means the use of OSLTF/CERCLA will be of no benefit towards the ultimate removal of the vessel, since pollution removal can be accomplished in those cases without moving the vessel. In this case, a decision was made that some of the cleaning would be most safely accomplished at the pier, so movement was not considered a real issue. If a longer move is necessary, USCG and the state could arrange for the cleanup contractor to charge the entity covering the removal for the transit if costs were involved. Confirmation in writing that the state, local, or other entity intends to remove the vessel once the OSC has raised and cleaned it will help obtain that approval.
- OSCs should confer with other jurisdictions that could be affected even if they are not participating in the actual response. In the case of the M/V SEA BREEZE, the local Selectman was upset that equipment (large trucks, front-end loaders, etc.) had been brought into town by the state, apparently in excess of the weight limit on the local bridge. The Selectman then sought to fine the responders hired by the state. The situation was resolved amicably, but had responders briefed the Selectman on the plan in advance, the issue could have been avoided.

Hurricane Ike Response, Houston/Galveston, Texas

Incident: Hurricane Ike response. SUPSALV provided a representative as requested by the COTP in Houston to augment USCG in responding to environmental and/or vessel salvage incidents as a result of Hurricane Ike. Primary focus quickly shifted to supporting USACE in clearing the Intracoastal Waterway between Freeport and Galveston, Texas. SUPSALV contractors deployed to remove vessels and debris that had sunk in this 65-mile stretch of the waterway to allow resumption of tug and barge traffic. Closure of the waterway had potential impacts to national refining capabilities and significant negative impacts to the local economy. The salvage team quickly and efficiently removed numerous vessels (primarily fishing boats) and accumulated household debris that had been swept into the waterway over a six-week timeframe to reopen the waterway.

Funding Mechanism: Stafford Act Funding, ESF-3

Final Vessel Disposition: Removed and disposed of via various methods.

Significant Challenges and Solutions: Logistics of mobilizing and contracting for salvage assets and teams to remote locations along the Intracoastal Waterway to accomplish timely removal of vessels and debris was challenging. Communications with customer and command element was difficult due to operations in remote locations.

In order to maximize on-site time, federal and commercial resources contracted for a berthing barge and support craft to allow the salvage team to stay on site as they moved farther down the waterway. Communications eventually improved as infrastructure came on line. Reliance on the onsite integrated team consisting of highly trained contractor Salvage Masters (commercial salvage) and SUPSALV representative to conduct independent real time clearance operations allowed for condensing the timeline and faster resumption of commercial traffic. Standing SUPSALV contracts allowed for rapid response and flexibility to contract for salvage assets as the situation evolved and needs became identified.

Outcome: 65 miles of the Galveston Intracoastal Waterway were cleared of debris allowing for the resumption of commercial shipping in an expeditious manner. USCG, USACE, COTP Houston, and commercial shippers were highly satisfied with the results of the operations performed.

Notable Lessons for OSC: The use of Basic Ordering Agreements (BOAs) greatly improved the Incident Command's ability to mobilize and hire local contractors to respond rapidly to natural disasters in a timely and efficient manner. Use of existing MOU with SUPSALV provided the OSC with increased flexibility and the ability to augment his/her salvage expertise for timely response to natural or manmade disasters.

Petaluma Precedent Site, Petaluma River, California

Vessel Description: 11 vessels, six river debris sites, three vehicles, and three barges.

Incident: In 2011, CalRecycle approached EPA Region 9 regarding the evaluation, assessment, and removal of numerous abandoned vessels and wrecks throughout the Petaluma River. Initial assessments of the inland river sites identified elevated levels of PCBs, arsenic, nickel, lead, asbestos, and substances exhibiting RCRA characteristics of hazardous waste, e.g., ignitability.

Removal Actions Included: Working with CalRecycle, EPA removed all hazardous substances and abandoned vessels and debris; transported and disposed of all hazardous wastes at approved facilities; conducted confirmation sampling; and conducted underwater surveys of all submerged obstructions and potential abandoned wrecks in Petaluma River. [82]

Total Products Recovered:

- 445 cubic yards of non-friable asbestos
- 18 cubic yards of hazardous waste solid
- 1,090 pounds of miscellaneous hazardous waste
- 72 lead acid batteries

Cost and Funding Mechanism for Removal:

- CERCLA/Hazardous substances - $651,586
- CalRecycle: Solid waste - $495,000
- Sonoma County Sheriff's Marine Unit: Adjudicated Vessels Abandoned

Final Vessel Disposition: Hazardous substances and contaminated debris disposed of via approved facilities. Vessels and marine debris associated with the case were scrapped and disposed of via landfill.

Significant Challenges and Solutions:

EPA's decision to engage in evaluation and removal actions was based on several factors, including:

- Actual or potential exposure to nearby human populations, animals, and/or ecosystems from hazardous substances or pollutants;
- Actual or potential contamination of drinking water supplies or sensitive ecosystems;
- Hazardous substances or pollutants in drums, barrels, tanks, or other bulk storage containers that posed a threat of release;
- Weather conditions that may cause hazardous substances to migrate or be released; and
- Threat of fire or explosion.

[82] EPA Memorandum. (2011). *Request for a Time-Critical Removal Action at the Petaluma Precedent Site, Petaluma, Sonoma County, California*.

Sacramento LASH Barges, West Sacramento, California

Vessel Description: Initial evaluations by USCG, EPA, state agencies, and the Port of Sacramento identified 22 former military Lighter Aboard Ships (LASH), and four derelict vessels. Two LASH barges and one drydock became the subject of this response.

Incident: On August 8, 2013, Sector San Francisco conducted a joint site assessment with EPA, state agencies, and the local port of a group of 22 LASH Lighters, including a dry dock located on Lake Washington, a tributary of the Sacramento River within the Sector San Francisco COTP Zone. These barges had been used as dumping grounds for many years, accumulating large quantities of petroleum, mixed hazardous materials including low-level radiation, and additional unknown hazards. The barges were in various states of disrepair and due to significant structural modifications, had questionable stability and buoyancy. This factor, coupled with the significant amount of hazardous wastes on-board, led the city, state and federal agencies involved to initiate emergency response actions. Because the potential responsible parties would not take action, the barges were acquired by the City of West Sacramento through legal injunction, and federal and state funding was accessed for the abatement of the pollution threats and disposition of non-contaminated debris.

Removal Actions Included: The USCG, teaming with BOA contractors, National Strike Force, California Department of Resource Recycling and Recovery, Department of Toxic Substance and Disease Control, and EPA, successfully removed all hazardous substances, miscellaneous oils and debris; conducted material sampling and hazard categorization; and transported and disposed of all hazardous wastes at approved facilities. Once the operations were completed, the remaining uncontaminated debris and vessel hulls were transferred to the State of California Department of Resource Recycling and Recovery for final disposal.

Total Products Recovered:

- 4,502 gals of oil/oil-water
- 252.5 gals miscellaneous hazardous substances
- 1,000 pounds of miscellaneous hazardous waste
- 50 lead acid/lithium batteries

Cost and Funding Mechanism for Removal:

- OSLTF: Cost to date - $325,320
- CERCLA: Cost to date - $0. Miscellaneous hazardous wastes, radiation sources, cylinders, and toxic chemicals were disposed of under state programs for toxic substances, thereby conserving CERCLA costs.
- Deliberate partnerships with the City of West Sacramento, State of California and USCG allowed each agency to leverage authorities for funding, ultimately keeping expenditures low, yet allowing for the complete abatement of pollution threats as well as debris.

Final Vessel Disposition: Hazardous substances and contaminated debris were disposed of by the State of California's Department of Toxic Substance and Disease Control via approved facilities. All oils were abated and disposed of using a commercial contractor hired by USCG. Vessels and non-contaminated marine debris associated with the response will be scrapped and disposed of via landfill.

Significant Challenges and Solutions:

USCG's decision to engage in evaluation and removal actions was based on several factors, including:

- Actual or potential exposure to nearby human populations, animals, and/or ecosystems from hazardous substances or pollutants; and
- Hazardous substances or pollutants in drums, barrels, tanks, or other bulk storage containers that posed a threat of release.

In this case study, it was the collaborative effort of all parties that resulted in the successful outcome of the removal of all pollutants and the vessel remnants as well. However, this will not be the case in every city and state. In scenarios where the vessel may remain, OSCs should investigate vessel removal options using internal authorities or the broader federal partnerships discussed in this guidance. In the coastal zone, the USCG OSC should investigate the use of the Commandant's Vessel Destruction request process. However, if this process is to be used, it is advised that District support be engaged early in the process to assist in coordinating with Area and Headquarters commands.

This case study represents the core elements for successful pollution abatement from derelict and abandoned vessels, concurrently realizing benefits to all parties and the environment, and underscores cooperative practices described in this document.

Appendix B: Technical Specialists and Special Teams

Appendix B includes information on the following technical specialists and special teams to assist the OSC/COTP:

- SUPSALV
- EPA Environmental Response Team (ERT)
- NOAA SSC
- NOAA MDP
- USCG Marine Safety Center (MSC) SERT
- USCG National Strike Force (NSF)
- The National Strike Force Coordination Center (NSFCC)
- Area Committee Members
- RRT

Special teams are outlined in the NCP, 40 C.F.R. Part 300.145. Special teams applicable to salvage and abandoned vessel operations include SUPSALV, NSF components, NOAA's SSC, and EPA's ERT. Title 40 C.F.R. Part 300.145(e) specifically addresses coordinated efforts of special teams for the purpose of salvage operations led by OSCs, noting that OSCs should seek assistance from special teams directly to ensure proper actions are taken. Further, technical specialists can be drawn upon, such as partner Area Committee members and the commercial response industry (e.g., the American Salvage Association).

SUPSALV

Under the Naval Sea Systems Command (NAVSEA), SUPSALV consists of four technical and operational divisions:

- The Diving Program Division is responsible for setting diving policy and approving U.S. Navy diving equipment.
- The Diving Certification Division serves as the System Certification Authority for U.S. Navy shipboard and portable hyperbaric systems.
- The Underwater Ship Husbandry Division develops techniques, procedures, and equipment to perform ship repairs.
- The Operations Division is a small cadre of government employees who manage and provide technical assistance for Salvage, Deep Search and Recovery, Towing, and Oil Spill Response operations. These operations can be accomplished using civilian contractors, military assets, or a combination.

SUPSALV has extensive experience in oil spill response and salvage in austere and logistically challenging environments. Operations include wreck re-floating, wreck removal, oil removal from submerged vessels, ship strandings/de-beaching, ship lightering, oil spill response (off shore, near shore, and in shore), towing/heavy lifting, and deep object search and recovery. Examples of SUPSALV assistance include:

- The survey of the M/V Montebello in the summer of 2011. SUPSALV sent two people to sit on the technical review board to help select the company that would perform the operation.
- The F/V MARGUN grounding near St. George Island, Alaska in 2009. The vessel was a 112-foot long fishing vessel that was grounded, requiring fuel removal to prevent pollution. Due to the remote location, it was difficult to find all the proper equipment to support the offload. SUPSALV maintains an ESSM base in Anchorage, Alaska with pre-positioned response

equipment. USCG requested 1,050 feet of 2-inch arctic grade hose that was quickly made available via C-130 transport.

- Fuel removal operations during the ex-USS CHEHALIS in Pago Pago, American Samoa. SUPSALV coordinated operations in conjunction with the Pacific Strike Team (PST) and Sector Honolulu in the removal of volatile fuels from the submerged wreck.

Under the Salvage Facilities Act (10 U.S.C. § 7361), the Navy is authorized to maintain a salvage capability that includes a capability for oil spill response. The Navy performs this function through both specialized Fleet Operating Forces (primarily salvage ships, tugs, and Mobile Diving Units) and SUPSALV. In addition, SUPSALV functions as an OSRO (33 C.F.R. Part 154) for most DOD facilities.

SUPSALV is a DOD representative to the NRT. Under the NCP, SUPSALV is designated as a special team to the OSC, and is a support agency under ESF-3 and ESF-10 when activated under the NRF for debris and pollution removal, respectively. During normal operations, SUPSALV would contract through its standing contracts, executing a military interagency purchase request (MIPR). In post-disaster operations where a disaster has been declared, unless the OSC is the DOD, FEMA may mission assign and fund this support via the Stafford Act, provided through USACE (ESF-3, as a channel clearance activity) or the USCG or EPA (ESF-10, as an oil or hazmat response activity). All Navy assets—SUPSALV and military—can be accessed by EPA or USCG OSCs, when available and at the approval of the CNO or appropriate Fleet Commander. For USCG OSCs, activities, both pre and post-storm, are accomplished with the USCG per a MOU dated 13 August 13 1980 and with USACE per an Inter Service Support Agreement dated 01 January 2011. EPA OSCs would access SUPSALV assets by activation of a standard pollution removal funds authorization (PRFA) request.

EPA ERT

The ERT is a group of EPA technical experts within the Office of Solid Waste and Emergency Response, who provide technical assistance on oil and hazardous substance releases, primarily to OSCs, in the U.S. and international waters. The ERT offers expertise in such areas as biology, chemistry, hydrology, toxicology, engineering, and health and safety. For oil spill incidents related to submerged or abandoned vessels, the ERT can perform the duties of SSC and/or serve as the head of the Environmental Unit under the ICS.

The ERT technically supports the NCP Subpart J (use of dispersants and other chemicals) program during oil spill response and recovery operations. The ERT technically evaluates alternative cleanup response technologies and assists with field implementation. The ERT can evaluate plans or implement the special monitoring of advanced response technologies (SMART) protocol. The ERT can provide advice on boom strategies/containment during abandoned vessel oil recovery operations.

For spills related to vessels, the ERT assists with hazard assessment, multimedia sampling and field analytical tools, the evaluation of the potential impacts to sensitive ecosystems and eco-toxicity risk to organisms in water and sediment, and the assessment of cleanup options. The ERT uses in-house oil fingerprinting techniques to evaluate mystery oil spills or weathered oil samples for source identification. The ERT evaluates innovative treatment methods, including potential biodegradation of oil constituents, based on analysis and rapid bench scale testing.

For submerged vessels, the ERT and EPA dive program have scientific divers, ROVs, and remote sensing tools to locate and evaluate environmental conditions in the vicinity of submerged vessels. ERT divers can provide technical support for commercial diving operations, including review of work plans and dive safety plans. The ERT and other EPA Dive Units have expertise in polluted water diving, proper personal protective equipment (PPE) for diving and topside personnel, and proper diver decontamination procedures.

NOAA SSC

NOAA science support is for "all hazards." The NOAA SSC experience can benefit an OSC/COTP during emergency responses to many types of incidents, including natural disasters, ship groundings, and terrorist incidents. For example, following the devastation from Hurricanes Katrina and Rita in 2005, NOAA Scientific Support Teams played major roles in rescue support, response to the multiple large oil spills, chemical container location and cleanup, and debris removal. The NOAA SSC also frequently supports vessel salvage and abandoned and derelict vessel operations and can access the NOAA hydrographic survey resources and the National Weather Service for incident specific weather forecasts. In addition, the NOAA SSC can provide support regarding legacy and historic shipwreck assessment and remediation, including access to the Remediation of Underwater Legacy Environmental Threats (RULET) database (Appendix D). The SSC can also be the liaison for NOAA and DOI trust resource programs, including scientists responsible for oil spill and coral grounding damage assessments, and NOAA's Maritime Heritage program, which includes a significant number of underwater archaeologists that can assist with the Sec 106 NHPA reviews.

NOAA Marine Debris Program

The mission of the NOAA MDP is to investigate and address problems that stem from marine debris through research, prevention, and reduction activities in order to protect and conserve our nation's marine environment and ensure navigation safety. The MDP has a history of assisting federal, state and local partners to address abandoned vessels, whether the boats are individual cases or many vessels abandoned from severe weather events such as Hurricanes Katrina and Rita and Superstorm Sandy. Though the MDP does not have dedicated funding to support a national abandoned/derelict vessel (ADV) effort, in the past, the MDP has:

- Provided scientific support to describe the movement of floating ADVs and determine potential environmental impacts;
- Assembled spatial, environmental and economic data vital to prioritizing ADVs for removal and disposal; and
- Hosted an ADV workshop providing a forum for many coastal state agencies to discuss unique challenges and develop solutions to address their ADV problems.

USCG MSC SERT

USCG MSC SERT is available to provide technical assistance. It has 8 – 10 staff engineers on call 24 hours a day, 7 days a week to provide immediate salvage engineering support to the USCG COTPs and OSCs. SERT can provide technical evaluations, including assessment and analysis of vessel stability, hull stress and strength, grounding and freeing forces, prediction of oil/hazardous substance outflow and expertise on passenger vessel construction, and fire protection and safety. SERT has mobile computing capability for on-scene deployment. The MSC maintains a database of over 5,000 hull files that can be used to generate computer models of vessels for salvage engineering. SERT maintains relationships with external agencies as well, including SUPSALV.

USCG NSF

40 C.F.R. Part 300.145(a) speaks specifically to the preparedness and response duties of the five components that make up the NSF. The NSF's area of responsibility covers all USCG Districts and Federal Response Regions.

NSFCC

Located in Elizabeth City, North Carolina, the NSFCC is responsible for support and standardization guidance to the Atlantic Strike Team (AST), Gulf Strike Team (GST), PST, and Public Information Assist Team (PIAT). The NSFCC also oversees the maintenance of the OPA 90 mandated Response Resources Inventory (RRI), OSRO Classification Program, and National Maintenance Contract (NMC)

for Strike Teams and other pre-positioned oil spill response equipment across the country. During an incident or potential discharge, the NSFCC can provide assistance in locating spill response resources, coordinating the use of private and public resources, and implementing ACPs.

- PIAT, also located in Elizabeth City, North Carolina, is responsible for assisting OSCs in meeting the demands for public information during a response. PIAT brings interagency crisis communication experience and technical expertise to help OSCs meet their objectives of truth and transparency of operations for the public. PIAT's use is encouraged any time the OSC/COTP requires outside public affairs support.
- AST is located in Fort Dix, New Jersey on Joint Base McGuire-Dix-Lakehurst.
- GST is located in Mobile, Alabama.
- PST is located in Novato, California.

The three NSF Strike Teams are the operational response components of the NSF and are responsible for providing highly trained personnel, technical expertise, and specialized equipment to assist OSCs during a pollution incident or threat of a pollution discharge. NSF Strike Teams assist with oil and chemical spill response, spill stabilization and containment, and monitoring or directing the response actions of responsible parties and/or contractors. OSCs may contact NSF Strike Teams directly for any assistance.

The NSF has extensive experience in oil/chemical spill response and vessel salvage assistance, usually working in concert with other special teams during salvage operations. Specific operations include product pumping capabilities, vessel damage assessment, source control, vessel lightering, protective booming, product spill containment, skimming, temporary storage, alternative response technology (dispersants and in-situ burns) components, and overall incident management/ICS implementation. Since its establishment in 1973, the NSF has been deployed during every major and many medium-sized pollution responses and salvage cases in the U.S.

American Salvage Association

The American Salvage Association was created as an association of professional salvors to provide an identity and assist in professionalizing the U.S. marine salvage and firefighting response capability. By doing so, the Association has helped to improve marine casualty response in North American coastal and inland waters. The American Salvage Association also educates government, industry, and the general public about the role of the marine salvor in protecting life, the environment, and property from the consequences of the perils of water transportation. To achieve these goals, the American Salvage Association promotes cooperation among its members to assure an effective, successful response in major incidents. As a commercial entity, the American Salvage Association can be a reference to the OSC/COTP during complex salvage and removal cases.

Area Committee Members

Each OSC/COTP in the Area Committee should document, as well as possible, the abandoned, derelict, and submerged wrecks throughout his/her Area of Responsibility and determine, as close as practicable, the degree of risk posed. Regional resource capabilities should account for any threat of discharge posed by the vessel or wreck, as appropriate. The information gathered should be incorporated into each applicable ACP, documenting the threat to the region and proximity to environmentally sensitive areas. This process will help identify potential risks within the area, and foster development of response and/or protection strategies.

RRTs

There are 13 RRTs, one for each of 10 federal regions, plus one for Alaska, one for the Caribbean, and one for the Pacific Basin. Each RRT maintains a RCP and is composed of state and federal representatives. Regional EPA and USCG officials co-chair the RRTs. Like the NRT, the standing RRTs are planning, policy, and coordinating bodies and do not respond directly to the scene. The RRT provides assistance as requested by the OSC during an incident.

Appendix C: State Abandoned Vessel Programs

The following summary contains applicable state statutes that relate to abandoned and derelict vessels. This section describes the statute as well as whether the program is funded. In some cases, such as Georgia, programs were funded for a time before funding was reallocated to other internal state programs. These state programs will provide the OSC/COTP with a broader awareness of possible partnership opportunities in their respective states. These partnerships can be utilized to leverage federal authorities toward pollution removal from active threats, and state authorities toward the abandoned vessel's removal and ultimate disposal. Many states are addressing the problem of abandoned vessels in their waters and many are considering new laws and regulations. This summary is only a starting point for understanding state programs and capabilities.

Table 3 – Summary of State Abandoned Vessel Programs

State	Statute	Description	Funding
Alabama	No program at this time.	No definition for abandoned vessel. Although Alabama does not have an abandoned vessel law, the state's salvage laws provide that any person may take up and secure "all property adrift." (*Id.* § 35-13-1)	No
Alaska	Alaska Stat. § 30.30.120	Abandoned and Derelict Vessels – A vessel left unattended for more than 30 days in state waters or on private property without authorization may be taken into custody.	No
California	HNC § 510-527	Wrecks and Wrecked Property of the Harbors and Navigation Code - Sec. 522 specifically addresses abandonment and removal.	Yes
Connecticut	Conn. Gen. Stat.§ 15-140c	Connecticut does not have a formal abandoned vessel program. CONN. GEN. STAT. § 15-140c provides local police departments and the Connecticut DEP with the authority to take abandoned vessels into custody.	No
Delaware	Del Code § 1303	Vessels Adrift or Abandoned on Public Property and Lost, Stolen, or Abandoned Property Relating to Vessels. Abandonment means 30 days without action by owner.	Yes; under Delaware National Resources and Environmental Control (DNREC)
Florida	FL Statutes - Title 28 FLC § 376.15 and 376.16	Derelict vessels; removal from public waters. Florida's Fish and Wildlife Conservation Commission (FWCC) is authorized and empowered to remove any derelict vessel as defined in §823.11(1) from public waters.	Florida State Grants
	§ 705.101 to 705.19 of Chapter 705	Lost or Abandoned Property. Authorizes law enforcement to remove abandoned property.	
Georgia	GA. Code Ann. § 52-7-72(a)	Abandoned/derelict vessels (defined as 5 days) posing a threat to public health or safety may be taken into custody.	Past funding via DNR

State	Statute	Description	Funding
Hawaii	HI. Rev. Stat. § 200-41 – 200-55	There is no formal state program in Hawaii. The Department of Land and Natural Resources addresses abandoned vessels through a collection of laws.	No
Illinois	625 ILL. Comp. Stat.45/3C-3(a)	The Illinois lost and abandoned watercraft laws do not expressly define "abandoned vessel". However, law enforcement agencies can authorize removal of a watercraft abandoned on waters for 24 hours or more.	No
Louisiana	LA Rev. Stat. § 34:843	The Coordinator is authorized to remove any vessel described in § 30:2469(A) and recover the costs of removal from the owner or operator of the vessel or structure. Louisiana Oil Spill Co-op has an abandoned oil barge program.	No
Maine	ME. Rev. Stat. Ann. tit. 12, § 1866(4)	Defined as "any watercraft that is inoperative and neglected…or that has been left by the owner in coastal waters without intention of removal."	Sub Lands Fund
Maryland	Maryland Code Title 8, Subtitle 7	State Boat Act. 8-721 to 8-723 and section 8-725-1 state that authorities may dispose of unclaimed vessel by auction/other means.	Waterway Improvement Fund (WIF)
Massachusetts	MA. Gen. Laws Ch. 91	In 2008, MA Legislature established the Abandoned Vessel Trust Fund to assist the Department of Conservation and Recreation (DCR) with the removal of abandoned vessels.	DCR Trust Fund
Michigan	MI. Comp. Laws § 324.76101 (a)	Michigan does not have a formal state program addressing abandoned vessels. This citation notes legal definition of "abandoned."	No
Minnesota	None	No formal state program addressing abandoned vessels.	No
Mississippi	MS. Code Ann. § 49-27-71	Mississippi Department of Marine Resources (DMR)'s Derelict Vessel Removal Program is authorized and funded through the state's Derelict Vessel Fund and Tidelands Trust Fund.	Yes
New Hampshire	N.H. Rev. Stat. Ann. § 270-B	There is no formal program; however, the Department of Safety has removal authority under chapter 270-B and the Pease Development Authority has authority to address abandoned vessels located in the state's ports and harbors.	Yes
New Jersey	N.J.S.A. 12:7C-7 et seq.	Pursuant to the Abandoned Vessel Disposition Law, abandoned vessels may be scrapped or disposed of via any means once custody is obtained. Abandonment means 30 days without action by owner.	No
New York	Title 10, § 130-139	Navigation Law. Derelict vessels; removal from public waters. Sheriff is authorized and empowered to remove any derelict vessel.	No

State	Statute	Description	Funding
North Carolina	N/A	North Carolina has no formal program to address abandoned vessels. North Carolina, at one time, had a pilot program for removal of abandoned vessels in the Neuse River Basin. The program has since expired.	No
Ohio	OH Rev. Code § 1547.01(B)(1)	There is no formal state program in Ohio that manages the removal and disposal of abandoned vessels. A collection of state laws sets forth the procedures for local law enforcement officers and private individuals to remove and claim abandoned vessels.	No
Oregon	Vol. 17, § 830.907 to 830.935	Navigation Law § 830.912. Derelict vessels; removal from public waters. Oregon State Marine Board is authorized and empowered to remove any derelict vessel.	Yes
Pennsylvania	30 PA. Cons. Stat. § 102	There is no formal state program that addresses abandoned vessels. This citation notes legal definition of "abandoned."	No
Rhode Island	R.I. GEN. LAWS § 46-22-2(7)	While Rhode Island passed abandoned vessel legislation, there is no formal state program yet to address abandoned vessels, due to re-allocation of program funding to other state programs.	No
South Carolina	S.C. CODE ANN. § 50-21-10(1)	South Carolina has a formal abandoned vessel removal program. South Carolina's abandoned vessel removal program is a multi-pronged effort involving a variety of state agencies and local governments.	Yes
Texas	TX Nat. Res. Code § 40.108	The Texas General Lands Office (GLO) has an Abandoned Vessel and Structure Removal Program.	Yes
Virginia	N/A	Virginia does not have a formal program to address abandoned vessels. Virginia Marine Resources Commission has authority to remove obstructions from state waters.	Marine Habitat Fund
Washington	Title 79, Chapter 79.100,	79.100.050 – Vessel may be scrapped or disposed of via any means once custody is obtained.	Yes

Appendix D: Pollution Mitigation from Legacy Wrecks

This Guidance defines "submerged legacy wrecks" as entirely beneath the surface and not presenting a hazard to navigation. Submerged wrecks are almost never economical to salvage for their intrinsic value. However, circumstances that may require raising sunken wrecks include intelligence value (e.g., GLOMAR EXPLORER operations), and historical interest (e.g., USS MONITOR). More frequently, the cargo or contents may be of interest, sometimes for historical artifacts (e.g., TITANIC) or intrinsic value (e.g., precious metals) but increasingly, sunken wrecks may need to be addressed to remove a potential environmental hazard from oil or hazardous substances. It is in this latter case that NCP OSC responsibilities most commonly intersect with submerged wrecks and, hence, the removal of oil and hazardous substances from these wrecks is the focus of the following discussion and flowchart.

Assessments

NOAA has spent a great deal of time and effort researching wreck assessment programs throughout the world and has applied its work toward the RULET program. In 2010, Congress directed NOAA to develop a list of the most ecologically and economically significant potentially polluting wrecks in U.S. waters, focusing on threats from oil pollution. NOAA ranked vessels as high, medium, or low potential oil pollution threats based on a broad multi-disciplinary weight of evidence that combines the historical evidence, archaeological interpretation, salvage engineering, and ecological and economic modeling. NOAA noted other pollution threats and hazards, including chemical cargoes and munitions when known, but these non-oil threats were not used in the ranking. Each vessel identified in the RULET assessment has been assigned a risk profile by NOAA, which has subsequently been delivered to each RRT and USCG Sector with recommendations based on the agencies' scientific and technical as well as resource trustee expertise. The national RULET report and the 87 individual risk assessments are available at: http://sanctuaries.noaa.gov/protect/ppw/.

The following list of characteristics was used by NOAA analysts to help determine the risk posed by latent pollution threats aboard legacy wrecks:

Characteristics and Remarks

Vessel Age

Vessels built prior to 1891 most likely did not use oil as their primary fuel source and therefore would not carry quantities posing a significant threat.

Vessel Location

Although any discharge is harmful, those wrecks within the U.S. EEZ located closer to environmentally sensitive areas warrant further scrutiny.

Vessel Construction

Vessels constructed during and after the 20th century will likely be constructed of steel, iron, or other resilient material.

Vessel Type

The vessel's service (e.g., tank ship, freight carrier, or passenger vessel) can give indications as to its potential capacities and fuel type.

Casualty Information

Whether the vessel sank due to catastrophic explosion or grounding will make a great deal of difference as to its potential remaining cargo aboard.

Route of Service/Logs

Consideration should be given as to the vessel's route of service and the type of cargo. If the vessel was beginning her voyage, it is probable she would be laden with fuel. Logs may also indicate where bunkers were last taken on.

Proximity to Sensitive Areas

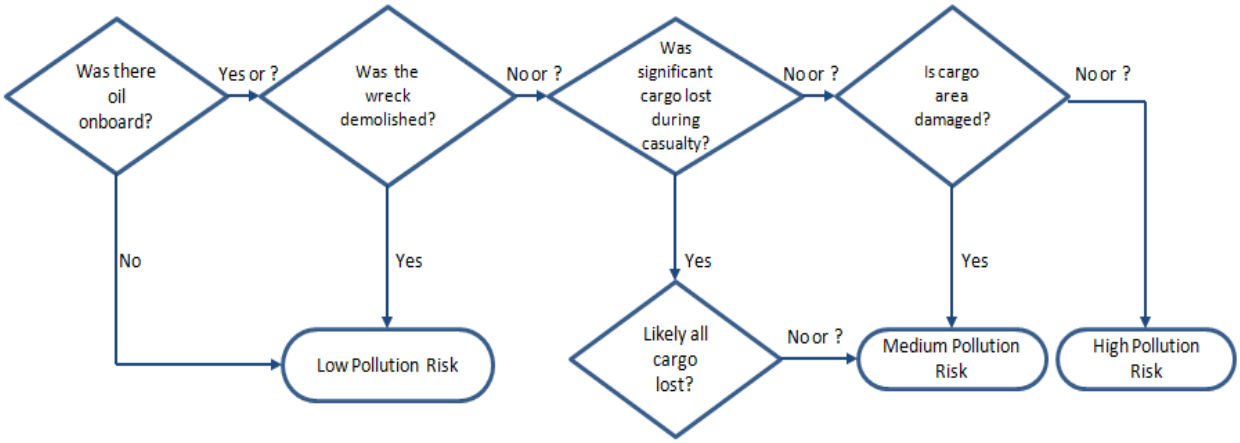
Identify the geographic area of oiling to water column, water surface, and shoreline resources, considering threatened resources at risk.

Socio-Economic Impacts

Spills from sunken wrecks have the potential to cause significant social and economic impacts, including fisheries, tourism, commerce, water supplies, and archeological sites.

Based on this NOAA assessment work, the figure below provides a guide for pollution threat decision making. The decision tree, which only evaluates physical integrity, was developed by the USCG SERT and used by NOAA in the development of the RULET Risk Assessment Vessel Profiles, and should be used to help inform OSCs on the decision-making process for potential pollution mitigation activities.

Figure 4 – Pollution Risk Decision Guide[83]



Typically, plans of the vessel or similar vessels are available. In addition, conditions of bunker and cargo loading may be on record. For 47 of the 87 vessels scored, an initial survey has been done or diver information is available that can give an idea of the condition and orientation (upside down, on side, or on keel; the more upright, the less chance of fuel remaining). This data can provide an idea of the likelihood of oil or hazardous substances remaining entrapped. From the total oil or hazardous substances potentially remaining on board as well as the orientation, compartmentalization, and condition of the vessel, an idea of the quantity and likelihood of a worst case discharge (WCD) can be derived. At that point, an assessment of the fate and trajectory of a WCD, given the type of oil, climatology, and currents can be performed through NOAA or other models. From this modeling, the probability and severity of potential impacts to environmentally sensitive areas can then be ascertained. No action or a plan for future defensive action (booming/skimming/dispersants if a discharge occurs) may be the most cost effective and environmentally benign alternative.

[83] Michel, J., Schmidt Etkin, D., et al. (2005). *Potentially Polluting Wrecks in Marine Waters.* Proceedings of the 2005 International Oil Spill Conference. American Petroleum Institute, Washington, D.C.

Authorities and Funding

The designated OSC/COTP has the authority to identify and address an environmental threat as described in previous sections of this document. In most cases of legacy submerged wrecks; however, the RP is either unknown or the subject of legal disputes of indeterminable longevity, and the eventual payment for operations or damages is questionable. Weighing the environmental risks against cost, the OSC/COTP can decide to proceed using the OSLTF (when the source is discharging or substantially threatens to discharge oil) or other appropriate government funds in these cases. Examples of this include the SS PRINCESS KATHLEEN (Alaska), M/V MONTEBELLO (California), and ex-USS CHEHALIS (American Samoa).

Priorities

Response priorities with regard to submerged wrecks have many influencing variables. However, there are several paramount response priorities that remain constant:

- Safety of responders and the public
- Minimize adverse impacts to the environment
- Minimize impacts to commerce infrastructure
- Public affairs outreach
- Stakeholder/community engagement

Key actions and decisions by the OSC/COTP that become the underpinning of the response include:

- Determining authority and identifying funding
- Conducting the initial assessment and determining courses of action
- Operational planning/management and execution
- Assessing current operational plan and making plan adjustments
- Reviewing public affairs program/transparency of operations

Contract Management

In cases where the RP is not known or in doubt, the OSC can choose to work with either a commercial contract (SS PRINCESS KATHLEEN, M/V MONTEBELLO), government assets (ex-USS CHEHALIS) or a combination. USCG OSCs should also engage their respective NPFC case manager, as well as the SILC Contracting Officer, prior to commencing operations.

With commercial contractors doing large projects, competitively bid contracts are usually required and must be carefully administered so that lengthy delays, generated by contractor protests, are not encountered. Bidders should be required to include a preliminary safety analysis and plan. In addition, to avoid extra costs, the SOW must be detailed enough to describe the full requirement/end state. However, the SOW should not be so detailed as to be overly prescriptive as to technical method of fulfilling the requirement (divers vs. Remote Operated Vehicles [ROVs], identity/type of platform, testing/sampling methods, etc.). The proposed technical methods must, however, be required to be disclosed by bidders so that the Technical Reviewers can fairly compare value and risk between proposals.

The required cost structure can prescribe fixed mobilization and demobilization costs combined with an operational day rate with number of shifts and estimated days to complete or, alternatively, an overall firm fixed price. Most other cost structures make price difficult to predict and control. Cost predictability and clarity is greater with government pre-negotiated contracts (BOAs, SUPSALV), but their use may not be appropriate and they may or may not be cheaper.

In the Action Plan Development section below, there are a number of decision points that should be reflected in the SOW. Foreseeable operational decisions made before the contract is competed will reduce both cost and controversy.

Action Plan Development

Assuming the initial assessment identifies a potential environmental threat that may be cost beneficial to remove, an Action Plan must be developed that, in rough form at least, informs the SOW. Key decisions include:

- ***Should removal actions be combined with the survey?*** In most cases, the assets required to remove oil or hazardous substances are different and considerably greater than those required to conduct a survey. Further, much is known about some wrecks and little about others. While the decision is a case-by-case judgment call, in most cases it is easier to control cost and risk by conducting a detailed survey that can inform removal planning (M/V MONTEBELLO, ex-USS CHEHALIS, and USS MISSISSINEWA). There are cases, however, where much is known of the wreck and necessary removal assets are reasonably available. In these cases, it may be cost beneficial to combine the survey and the removal operations (SS PRINCESS KATHLEEN).
- ***What tanks/areas should be accessed?*** Ships can have large cargo tanks; will have bunker fuel tanks, oil in machinery sumps/crankcases, small machinery space "day" tanks, and oily waste tanks; and may have oil or hazardous substances in drums and/or containers. These may have leaked and oil or hazardous substances may be trapped in spaces above. Due to difficulties locating and accessing these materials, it may take considerably more risk, time, and cost to either survey or remove oil or hazardous substances from some areas than others. Typically, the larger tanks are the easiest to access. At some point, there is usually a point of diminishing returns where large amounts of risk/cost are chasing small potential pockets of oil or hazardous substances. This point should be carefully analyzed and decided upfront.
- ***Divers vs. ROVs:*** By far the greatest determining factor in the efficient use of divers is depth. Interior surveys and the mechanical work associated with removal require surface-supplied or surface-tethered (vice free swimming scuba) divers at any depth. As depth and decompression requirements increase, the logistics footprint and cost increase dramatically. Shallower than 60 feet, most tasks can be done without delay for decompression. Depending on the dive profiles, a step increase in cost occurs somewhere in the 60 – 90 foot range as many dives may require decompression stops. Costs ramp up steeply between 100 – 190 feet as most dives require decompression stops, which become quite lengthy at the upper end. Another large step increase occurs at the 190-foot depth as divers must shift to mixed gas. Somewhere in the 120 – 300-foot range, depending on the work needed, saturation diving becomes more efficient and represents an exponential cost increase. Pressurized diving becomes impossible at around 1,500 feet and usually completely impractical well before that. Atmosphere (non-pressurized) diving is possible to around 2,000 feet and can be efficient in some applications; however, the cost, bulk, and handling requirements usually do not represent a worthwhile gain.

  Small, man-handled ROVs are typically simple optical/sonar sensors commonly used for searches, external inspections, and to monitor or guide divers. They are cheap and effective but do not have the power to perform the work necessary for surveys (sample hole drilling/grinding) or extraction operations. Larger working ROVs with sufficient power and manipulator functionality to perform mechanical work require extensive handling systems, skilled operators, and on-board technicians. Specialized tools for the specific extraction must usually be developed and tested on the ROV. That said, somewhere in the 190 to 1,000-foot range, ROVs become the best option in terms of cost and risk, especially for surveys. Useful work can be performed to around 20,000 feet but size, handling requirements, and logistic support increase dramatically with depth.

- ***Platforms:*** Platforms can range from a small boat to support a shallow external survey to a number of large ships and barges supporting a large recovery operation. The following focuses on larger platforms to support large operations. Platforms must be capable of supporting diving and/or ROV operations in the depth and weather conditions contemplated for the duration required. Action Plan development must specify the expected and worst case weather conditions, berthing requirements, deck space requirements, fueling requirements for topside equipment, communications requirements, freeboard requirements for both handling over the side (maximum) and weather (minimum), fendering requirements, personnel and cargo transfer, station-keeping requirements, waste disposal requirements (especially in waters where overboard sewage discharge is not permitted), decontamination requirements, and storage requirements for recovered product.

  The platform from which the underwater work is to be performed can be either a barge or a ship. Barges are much cheaper than ships, but must typically be fitted with portable living accommodations and weight handling equipment. In addition, ships or barges are safer, more reliable, and more stable in underwater operations than smaller platforms. However, barges typically must be moored. This can be done to thousands of feet but becomes less and less cost effective and less positionally secure as depth increases. Generally, the shallower and longer an operation, the more likely a moored barge or ship is the best option. If an unmoored ship is to be used as the underwater work platform, it must be able to maintain station either by constant maneuvering or with a dynamic positioning (DP) system. DP systems are designated DP1 through DP3 with increasing numbers reflecting increased redundancy and safety. Station keeping is tiresome and difficult to maintain without DP and risk of ROV accidents increases. Manned underwater operations require at least level DP2. Another consideration is the reliability of the ship's engineering plant. All the support equipment, the ROVs, and divers are idled but being paid if the ship has an engineering casualty. Further, ships must have enough open deck space to support the operational footprint. The cost and availability of suitable ships varies greatly with spot market conditions.

- ***Oil or hazardous substances removal methods:*** The basic technique for removing oil or hazardous substances from a submerged tank is a "hot tap" system, essentially a bolt-on flange with a valve mounted on it through which a hole is drilled into the tank. After the valve is closed, hoses and pumps can be mounted. As depth and fluid viscosity increase and temperature decreases, products become more difficult to pump. Injection of steam or hot water and/or use of a ring of injected water to reduce hose friction have made pumping possible to deeper depths (SS JACOB LUCKENBACH, SS PRINCESS KATHLEEN). However, depending on the viscosity and temperature, at some depth pumping through hoses becomes impractical and a specifically engineered solution must be devised. In M/V PRESTIGE, a tanker sunk off Spain, a lowered aluminum bell arrangement captured oil and it was raised and lowered to over 10,000 feet, at huge expense. Hot tap arrangements are unsafe for gasoline but work for diesel and all heavier oils.

- ***How clean is clean?*** This is related to the issue above (what tanks/areas should be accessed). There will invariably be small pockets of oil remaining in tank webbing and framing in tanks that have had product removed. Consider that the most easily available access points for tanks may not be at the absolute highest point. Will the decision be made to cut larger or new accesses and remove remaining pockets? The Action Plan should discuss at what point accessed tanks/areas are clean enough.

- ***Disposal of recovered oil or hazardous substances:*** The Action Plan should address the disposal of recovered product all the way to final disposition. Failure to have the disposal arrangements in place, permitted as necessary and verified, before product (characterized as hazardous waste) is removed can result in delay and increased costs. Removed oil or hazardous substances can be pumped to a barge, tanker, tank, or bladder. These in turn must take the oil or hazardous substances to a permitted facility ashore where it must be transferred by road or rail to a disposal or reuse facility.

- ***Wildlife Operations:*** Potential wildlife operations may be necessary (as with the LUCKENBACH operation) to protect state and federal trust resources. Best Management Practices (BMPs) should be

identified during the consultation phase of operational planning. Increased wildlife operations may require additional support on site, including observer platforms as well as the potential for prepositioned equipment and emergency response resources.

- ***War Graves and Historically Significant Wrecks:*** Procedures need to be in place to record and avoid disturbing artifacts and address human remains, if found.
- ***Operations Safety:*** The Action Plan should identify anticipated safety issues. In this regard, the Action Plan informs the SOW. In turn, the SOW will facilitate contract bidder requirements to include a preliminary safety analysis and plan. More detail appears below in the site safety section.

The following decision diagram should be used to develop an operational plan based on initial assessments of the wreck against a WCD, as described above.

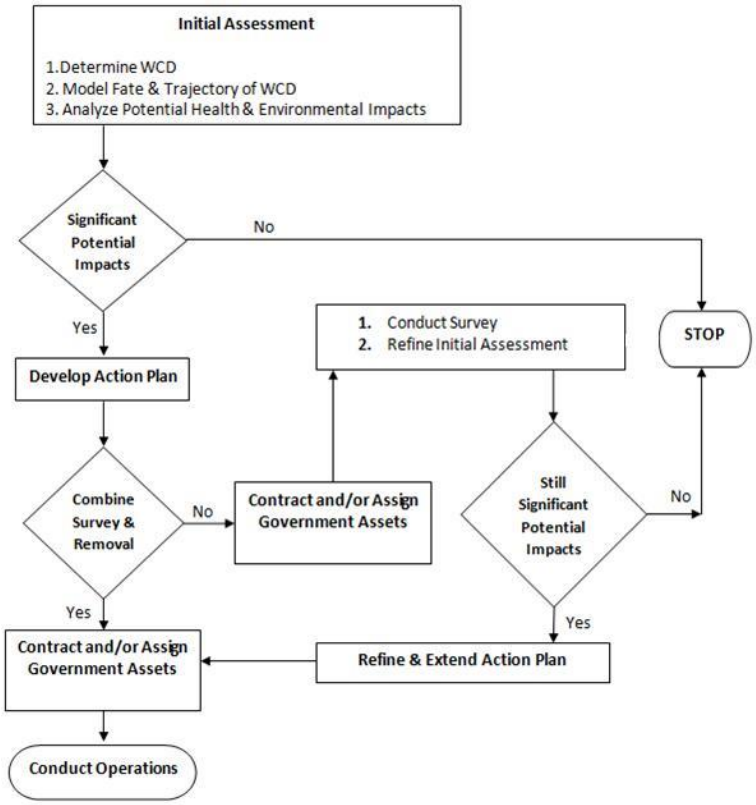


Figure 5 – Operations Plan Development

Site Safety Issues

Site safety and risk analysis are the most important part of any mission. Salvage and wreck operations are certainly no exception. Diving operations and fuel transfer make these types of operations even more hazardous. Thus, site safety should remain a top priority of all involved. Risk analysis begins with a job safety analysis, e.g., what are the tasks being conducted and what are the risks posed to responders/workers? A combination of the General Assessment of Risk model, as well as the ICS-form 208, Emergency Response and Site Safety Plan, will provide an excellent starting point.[84] Although not an inclusive list, some major safety issues may include:

[84] It is important to note that the General Site Safety Plan is a requirement set forth in Title 29 C.F.R. 1910.120(b)(4), as well as the Dive Safety Plan required by Title 29 C.F.R. § 1910.420 and § 421(d).

Hazard	Mitigation
Diving	
Cold water diving	Adjust dive tables to account for colder temps.
Wildlife contact	Implement Wildlife Monitoring Teams to monitor and report wildlife activity.
Depth of diving/amount of work required below surface	Diver work/rest should be regularly monitored. Dive Supervisor will ensure this activity is conducted.
Decontamination of personnel diving in contaminated waters	Expedited emergency diver decontamination should be established in advance to support rapid decontamination and employment of surface decompression in chamber.
Product Removal	
Explosion/static accumulation of oil product in containers	Ensure proper transfer protocols are followed and that safety precautions are taken to mitigate possible explosive atmospheres.
Hydrogen sulfide (H_2S) exposure from removed product (heated bunker oils, crudes, etc.)	Some operations require product to be heated. Ensure atmospheric monitoring and exclusion zones are appropriately established based on OSHA permissible exposure limits/ American Conference of Governmental Industrial (ACGIH) threshold limit values.[85]
Flammable vapors (gasoline, naphthalene, jet-a, etc.)	Ensure proper transfer protocols are followed and that safety precautions are taken to mitigate explosive atmospheres.
Heavy lift/overhead operations	Crane operations are common during major operations such as this. Proper site safety protocols include safety zones, licensed operators, and safety observers among others.
General Safety	
Slips, trips, and falls	General awareness should always be taken when on-site, considering the number of trip and fall hazards present. Non-essential personnel should be limited.
On-water operations	Personal Floatation is required for all on-water operations.
Thermal exposure (heat/cold stress)	Exposure standards should be consistent with OSHA recommendations, included in the Site Safety Plan, and briefed to all teams.
Crew fatigue	Exposure standards should be consistent with OSHA recommendations, included in the Site Safety Plan, and briefed to all teams.

Table 4 – Major Site Safety Issues

Fuel and Pollution Mitigation

Experience has shown that there are many ways to remove product from a submerged wreck. Numerous technical papers have been written on the subject and present good case studies on a variety of removal methods, including tank stinging, hot-tapping, and direct transfers. Considering that more than one option exists, OSCs should consider all options, and in many cases, a combination of options available to mitigate the pollution threat remaining aboard.

Within each of the above removal tactics, there are a multitude of activities and associated resources that make up a successful removal operation. The hot-tapping process is further described in the removal description noted in the case narrative on the SS PRINCESS KATHLEEN below.

Product Removal Process

[85] It is recommended that operational action levels be established that recognize the most stringent exposure level.

The product removal process contains many steps, but will always generally contain the same five core activities, noted below.

Figure 6 – Product Removal Process

Operations of this nature seldom include just one contractor or salvor. In many cases, operations will require multiple response entities, each providing a separate technical specialty. These providers should be managed by a project manager designated by the OSC for the purposes of coordinating the multi-faceted operation. The project manager should work in concert with the designated Operations Section Chief.

Product Removal Case Examples

The following examples consist of two methods of removal of product from a submerged wreck. These processes should be developed by the salvor after assessments have been completed and as much information has been captured as possible.

Despite the raging fire that sank her, the ex-USS CHEHALIS was able to keep her cargo of volatile aviation gasoline intact. Normally, a less volatile product could be removed using the "hot tap" method, as was used during the SS PRINCESS KATHLEEN. However, this method could create an explosive environment when considering the cargo remaining within the tanks of the ex-USS CHEHALIS. To circumvent hot tapping the tanks, a buoyed oil skimming system was introduced into the cargo tanks via the wreck's cargo hatches. The product was then removed using a pneumatic pump on a floating platform above the wreck. Several precautionary measures were put in place to prevent static accumulation, which is a universal risk with light cargos such as gasoline.

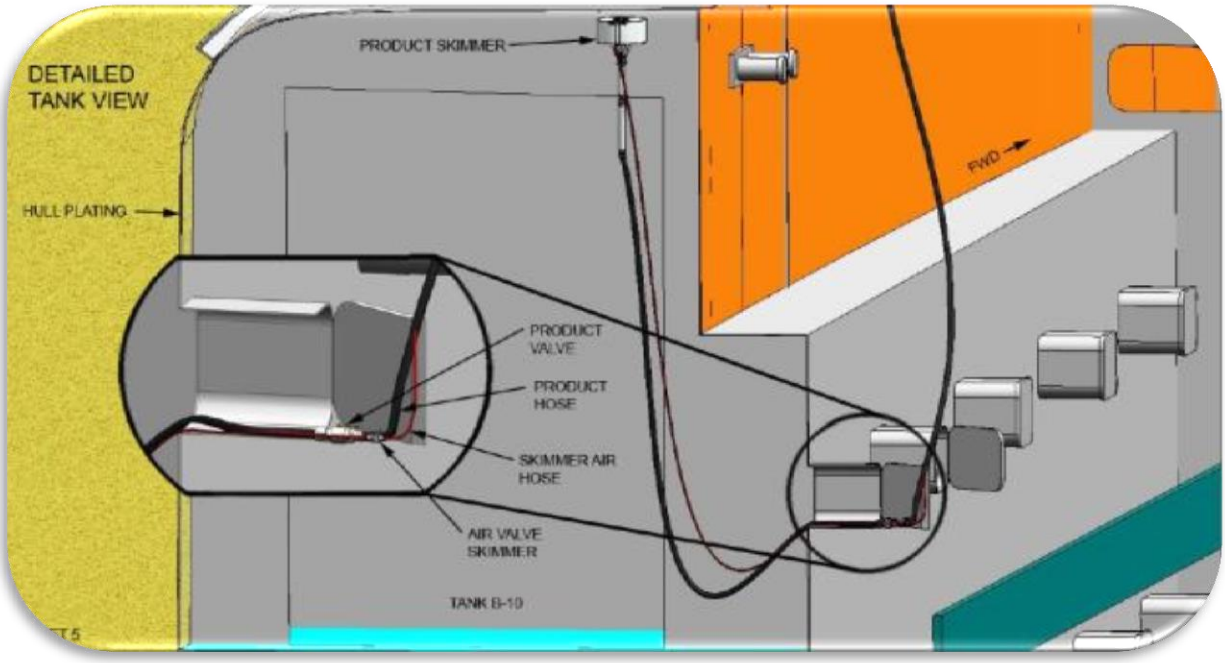


Figure 7 – EX-USS CHEHALIS Product Removal Process

In the early planning phases of the ex-USS CHEHALIS, it was assumed Singapore would receive the offloaded cargo as they had done for the USS MISSISSINEWA wreck oil operation. When the Singapore Port Authority was presented with a formal agreement, representatives from Singapore (Singapore National Environment Agency (NEA)) refused to allow any barge with recovered product to enter the country, citing the Basel Convention. This forced a last minute change to a critical element of the operation. Ultimately, a plan was developed whereby the recovered product was shipped back to the U.S. and transported and incinerated in Kansas.

To facilitate removing the cooled viscous bunkers of the SS PRINCESS KATHLEEN, the operations team developed a closed-circuit system of heating, re-circulating, and recovering bunkers from the wreck. A 20,000 gallon portable tank with heating coils was fastened to the deck of the primary work platform along with a hot water boiler, pumping, and heating equipment. The tank was filled with water and heated. The tanks on the SS PRINCESS KATHLEEN had been fitted with landing plates and flanges in advance using hot tap. A closed circuit loop was established from the tank being defueled on the wreck to the heated portable tank topside. As product was drawn from the wreck, clean heated water was gravity-fed back to the wreck via a closed-recirculation loop, cycling heated water through the tanks and freeing the viscous oil.

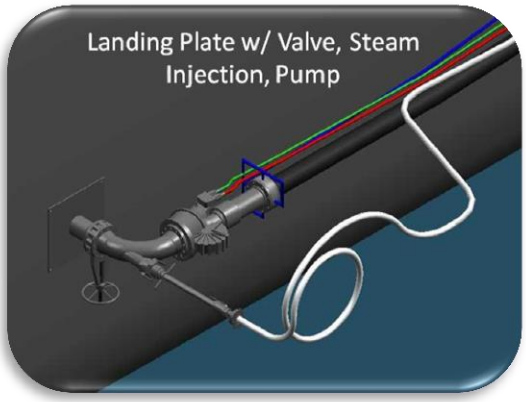


Figure 8 – SS LUCKENBACH Transfer Operations (1)

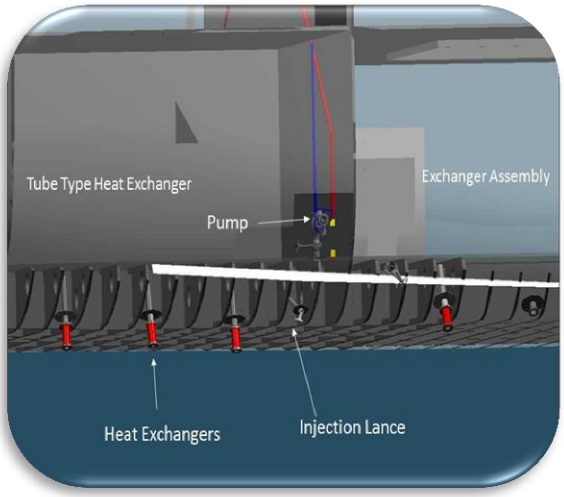


Figure 9 – SS LUCKENBACH Transfer Operations (2)

During the SS PRINCESS KATHLEEN's removal phase, once product was offloaded, the removed bunkers, when heated, created a higher level of H_2S than was expected from the original product analysis. Although atmospheric monitoring was regularly conducted and logged throughout the removal operation, additional measures were immediately activated after a mandatory stand-down, including vapor barrier; respiratory protection during tank monitoring and skimming; establishment of restricted areas; and chemical additives cycled through the product to reduce H_2S vapor.

The regular, daily evaluation of on-site operations proved to be a priceless effort throughout the operation, allowing the Operations and Planning staff to make minor operational adjustments and plan augmentations where necessary.

The SS JACOB LUCKENBACH, mitigated in 2003, drew many similarities to the SS PRINCESS KATHLEEN removal operations. The contents of the SS JACOB LUCKENBACH; however, were far more viscous, in some cases measuring nearly 200,000 centistokes (cSt). In an effort to remove the oil from the wreck, the oil within the tanks needed to be heated to over 78 degrees Fahrenheit. This was accomplished by hot-tapping the hull of the vessel and inserting specially designed heat exchangers and steam lances to increase the internal temperature of the tank and thereby decrease the oil's viscosity. Additionally, the submersible pumps were affixed with an annular water injection flange. The flange, affixed to the pump with a collar, injects a water sleeve within the discharge hose, thereby lubricating the inside of the hose and allowing the heavy viscous oil to move more freely with less internal surface tension. The operations removed nearly 94,000 gallons of fuel oil.

Appendix E: Abandoned Vessel Program Development

This appendix provides example programs proven successful in abandoned vessel removal and makes recommendations for local and regional abandoned vessel program development. The best programs are those that work in concert with one another. The following proposal for Regional Standardized Control Systems considers the cooperation of federal, state, and local agencies. These example programs in this Guidance can be shared with Area Committee and regional workgroup members to assist in developing regional solutions to the issue of abandoned vessels.

Utilization of a Central Reporting Entity and Database for Tracking of Abandoned Vessels

A central clearinghouse for abandoned vessel reports should be accessible by any entity, such as a local marina or harbormaster. Reports should be followed up on by the appropriate state environmental response entity. Vessels of significant threat should be documented in local ACPs.

Warning System

State and federal entities with jurisdiction over safe navigation and environmental protection should develop and deploy warning communication systems at the local level, either via the local COTP office, or through engagement with harbormasters and marinas. A warning system should clearly establish and articulate penalties for vessel abandonment. If state/local authorities can track or identify ownership interests before a vessel presents a hazard, it will help with administrative processes preceding removal.

Actions by State and Federal Entities to Identify Owners

The identification of a documented vessel owner is the best chance of removing a vessel that has been abandoned. Vessel registration is required in most states and can be used to track ownership.

Adoption of Standard Criteria for Hazard to Navigation and Environment

Criteria such as those used by USACE for hazards to navigation and USCG and EPA for environmental concerns should be employed as a benchmark for regional programs.

Establish Measures to Encourage Owner-Removal

Some state programs offer vessel turn-in opportunities or reimbursement of a percentage of disposal fees. These programs encourage owners to properly dispose rather than abandon.

Strict Liabilities for Non-Compliance of Vessel Disposal and Marking Requirements

Increased civil penalty standards may discourage owners from abandoning vessels when considering an affordable, legal alternative.

Award Rights to Marinas/Harbormasters

In the event of vessel abandonment within a marina or public harbor, states and local municipalities should consider the ability to award rights to the marina or harbormaster to facilitate removal and disposal. Further, created regional programs should reimburse marina/harbormasters for the cost of recovery and disposal.

Example of an Abandoned Vessel Program

Washington State Derelict Vessel Removal Program (DVRP)

This program has been developed for authorities in the State of Washington and is only presented here as an example.

Washington's 2001 Legislature authorized the use of money in the state toxics account for a grant program for local governments to clean up and dispose of hazardous substances on abandoned and derelict vessels. The 2002 Washington State Legislature then passed the Derelict Vessel Act, which provides certain local and state agencies with the authority and funding for the removal and disposal of derelict and abandoned vessels from the waters of the state. Prior to the 2002 legislation, the DNR had to rely on cooperation by the vessel owners, lengthy legal approaches such as trespass and nuisance abatement actions, and federal actions to address derelict vessels. The Program was further strengthened on May 13, 2013 when Governor Inslee signed legislation to hold vessel owners more accountable, as well as to help prevent vessels from becoming derelict or abandoned in the first place, improve enforcement, and bolster funding.[86]

Key Elements of the 2013 Enhancements to the DVRP:

- Permanently establishes the $1 surcharge on vessel registration that was set to expire at the end of 2013.
- Gives authority to the Washington Department of Ecology and authorized public entities to board vessels that meet the definition of "abandoned" or "derelict" for the purpose of assessing and correcting any potential threats to health, safety, and the environment.
- Changes registration-related offenses (such as failing to register) from a criminal misdemeanor to a civil infraction, making enforcement and collection of fines more realistic and efficient.
- Increases owner accountability by requiring owners of vessels longer than 65 feet and older than 40 years to obtain a vessel inspection before transferring ownership of the vessel to another party.

The DVRP Provides:

- Reimbursement of up to 90% of the cost of removal and disposal.
- Authorized public entities not able to undertake the removal of a derelict vessel may ask DNR to assume the lead.
- Priority for the use of funds is for vessels in danger of breaking up, sinking, or blocking a navigational channel, or vessels that present a risk to human health, safety, or the environment.
- Funding for the Program comes from an additional fee placed on annual vessel registration fees.
- Only authorized public entities in Washington State (DNR, Department of Fish and Wildlife Service, Parks and Recreation Commission, Metropolitan Park Districts, Port Districts, and any city, town or county with ownership, management or jurisdiction over the aquatic lands where the vessel is located) may participate in this program.

[86] http://www.dnr.wa.gov/BusinessPermits/News/Pages/2013_05_20_derelict_vessels_nr.aspx

Appendix F: EPA Ocean Disposal Permitting Program

40 C.F.R. Part 229.3 Transportation and disposal of vessels.

(a) All persons subject to title I of the Act are hereby granted a general permit to transport vessels from the [U.S], and all departments, agencies, or instrumentalities of the [U.S.] are hereby granted a general permit to transport vessels from any location for the purpose of disposal in the ocean subject to the following conditions:

(1) Except in emergency situations, as determined by [USACE] and/or [USCG], the person desiring to dispose of a vessel under this general permit shall, no later than 1 month prior to the proposed disposal date, provide the following information in writing to the EPA Regional Administrator [RA] for the Region in which the proposed disposal will take place:

(i) A statement detailing the need for the disposal of the vessel;

(ii) Type and description of vessel to be disposed of and type of cargo normally carried;

(iii) Detailed description of the proposed disposal procedures;

(iv) Information on the potential effect of the vessel disposal on the marine environment; and

(v) Documentation of an adequate evaluation of alternatives to ocean disposal (i.e., scrap, salvage, and reclamation).

(2) Transportation for the purpose of ocean disposal may be accomplished under the supervision of the District Commander of [USCG] or his designee.

(3) Except in emergency situations, as determined by [USACE] and/or the District Commander of [USCG], appropriate measures shall be taken, prior to disposal, by qualified personnel to remove to the maximum extent practicable all materials which may degrade the marine environment, including without limitation:

(i) emptying of all fuel lines and fuel tanks to the lowest point practicable, flushing of such lines and tanks with water, and again emptying such lines and tanks to the lowest point practicable so that such lines and tanks are essentially free of petroleum, and

(ii) removing from the hulls other pollutants and all readily detachable material capable of creating debris or contributing to chemical pollution.

(4) Except in emergency situations, as determined by [USACE] and/or [USCG], the dumper shall, no later than 10 days prior to the proposed disposal date, notify the EPA [RA] and the District Commander of [USCG] that the vessel has been cleaned and is available for inspection; the vessel may be transported for dumping only after EPA and [USCG] agree that the requirements of paragraph (a)(3) of this section have been met.

(5) Disposal of these vessels shall take place in a site designated on current nautical charts for the disposal of wrecks or no closer than 22 kilometers (12 miles) from the nearest land and in water

no less than 50 fathoms (300 feet) deep, and all necessary measures shall be taken to insure that the vessels sink to the bottom rapidly and that marine navigation is not otherwise impaired.

(6) Disposal shall not take place in established shipping lanes unless at a designated wreck site, nor in a designated marine sanctuary, nor in a location where the hulk may present a hazard to commercial trawling or national defense (see 33 C.F.R. Part 205).

(7) Except in emergency situations, as determined by [USACE] and/or [USCG], disposal of these vessels shall be performed during daylight hours only.

(8) Except in emergency situations, as determined by [USACE] and/or the District Commander of [USCG], the [COTP], [USCG], and the EPA [RA] shall be notified forty-eight (48) hours in advance of the proposed disposal. In addition, the COTP and the EPA [RA] shall be notified by telephone at least twelve (12) hours in advance of the vessel's departure from port with such details as the proposed departure time and place, disposal site location, estimated time of arrival on site, and the name and communication capability of the towing vessel. Schedule changes are to be reported to the COTP as rapidly as possible.

(9) The Nautical Data Branch, N/CS 26, Station 7350, National Ocean Service, NOAA, 1315 East West Hwy, Silver Spring, MD 20910, shall be notified in writing, within 1 week, of the exact coordinates of the disposal site so that it may be marked on appropriate charts.

Appendix G: References and Additional Reading Materials

Basel Convention. *Guidance on Dealing with Abandonment of Ships on Land or in Ports.* Annex. Retrieved from: http://www.basel.int/Portals/4/Basel%20Convention/docs/ships/abandonment/GuidanceOnDealingWithAbandonmentOfShips.English.pdf

EPA. (2006). *National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs.* Office of Enforcement & Compliance Assurance. Retrieved from: http://water.epa.gov/type/oceb/habitat/upload/2006_05_17_oceans_habitat_artificialreefsuments_0605finalreefguidance.pdf

EPA. (2000). *A Guide for Ship Scrappers: Tips for Regulatory Compliance*. Office of Enforcement and Compliance Assurance. Retrieved from: http://www.epa.gov/oecaerth/resources/publications/civil/federal/shipscrapguide.pdf

European Commission. (2011). *Guideline on and recommendations for dealing with Abandoned Vessels.* Directorate-General Environment and Climate Action. Recovery of Obsolete Vessels not used in the Fishing Trade. ENV.C.2/ETU/2010/0031. Retrieved from: http://ec.europa.eu/environment/waste/ships/pdf/Guide_Recyc_Abandoned%20Vessels_Final_Ver03.pdf

European Commission. (2011). *Recovery of Obsolete Vessels not used in the Fishing Trade.* Retrieved from: http://ec.europa.eu/environment/funding/pdf/calls2010/specifications_en_10031.pdf

Fitzpatrick, M., Tebeau P., and Hansen, K. (2013). *Development of Bottom Oil Recovery Systems - Final Project Report.* Report No. CG-D-09-13, Acquisition Directorate Research and Development Center, Department of Homeland Security, June 2013.

GAO. (1992). *Abandoned Vessels Pollute Waterways and Cost Millions to Clean Up and Remove.* Retrieved from: www.gao.gov/products/RCED-92-235

Kauffman, M and Mosley, D. (2003). *M/V Kimton: A Case Study of The U. S. Coast Guard's Abandoned Vessel Program*. International Oil Spill Conference Proceedings: April 2003, Vol. 2003, No. 1, pp. 571-753.

Lloyd's of London. (2013). *The Challenges and Implications of Removing Shipwrecks in the 21st Century*. Retrieved from: http://www.lloyds.com/~/media/Lloyds/Reports/Emerging%20Risk%20Reports/Wreck%20Report%

Maryland Dept. of Natural Resources. *Maryland Abandoned Boat and Debris Program.* Retrieved from: http://www.dnr.state.md.us/boating/abandonedboats.asp

NOAA. (2009). *Best Management Practices (BMP) for Abandoned Boats*. Retrieved from: http://marinedebris.noaa.gov/projects/pdfs/advbmp09.pdf

NOAA. (2011). *NOAA Marine Debris Program.* Website. Retrieved from: http://marinedebris.noaa.gov/projects/dvessels.html#res

South Carolina Dept. Health & Environmental Control. (2011). *Marine Debris & Abandoned Vessels: Identification, Reduction and Prevention through Community-based Education and Action.* Final Report to NOAA Fisheries and Habitat Conservation Program. Retrieved from: http://www.scdhec.gov/environment/ocrm/docs/debris/Clean_Marine_Report.pdf

USCG. (2006). *Abandoned Vessels, COMDTINST M16465.43*. Retrieved from: http://www.uscg.mil/directives/cim/16000-16999/CIM_16465_43.pdf

USCG. (1983). *CERCLA Response Authority and Associated Coast Guard Policies, COMDTINST M16465.29.* Retrieved from: http://www.uscg.mil/directives/cim/16000-16999/CIM_16465_29.pdf

Washington State. *Departmern of Natural Resources Derelict Vessel Program*. Retrieved from: http://www.dnr.wa.gov/recreationeducation/topics/derelictvessels/pages/aqr_derelict_vessel_removal_program.aspx

Appendix H: Acronyms

ACHP: Advisory Council on Historic Preservation

ACGIH: American Conference of Governmental Industrial Hygienists

ACP: Area Contingency Plan

ADV: Abandoned/Derelict Vessel

ASA: Abandoned Shipwreck Act

AST: Atlantic Strike Team

BMP: Best Management Practice

BOA: Basic Order Agreement

CBRN: Chemical, Biological, Radiological, or Nuclear

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

C.F.R.: Code of Federal Regulations

CNO: Chief of Naval Operations

COCO: Contractor Owned and Operated

COMDTINST: (U.S. Coast Guard) Commandant Instruction

COTP: Captain of the Port

cSt: centistokes

CWA: Clean Water Act

DCR: Department of Conservation and Recreation

DEP: Department of Environmental Protection

DMR: Department of Marine Resources

DNR: Department of Natural Resources

DNREC: Delaware National Resources and Environmental Control

DOD: (U.S.) Department of Defense

DOE: (U.S.) Department of Energy

DOI: (U.S.) Department of the Interior

DOJ: (U.S.) Department of Justice

DP: Dynamic Positioning

DVRP: Derelict Vessel Removal Program

EEZ: Exclusive Economic Zone

EFH: Essential Fish Habitat

E.O.: Executive Order

EPA: (U.S.) Environmental Protection Agency

ERT: Environmental Response Team

ESA: Endangered Species Act

ESF: Emergency Support Function

ESSM: Emergency Ship Salvage Material System

FEMA: Federal Emergency Management Agency

FWCC: Fish and Wildlife Conservation Commission

FWPCA: Federal Water Pollution Control Act

GAO: Government Accountability Office

GLO: General Lands Office

GOCO: Government Owned, Contractor Operated

GRP: Geographic Response Plan

GST: Gulf Strike Team

H_2S: Hydrogen Sulfide

Hazmat: Hazardous Materials

IC: Incident Commander

ICS: Incident Command System

ID: Identification

IHSA: Intervention on the High Seas Act

IMDCC: Interagency Marine Debris Coordinating Committee

LASH: Lighter Aboard Ships

MARAD: (U.S.) Maritime Administration

MARPOL: International Convention for the Prevention of Pollution from Ships

MDP: NOAA Marine Debris Program

MDE: Maryland Department of the Environment

MIPR: Military Interagency Purchase Requisition

MISLE: Marine Information Safety and Law Enforcement

MMP: Maine Marine Patrol

MMPA: Marine Mammal Preservation Act

MOA: Memorandum of Agreement

MOU: Memorandum of Understanding

MPRSA: Marine Protection Research and Sanctuaries Act

MRSA: Maine Revised Statute Annotated

MSC: Marine Safety Center

NANPCA: Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990

NAVSEA: Naval Sea Systems Command

NCP: National Oil and Hazardous Substances Pollution Contingency Plan

NEA: (Singapore) National Environment Agency

NHPA: National Historic Preservation Act

NMC: National Maintenance Contract

NMFS: National Marine Fisheries Service

NMS: National Marine Sanctuary

NMSA: National Marine Sanctuaries Act

NOAA: National Oceanic and Atmospheric Administration

NPFC: National Pollution Funds Center

NPS: National Park Service

NRF: National Response Framework

NRT: National Response Team

NSF: National Strike Force

NSFCC: National Strike Force Coordination Center

OCMI: Officer in Charge, Marine Inspection

OPA 90: Oil Pollution Act of 1990

OSC: On-Scene Coordinator

OSHA: Occupational Safety and Health Administration

OSLTF: Oil Spill Liability Trust Fund

OSRO: Oil Spill Removal Organization

PCBs: Polychlorinated Biphenyl

PIAT: Public Information Assist Team

PPE: Personal Protective Equipment

PRFA: Pollution Removal Funds Authorization

PST: Pacific Strike Team

RA: Regional Administrator

RCP: Regional Contingency Plan

RCRA: Resource Conservation and Recovery Act

RHA: Rivers and Harbors Act

RP: Responsible Party

ROV: Remote Operated Vehicle

RRI: Response Resources Inventory

RRT: Regional Response Team

RULET: Remediation of Underwater Legacy Environmental Threats

SERT: Salvage Emergency Response Team

SHPO: State Historic Preservation Office

SILC: Shoreside Infrastructure Logistics Command

SMART: Special Monitoring of Advanced Response Technologies

SNO: Statement of No Objection

SOW: Statement of Work

SSC: Scientific Support Coordinator

SUPSALV: U.S. Navy Supervisor of Salvage

TSCA: Toxic Substances Control Act

UC: Unified Command

USACE: U.S. Army Corps of Engineers

U.S.C: U.S. Code

USCG: U.S. Coast Guard

USFWS: U.S. Fish and Wildlife Service

USVI: U.S. Virgin Islands

WCD: Worst Case Discharge

WIF: Waterway Improvement Fund

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Places of Refuge

Case Studies

Maritime Salvage & Intervention

PLACES OF REFUGE

CASE STUDIES

DOLE AMERICA: Private wharf owner refused access to dry-dock services.

The MV DOLE AMERICA struck the Nab Tower in the Solent Approaches and sank with a cargo of fruit.

After re-floating this vessel needed dry-docking facilities to enable jury repairs to be affected to the vessel and in particular to a 13m gash in the way of holds 1 & 2 below the waterline.

Although the dry-dock was empty at the time there was a major ship refurbishment contract due in one week's time. Access to the dock was granted at first but later refused even as the casualty had covered over half of the passage from the site of re-floating, under tow and supported by sheerlegs, towards it.

The refusal was not lifted and the vessel had to make a further dangerous journey (still supported by the sheerlegs) to another repair facility.

Small general cargo vessel off Shetland: Refused entry by the SOSREP because of value of fish farm stocks.

During a severe storm this small cargo vessel was swept by a wave and the cargo of fishmeal was displaced. The vessel took on a severe list (35 degrees) and the crew were lifted off by CG helicopter. However a second vessel appeared as the weather began to moderate and managed to get a line onto the casualty. They requested haven in a nearby sheltered loch.

The loch in question however was populated by a large number of salmon farms containing aggregated stock of around £15 million.

The vessel itself only contained the cargo of fishmeal and MDO fuel; there was no risk to life and no significant risk to the environment if it sank on the open sea. The cost of contaminating the fish stocks with the MDO on the other hand was a real one and haven was refused on grounds of comparative value.

The vessel did subsequently enter the loch when its stability was assured and the weather had moderated further.

M/T MAGNITUDE: Granted entry to Milford Haven laden with 90,000 tonnes of HFO and a split in side of vessel.

Six days after the M/T PRESTIGE (70,000 tonnes HFO) sank we dealt with this vessel which was awaiting entry to the Haven to discharge. At daybreak the crew found themselves in the centre of an oil slick which was issuing from a visible crack in the side of the vessel.

Whilst the casualty transferred cargo from the tanks near the crack the SOSREP made contact with the Milford Haven Harbour Master who also held a meeting with his local environment Group to explain the situation. It was agreed that, despite the risk of pollution from the vessel by HFO, bringing the vessel into the port presented the least risk of pollution to the greater environment.

The vessel was finally brought into the port, boomed and discharged successfully with little or no pollution.

Since then the decision to allow the vessel to enter the Haven has been reviewed by the port authority and the Harbour Master has been instructed to refuse entry to a future vessel in similar circumstances.

Milford Haven have very good reason to feel the need for protection from legal action ensuing from pollution within their port and would insist that the Government took full responsibility for the risk in this sort of event by requiring a direction to admit the vessel.

AB BILBAO: Dangerous cargo – given shelter offshore and later brought into port for temporary repairs.

The AB BILBAO was making passage down the North Sea towards the Dover Strait into a south-west gale when an explosion blew off the first section of her single hatch-cover. This exposed her cargo of 3,300 tonnes of fero-silicone to sea and rain. The datasheets for the cargo showed that the presence of moisture would cause emissions of the gasses hydrogen, acetylene, arsine and phosphine.

The vessel was instructed to take shelter from the south-west winds offshore in the Margate Roads. It was realised that the vessel could not lie in this position for any length of time however as the weather was forecast to strengthen to force ten from the south-east. The problem was how to evaluate the real risk posed by the wet cargo.

The response team led by the SOSREP set about locating an expert source of information about the behaviour of the cargo. Eventually two sources of information were found – one of whom worked for the owners and the other as independent advisor to the SOSREP.

The risk was evaluated as low in real terms and the casualty was brought into the Medway Ports under Direction and there given temporary repairs without landing the cargo.

At one time there was a considerable body of environmental advise which indicated that major parts of the south east UK and parts of Holland should be evacuated. It was the impartiality and value of the independent expert advice that enabled the frontline parties involved to properly evaluate the real risk posed by the situation and take meaningful decisions.

MV WESTER TILL: 7,300 gt general cargo/container vessel on fire, IMO classified substances, suddenly diverted into a port of refuge

During the evening pallets of rolled paper on fire and stowed in the after hold beneath a deck cargo of containers was discovered as the vessel headed down the Channel from Antwerp. Attempts to extinguish the fire with CO2 were unsuccessful and a shore based fire fighting team and a salvage crew were transferred onto the casualty. It was known that there were quantities of cargo described as flammable liquids, corrosives, poisonous toxins and miscellaneous IMO classified items on board some of which were close to the site of the fire.

By the early hours of the morning the fire was considered to be smouldering and under control. Arrangements were made to bring the vessel into the port of Southampton so that cargo could be removed and water from shore-based fire appliances used to ensure the fire was out. All available fire appliances were tasked to the quayside at Southampton.

During the passage fire fighters entered the hold every 30 minutes to quench small flames and keep control of the fire. At around 10:50 the Salvage Master on board the casualty reported the fire had reasserted itself and was spreading rapidly – it could not be fought with the onboard resources and he needed to bring the vessel alongside at the earliest possible moment.

Within ten minutes all arrangements had been made to divert the vessel into the Portsmouth naval dockyard. Within 45 minutes of the fire report the vessel was manoeuvring alongside and the shore-based fire appliances from Southampton were making arrangements to fight the fire.

Because of the time constraints in this case the risk assessment had to be rough and ready and the co-operation of the Queen's Harbour Master at Portsmouth was vital – it was a case of independent responders each trusting in the others professionalism and working to what became a common objective – to extinguish the fire before it gained sufficient hold to disperse the known pollutants on board the casualty.

Annex WW

Assortment of Plans

Site Safety and Health Plan

Site Safety and Health Plan ICS-208-CG (rev 9/06)

Incident Name: _____ Date/Time Prepared: _____ Operational Period: _____

Purpose. The ICS Compatible Site Safety and Health Plan is designed for safety and health personnel that use the Incident Command System (ICS). It is compatible with ICS and is intended to meet the requirements of the Hazardous Waste Operations and Emergency Response regulation (Title 29, Code of Federal Regulations, Part 1910.120). The plan avoids the duplication found between many other site safety plans and certain ICS forms. It is also in a format familiar to users of ICS. Although primarily designed for oil and chemical spills, the plan can be used for all hazard situations.

Questions on the document should be addressed to the Coast Guard Office of Incident Management and Preparedness (G-RPP).

Table of Forms

FORM NAME	FORM #	USE	REQUIRED	OPTIONAL	ATTACHED
Emergency Safety and Response Plan	A	Emergency response phase (uncontrolled)	X		
Site Safety Plan	B	Post-emergency phase (stabilized, cleanup)	X		
Site Map	C	Post-emergency phase map of site and hazards	X		
Emergency Response Plan	D	Part of Form B, to address emergencies	X		
Exposure Monitoring Plan	E	Exposure monitoring Plan to monitor exposure	X		
Air Monitoring Log	E-1	To log air monitoring data	X*		
Personal Protective Equipment	F	To document PPE equipment and procedures	X*		
Decontamination	G	To document decon equipment and procedures	X*		
Site Safety Enforcement Log	H	To use in enforcing safety on site		X	
Worker Acknowledgement Form	I	To document workers receiving briefings		X	
Form A Compliance Checklist	J	To assist in ensuring HAZWOPER compliance		X	
Form B Compliance Checklist	K	To assist in ensuring HAZWOPER compliance		X	
Drum Compliance Checklist	L	To assist in ensuring HAZWOPER compliance		X	
Other:					

** Required only if function or equipment is used during a response*

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EMERGENCY SAFETY and RESPONSE PLAN	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Attachments: **Attach MSDS for each Chemical:**
5. Organization IC/UC:	Safety: Div/Group Supv:	Entry Team:	Backup Team:	Decon Team:

6.a. Physical Hazards and Protection	6.b. Confined Space ☐ Noise ☐ Heat Stress ☐ Cold Stress ☐ Electrical ☐ Animal/Plant/Insect ☐ Ergonomic ☐ Ionizing Rad ☐ Slips/Trips/Falls ☐ Struck by ☐ Water ☐ Violence ☐ Excavation ☐ Biomedical waste and/or needles ☐ Fatigue ☐ Other (specify)

6.c. Tasks & Controls	6d Entry Permit	6.e. Ventilate	6f. Hearing Protection	6g. Shoes (type)	6.h. Hard Hats	6i. Clothing (cold wx)	6j. Life Jacket	6l. Work/ Rest (hrs)	6.m. Fluids (amt/time)	6.n. Signs & Barricade	6.p. Fall Protect	6.q. Post Guards	6.r. Flash Protect	6.s. Work Gloves	6.t. Other

7.a. Agent	7.b. Hazards		7.c. Target Organs	7.d. Exposure Routes	7.f. PPE	7.g. Type of PPE
	Explosive ☐ Flammable ☐ Reactive ☐ Biomedical ☐ Toxic ☐	Radioactive ☐ Carcinogen ☐ Oxidizer ☐ Corrosive ☐ Specify Other: ☐	Eyes ☐ Nose ☐ Skin ☐ Ears ☐ Central Nervous System ☐ Respiratory ☐ Throat ☐ Lungs ☐ Heart ☐ Liver ☐ Kidney ☐ Blood ☐ Lungs ☐ Circulatory ☐ Gastrointestinal ☐ Bone ☐ Other Specify: ☐	Inhalation ☐ Absorption ☐ Ingestion ☐ Injection ☐ Membrane ☐ ☐	Face Shield ☐ Eyes ☐ Gloves ☐ Inner Suit ☐ Splash Suit ☐ Level A Suit ☐ SCBA ☐ APR ☐ SAR ☐ Cartridges ☐ Fire Resistance ☐	

8. Instruments:	8.a. Action Levels	8.b. Chemical Name(s):	8.c. LEL/UEL %	8.d. Odor Thresh Ppm	8.e. Ceiling/ IDLH	8.f. STEL/TLV	8.g. Flash Pt/ Ignition Pt (F or C)	8.h. Vapor Pressure (mm)	8.i. Vapor Density	8.j. Specific Gravity	8.l. Boiling Pt F or C
O2 ☐											
CGI ☐											
Radiation ☐											
Total HCs ☐											
Colorimetric ☐											
Thermal ☐											
Other ☐											

EMERGENCY SAFETY and RESPONSE PLAN (Cont)	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Attachments: **Attach MSDS for each Chemical**

9. Decontamination:				
Instrument Drop Off ☐	Suit Wash ☐	Bottle Exchange ☐	SCBA/Mask Rinse ☐	Intervening Steps ☐ Specify:
Outer Boots/Glove Removal ☐	Decon Agent: Water ☐	Outer Suit Removal ☐	Inner Glove Removal ☐	
Suit/Gloves/Boot Disposal ☐	Other ☐	Inner Suit Removal ☐	Work Clothes Removal ☐	
	Specify:	SCBA/Mask Removal ☐	Body Shower ☐	

10. Site Map. Include: Work Zones, Locations of Hazards, Security Perimeter, Places of Refuge, Decontamination Line, Evacuation Routes, Assembly Point, Direction of North
☐ Attached, ☐ Drawn Below:

11.a. Potential Emergencies:	11.b. Evacuation Alarms:	11.c Emergency Prevention and Evacuation Procedures:
Fire ☐	Horn ☐ # Blasts ☐	Safe Distance:
Explosion ☐	Bells ☐ #Rings ☐	
Other ☐	Radio Code ☐	
	Other:	

12. a. Communications:	12.b. Command #:	12.c. Tactical #:	12.d. Entry #:
Radio ☐ Phone ☐ Other ☐			

13.a. Site Security: Personnel Assigned	13.b. Procedures:	13.c. Equipment:
14.a. Emergency Medical: Personnel Assigned	14.b. Procedures:	14.c Equipment:
15. Prepared by:	16. Date/Time Briefed:	**ICS-208-CG SSP-A Page 2. (rev 9/06):** Page _____ of _____

CG ICS SITE SAFETY PLAN (SSP) HAZARD ID/EVAL/CONTROL	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)
5. Supervisor/Leader	6. Location and Size of Site	7. Site Accessibility Land☐ Water☐ Air ☐ Comments:	8. For Emergencies Contact:	9. Attachments: **Attach MSDS for each Chemical**

10.a. Job Task/Activity	10.b. Hazards* ⇨	10.c. Potential Injury & Health Effects	10.d. Exposure Routes	10.e. Controls: Engineering, Administrative, PPE
			Inhalation ☐ Absorption ☐ Ingestion ☐ Injection ☐ Membrane ☐ ☐	
			Inhalation ☐ Absorption ☐ Ingestion ☐ Injection ☐ Membrane ☐ ☐	
			Inhalation ☐ Absorption ☐ Ingestion ☐ Injection ☐ Membrane ☐ ☐	
			Inhalation ☐ Absorption ☐ Ingestion ☐ Injection ☐ Membrane ☐ ☐	
			Inhalation ☐ Absorption ☐ Ingestion ☐ Injection ☐ Membrane ☐ ☐	

11. Prepared By:	12. Date/Time Briefed:	***HAZARD LIST**: Physical/Safety, Toxic, Explosion/Fire, Oxygen Deficiency, Ionizing Radiation, Biological, Biomedical, Electrical, Heat Stress, Cold Stress, Ergonomic, Noise, Cancer, Dermatitis, Drowning, Fatigue, Vehicle, & Diving	**ICS-208-CG SSP-B (rev 9/06):** Page _____ of _____

CG ICS SSP: SITE MAP	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)
5. Supervisor/Leader	6. Location and Size of Site	7. Site Accessibility Land☐ Water☐ Air ☐ Comments:	8. For Emergencies Contact:	9. Include: - Work Zones - Locations of Hazards - Security Perimeter - Places of Refuge - Decontamination Line - Evacuation Routes
10. Sketch of Site: ☐ Attached. ☐ Drawn Here				
11. Prepared By:	12. Date/Time Briefed:	**HAZARD LIST**: Physical/Safety, Toxic, Explosion/Fire, Oxygen Deficiency, Ionizing Radiation, Biological, Biomedical, Electrical, Heat Stress, Cold Stress, Ergonomic, Noise, Cancer, Dermatitis, Drowning, Fatigue, Vehicle, & Diving	**ICS-208-CG SSP-C (rev 9/06):** Page _____ of _____	

CG ICS SSP: EMERGENCY RESPONSE PLAN	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)
5. Supervisor/Leader	6. Location and Size of Site	7. For Emergencies Contact:		8. Attachments: **INCLUDE ICS FORM 206 and EMT Medical Response Procedures**
9. Emergency Alarm (sound and location)	10. Backup Alarm (sound and location)	11. Emergency Hand Signals	12. Emergency Personal Protective Equipment Required:	

13. Emergency Notification Procedures	14. Places of Refuge (also see site map form 208B)	15. Emergency Decon and Evacuation Steps	16. Site Security Measures

17. Prepared By:	18. Date/Time Briefed:	**HAZARD LIST**: Physical/Safety, Toxic, Explosion/Fire, Oxygen Deficiency, Ionizing Radiation, Biological, Biomedical, Electrical, Heat Stress, Cold Stress, Ergonomic, Noise, Cancer, Dermatitis, Drowning, Fatigue, Vehicle, & Diving	**ICS-208-CG SSP-D (rev 9/06)** Page _____ of _____

CG ICS SSP: Exposure Monitoring Plan	1. Incident Name	2. Date/Time Prepared:	3. Operational Period:	4. Safety Officer (Method of Contact):

5. Specific Task/Operation	6. Survey Location	7. Survey Date/Time	8. Monitoring Methodology	9. Direct-Reading Instrument	10. Air Sampling	11. Hazard(s) to Monitor	12. Monitoring Duration	13. Reasons to Monitor	14. Laboratory Support for Analysis
			☐ Personal Breathing Zone ☐ Area Air Monitoring ☐ Dermal Exposure Monitoring ☐ Biological Monitoring: ☐ Blood ☐ Urine ☐ Other ☐ Obtain bulk samples ☐ Other:	Model: Manufacturer: Last Mfr Calibration Date:	Sampling/Analysis Method: Collecting Media: ☐ Charcoal Tube ☐ Silica Gel ☐ 37 mm MCE Filter ☐ 37 mm PVC Filter ☐ Other:_____			☐ Regulatory Compliance ☐ Assess current PPE adequacy ☐ Validate engineering controls ☐ Monitor IDLH Conditions ☐ Other_____	
			☐ Personal Breathing Zone ☐ Area Air Monitoring ☐ Dermal Exposure Monitoring ☐ Biological Monitoring: ☐ Blood ☐ Urine ☐ Other ☐ Obtain bulk samples ☐ Other:	Model: Manufacturer: Last Mfr Calibration Date:	Sampling/Analysis Method: Collecting Media: ☐ Charcoal Tube ☐ Silica Gel ☐ 37 mm MCE Filter ☐ 37 mm PVC Filter ☐ Other:_____			☐ Regulatory Compliance ☐ Assess current PPE adequacy ☐ Validate engineering controls ☐ Monitor IDLH Conditions ☐ Other_____	
			☐ Personal Breathing Zone ☐ Area Air Monitoring ☐ Dermal Exposure Monitoring ☐ Biological Monitoring: ☐ Blood ☐ Urine ☐ Other ☐ Obtain bulk samples ☐ Other:	Model: Manufacturer: Last Mfr Calibration Date:	Sampling/Analysis Method: Collecting Media: ☐ Charcoal Tube ☐ Silica Gel ☐ 37 mm MCE Filter ☐ 37 mm PVC Filter ☐ Other:_____			☐ Regulatory Compliance ☐ Assess current PPE adequacy ☐ Validate engineering controls ☐ Monitor IDLH Conditions ☐ Other_____	
			☐ Personal Breathing Zone ☐ Area Air Monitoring ☐ Dermal Exposure Monitoring ☐ Biological Monitoring: ☐ Blood ☐ Urine ☐ Other ☐ Obtain bulk samples ☐ Other:	Model: Manufacturer: Last Mfr Calibration Date:	Sampling/Analysis Method: Collecting Media: ☐ Charcoal Tube ☐ Silica Gel ☐ 37 mm MCE Filter ☐ 37 mm PVC Filter ☐ Other:_____			☐ Regulatory Compliance ☐ Assess current PPE adequacy ☐ Validate engineering controls ☐ Monitor IDLH Conditions ☐ Other_____	

15. Prepared By:	16. Date/Time Briefed:	**HAZARD LIST**: Potential Health Effects: Bruise/Lacerations, Organ Damage, Central Nervous System Effects, Cancer, Reproductive Damage, Low Back Pain, Temporary Hearing Loss, Dermatitis, Respiratory Effects, Bone Breaks, & Eye Burning
18. Safety Officer Review:	Reporting: Monitoring results shall be logged in the ICS-208-CG SSP-E-1 form (Air Monitoring Log) and attached as part of a current Site Safety Plan and Incident Action Plan. Significant Exposures shall be immediately addressed to the IC and General Staff for immediate correction.	**ICS-208-CG SSP-E (rev 9/06)** Page _____ of _____

CG ICS SSP: AIR MONITORING LOG	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)	
5. Site Location	6. Hazards of Concern	7. Action Levels (include references):		8. Weather: Temperature: Precipitation: Wind: Relative Humidity: Cloud Cover:	
9.a. Instrument, ID Number Calibrated? Indicate below.	9.b. Monitoring Person Name(s)	9.c. Results (units)	9.d. Location	9.f. Time	9.g. Interferences and Comments
10. Safety Officer Review:		Potential Health Effects: Bruise/Lacerations, Organ Damage, Central Nervous System Effects, Cancer, Reproductive Damage, Low Back Pain, Temporary Hearing Loss, Dermatitis, Respiratory Effects, Bone Breaks, & Eye Burning			**ICS-208-CG SSP-E-1 (rev 9/06):** Page _____ of _____

CG ICS SSP: PERSONAL PROTECTIVE EQUIPMENT	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)
5. Supervisor/Leader	6. Location and Size of Site	7. Hazards Addressed:		8. For Emergencies Contact:

9. Equipment:				10. References Consulted:

11. Inspection Procedures:	12. Donning Procedures:	13. Doffing Procedures:	14. Limitations and Precautions (include maximum stay time in PPE):

15. Prepared By:	16. Date/Time Briefed:	Potential Health Effects: Bruise/Lacerations, Organ Damage, Central Nervous System Effects, Cancer, Reproductive Damage, Low Back Pain, Temporary Hearing Loss, Dermatitis, Respiratory Effects, Bone Breaks, Eye Burning	**ICS-208-CG SSP-F: (Rev 9/06)** Page _____ of _____

CG ICS SSP: DECONTAMINATION	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)
5. Supervisor/Leader	6. Location and Size of Site	7. For Emergencies Contact:		8. Hazard(s) Addressed:

9. Equipment:				10. References Consulted:

11. Contamination Avoidance Practices:	12. Decon Diagram: ☐ Attached, ☐ Drawn below	13. Decon Steps

14. Prepared By:	15. Date/Time Briefed:	Potential Health Effects: Bruise/Lacerations, Organ Damage, Central Nervous System Effects, Cancer, Reproductive Damage, Low Back Pain, Temporary Hearing Loss, Dermatitis, Respiratory Effects, Bone Breaks, Eye Burning	**ICS-208-CG SSP-G (rev 9/06):** Page _____ of _____

CG ICS SSP: ENFORCEMENT LOG	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)	
5. Supervisor/Leader	6. For Emergencies Contact:			7. Attachments:	
8.a. Job Task/Activity	8.b. Hazards	8.c. Deficiency	8.d. Action Taken	8.e. Safety Plan Amended?	8.f. Signature of Supervisor/Leader
9. Prepared By:	10. Date/Time Briefed:	**HAZARD LIST**: Physical/Safety, Toxic, Explosion/Fire, Oxygen Deficiency, Ionizing Radiation, Biological, Biomedical, Electrical, Heat Stress, Cold Stress, Ergonomic, Noise, Cancer, Dermatitis, Drowning, Fatigue, Vehicle, & Diving			**ICS-208-CG SSP-H (rev 9/06):** Page _____ of _____

CG ICS SSP WORKER ACKNOWLEDGEMENT FORM	1. Incident Name	2. Site Location:	3. Attachments:	
4. Type of Briefing	5. Presented By:		6. Date Presented	7. Time Presented
Safety Plan/Emergency Response Plan ☐ Start Shift ☐ Pre-Entry ☐ Exit ☐ End of Shift ☐ Specify Other:				
8.a. Worker Name (Print)	8.b. Signature*		8.c. Date	8.d. Time

CG ICS SSP: Emergency Safety & Response Plan 1910.120 Compliance Checklist (Form A)	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Site Supervisor/Leader	5. Location of Site
6.a. Cite: 1910.120	6.b. Requirement(sections that duplicate or explain are omitted)		6.c. ICS Form	6.d. Check	6.e. Comments
(**q**)(1)	Is the plan in writing?		SSP-A	☐	
(1)	Is the plan available for inspection by employees?		N/A	☐	Performance based
(**q**)(2)(i)	Does the plan address pre-emergency planning and coordination?		SSP-A	☐	
(ii)	Does it address personnel roles?		SSP-A	☐	
(ii)	Does it address lines of authority?		SSP-A	☐	
(ii)	Does it address communications?		SSP-A	☐	
(iii)	Does it address emergency recognition?		SSP-A	☐	
(iii)	Does it address emergency prevention?		SSP-A	☐	
(iv)	Does it identify safe distances?		SSP-A	☐	
(iv)	Does it address places of refuge?		SSP-A	☐	
(v)	Does it address site security and control?		SSP-A	☐	
(vi)	Does it identify evacuation routes?		SSP-A	☐	
(vi)	Does it identify evacuation procedures?		SSP-A	☐	
(vii)	Does it address decontamination?		SSP-A	☐	
(viii)	Does it address medical treatment and first aid?		SSP-A	☐	
(ix)	Does it address emergency alerting procedures?		SSP-A	☐	
(ix)	Does it address emergency response procedures		SSP-A	☐	
(x)	Was the response critiqued?		N/A	☐	Performance based
(xi)	Does it identify Personal Protection Equipment?		SSP-A	☐	
(xi)	Does it identify emergency equipment?		SSP-A	☐	
(**q**)(3)(ii)	All the hazardous substances identified to the extent possible?		N/A	☐	Performance based
(ii)	All the hazardous conditions identified to the extent possible?		N/A	☐	Performance based
(ii)	Was site analysis addressed?		N/A	☐	Performance based
(ii)	Were engineering controls addressed?		N/A	☐	Performance based
(ii)	Were exposure limits addressed?		N/A	☐	Performance based
(ii)	Were hazardous substance handling procedures addressed?		N/A	☐	Performance based
(iii)	Is the PPE appropriate for the hazards identified?		N/A	☐	Performance based
(iv)	Is respiratory protection worn when inhalation hazards present?		N/A	☐	Performance based
(v)	Is the buddy system used in the hazard zone?		N/A	☐	Performance based
(vi)	Are backup personnel on standby?		N/A	☐	Performance based
(vi)	Are advanced first aid support personnel standing by?		N/A	☐	Performance based
(vii)	Has the ICS designated safety official been identified?		SSP-A	☐	
(vii)	Has the Safety Official evaluated the hazards?		N/A	☐	Performance based
(viii)	Can the Safety Official communicate with IC immediately?		N/A	☐	Performance based
(ix)	Are appropriate decontamination procedures implemented?		N/A	☐	Performance based

CG ICS SSP: 1910.120 COMPLIANCE CHECKLIST (Form B)	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Site Supervisor/Leader	5. Location of Site

6.a. Cite: 1910.120	6.b. Requirement(sections that duplicate or explain are omitted)	6.c. ICS Form	6.d. Check	6.e. Comments
1910.120 (**b**)(1)(ii)(A)	Organizational structure?	203	☐	
(B)	Comprehensive workplan?	IAP	☐	Incident Action Plan
(C)	Site Safety Plan?	SSP-B	☐	
(D)	Safety and health training program?	N/A	☐	Responsibility of each employer
(E)	Medical surveillance program?	N/A	☐	Responsibility of each employer
(F)	Employer SOPs?	N/A	☐	Responsibility of each employer
(G)	Written program related to site activities?	N/A	☐	
(**b**)(1)(iii)	Site excavation meets shored or slope requirements in 1926?	N/A	☐	
(**b**)(2)(i)(D)	Lines of communication?	201 203 205	☐	
(**b**)3(iv)	Training addressed?	N/A	☐	Responsibility of each employer
(v)-(vi)	Information and medical monitoring addressed?	N/A	☐	Responsibility of each employer
(**b**)4(i)	Site Safety Plan kept on site?	N/A	☐	
(ii)(A)	Safety and health hazard analysis conducted?	N/A	☐	
(B)	Properly trained employees assigned to right jobs?	N/A	☐	
(C)	Personnel Protective Equipment issues addressed?	SSP-F	☐	
(E)	Frequency and types of air monitoring addressed?	SSP-E	☐	
(F)	Site control measures in place?	SSP-B	☐	
(G)	Decontamination procedures in place?	SSP-G	☐	
(H)	Emergency Response Plan in place?	SSP-D	☐	
(I)	Confined space entry procedures?	SSP-B	☐	
(J)	Spill containment program	SSP-B	☐	
(iii)	Pre-entry briefings conducted?	SSP-I	☐	
(iv)	Site Safety Plan effectiveness evaluated?	SSP-H	☐	
(**c**)(1)	Site characterization done?	N/A	☐	
(**c**)(2)	Preliminary evaluation done by qualified person?	N/A	☐	
(**c**)(3)	Hazard identification performed?	SSP-B	☐	
(**c**)(4)(i)	Location and size of site identified?	SSP-B	☐	
(ii)	Response activities, job tasks identified?	SSP-B	☐	
(iii)	Duration of tasks identified?	SSP-B	☐	Operational period
(iv)	Site topography and accessibility addressed?	SSP-C	☐	
(v)	Health and safety hazards addressed?	SSP-B	☐	
(vi)	Dispersion pathways addressed?	SSP-B	☐	
(vii)	Status and capabilities of medical emergency response teams?	206	☐	
(**c**)(5)(i)(iv)	Chemical protective clothing addressed and properly selected?	SSP-F	☐	
(ii)	Respiratory protection addressed?	SSP-B and F	☐	
(iii)	Level B used for unknowns?	N/A	☐	

CG ICS SSP: 1910.120 COMPLIANCE CHECKLIST Form B (cont)	1. Incident Name	2. Date/Time Prepared	3. Operational Period		
6.a. Cite: 1910.120	6.b. Requirement(sections that duplicate or explain are omitted)		6.c. ICS Form	6.d. Check	6.e. Comments
1910.120 (**c**)(6)(i)	Monitoring for ionization conducted?		SSP-E	☐	
(ii)	Monitoring conducted for IDLH conditions?		SSP-E	☐	
(iii)	Personnel looking out for dangers of IDLH environments?		N/A	☐	
(iv)	Ongoing air monitoring program in place?		SSP-E	☐	
(**c**)(7)	Employees informed of potential hazard occurrence?		SSP-B	☐	
(**c**)(8)	Properties of each chemical made aware to employees?		SSP-B	☐	
(**d**)(1)	Appropriate site control procedures in place?		IAP, SSP-B	☐	
(**d**)(2)	Site control program developed during planning stages?		IAP, SSP-B	☐	
(**d**)(3)	Site map, work zones, alarms, communications addressed?		IAP, SSP-B	☐	
(**g**)(1)(i)	Engineering, admin controls considered?		SSP-B	☐	
(iii)	Personnel not rotated to reduce exposures?		N/A	☐	
(**g**)(5)(i)	PPE selection criteria part of employer's program?		N/A	☐	Responsibility of employer
(ii)	PPE use and limitations identified?		SSP-F	☐	
(iii)	Work mission duration identified?		SSP-F	☐	
(iv)	PPE properly maintained and stored?		N/A	☐	Responsibility of employer
(vi)	Are employees properly trained and fitted with PPE?		N/A	☐	Responsibility of employer
(vii)	Are donning and doffing procedures identified?		SSP-F	☐	
(viii)	Are inspection procedures properly identified?		SSP-F	☐	
(ix)	Is a PPE evaluation program in place?		SSP-F	☐	
(**h**) (3)	Periodic monitoring conducted?		SSP-E	☐	
(**k**)(2)(i)	Have decontamination procedures been established?		SSP-G	☐	
(ii)	Are procedures in place for contamination avoidance?		SSP-G	☐	
(iii)	Is personal clothing properly deconned prior to leaving the site?		SSP-G	☐	
(iv)	Are decontamination deficiencies identified and corrected?		SSP-H	☐	
(**k**)(3)	Are decontamination lines in the proper location?		SSP-C	☐	
(**k**)(4)	Are solutions/equipment used in decon properly disposed of?		N/A	☐	
(**k**)(6)	Is protective clothing and equipment properly secured?		N/A	☐	
(**k**)(7)	If cleaning facilities are used, are they aware of the hazards?		N/A	☐	
(**k**)(8)	Have showers and change rooms provided, if necessary?		N/A	☐	
(**l**)(1)(iii)	Are provisions for reporting emergencies identified?		SSP-D	☐	
(iv)	Are safe distances and places of refuge identified?		SSP-B and C	☐	
(v)	Site security and control addressed in emergencies?		SSP-D	☐	
(vi)	Evacuation routes and procedures identified?		SSP-D	☐	
(vii)	Emergency decontamination procedures developed?		SSP-D	☐	
(ix)	Emergency alerting and response procedures identified?		SSP-D	☐	
(x)	Response teams critiqued and followup performed?		SSP-H	☐	
(xi)	Emergency PPE and equipment available?		SSP-D	☐	

CG ICS SSP: 1910.120 COMPLIANCE CHECKLIST Form B (cont)	1. Incident Name	2. Date/Time Prepared	3. Operational Period		
6.a. Cite:	6.b. Requirement(sections that duplicate or explain are omitted)		6.c. ICS Form	6.d. Check	6.e. Comments
1910.120 (**l**)(3)(i)	Emergency notification procedures identified?		SSP-D	☐	
(ii)	Emergency response plan separate from Site Safety Plan?		SSP-D	☐	
(iii)	Emergency response plan compatible with other plans?		SSP-D	☐	
(iv)	Emergency response plan rehearsed regularly?		SSP-D	☐	
(v)	Emergency response plan maintained and kept current?		SSP-H	☐	
1910.165 (**b**)(2)	Can alarms be seen/heard above ambient light and noise levels?		N/A	☐	
(**b**)(3)	Are alarms distinct and recognizable?		N/A	☐	
(**b**)(4)	Are employees aware of the alarms and are they accessible?		SSP-D	☐	
(**b**)(5)	Are emergency phone numbers, radio frequencies clearly posted?		206	☐	
(**b**)(6)	Signaling devices in place where there are 10 or more workers?		IAP	☐	
(**c**)(1)	Are alarms like steam whistles, air horns being used?		IAP	☐	
(**d**)(3)	Are backup alarms available?		IAP	☐	
(m)	Are areas adequately illuminated?		IAP	☐	
(**n**)(1)(i)	Is an adequate supply of potable water available?		IAP	☐	
(ii)	Are drinking water containers equipped with a tap?		IAP	☐	
(iii)	Are drinking water containers clearly marked?		IAP	☐	
(iv)	Is a drinking cup receptacle available and clearly marked?		IAP	☐	
(**n**)(2)(i)	Are non-potable water containers clearly marked?		IAP	☐	
(**n**)(3)(i)	Are their sufficient toilets available?		IAP	☐	
(**n**)(4)	Have food handling issues been addressed?		IAP	☐	
(**n**)(6)	Have adequate wash facilities been provided outside hazard zone?		IAP	☐	
(**n**)(7)	If response is greater than 6 months, have showers been provided?		IAP	☐	
7. Prepared By:		**ICS-208-CG SSP-K (rev 9/06): Page 3.** Page _____ of _____			

CG ICS SSP: 1910.120 DRUM COMPLIANCE CHECKSHEET	1. Incident Name	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact)
5. Supervisor/Leader	6. Location and Size of Site	7. For Emergencies Contact:		8. Note: tanks and vaults should also be treated in the same manner as described below [1910.120(j)(9)]. Many can also pose confined space hazards.

9.a. Cite: 1910.120 (Cites that duplicate or explain requirements are omitted)	9.b. Requirement	9.c. Check	9.d. Comments
(**j**)(1)(ii)	Drums meet DOT, OSHA, EPA regs for waste they contain, including shipment?	☐	
(iii)	Drums inspected and integrity ensured prior to movement?	☐	
(iii)	Or drums moved to an accessible location (staging area) prior to movement?	☐	
(iv)	Unlabelled drums treated as unknown until properly identified and labeled?	☐	
(v)	Site activities organized to minimize drum handling?	☐	
(vi)	Employers properly warned about the hazards of moving and handling drums?	☐	
(vii)	Suitable overpack drums are available for addressing leaking and ruptured drums?	☐	
(viii)	Leaking materials from drums properly contained?	☐	
(ix)	Are drums that cannot be moved, emptied of contents with transfer equipment?	☐	
(x)	Are suspect buried drums surveyed with underground detection system?	☐	
(xi)	Are soil and covering material above buried drums removed with caution?	☐	
(xii)	Is the proper extinguishing equipment on scene to control incipient fires?	☐	
(**j**)(2)(i)	Are airlines on supplied air systems protected from leaking drums?	☐	
(ii)	Are employees at a safe distance, using remote equipment, when handling explosive drums?	☐	
(iii)	Are explosive shields in plane to protect workers opening explosive drums?	☐	
(iv)	Is response equipment positioned behind shields when shields are used?	☐	
(v)	Are non-sparking tools used in flammable or potentially flammable atmospheres?	☐	
(vi)	Are drums under extreme pressure opened slowly & workers protected by shields/distance?	☐	
(vii)	Are workers prohibited from standing and working on drums?	☐	
(**j**)(3)	Is the drum handling equipment positioned and operated to minimize sources of ignition?	☐	
(**j**)(5)(i)	For shock sensitive drums, have all non-essential employees been evacuated?	☐	
(ii)	For shock sensitive drums: is handling equipment provided with shields to protect workers?	☐	
(iii)	Are alarms that announce start/finish of explosive drum handling actions in place?	☐	
(iv)	Are continuous communications in place between the drum handling site & command post?	☐	
(v)	Are drums under pressure properly controlled for prior to handling?	☐	
(vi)	Are drums containing packaged laboratory wastes treated as shock sensitive?	☐	
(**j**)(6)(i)	Are lab packs opened by trained and experienced personnel?	☐	
(ii)	Are lab packs showing crystallization treated as shock sensitive?	☐	
(**j**)(8)(ii-iii)	Are drum staging areas manageable with marked access and egress?	☐	
(iv)	Is bulking of drums conducted only after drum contents have been properly identified?	☐	

10. Prepared By:	**Form SSP-L (rev 9/06)** Page _____ of _____

Real World Site Safety Plan

ATHOS I

Site Safety Plan

MV ATHOS I
November 27, 2004

Prepared for Unified Command Staff
Revised December 7, 2004

SITE DESCRIPTION

Site generally referred to as: MV ATHOS I

Location: Delaware River near Paulsboro, New Jersey

Surrounding area: _x__ industrial, _x_ residential, _x_ rural, _x_ unpopulated, _x_other:
Topography: ____ rocky, _X__ sandy beach, _X__ docks, ____ cliffs, _X__ marshes,

Other: _____

Potential Hazards:

_X_Chemical Exposure
_X_Oxygen Deficiency
___ Ionizing Radiation
_X_ Cold/Heat Exposure
_X_Slippery and Uneven Surfaces
_X_Slips, Trips & Falls
___ Fire/Explosion
___ Confined/Enclosed Space Entry
_X_ Biological Hazards
_X__ Noise
_X_ Boat Operations

SITE CONTROL

All work will be conducted in accordance with established procedures and developed work plans.

- Anyone entering or departing a WORK AREA, or associated control zones, will report to the site supervisor
- No person will enter a site without knowledge of the approved Site Safety and Health Plan and associated site hazards.
- No person will enter a site without adequate training in hazardous waste emergency response/safety and health based on work assignment and applicable hazardous conditions.
- All personnel entering a contaminated area are required to decon prior to exiting the zone.

In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.

SITE SAFETY/OPERATIONS MAP

The site safety map includes the location of items such as: zone boundaries, washing, toilet/hygiene facilities, first aid equipment, fire extinguishers, command posts, equipment staging/storage, eating/rest areas, animal rehab/hazing stations, and locations of identified hazards. Any additional hazards encountered on site will be marked on the site map.

See Attachment A

SITE ORGANIZATION

See Organizational Chart in IAP, ICS Form 207.

HAZARD EVALUATION:

CHEMICAL HAZARDS (check appropriate category and attach MSDS if available)

Oils composed of an indefinite petroleum mixture. May contain benzene, toluene, xylene, naphthalenes, and polyaromatic hydrocarbons (PAHs) in concentrations that may vary widely depending on the source of the oil, weathering and aging.

Hazard Descriptions: May cause dermatitis by skin contact, nausea by inhalation, and eye irritation. Benzene can effect the blood and blood forming organs and is a carcinogen. Exposure to benzene, toluene, and xylene is most likely around freshly spilled oil and in poorly ventilated areas (such as in pits or under docks). Benzo(a)pyrene, a PAH, can cause skin cancer with prolonged skin contact. As oil weathers and ages, benzeo(a)pyrene becomes more concentrated because it evaporates more slowly than other components.

Basic Precautions: Stay upwind from fresh spills. Wear respiratory protection and chemical resistant clothing to prevent skin or eye contact. Periodically change clothing to prevent the hydrocarbon from soaking through and immediately change clothing if the hydrocarbon comes in contact with skin. Wash skin with soap and water when changing into street clothing, before eating/drinking, or when exiting to a contamination reduction zone. Flush eyes with water if exposed directly to the hydrocarbon. Do not induce vomiting if hydrocarbon is swallowed - contact a physician immediately. A urinary phenol test is required at the end of the shift if exposed to benzene.

Initial air monitoring was completed as of 1400 Hours, 11/28/04. Results indicated no detectable concentrations of benzene at sites monitored.

Additional air monitoring will be conducted on an as needed basis or as requested by Unified Command.

GENERAL SAFE WORK PRACTICES

The following safe work practices will be adhered to while on site (check those that are appropriate & add any additional).

_X_ **BUDDY SYSTEM:** The buddy system will be observed inside the Work Area (EXCLUSION ZONES). Personnel must work within sight of their assigned partner at all times.

_N/A_ **OCCUPATIONAL MEDICAL MONITORING**: Personnel shall be provided occupational medical monitoring program in accordance with 29 CFR 1910.120.

_X_ **LIGHTING:** Fixed or portable lighting will be maintained in dark areas or for night work.

_X_ **SLIPPERY ROCKS AND SURFACES:** All personnel in the work area will wear chemical resistant safety boots (with steel toe). Neoprene is a common material/fairly resistant to many oils.

_X_ **WORK NEAR WATER:** All personnel working in boats, on docks, or near water, will wear Coast Guard approved personal flotation devices (PFDs) or work vests.

_X_ **HEAT STRESS:** Guidelines developed by ACGIH can be utilized in determining work/rest periods. fluids will be available and encouraged during rest periods.

_X_ **COLD STRESS:** Adequate warm clothing, rest opportunities, exposure protection, warm and/or sweet fluids will also be available. For prolonged water temperatures below 59 degrees F, or a combined water and air temperature less than 120 degrees F, exposure suits should be worn by personnel working/traveling in small boats, and immersion suits shall be available for vessel operations other than small boats.

_X_ **HIGH NOISE LEVELS:** Hearing protection will be used in high noise areas -- generally where noise levels require personnel to raise their voices to be heard or in areas exceeding 84dBA.

_X_ **ELECTRICAL HAZARDS:** Electrical hazards are designated on the site map, and shall be marked with suitable placards, barricades, or warning tape as necessary.

_X_ **CONFINED SPACES:** Open manholes, trenches, or similar hazards should be noted on the site map including work under docks and piers.

_X_ **MUD:** Dangerous mud flats posing a hazard are off limits to all personnel.

_X_ **CARBON MONOXIDE:** Equipment operators will ensure personnel do not linger near exhaust pipes.

_X_ **UV LIGHT EXPOSURE:** Sunscreens of protection factor 15 (or greater), and UV tinted safety glasses should be available for response personnel, as needed.

_X_ **HELICOPTER OPERATIONS:** Pilots shall provide safety briefing for all passengers.

_X_ **MOTOR VEHICLES:** Drivers will maintain a safe speed at all times.

_X_ **DRUM HANDLING AND SPILL CONTAINMENT**: To the extent possible, utilize mechanical devices, drum slings or other mechanical assisting devices to handle drums and containers.

Temporary holding/staging areas for drums and containers containing waste materials shall be constructed to contain spillage, run-off, or accidental releases of materials.

Manual lifting and handling of drums and containers shall be kept to a minimum.

_X_ **CONFINED SPACE ENTRY:** If a confined space must be entered or hot work conducted in a confined space, a specific confined space entry work plan and confined space work authorization (permit) will be developed for that operation.

_X_ **POISONOUS PLANTS:** (Poison ivy, oak, or sumac)

_NA_ **SPECIAL PPE**

___Thermal Protection Proximity Suits, short duration—close proximity at radiant heat temperatures as high as 2000°F. Respiratory protection must be provided.
___Fire Entry Suits, protection for brief entry into flame environment at temperatures as high as 2000°F. Not designed for rescue operations. Respiratory protection must be provided.
___Turn out gear—general fire fighting protective clothing.

_X_ **DECONTAMINATION PROCEDURES:** Contaminated personnel will decontaminate in accordance with the instructions of the Safety Officer. See the Decon and layout provided as Attachment B.

_X_ **SANITATION & PERSONAL HYGIENE:** Potable water, non-potable water, toilets and personal hygiene facilities shall be readily available.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Level D as described below will be used on site:

Level D (no known hazard(s))

- **Tyvek-type and/or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant Gloves**
- **Hearing protection**

Level C (known hazard(s) are atmospheric contaminants, liquid splashes or other contact that will not adversely affect the skin.

- Hooded disposable - chemical resistant
- coveralls
- splash suit
- Cartridge Respirator - air purifying
  - Full face
  - Half-mask
- Gloves - chemical resistant
- Boots - chemical resistant (work shoes)
- Hard hat
- Escape pack
- Means of communication
- Safety glasses/goggles/face shield

Level B (The hazard type and atmospheric concentration have been identified and require a high level of general and respiratory protection.

- Pressure Demand
  - SCBA
  - Air supplied respirator
  - Escape pak
- Hooded Chemical resistant/disposable
  - Coveralls
  - 2 piece splash suit
  - Gloves - chemical resistant (inter-outer)
  - Boots - chemical resistant (work shoes)
  - Hard hat
  - Means of communication
  - Safety glasses/goggles/face shield

Level A (The hazard(s) have been identified and require the highest level of protection for skin, eyes and respiratory system)

- Pressure Demand
  - SCBA
  - Air Supplied Respirator
  - Escape Pack
- Fully encapsulated-chemical protective suit
- Coveralls
- Long underwear
- Gloves - chemical resistant (inter-outer)
- Boots - chemical resistant (work shoes)
- Hard hat
- Radio communication

NOTE: The SAFETY OFFICER may modify PPE on a case by case basis. Special operations may require a different PPE level.

EMERGENCY PROCEDURES

In all cases when an on-site emergency occurs, personnel will not reenter the work area or restart work until the condition resulting in the emergency has been investigated by supervisory personnel, hazards have been reassessed; the site safety plan revised, as needed; and site personnel briefed on any changes in the operation or safety plan.

Emergency Medical Procedures:

- Call for assistance if necessary. Report all injuries to your supervisor.
- Do not attempt to move seriously injured personnel, call for assistance.

Emergency Fire Procedures:

- DO NOT attempt to fight fires other than small fires. A small fire is generally considered to be a fire in the early stages of development, which can readily be extinguished with personnel and equipment in the immediate area in a few minutes time.
- YOU MUST call for help immediately. Alert nearby personnel and notify supervision.
- When the fire alarm is sounded, personnel shall immediately leave the work area to the designated entry/exit point for role call.
- The Site Safety Officer or the Fire Department shall ensure that the fire is extinguished BEFORE restarting work.

EMERGENCY NUMBERS

FIRE 911

MEDICAL 911

POLICE 911

EVACUATION PROCEDURE

All contractors will develop the following procedures to specific to their work force/site.

EVACUATION & FIRE SIGNAL(S)

PRIMARY EVACUATION ROUTE

SECONDARY EVACUATION ROUTE

ASSEMBLY POINT

COMMUNICATIONS

General signals:

- **THUMBS UP:** I'm OK/I agree.
- **THUMBS DOWN:** don't agree.
- **HANDS ACROSS THROAT:** out of air/trouble breathing.
- **GRAB HAND/ARM:** come with me.
- **HANDS ON HEAD:** I need assistance.

For more detailed communication procedures and information, refer to the Communications Plan as developed for the IAP.

SITE SAFETY BRIEFINGS/MEETINGS

All personnel, employees, contractors, subcontractors and visitors will be provided with an initial site safety plan briefing to communicate the work plan and nature, level and degree of hazards expected on site.

Personnel will also receive regular briefings when significant changes are made in the work procedures or safety plans. At a minimum these meetings will describe the work to be accomplished, discuss safety procedure changes, and note any items which need to be passed from others. General safety training topics should also be covered based on points raised in previous meetings and the site safety plan attachments. Document all safety meetings.

The responsibilities of the SITE SAFETY OFFICER include (but are not limited to):

- Coordination of all safety and health concerns for the entire work site;
- Keeping the plan current; and
- Liaison with safety officers from other organizations.

AUTHORIZATIONS

Approvals

Site Safety Officer:

_____ **Date:** _____

Command Staff:

_____ **Date:** _____
FOSC

_____ **Date:** _____
QI/Incident Commander

_____ **Date:** _____
New Jersey

_____ **Date:** _____
Delaware

_____ **Date:** _____
Pennsylvania

_____ **Date:** _____
Information Officer

SAFETY AND HEALTH CONCERNS

Site safety plans must provide a set of control measures to minimize the risks to personnel. Possible site control measures are described below.

Site Security and Access Controls:

Safety and health risks can be significantly reduced by limiting access to work areas. People entering work areas, without adequate training, or without adequate supervision create a needless risk for other response personnel as well as themselves.

Response personnel and equipment need to leave contaminated areas in a manner which minimizes the spread of possible contaminants to clean areas or equipment.

Site security can also help prevent illegal disposal of other hazardous products in the response area.

Use of Control Zones. At hazardous materials incidents control zones are established to limit personnel access to contaminated areas and prevent the spread of contamination. This helps protect personnel and minimizes further damage to the environment.

Anyone entering or departing a work area, or associated control zones, should report to the designated recorder for that area. The site security officer enforces this policy at all times.

No person should enter a site without reading and subscribing to the approved Site Safety and Health plan.

No person should be allowed to enter a site without adequate training in hazardous waste operations safety and health; based on work assignment and applicable hazardous conditions.

Cold Zones. These are minimal exposure areas maintained as uncontaminated locations for support functions. Command posts, food service areas, and new equipment storage and staging areas are examples of cold zone support functions. This zone is also called a "clean zone" or "support zone".

Hot Zones. Defined areas of exposure hazards. Hot zones should extend far enough to prevent adverse effects to unprotected personnel outside of the zone.

For oil spills the impacted area where oil recovery is being conducted is typically treated as a hot zone. This zone is also referred to as "restricted zone", or "exclusion zone".

Warm Zones. These zones are where many control functions take place (e.g., personnel log in and out, personnel are decontaminated and dirty equipment is stored

or decontaminated). These zones are also called "decontamination," "contamination reduction," or "limited access zones."

Access control. The warm zone includes control points for the access corridor and thus assists in reducing the spread of contamination. A site recorder should keep track of personnel and equipment passing through the control points. This is important for project documentation and for safety considerations.

Decontamination area. An area within the warm zone (set aside) for decontamination of personnel, or equipment moving out of the work area (hot zone). The decontamination area should provide facilities for personnel to store contaminated clothing and equipment. Personnel must be able to wash their hands and faces before eating, drinking, smoking, or departing the work area. In some cases, showers may be required for personnel removing a contaminated clothing and changing into street clothing.

A clean sheltered area associated with the decon area, should be set aside for breaks. Rest and rehab will often be needed to control heat and cold stress hazards. Appropriate fluids (warm for cold stress conditions, and cool for heat stress conditions) should be available.

Smoking should be restricted to an area where hands can be washed first and where there is no significant fire hazard.

Marking of Zones. Zones should be marked as needed to control traffic and enforce decon procedures. Placards, barricades, traffic-cones, and/or boundary tape can be used for this purpose. The site safety officer should periodically inspect the effectiveness of boundaries.

An example of a color coding scheme might be orange, red, or black and yellow for exclusion zones,yellow for contamination reduction zones, and green or white for support zones.

Site map(s) should be developed and modified as necessary to cover the entire work area. It may be necessary to develop more detailed maps for individual sectors. Maps should be attached to the Site Safety Plan.

The site map(s) should include:

Control Zones.

The decontamination layout, equipment storage, temporary waste storage areas, toilets and personal hygiene facilities.

Emergency equipment such as fire extinguishers, first aid kits, eye wash stations, and stokes litters. If emergency medical evacuation can be accomplished by vehicle, maps should include routes to nearest hospital.

Evacuation routes and post-evacuation assembly areas.

Command post(s).

Staging areas for resources such as arriving personnel, new (clean) equipment, or visitors.

Rest and rehab support areas (e.g., food, fluids, and shelter).

Adjacent restricted operations (by other teams) should be noted on applicable maps. Examples include :

- animal rehab, capture, or staging;
- bird hazing stations; high pressure wash, bio-remediation, and dispersant work areas
- HAZMAT Team operations.

The location of identified safety hazards should be identified, known and understood by all personnel. The following are examples:

- underground electrical cables,
- overhead cables,
- pits, trenches, open holes/hatches,
- hearing protection areas,
- hard hat areas, and
- suspected locations of poisonous plants, insects, or animal hazards.

Access/Egress, and Dangerous Work Surfaces

Access/Egress. Spill response often requires getting personnel into isolated locations, damaged vessels or facilities, or other difficult to reach areas where it will be awkward for personnel to get to the work location. Adequate secured ladders, ramps, or other access must be provided.

Oily surfaces. Oily/slippery surfaces are a primary concern. Oil/chemical soaked boots present a skin contact hazard and slipping hazard. Personnel working around oily/chemical soaked surfaces should wear rubber safety boots with textured bottoms. Boat crews may consider substituting clean deck shoes with textured soles.

Damaged surfaces. Old or damaged deck plating, piers, or building floors may be a trip/fall hazard. Personnel should be restricted from working on

these locations or temporary surfaces should be constructed/installed as necessary.

Lighting. Fixed or portable lighting must be maintained for dark areas or work after sunset. Sufficient illumination should be provided at a minimum to meet the requirements of TABLE H-120.1 (Minimum Illumination Intensities) of 29 CFR 1910.120(m).

Work on or near the water. All personnel working in boats, on docks, or generally within several feet of water deeper than waist high, should wear Coast Guard approved personal flotation devices (PFDs) or work vests. Under hypothermia conditions it may be necessary to use insulated flotation suits. A boating safety briefing should be provided for all personnel using boats.

Small aircraft safety. Personnel working around or flying in rotary or small fixed wing aircraft should receive a safety briefing from the pilot before flight. In particular - safe approaches/exits, the locations of floatation gear, and emergency exits.

High Noise Levels. Hearing protection should be used by all personnel routinely working in high noise areas (84 dBA or 90 dBA). Locations likely to exceed this level include the vicinity of vac-trucks, heavy equipment, pumps, generators, and bird hazing stations. Generally, where noise levels require personnel to raise their voices to be heard, hearing protection should be used.

Animal hazards (insects, snakes, wildlife, etc.). These hazards are very site-specific. Specific controls should be developed in consultation with local game/wildlife officials, health service representatives, or other experienced individuals (e.g., local utility companies often face these hazards regularly). Personnel should be briefed on where potential hazards are and provided, if possible, visual familiarization.

Wildlife hazards are one of the most frequently encountered hazards. This can range from oily waterfowl to bears. Personnel should not underestimate the safety (and health) hazards associated with oily/injured bird or mammal species. Sharp bills can injure eyes in particular. These animals are frightened and very defensive at the approach of people, and are often stronger than they appear. Dead animals in general, should only be handled by specially trained personnel.

Insects Hazards (e.g., mosquitoes and ticks). General controls might include long sleeved clothing and insect repellent available for all personnel in designated areas.

Poisonous Snakes. General controls include identification training, knee high rubber boots, and snake bite kits for personnel in designated areas.

Poisonous Plants (e.g., poison ivy, oak, and sumac). Long sleeved clothing should be worn in areas containing these plants. Areas known to contain these plants should be marked/posted to the extent possible. Emergency medical personnel should prescribe first aid treatments.

Electrical Hazards. Electrical power lines (buried or overhead) should be marked on applicable project maps and physically marked in the field as necessary.

Carbon Monoxide. Vehicle/equipment operators should ensure that personnel are not allowed to linger or work near exhaust pipes.

Falling Objects. Hard hat areas determined by site safety personnel should be noted on site maps and enforced for all personnel entering these areas.

UV Light Exposure. Sunscreens of protection factor 15 (or greater) and UV tinted safety glasses should be made available for response personnel as needed to prevent overexposure to UV light.

Power Tools. Detailed requirements for hand and portable power tools (including jacks and lawn mowers) are found in 29 CFR 1910.241 through 247.

Use insulated tools with the insulation in good condition. Power tools should also be of the grounded type.

Ensure adequate guarding of hand tools.

Extension cords should also be grounded, have insulation in good condition, and have appropriate lengths and gauges.

Avoid electrocution hazards. In particular, power tools should not be used outdoors when it is raining or around wet surfaces.

Eye protection should be used when working with power tools.

Handling drums, containers, and heavy loads. 29 CFR 1910.120(j) has specific requirements regarding the handling of drums and containers on site. There may be many containers used at a spill site ranging from plastic bags to over pack drums to very large roll-off containers.

Some of the key elements:

- Use containers that are in good condition and adequate for the selected use.

- Containers being transported for disposal must be properly labeled.
- Containers being kept at temporary disposal staging areas must be held in containment areas that will prevent runoff and leaching of oily residues. Fire fighting-provisions should be reviewed.
- Personnel should not be allowed to work under equipment lifting loads.
- Unassisted manual lifting of heavy containers should be avoided. Mechanical equipment, lifting aids (hand trucks or support belts) , and partner lifts should be encouraged.
- Periodically personnel should be reminded of proper lifting procedures.

Confined Space Safety. Confined spaces should not be entered unless a specific plan has been developed for the space(s) of concern. Confined spaces must first be tested and appropriate documentation posted for entrants (e.g., confined space entry permit or marine chemist certificate). Personnel entering these spaces must be specially trained and equipped for confined space entry.

When confined spaces are present on a site, measures must also be taken to prevent accidental entry into confined spaces by untrained or unprepared personnel. Confined spaces should be noted on site safety maps and reviewed during site safety briefings. Warning signs or barriers may also be needed to prevent accidental entries. Personnel working around confined spaces must understand the nature, hazards, and policy regarding confined spaces.

Heat Stress Considerations. Safety personnel should make heat stress determinations throughout the day. If it is determined that a heat stress hazard exists an alert should be passed to all to implement periodic rest periods. Fluids should be readily available.

Health Concerns: Excessive exposure to a hot working environment can bring about a variety of heat-induced disorders.

Heat Stroke. Unless the heat stroke victim receives quick and appropriate treatment, DEATH CAN OCCUR. Any person with signs of symptoms of heat stroke requires immediate hospitalization. While waiting for medical assistance first aid should be administered.

Heat Exhaustion. In most cases, treatment involves rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment.

Preparing For Work in The Heat. Healthy personnel are generally capable of adjusting to the heat. This adjustment usually takes about 5 to 7 days during which time the body will undergo changes that will make continued exposure to heat more endurable.

Work/Rest Periods. Whenever possible work should be distributed evenly with regular breaks scheduled. Providing cool rest areas in hot work environments considerably reduces the stress of working in the heat. Rest areas should be shaded and as close to the work area as possible. Short but frequent rest provides the best benefit.

Drinking Fluids. Most heat disorders involve excessive dehydration. It is essential that water intake during the workday be about equal to the amount of sweat produced.
Personnel should be encouraged to consume 5 to 7 ounces of fluids every 15 to 20 minutes to replenish the fluids.

There is no optimum temperature of drinking water. Most people tend to drink cool fluids.

Protective Clothing and Heat Stress. Clothing inhibits the transfer of heat. Where the air temperature is lower than skin temperature clothing reduces the body's ability to lose heat into the air. When air temperature is higher than skin temperature clothing helps to prevent the transfer of heat from the air to the body. The advantage of wearing additional clothes, however, may be nullified if the clothes interfere with the evaporation of sweat (such as rain slickers or chemical protective clothing).

Cold Stress. Frostbite and hypothermia are the two major hazards of working in cold temperatures. A cold environment can reduce the temperature of the body and cause shivering, reduced mental alertness, and sometimes loss of consciousness. However, a healthy worker who is properly protected and takes reasonable precautions can function efficiently and safely in cold environments.

Safety personnel should make cold stress determinations throughout the day when temperatures fall below 40 degrees F. Many of the protective methods for heat stress also apply to cold stress:

- Shelter (warm),
- fluids (warm), and
- work/rest cycling (to warm up in shelters).

Factors affecting cold exposures. Factors that can contribute to cold injury include exposure to humidity and high winds, contact with moisture or metal, inadequate clothing, age, and general health. Physical conditions that can worsen the effects include fatigue, allergies, vascular disease, smoking, drinking, and certain specific drugs or medicines. The actual effects of a cold environment on the body also depend upon how well the skin is protected. Environmental factors affecting cold stress include wind and humidity, as well as temperature.

Hypothermia. Hypothermia is perhaps the most serious cold injury because it is a generalized (threatening the whole body) injury which can therefore be life threatening.

Hypothermia is an abnormally low body temperature caused by exposure to cold in air or in water. Hypothermia results as the body loses heat faster than it can produce it. Air temperature alone is not enough to judge the cold hazard of a particular environment. Hypothermia cases often develop in air temperatures between 30-50 degrees. When you figure in such factors as wind chill, temperature can be significantly lower.

Warning Signs

Pain in the extremities may be the first warning of dangerous exposure to cold. Severe shivering must be taken as a sign of danger requiring removal from the cold exposure. A worker should go immediately to a warming shelter if any of the following symptoms occur:

- Pain in the extremities (or frostnip),
- Onset of heavy shivering,
- Excessive fatigue,
- Drowsiness, or
- Euphoria.

Other cold stress injuries:

- Frostbite is characterized by whitened areas on skin; a burning sensation; blistering; and the affected parts become cold, numb, and tingling.
- Frostnip is a condition where the skin turns white but without the severity of frostbite.
- Acrocyanosis is characterized by cold hands and feet that turn blue and sweaty.
- Trench foot is an edema (swelling) of the foot with tingling, itching, severe pain, and blistering. It is caused by the feet being exposed to cold and dampness.
- Raynaud's disease includes symptoms such as fingers turning white and stiff; intermittent blanching and reddening of the fingers and toes; the affected area tingles and becomes very red or reddish purple.

Evaluating cold exposure hazards. Common sense will generally dictate how much clothing to wear and when to get into a warm area in most cases. However, some work environments require more complex evaluation.

Preventing cold stress.

- Reduce manual work loads.
- Prevent dehydration.
- Provide warm locations and plenty of breaks.
- Provide wind or draft barriers both inside and outside to limit exposure to air movement.
- Schedule the coldest work for the warmest part of the day. Move work to warmer areas whenever possible. Assign extra workers to highly demanding tasks. Make relief workers available for workers who need a break.
- The buddy system is important when working in stressful environments.
- Avoid fatigue/stress by ensuring sufficient sleep and good nutrition are to maintain a high level of tolerance to cold.
- Provide sufficient warm clothing. The most important parts of the body to protect are the feet, hands, head, and face.

Medical Surveillance. 29 CFR 1910.120(f) requires medical surveillance for certain categories of personnel. The four primary categories are:

1. Members of hazmat teams (as defined in the OSHA standard, basically any group of personnel "who are expected to perform work to handle and control actual or potential leaks or spills of hazardous substances requiring possible close approach to the substance");
2. Personnel injured due to overexposure from an incident;

3. Personnel who are or may be exposed to hazardous substances or health hazards at or above the OSHA permissible exposure limits (PELs) or above other published exposure levels if no PEL exists for 30 days or more a year (exposure is assessed without regarding use of respirators as a mitigating control); and
4. All response personnel wearing respirators for 30 days or more a year.

Sanitation Requirements

Potable water. An adequate supply of potable water, or other drinking fluids, shall be maintained at all times. Containers for drinking fluids should close tightly and be equipped with a tap. These containers must be labeled so they are not accidentally used for other purposes. Where single service cups are supplied, the unused cups shall be maintained in a sanitary container; and a separate disposal container provided for used cups.

Non-potable water. Water intended for uses other than drinking or washing should be labeled as it is not accidentally used for drinking, washing, or cooking. There shall be no cross-connection of potable and non-potable water supplies.

Toilet facilities. Toilet facilities should be provided as follows (29 CFR 1910.120(n):

- 20 or fewer people: 1 facility
- 20-200 people: 1 toilet seat, and
- 1 urinal per 40 persons
- more than 200 people: 1 toilet seat, and
- 1 urinal per 50 persons

Toilets shall be provided such that they are readily accessible from all work areas. Mobile crews with ready access to toilet facilities using their own transportation do not need to have toilet facilities located at their temporary work sites.

Sewage shall be handled in accordance with local health codes using one of the following means:

- sanitary sewer,
- chemical toilets,
- recirculating toilets,
- combustion toilets, or
- flush toilets.

Food handling shall be conducted in accordance with the requirements of local jurisdiction.

Washing Facilities. Washing facilities shall be readily accessible by all employees. In addition to sanitary cleaning, these facilities shall be equipped to remove oily residues from the skin. Washing facilities shall be maintained free of contaminants above exposure limits.

Showers. For operations lasting more than 6 months, showers and changing rooms must be provided in accordance with 29 CFR 1910.120(n)(7);.141(d)(3);(e)

SAFE WORK PRACTICES

Cold Weather

Frostbite and hypothermia are major hazards of working in cold temperatures. A cold environment can reduce the temperature of the body and cause shivering, reduced mental alertness, and even loss of consciousness. However, a healthy worker who is properly protected and takes reasonable precautions can function efficiently and safely in cold environments.

Factors Affecting Cold Exposures:

- exposure to humidity and high winds,
- contact with moisture or metal,
- inadequate clothing, age, and general health.

Physical conditions that worsen the effects include:

- fatigue, allergies, vascular disease, smoking, drinking, and
- certain specific drugs or medicines.

Important Warnings:

- Pain in the extremities may be the first warning of dangerous exposure to cold.
- Severe shivering must be taken as a sign of danger requiring removal from the cold exposure.

A worker should go immediately to a warming shelter if any of the following symptoms occur:

- pain in the extremities,
- onset of heavy shivering,
- excessive fatigue, drowsiness, or
- euphoria.

Hypothermia: Hypothermia is an abnormally low body temperature caused by exposure to cold in air or in water. Hypothermia results as the body looses heat faster than it can produce it. Air temperature alone is not enough to judge the cold hazard of a particular environment. Hypothermia cases often develop in air temperatures between 30-50 degrees Fahrenheit. When you figure in such factors as wind chill, the effective temperature can be significantly lower.

Early warnings of hypothermia are:

- uncontrollable shivering and the sensation of cold;
- the heartbeat slows and sometimes becomes irregular, the pulse weakens, and the blood pressure changes;
- fits of shivering, vague or slurred speech, memory lapses, incoherence, or drowsiness are some symptoms which may occur; and

- other symptoms which may be seen before unconsciousness are cool skin, slow, irregular breathing, low blood pressure, apparent exhaustion, and inability to get up after a rest.

First aid for hypothermia: The main objective in handling potential cases of hypothermia is rewarming the body core evenly and without delay. HOWEVER, doing it TOO RAPIDLY can disrupt body functions such as circulation. Follow these guidelines:

- The outer layer of clothing should be removed when entering a warm shelter.
- The remaining clothing should be loosened to permit sweat to evaporate.
- Alcohol should not be consumed while in the warm environment.
- Anyone on medications such as blood pressure control or water pills should consult a physician about possible side effects of cold stress.

If medical help is not immediately available:

- Keep the person quiet, but keep them awake, if possible.
- Avoid unnecessary movement. If it's necessary to move a hypothermia victim, use a litter the exertion of walking could aggravate circulation problems.
- In case of mild hypothermia where the person is conscious, the body may be packed with heat packs or warm towels at the neck, groin, and armpits.
- As the extremities begin to recover warmth give conscious victims sweet, warm drinks. AVOID caffeine or alcoholic drinks.
- Don't re-warm the core and the extremities at the same time. The sudden return of the cool blood pooled in the extremities to the heart can cause shock.

Water Immersion Victims. Flotation is the most important factor in water immersion survival, but may not be available if not provided in advance.

How to Prevent Cold Stress Injuries:

- Wear the proper clothing to protect yourself
- Provide windbreaks & shelters.
- Schedule coldest work for the warmest part of the day.
- Move work to warmer areas whenever possible.
- Assign extra workers to highly demanding tasks.
- Relief workers available for workers needing a break
- Enforce the BUDDY SYSTEM.
- Minimize sitting/standing still for long periods.
- Older workers need to be extra careful in the cold.
- Sufficient sleep and good nutrition are important for maintaining a high level of tolerance to cold.
- Provide appropriate PROTECTIVE CLOTHING/EQUIPMENT.
- PRIORITY CLOTHING includes protection of FEET, HANDS, HEAD, and FACE. Keeping the head covered important because as much as 40% of body heat can be lost when the head is exposed.

Equipment and Clothing where there is the possibility of falling onto the water.

Flotation (personal or throwing devices)

Air trapped between layers of clothing will provide buoyancy and heat insulation, but personal Floatation Devices (PFDs) offer the best chance for survival in cold water.

Type III PFDs include float coats and mustang suits which provide floatation and thermal protection.

SAFE WORK PRACTICE - HOT WEATHER

Heat Stroke. Heat stroke is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate.

A heat stroke victim's skin is hot, usually dry, red or spotted. Body temperature is usually 105 degrees F or higher, and the victim is mentally confused, delirious, perhaps in convulsions, or unconscious.

Any person with signs/symptoms of heat stroke requires immediate first aid or hospitalization. This includes removing the victim to a cool area, thoroughly soaking the clothing with water, and vigorously fanning the body to increase cooling.

Heat Exhaustion. Heat exhaustion symptoms may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. Those suffering from heat exhaustion still sweat but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed and the body temperature is normal or only slightly elevated.

In most cases, treatment involves having the victim rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover quickly with this treatment.

Fainting. A worker who is not accustomed to hot environments and who stands erect and immobile in the heat is susceptible to fainting. With enlarged blood vessels in the skin and in the lower part of the body due to the body's attempts to control internal temperature, blood may pool there rather than return to the heart to be pumped to the brain. By moving around, and thereby preventing blood from pooling, the patient can prevent further fainting.

Heat Rash. Heat rash, also known as prickly heat, is likely to occur in hot, humid environments where heat is not easily removed from the surface of the skin by evaporation and the skin remains wet most of the time. The sweat ducts become plugged, and a skin rash soon appears. When the rash is extensive or when it is complicated by infection, prickly heat can be very uncomfortable. The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin.

Preparing For Work in the Heat

Gradual exposure to heat gives the body time to become accustomed to higher environmental temperatures. Heat disorders in general are more likely to occur among

workers who are not adjusted to working in the heat or among workers who have been away from hot environments.

The amount of heat produced during hard, steady work is much higher than that produced during intermittent or light work.

Rest Areas. Resting in cool, shaded areas can considerably reduce the stress of working in a hot environment.

Drinking Water. In the course of a day's work in the heat, a worker may produce as much as 2 to 3 gallons of sweat. It is essential that water intake during the workday be about equal to the amount of sweat produced. Most workers exposed to hot conditions drink less fluids than needed. Don’t depend on thirst to signal when and how much to drink. Instead, drink 5 to 7 ounces of fluids every 15 to 20 minutes to replenish the necessary fluids in the body. There is no optimum temperature of drinking water, but most people tend to drink cool fluids. Individual drinking cups should be provided--never use a common drinking cup.

SAFE WORK PRACTICE: MANUAL LIFTING

Lifting and moving objects such as drums, boxes and bags of debris are a routine part of work. However, incorrect lifting and moving of objects can cause serious injury to the lower back. Below are some helpful suggestions to avoid injury while lifting or moving objects.

Use available machinery and lifting equipment before lifting heavy loads manually.

Have someone help you with a heavy load (even a load within personal capacity can cause back injury). Use team work for numerous small loads (e.g., stock piles of trash bags full of debris).

Use of Chemical Protective Equipment will restrict movement and visibility. Use extra care while lifting in this equipment.

Position feet properly. It is important to maintain balance and avoid twisting motions while lifting. Feet should not be close together. The feet should be close to the load to help keep the body close to the center of gravity. One foot should be positioned in the direction the load will be moved to avoid twisting or turning of the back during the lift. Turn using your feet and not by twisting the back.

Before and during the lift pull the load close to you to keep the center of gravity over your feet.

Check your grip and test the weight of the load before lifting.

The back should be straight when starting the lift and the knees should be doing the bending. This will help to ensure that much of the lifting is done with the legs. To help keep the back straight the chin should be tucked in and head kept up.

Keep the stomach muscles tight while lifting. Keep your back straight during the lift and avoid twisting motions in particular.

Move slowly and deliberately.

SAFE WORK PRACTICE: HELICOPTERS

Basic Safe Work Practices for All Passengers/Ground Crews:

Passengers should receive a safety briefing from helicopter operators including safety features and equipment, their location on the individual aircraft and water landing procedures, when appropriate.

Passengers or ground crew members approaching helicopters shall stay in a crouched position, and shall be in clear view of the pilot while approaching or departing a helicopter.

Passengers and ground crew should approach/depart from the FRONT of the helicopter ONLY when signaled by the pilot; and should NEVER walk under or around the tail.

Loose fitting clothing, hats, hard hats, or other gear, which might be caught in rotor down wash must be secured or removed within 100 feet of operating helicopters.

Passengers shall maintain a distance of 50 feet from helicopters while rotors are turning. Ground crew should also maintain this distance unless specific work practices are developed for closer work.

Passengers shall wear seat belts at all times.

Passengers and ground crew shall wear hearing protection (including communications headsets, or helmets) at all times around operating helicopters.

Passengers shall generally assist the pilot in watching for other traffic or ground obstacles as directed by the pilot.

During emergency landings in water:

Do not exit until rotor blades stop turning or pilot signals all clear.

Do not inflate life preservers until outside of the helicopter.

SAFE WORK PRACTICE: BOAT OPERATIONS

Boat operators should familiarize themselves, and passengers with safety features and equipment on their boats. Boats are to be operated only by qualified personnel.

Life jackets, work vests, mustang suits, or other appropriate Coast Guard approved Personal Flotation Devices (PFDs) should be worn by personnel in small boats. Exposure suits are particularly critical in extremely cold conditions.

Types of Personal Flotation Devices (PFDs)

TYPE I Off-shore life jacket provides the most buoyancy. It is effective for all waters and intended specifically for open, rough or remote waters where rescue may be delayed.

Type II Near-shore buoyancy vests are intended for calm, inland water or where there is a good chance of quick rescue.

Type III Flotation aids are good for calm, inland water, or where there is a good chance of quick rescue. Examples: float coats, fishing vests, and ski vests.

Type IV These are throwable devices, not intended to be worn or to replace those that are worn.

Type V (Special Use) These are intended for specific activities (according to the conditions on the labels). Some examples: deck suits, mustang suits, work vests, and hybrid PFDs below.

Type V (Hybrid Inflatables). These PFDs contain a small amount of inherent buoyancy and an inflatable chamber.

Small boats should generally not be operated for after sunset. If this is required and poses minimal risk, routes of operations, communication requirements should be carefully prescribed. Each boat will be fully equipped with appropriate running lights and emergency signaling devices.

Distress signals (three or more for day and three or more for night) should be carried on board all vessels.

Boat operators must keep their supervisors informed of their area of operations.

Boat operators should never anchor their boats by the stern. This is typically the lowest point on the boat due to design and/or loading, and is often squared off making it vulnerable to swamping.

Portable fuel tanks should be filled outside of the boat. All sources of ignition in the area of fueling (e.g., engines, stoves or heat producing equipment, and electrical equipment) should be secured while fueling.

Strict adherence to the buddy system must be observed in small boats; and all boats should be in direct visual or radio contact with a shore base at all times.

To avoid slipping on wet decks or falling in small boats, personnel should remain seated while boat is underway. Horseplay and speeding is strictly prohibited. Boat operators must also ensure that boats are not overloaded.

Boat shoes, safety sunglasses and hearing protection should be worn by personnel working in or operating small boats where appropriate.

Depending on the specific nature of the operations (e.g., work in remote areas), other emergency equipment which should be considered such as: anchors, radios, bailers, first aid kits, and additional means of propulsion (e.g., paddles).

Boat personnel are cautioned not to use their legs as fenders, or get their hands, arms, or legs between vessels or between vessels and docks.

SAFE WORK PRACTICE: DRUM HANDLING

Handling Drums.

A specific work plan has been developed for handling storage of drums or containers. The plan outlines the appropriate PPE.

- Drums shall be inspected and properly labeled.
- Movement of drums must be kept to a minimum.
- Whenever possible, drums shall not be moved manually.
- Prior to shipment, each drum must be in good condition (or over-packed) and properly labeled in accordance with DOT requirements.
- A log shall be maintained to track sampling, re-packing/over-packing, bulking/consolidation, on-site movement, off -site shipment of each drum.

Opening and sampling drums.

When opening drums, minimize number of employees in the work area.

When drums are moved from their original locations to a work area or staging area, a spill containment area must be constructed for those locations. The containment should be able to contain the maximum loss from any of the containers in the area.

Safe access and egress points must be provided to all staging areas. Adequate room and ramps must be provided for heavy equipment used to handle drums. A secondary emergency egress point must also be identified.

SAFE WORK PRACTICE: DRIVING AND VEHICLES

One of the most dangerous operations performed by personnel is driving to and from the site. This is particularly true when driving unfamiliar vehicles.

Familiarize yourself with your vehicle before driving. Walk around and check the outside condition, familiarize yourself with the interior, and make all adjustments before driving a vehicle. Check for these:

_____ signs of accident damage:
_____ tires inflated, in good condition, changing equipment
_____ gas cap is in place
_____ hood and trunk secured
_____ locate emergency kit
_____ check exterior lights - function properly
_____ headlights (dim)
_____ headlights (bright)
_____ parking lights
_____ emergency flashers (front and rear)
_____ turn signals (front and rear)
_____ brake lights
_____ side/rear mirrors adjusted and in good condition
_____ horn works properly
_____ seat belts are in good condition
_____ locate your sunglasses
_____ locate the headlight switch/dimmer
_____ locate the windshield wiper switch
___ heating and air conditioning switches
_____ check gauges

DRIVE CAREFULLY!

GET YOUR ATTITUDE RIGHT before driving!

Remember no reckless driving.

Forget schedules while driving! The road is no place to make up lost time.

SETTLE DOWN! Do not bring frustrations into the vehicle with you.

Make up your mind to be the most courteous driver on the road. Forget about getting even with bad drivers on the road. Forget about competing with other drivers.

Expect other drivers to make stupid mistakes, and prepare to deal with their mistakes. Expect the other drivers to break the rules.

Use your headlights during all conditions of reduced visibility (dawn, dusk, fog).

Do not drive under the influence of alcohol or drugs. Only time will make you sober.

Look ahead for problems and maintain a safe distance behind the car in front of you.

Slow and steady is the best pace for driving on snow, ice, or other slippery road surfaces. Do not hit your brakes hard or accelerate quickly.

SAFE WORK PRACTICE: HANDLING OILED WILDLIFE

Handling of Birds. Handling of birds must be done properly to ensure the protection of BOTH bird and handler. Wild birds have no way of knowing or understanding human intentions. Even a greatly weakened bird can inflict serious injury to handlers. Eyes are a particular concern. Open wounds on hands and arms present access for oily contaminants and disease vectors to enter the human blood system.

Contact With Oil. The site safety plan will provide a more detailed discussion of health hazards of oils.

The primary health hazard associated with oils (crude oil in particular) is dermatitis from skin contact. This condition may be aggravated for personnel conducting washing operations. Prolonged exposure to soapy water initiates defatting of the skin, and water logging may contribute to an initial skin injury that can aggravate sensitivity to the oil. Once an individual contracts an allergic dermatitis reaction it will be nearly impossible to prevent future outbreaks other than by strict avoidance of any further contact with the oil.

Oils splashed in the eyes will also cause acute irritation and perhaps inflammation.

Injuries inflicted by birds open a path for the chemical components of oils to enter the blood.
The smell of crude oil or diesels may be irritating to sensitive individuals and can cause nausea even at otherwise nontoxic concentration.

Personal Protective Equipment (PPE) for working in REHAB centers:

- Dress adequately and bring a change of clothing.
- Dress adequately for the cold in particular.
- Bring a rain suit if there is any chance of working outside in the rain.
- Bring a change of work clothing if you will be working with oil or contaminated water.
- Use aprons, rain slickers & pants, boots or boot covers, and gloves that are resistant to oils (neoprene is a common material that is resistant to many oils).
- Wear heavy long sleeved garments for protection from bird bites. Bites may become infected and must be properly cleaned and treated.
- Wear glasses or goggles (for beak and splash protection) while handling or cleaning oily birds.

Immunization.

Personnel working in the field or handling birds in centers should have an up-to-date tetanus immunization.

Rabies prophylaxis should be considered for personnel handling wild animals, AND ESPECIALLY if field personnel are bitten by wild animals.

Handling Birds. Never handle birds unless trained in handling procedures

SAFE WORK PRACTICES:
GENERAL PERSONAL PROTECTIVE EQUIPMENT

Hearing Protection

A noise level of 90 decibels (dBa) or greater is known to be a long term hazard to anyone who is not wearing hearing protection; OSHA has also established 85 dBa as an "Action Level" because some people may suffer long term effects from exposure to that level. Hearing protection devices are available, and should be worn.

Hearing Protection Devices:

Expandable Foam Earplugs

The expandable foam earplugs come with or without a cord attached to the plugs. To use roll the plug into a narrow cylinder, insert them all the way into the ear canal, these plugs work by expanding to take on the shape and size of the ear canal.
These plugs are considered disposable, and must be discarded after a daily or single usage, in order to avoid the possibility of infection from accumulated dirt and/or germs.

Sized Rubber Earplugs

These come in a variety of sizes to accommodate most ear canals. These plugs are not considered disposable, and should be cared for and kept clean and free from potential infection. They should be washed with mild soap and water after each usage, and stored in a clean area.

Earmuffs

Earmuffs are also not considered disposable, and should be cared for and kept clean in the same manner as rubber earplugs. It must be noted that the full benefit of wearing earmuffs cannot be obtained while wearing glasses, because the temple pieces on the glasses interfere with the sealing surface on the ear.

Noise Reduction Ratings are assigned to all pieces of hearing protection. Earplugs and earmuffs are assigned Noise Reduction Ratings anywhere from 20 to 35 decibels, meaning that if worn properly, that device will reduce the noise level that many decibels.

HEAD PROTECTION

Head injuries are caused by falling or flying objects, or by bumping the head against a fixed object. The general rule is hard hats are required unless otherwise specified by the Safety Officer.

For maximum protection hard hats are designed to be worn straight on the head with the peak forward. The shell and suspension have been engineered and constructed of materials to provide maximum protection – *do not alter the shell or suspension system.*

FACE and EYE PROTECTION

The general rule is face and eye protection is required unless otherwise specified by the Safety Officer.

The minimum acceptable eye protection is safety glasses with side shields that comply with ANSI Standard Z87.1.

Ordinary personal prescription glasses and commercial safety glasses do not meet this standard and are not permitted. Safety eyewear must be worn in all work areas. Contact lenses do not constitute eye protection.

Goggles and face shields are required for work that could generate excessive particles or present the possibility of a liquid/chemical splash. Face shields add to the protection of the face and eye area and are to be worn with goggles and/or safety glasses.

SAFE WORK PRACTICES: GENERAL PERSONAL PROTECTIVE EQUIPMENT

HAND PROTECTION

The potential for hand injury comes from contact with sharp objects, pinch-points, force, impact; hand burns from contact with high temperatures, with acidic or caustic materials; or other reaction-types of injury from chemicals in general.

No one type of glove protects against all hazards. Some work may require only general purpose leather work glove, while other work may require a variety of gloves for the potential hand hazards they may encounter. Whatever the application gloves should be worn continuously. The only exception would be if a certain activity would be more hazardous with gloves on (such as working around rotating equipment - lathes, etc.).

Handling Objects & Materials

Before grasping objects, inspect them for sharp edges, nails, splinters, metal particles, burrs, or rough surfaces. Do not slide hands along edges of object to grasp them.

Do not use your hands to do the work that vises and clamps are meant to do; and do not use your hands to guide work through table saws - use pusher sticks.

Always keep guards in place on tools and machinery, and keep hands away from moving, rotating, and cutting parts. Avoid wearing rings and jewelry that can be caught in equipment.

Always cut away from the body when using knives, and keep the opposite hand clear of the knife's path.

When removing metal shavings or chips, use a brush, because some of these particles can cut right through gloves.

Always make sure electrically driven equipment is not only shut off at the switch, but shut off and locked out and tagged at the breaker before beginning to do any work on such equipment

Never use compressed air to remove dirt from the hands or body.

FOOT PROTECTION

There is potential for injury in dropping or mishandling loads that are being lifted, carried, or pushed or pulled manually. Other risks are from falling objects, mobile equipment, walking into objects, or from hydraulic equipment.

Foot protection, such as steel toed work shoes can help to minimize the severity and frequency of foot and toe injuries.

Personnel in work areas must wear foot protection consisting of a shoe with a sturdy leather or leather-like upper and an oil resistant sole. Soft leather uppers or soft-toed uppers are not allowed. Shoes must be fully enclosed (no open toes or heels) and resistant to the hazards encountered (i.e., acids caustics, slippery surfaces, etc.). When climbing ladders, stairs, etc. the shoes should have a heel to prevent slippage.

Steel-toed work shoes are not required but are strongly recommended.

Office personnel may wear non-work shoes while in office areas. However, appropriate work shoes must be worn when going out into field locations.

Sneakers or causal shoes are not allowed in work areas.

Additional foot protection may be required for specific work such as working on boats or around spilled material the safety plan will outline the specific protective equipment for specific types of work.

SAFE WORK PRACTICES: General First Aid

Individuals providing first aid care should note that it is possible to be exposed to infectious diseases due to contact with injured people who may be infectious, or contaminated objects during the course of performing first aid duties. Examples of such infectious diseases are Hepatitis B virus (HBV) and human immunodeficiency virus (HIV). Proper personal protective equipment is a must to prevent exposure.

Individuals who may have or suspect they may have been exposed should report the incident immediately. Immediately following a report of an exposure incident a confidential medical evaluation and follow-up conducted.

The *primary* goal is to stop/reduce the bleeding, treat for traumatic shock, and obtain medical care promptly. To accomplish this:

- Apply direct pressure with a clean cloth pad, or place hand firmly over the wound.
- When possible, clean the wound with soap and water and remove all foreign matter.
- Maintain pressure until bleeding stops or lessens.
- Apply additional cloth pads and bind firmly in place. Do not use rope or wire for this purpose.
- Keep the patient lying down, insulated from cold surfaces, but don't induce sweating. If thirsty, give water if there is no evidence of internal bleeding or if not semi-conscious.
- If severe bleeding can not be controlled by direct pressure, arterial pressure should be used.
- When there is bleeding from the mouth, nose, or ears, there may be serious internal wounds.Keep patient lying down and warm (not the point he may sweat). Raise his head if his breathing is difficult. Make sure his mouth and nose are clear of all matter.

A fracture is a break in any bone in the body. These are the various types of fractures:

- Simple fracture is a break that is confined inside the flesh without protrusion of a broken end through the skin.
- Compound fracture is associated with an open wound of the skin.
- A dislocation occurs when a movable bone is displaced from its joint.
- Sprains are injuries to ligaments and tendons that result from abnormal stretching of these tissues at a bone joint.

First Aid Measures

Call for help immediately. Control bleeding and immobilize the fractured area. Always suspect head or spinal injury where there have been severe blows to the head or back from falls or other causes. A person with a possible upper or lower spine fracture must not be moved unless it is absolutely necessary. Do not attempt to reposition any dislocated joint.

Sprains are common. Symptoms are swelling, tenderness, and painful motion. There also may be large discolored areas. Some symptoms resemble those for fractures, knowing the cause of the injury is of help in deciding how to treat.

If there is a possibility of a fracture, immobilize the body part. Otherwise, apply cold water or an ice pack. Do not walk on a badly sprained ankle without proper support. Leave the shoe on but with laces loosened on high-cut shoes.

DAILY SAFETY MESSAGES

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; and boat operations

General Safety Concerns:

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decon-tamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes –

SPECIAL CAUTION:
STAY CLEAR OF DIVING OPERATIONS BY AT LEAST 200 YDS. THIS WILL BE STRICTLY ENFORCED!

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **In the event of a non-life threatening emergency the patient should, if possible, be transported out of the hot zone and decontaminated as much as possible. In life threatening emergencies, where a patient cannot be moved, medical**

personnel will respond into the hot zone properly attired. A second ambulance will be dispatched to transport.

- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**

Medical Emergency Triage and Evacuation Procedure

Medical Aid is available at the following locations:

Staging Area 3 (The Lagoon)
Paramedics Contact Number: 610-636-8324

In the event of an injury or illness requiring medical attention the following guidelines should be followed:

Non-Life-Threatening

The Field Operations Supervisor should relieve the person from duty and, as possible, conduct personnel decontamination in preparation for medical attention. The person requiring medical attention should be transported immediately to the Medical Aid Station at Hogg Island on the Pennsylvania side or the Miller Staging area on the New Jersey side of the river.

A radio call should be made to Medical 1 (Hogg Island) or Medical 2 (Miller Staging) to let the medical personnel know a patient is in route.

Life Threatening

In the event of a life threatening emergency, the closest Medical Station should be notified immediately and asked to respond to the scene. Be prepared to describe the medical emergency and all actions that have been taken to treat the condition on site.

Medical Station personnel will call 911 immediately and provide the emergency dispatcher with the patient information.

Coordination by the Field Supervisor, Field Safety Representative, and Medical personnel is important to ensure effective transportation and response

Notifications

Notification should be made to the Field Safety Representative or the Safety Officer (Ed Doyle, 302-293-8959 or Archie Gresham, 302-293-8960).

SAFE USE OF PRESSURE WASHERS AND STEAM CLEANERS

Work to Be Done: Removal of contaminants from equipment, shoreline, piers, and similar structures.

Equipment: Steam cleaners, and pressure washers powered by internal combustion engines.

Site Description: Various types of work surfaces, rocks, sand, oily surfaces.

Potential Hazards: Slips, trips, falls, steam burns, injuries from excess pressure, excessive noise, injuries from hot surfaces on the hotsy or pressure washers, insect and animal bites, and potential drowning.

Special notes: All personnel should adhere to the following precautions with steam cleaners and pressure washers:

- All personnel will wear proper personal protective equipment when working operating the steam or pressure wands or assisting personnel using this equipment. This will include Tyvek coveralls, rubber boots, nitrile or neoprene gloves, **face shield with clear or tinted safety glasses with side shields under the shield**.
- All personnel working around pressure washers or steam cleaners must, at a minimum, wear regular safety glasses.
- **Equipment operators should never direct the power spray of the wand to themselves or other personnel.** Steam washers are for decontamination of equipment only. Personal Protective Equipment should not be washed or decontaminated by using steam or power washers.
- Prior to starting the equipment caution should be exercised when filling the tank with gasoline. No smoking will be allowed in the area while equipment is being refueled. Prior to startup all hoses and wand should be connected and rechecked to ensure the connections are secure.
- All supply and wand hoses should be free of kinks and where possible secured to not present a tripping hazard to other personnel.
- Operators should be cautious when using the rope pull to start the engine. Wet hands, slippery hands, pulls or frayed pull rope can lead to injury.
- Operators should ensure that personnel in the area are a safe distance from the wand and equipment operations.
- Noise surveys should be taken to check noise exposure to workers. Generally personnel working on or within 5 feet of steam or pressure should wear hearing protection.
- When working near water, Personal Flotation Devices (PFD's) must be worn.
- Contaminated areas, where personnel are working, should be marked and barricaded, and the surface

covered to prevent spread of contamination. NOTE: If plastic is used for coverage of the surfaces, personnel must exercise care when walking on the plastic surfaces as they can become slick with a combination of contaminant and water. The wearing of rubber oil resistant non-skid boots or the use of cloth covering on the surface instead of plastic is preferable.

- Wand levers should always be held and triggered by the operator's hand. At no time should the lever be wired or taped in the open position.

ATV Safety Practices

Operating ATV's can be hazardous if safety practices are not followed:

- Wear proper protective clothing. This includes an approved helmet, gloves, eye protection, a long-sleeved shirt, and long pants.
- Inspect the ATV before you begin.
- Be aware of potential hazards/obstructions that may be present in the area where you are operating.
- DO NOT carry passengers.
- Be aware of your surroundings.
- Watch out for other personnel and equipment.

Handling characteristics of ATVs vary depending upon basic design and how they are equipped.

ATVs with solid rear axles (and those with locked differentials) turn both rear wheels at the same speed. ATVs with unlocked differentials allow the rear wheels to turn at different speeds. If a rear wheel leaves the ground, it will spin freely. Then when it touches the ground again, it may grab and cause loss of control.

Some ATVs are equipped with four-wheel drive. When operating in a four-wheel drive mode, keep the following in mind:

- Use of only the front brake or only the rear brake has the effect of braking both the front and rear wheels.
- Abrupt deceleration from shifting to a lower gear (engine braking) will affect both the front and rear wheels.

Posture

The correct riding posture will help you to easily operate the controls and help you react more quickly to potential hazards. Proper straight line riding posture includes:

- Head and eyes up, looking well ahead
- Shoulders relaxed, elbows bent slightly out, away from your body
- Hands on the handlebars
- Knees in toward the gas tank
- Feet on the footrests, toes pointing straight ahead
- Always keep both hands on the handlebars and both feet on the footrests. Removing even one hand or foot can reduce your ability to control the ATV, or could cause you to lose your balance and fall off. ATVs are rider-active—to enhance the performance capabilities of the ATV in maneuvers such as turning, negotiating hills, and crossing obstacles, you must shift your body weight.

VESSEL SAFETY

The operator is responsible for the safety of the crew and vessel at all times. The vessel shall never be operated in a manner that threatens safety of the crew or vessel. The operator is to ensure that ALL personnel aboard the vessel are wearing lifejackets AT ALL TIMES! Under no circumstances are personnel to enter the water while the vessel is underway or the vessel's engine(s) is(are) running.

It is the operators' responsibility to ensure the vessel is seaworthy and in safe operating condition prior to leaving shore. The operator will inspect the vessel and determine that all required operational and safety equipment is on board and in proper working condition.

The operator is responsible for safe transport, launch, operation, and recovery of the vessel.

In the event of a boating accident, the operator is the primary person responsible for the vessel and crew. If vessel or crew is in imminent danger, the operator should contact the US Coast Guard immediately.

Ensure vessels are not overloaded with personnel or equipment, and consult vessel capacity according to the boat plate or sticker.

All vessels will carry on board an air horn to be available for emergency sound signaling.

USE THE RIGHT VESSEL FOR THE RIGHT JOB!

Stop Vessel Operations Criteria (Weather)

Vessels will cease operations when any of the following occur:

1. Visible lightning strike
2. 25 knot winds
3. Sea state:

>60' vessels: 6'	30'-60' vessels: 5'	20'-30' vessels: 4'	<20' vessels: 3'

4. Whenever the Safety Officer or one of his assistants deems operations too hazardous to continue.
5. Whenever the vessel operator deems it too hazardous to continue operations.

Vessel operators and response supervisors need not wait for a Safety Officer to deem operations too dangerous. If you feel that the conditions are too hazardous to safely operate in, discontinue operations, notify your supervisor, and then notify the Safety Officer. You may be the first responder to experience hazardous conditions, and your input to the Safety Officer may provide a valuable heads-up to the rest of the command.

Nighttime vessel operations and restrictions

All vessels with lengths of 20 feet or less are required to be safely moored/recovered prior to sunset.

Flat-bottom, “john boat” style boats are not permitted to operate at night and should be safely moored/recovered prior to sunset.

All vessels not specifically restricted from nighttime ops, as detailed above, may only operate after sunset with the proper use of navigation lights as required by Chapter I of the Navigation Rules.

Personal Protective Equipment (PPE) requirements:

All responders working on or near the water must wear a Personal Floatation Device (PFD).

Responders performing the following operations must wear “Mustang” exposure suits:

- Waterborne SCAT teams
- Boom tending and placement teams
- Waterborne vessel decon teams
- Waterborne wildlife recovery teams
- Permanent boat drivers/crew

Crews of vessels equipped with enclosed, heated cabins, where the crew will primarily remain, are excluded from the exposure suit requirement.

Requests for deviation from the above requirements should be directed to the Site Safety Officer, Ed Doyle (302) 293-8959.

Gasoline Safety

Gasoline is a flammable liquid and should be stored at room temperature, away from potential ignition sources such as sparks and flames, space heater, and any other ignition sources. Gasoline vapors are heavier than air and can travel along the ground to an ignition source.

Refueling Advisory

Be aware that fire incidents involving refueling are not unusual. Many of these incidents may be related to static electricity buildup and discharge.

Safety guidelines on filling containers:

- Do not smoke while refueling.
- Shut off the engine using the gasoline along with any engines in the immediate vicinity.
- Only store gasoline in containers with approved labels. Never store gasoline in glass or unapproved containers.
- Portable containers must be placed on the ground, and the nozzle must stay in contact with the container when filling, to prevent buildup and discharge of static electricity.
- Fill the container at a slow rate. This will decrease the chance of static ignition buildup and minimize incidents of spillage or splattering.
- Keep your face away from the nozzle or container opening.
- Avoid prolonged breathing of gasoline vapors.
- Never siphon gasoline by mouth. Do not put gasoline in your mouth—gasoline can be harmful or fatal if swallowed. If someone swallows gasoline, do not induce vomiting. Call for medical assistance immediately.
- Keep gasoline away from your eyes and skin, because it may cause irritation. Wear safety glasses while filling tanks.
- Use gasoline only in open areas that get plenty of fresh air.
- Never use gasoline to wash your hands.
- Remove gasoline-soaked clothing immediately.
- Fill container to no more than 95 percent full to allow for expansion.
- Place cap tightly on the container after filling. Do not use containers that do not seal properly.
- When transporting gasoline in a portable container, make sure the container is secure from tipping and sliding.

Commercial Diving Operations

The following are Health and Safety requirements for all commercial diving operations.

Qualifications of dive team:

- Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.
- Each dive team member shall have experience or training in the following:
  - The use of tools, equipment and systems relevant to assigned tasks;
  - Techniques of the assigned diving mode: and
  - Diving operations and emergency procedures.
- All dive team members shall be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent).
- Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.
- Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.
- The employer shall not require a dive team member to be exposed to hyperbaric conditions against the employee's will, except when necessary to complete decompression or treatment procedures.
- The employer shall not permit a dive team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a dive team member.
- The employer or an employee designated by the employer shall be at the dive location in charge of all aspects of the diving operation affecting the safety and health of dive team members.
- The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

Safe Practices Manual

- The employer shall develop and maintain a safe practices manual which shall be made available at the dive location to each dive team member.
- The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard.
- For each diving mode engaged in, the safe practices manual shall include:
  - Safety procedures and checklists for diving operations;
  - Assignments and responsibilities of the dive team members;
  - Equipment procedures and checklists; and

- Emergency procedures for fire, equipment failure, adverse environmental conditions, and medical illness and injury.

Pre-dive procedures

- The employer shall comply with the following requirements prior to each diving operation, unless otherwise specified.
- *Emergency aid.* A list shall be kept at the dive location of the telephone or call numbers of the following:
- An operational decompression chamber (if not at the dive location);
  - As per medical plan, a hyperbaric chamber is located at UPENN Hospital (215) 662-3920
  - Accessible hospitals (Listed on ICS form 206 – Medical plan);
  - Available physicians (Listed on ICS form 206 – Medical plan);
  - Available means of transportation; and
  - A first aid kit appropriate for the diving operation
- When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions.
- In addition to any other first aid supplies, an American Red Cross standard first aid handbook or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.
- *Planning and assessment.* Planning of a diving operation shall include an assessment of the safety and health aspects of the following:
  - Diving mode;
  - Surface and underwater conditions and hazards;
  - Breathing gas supply (including reserves);
  - Thermal protection;
  - Diving equipment and systems;
  - Dive team assignments and physical fitness of dive team members (including any impairment known to the employer);
  - Repetitive dive designation or residual inert gas status of dive team members;
  - Decompression and treatment procedures (including altitude corrections); and
  - Emergency procedures.
- *Hazardous activities.* To minimize hazards to the dive team, diving operations shall be coordinated with other activities in the vicinity which are likely to interfere with the diving operation.
- Dive team members shall be briefed on:
  - The tasks to be undertaken;
  - Safety procedures for the diving mode;
  - Any unusual hazards or environmental conditions likely to affect the safety of the diving operation; and

- Any modifications to operating procedures necessitated by the specific diving operation.

- Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.
- *Equipment inspection.* The breathing gas supply system including reserve breathing gas supplies, masks, helmets, thermal protection, and bell handling mechanism (when appropriate) shall be inspected prior to each dive.
- *Warning signal.* When diving from surfaces other than vessels in areas capable of supporting marine traffic, a rigid replica of the international code flag "A" at least one meter in height shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.

Record keeping

The employer shall record the occurrence of any diving-related injury or illness which requires any dive team member to be hospitalized for 24 hours or more, specifying the circumstances of the incident and the extent of any injuries or illnesses.

Danger: Medical Waste and Needles

Protect yourself from needle sticks and contact with medical waste while picking up debris from the shoreline area. All types of debris wash up on the shoreline including medical waste such as used hypodermic needles.

Be Cautious while picking up debris.

If you see medical waste such as hypodermic needles notify your supervisor immediately. Use grabbing tools to pick up debris—**do not pick up with your hands**.

If you are stuck by a needle immediately notify your supervisor who will arrange for medical attention.

Why do you need medical attention?

Because needle stick injuries can expose workers to a number of bloodborne pathogens that can cause serious or fatal infections. The pathogens that pose the most serious health risks are:

- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human immunodeficiency virus (HIV) -- the virus that causes AIDS

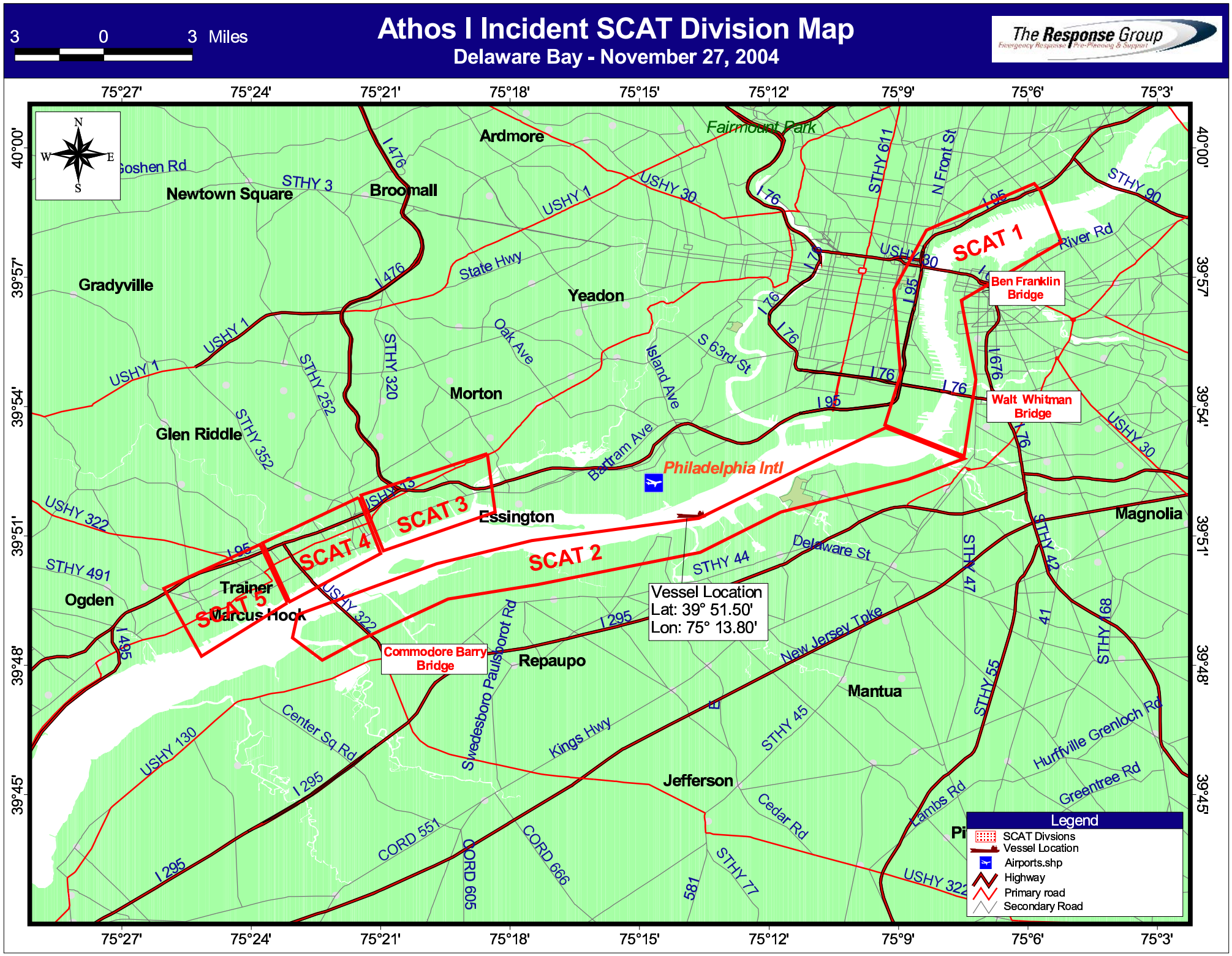
To date only one hypodermic needle has been report along the shoreline. But there is always the possibility of more hypodermic needles and other medical waste.

Be very careful!

Sharps containers and medical waste will be provided in each work area. All sharps like hypodermic needles must be disposed of in sharps containers and medical waste such as used bandages must be disposed of in the appropriate medical waste bag.

ATTACHMENT A

Site Map


3 0 3 Miles
Athos I Incident SCAT Division Map
Delaware Bay - November 27, 2004
The Response Group
Emergency Response Pre-Planning & Support
75°27'
75°24'
75°21'
75°18'
75°15'
75°12'
75°9'
75°6'
75°3'
40°00'
39°57'
39°54'
39°51'
39°48'
39°45'
N
S
W
E
Ardmore
Fairmount Park
Newtown Square
Broomall
Gradyville
Yeadon
Morton
Glen Riddle
Essington
Philadelphia Intl
Magnolia
Trainer
Ogden
Marcus Hook
Repaupo
Mantua
Jefferson
Goshen Rd
STHY 3
I 476
USHY 1
USHY 30
I 76
STHY 611
N Front St
I 95
STHY 90
River Rd
SCAT 1
Ben Franklin Bridge
State Hwy
Oak Ave
STHY 320
Island Ave
S 63rd St
I 676
Walt Whitman Bridge
STHY 252
STHY 352
Bartram Ave
USHY 13
SCAT 3
SCAT 4
SCAT 2
SCAT 5
USHY 322
STHY 491
I 495
Delaware St
STHY 44
STHY 47
STHY 42
Vessel Location
Lat: 39° 51.50'
Lon: 75° 13.80'
Commodore Barry Bridge
Swedesboro Paulsboro Rd
I 295
New Jersey Tpke
STHY 168
USHY 130
Center Sq Rd
Kings Hwy
STHY 45
STHY 55
Hurffville Grenloch Rd
Greentree Rd
Cedar Rd
Lambs Rd
CORD 551
CORD 605
CORD 666
581
STHY 77
USHY 322
Legend
SCAT Divsions
Vessel Location
Airports.shp
Highway
Primary road
Secondary Road

ATTACHMENT B

Sample Decontamination Plan

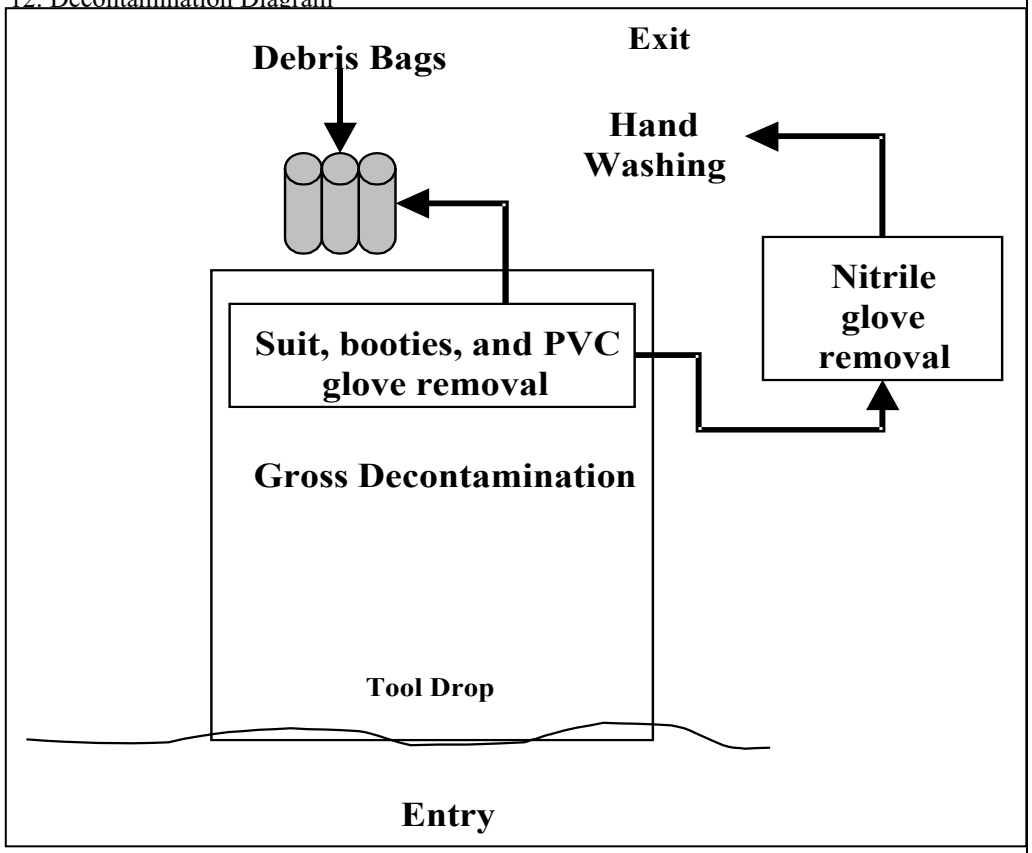
SAMPLE DECONTAMINATION PLAN	1. Incident Name MV ATHOS I	2. Date/Time Prepared	3. Operational Period	4. Safety Officer (include method of contact) Edward T. Doyle, Jr., PhD 302-293-8959
5. Response Organization	6. Location and Size of Site	7. For Emergencies Contact: 911	8. Hazard(s) Addressed:	

9. Equipment:	Absorbent Carpeting	Sorbent Pads		10. References Consulted:
Hand washing Station	Bags for debris			
Buckets	Sunscreen			
Soap, Detergents	First Aid Kits			
Brushes, rakes				

11. Contamination Avoidance Practices:

1. Wear all proper PPE
2. Replace damaged PPE
3. Proper decon
4. Minimize the spread of decon
5. Replace carpet periodically and/or when soiled.

12. Decontamination Diagram



13. Decon Steps

1. Roll down protective suit
2. Dispose of suit
3. Remove protective booties
4. Dispose of booties
5. Remove PVC Gloves
6. Remove safety glasses
7. Decontaminate glasses
8. Remove nitrile gloves
9. Dispose of nitrile gloves
10. Wash hands & face

14. Prepared By:	15. Date/Time Briefed:	Potential Health Effects: Bruise/Lacerations, Organ Damage, Central Nervous System Effects, Cancer, Reproductive Damage, Low Back Pain, Temporary Hearing Loss, Dermatitis, Respiratory Effects, Bone Breaks, Eye Burning	

Site Specific Hazards

Site Safety Plan Attachment

9709 CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Products containing Benzene Additional Attachments:		2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:	
Medical Condition	Action Level	Reference	Signs, Symptoms & Potential Health Effects	Exposure Route	Controls: Engineering, Administrative, PPE	Medical Response
Cancer			Bone marrow depression, Abnormal blood counts, Cancer of the blood (leukemia), incapacitating illness & death	Inhalation **X** Absorption **X** Ingestion Injection Membrane _____	- Avoid Contact - Avoid confined & tight spaces - Keep upwind - Air monitoring - Chem resistance clothing - Respirators > PEL	- Test blood & urine for phenol
Dermatitis			Reddening of the skin, benzene is a suspected skin carcinogen	Inhalation Absorption **X** Ingestion Injection Membrane _____	- Avoid Contact - Keep upwind - Wear chemical resistance gloves & clothing - Wash frequently	- Wash skin & exposed areas with soap and water
Eye Irritation			Red eye, weeping eye, blurry vision	Inhalation Absorption **X** Ingestion Injection Membrane _____	- Avoid Contact - Keep upwind - Wear safety glasses - High splash zone, wear chemical resistance goggles	- Flush eyes with water
Central Nervous System Effect			Giddiness, headache, nausea, staggered gait, fatigue -	Inhalation **X** Absorption **X** Ingestion Injection Membrane _____	- Avoid contact, & confined/tight spaces - Keep upwind - Air monitoring - Chem resistance clothing Respirators > PEL	- Test blood & urine for phenol
Respiratory Irritant			Irritation of nose, throat and lungs	Inhalation **X** Absorption **X** Ingestion Injection Membrane _____	- Avoid confined & tight spaces - Keep upwind - Air monitoring - Chem resistance clothing Respirators > PEL	- Test blood & urine for phenol
4. Prepared by:	5. Date/time briefed:		**Last Update: 4/25/05**		**SSP-Attach 1: Benzene** **Page ____ of _____**	

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Products Containing Hydrogen Sulfide Additional Attachments:		2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:	
Medical Condition	Action Level	Reference	Signs, Symptoms & Potential Health Effects	Exposure Route	Controls: Engineering, Administrative, PPE	Medical Response
Chemical asphyxiation	**Note: Poor Warning Properties**		Headache, dizziness, fatigue, staggered gait, giddiness	Inhalation **X** Absorption Ingestion Injection Membrane _____	- Avoid Contact - Avoid confined & tight spaces - Keep upwind - Air monitoring - SCBA > PEL	
Diarrhea			Runny or loose stool	Inhalation **X** Absorption Ingestion **X** Injection Membrane _____	- Avoid Contact - Keep upwind - Wash frequently - Avoid confined & tight spaces - Keep upwind - Air monitoring - SCBA > PEL	- If ingested, induce vomiting, drink large volumes of water
Respiratory Paralysis			Difficulty breathing, fatigue, strong signs of weakness	Inhalation **X** Absorption Ingestion Injection Membrane _____	- Avoid Contact - Keep upwind - Wash frequently - Avoid confined & tight spaces - Keep upwind - Air monitoring - SCBA > PEL	- Provide support respiration where needed
Chemical Burns			Severe burning of skin, eyes and other external organs -	Inhalation Absorption Ingestion Injection Membrane Contact **X**	- Avoid areas above 10% LEL - Keep upwind - Air monitoring - Flash protective clothing SCBAs > PEL	-Treat for burns as appropriate
Central Nervous System Depression			Headache, dizziness, fatigue, staggered gait, giddiness	Inhalation **X** Absorption Ingestion Injection Membrane _____	- Avoid confined & tight spaces - Keep upwind - Air monitoring - Chem resistance clothing SCBA > PEL	- Remove from site
4. Prepared by:	5. Date/time briefed:		**Last Update: 4/25/05**		**SSP-Attach 2: Hydrogen Sulfide Page ____ of _____**	

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Generic Signs & Symptoms of Toxic Exposure Attachments:	2. Divisions/Groups/Units affected:	3. Job Tasks Involving Hazard:

Signs and Symptoms	Action to be Taken
- Sudden weight loss or change in appetite. - Unusual fatigue or sleeping difficulties - Unusual irritability - Skin rashes/allergies/sores - Hearing loss - Vision loss or problems - Changes in sense of smell - Shortness of breath, asthma, cough, wheeze, excess sputum - Chest pains - Nausea, vomiting, dizziness - Weakness, tremors - Headaches - Stomach pains - Personality changes	**1. REMOVE PERSON AND OTHERS FROM SITE.** **2. REPORT SYMPTOM TO SUPERVISOR** **3. EVALUATE POTENTIAL SOURCES** **4. REQUEST SITE CHARACTERIZATION BY SITE SAFETY OFFICER**

4. Prepared by:	5. Date/time briefed:	**Last Update: 4/25/05**	**SSP-Attach 3: Signs/Symptoms of Toxic Exposure**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Heat Stress Attachments:		2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:	
Medical Condition	Action Level	Reference	Signs, Symptoms & Potential Health Effects	Exposure Route	Controls: Engineering, Administrative, PPE	Medical Response
Heat Stroke	Minimize exposure	NIOSH: Working in Hot Environments	Skin is hot Skin is dry Skin is red and spotted Body Temp: 105 or > Mental confusion Convulsions Unconscious	Inhalation Absorption **X** Ingestion Injection Membrane _____	- Acclimitize workers - Avoid direct sun - Institute work/rest regimens - Provide cool rest areas - Drink 5-7 ounces water every 15-20 minutes - Consider ccoling garments - Use heat stress monitors - Use canopies or other shelter - Minimize workers with illnesses and excessive weight	- Get EMT assistance immediately - Remove victim to cool area - Soak clothing w/water - Fan body to increase cooling
Heat Exhaustion	Minimize exposure	NIOSH: Working in Hot Environments	Extreme weakness Giddiness, headache Nausea, Vomiting Skin is clammy & moist Complexion is pale/flushed Body Temp: normal to slightly elevated	Inhalation Absorption **X** Ingestion Injection Membrane _____		- Notify EMT - Rest victim in cool place - Have victim drink plenty of water
Heat Cramps	Minimize exposure	NIOSH: Working in Hot Environments	Painful spasms of muscles Profuse sweating	Inhalation Absorption **X** Ingestion Injection Membrane _____		- Remove victim from site - Ensure victim drinks plenty of water and replaces electrolytes
Fainting	Minimize exposure	NIOSH: Working in Hot Environments	Victim faints due to lack of blood to the brain	Inhalation Absorption **X** Ingestion Injection Membrane _____		- Remove victim to cool area - Ensure victim drinks plenty of fluid - Ensure victim is not sedentary in direct heat
Heat Rash	Minimize exposure	NIOSH: Working in Hot Environments	Skin rash Experience of prickly heat	Inhalation Absorption **X** Ingestion Injection Membrane _____		- Remove victim to cool place - Ensure victim drinks plenty of water

4. Prepared by:	5. Date/time briefed:	**Last Update: 4/25/05**	**SSP-Attach 4: Heat Stress**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Cold Stress Attachments:		2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:	
Medical Condition	Action Level	Reference	Signs, Symptoms & Potential Health Effects	Exposure Route	Controls: Engineering, Administrative, PPE	Medical Response
Hypothermia	Minimize exposure	NIOSH: Working in Cold Environments	Pain in extremities Uncontrollable shivering Reduced core temperature Cool skin Rigid muscles Slowed heart rate Weakened pulse Low blood pressure Slow irregular breathing Slurred speech Drowsiness Incoherence Uncoordination Diminished dexterity Diminished judgement	Inhalation Absorption **X** Ingestion Injection Membrane _____	- Reduce manual work load - Ensure workers drink plenty of water - Establish warm locations for breaks - Establish work & rest regimens - Establish shelters, canopies or other devices to reduce wind effect - Minimize sitting still or standing around - Ensure proper sleep - Ensure proper diet - Ensure right balance of protective clothing - Ensure workers are not overheated by clothing	- Remove victim from wind, snow & rain - Minimize use of energy - Keep person awake - Remove wet clothing - Get into dry clothing - Wrap blanket around - Pack neck, groin, armpits with warm packs or towels - Give sweat warm drinks - Remove person to medical facility
Frostbite	Minimize exposure	NIOSH: Working in Cold Environments	Whitened areas of skin Burning sensation at first Blistering Affected part; cold, numb & tingling	Inhalation Absorption **X** Ingestion Injection Membrane _____		- Cover frozen part - Provide extra clothing & blankets - Place affected part in warm water or with warm packs - If no pads, wrap in blanket - Discontinue warming when part becomes flushed and swollen - Exercise part after warming, but place no pressure on it - Give sweet warm fluids - Do not rub part with anything - Do not use hot heating devices on part - Obtain medical assistance
4. Prepared by:	5. Date/time briefed:		**Last Update: 4/25/05**		**SSP-Attach 5: Cold Stress** **Page 1 of 2**	

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Cold Stress Attachments:		2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:	
Medical Condition	Action Level	Reference	Signs, Symptoms & Potential Health Effects	Exposure Route	Controls: Engineering, Administrative, PPE	Medical Response
Chilblain	Minimize exposure	NIOSH: Working in Cold Environments	Recurring localized ithcing Swelling, painful inflammation of fingers, toes, or ears Severe spasms	Inhalation Absorption **X** Ingestion Injection Membrane	- Reduce manual work load - Ensure workers drink plenty of water - Establish warm locations for breaks - Establish work & rest regimens - Establish shelters, canopies or other devices to reduce wind effect - Minimize sitting still or standing around - Ensure proper sleep - Ensure proper diet - Ensure right balance of protective clothing - Ensure workers are not overheated	- Remove to warmer area - Consult physician
Frostnip	Minimize exposure	NIOSH: Working in Cold Environments	Skin turns white	Inhalation Absorption **X** Ingestion		- Remove to warmer area - Refer to treatment for frost bite
Acrocyanosis	Minimize exposure	NIOSH: Working in Cold Environments	Hands and feet are cold, blue and sweaty	Inhalation Absorption **X** Ingestion		- Remove to warmer area - Loosen tight clothing - Consult physician
Trench Foot	Minimize exposure	NIOSH: Working in Cold Environments	Swelling of the foot Tingling, itching Severe pain Blistering	Inhalation Absorption **X** Ingestion		- Remove to warmer area - Refer to treatment for frost bite - Consult physician
Raynaud's Disease	Minimize exposure	NIOSH: Working in Cold Environments	Fingers turn white & stiff Intermittent blanching & reddening of fingers and toes Affected areas tingle & becomes very red or reddish purple	Inhalation Absorption **X** Ingestion Injection Membrane		- Remove to warmer area - Consult physician
4. Prepared by:	5. Date/time briefed:		**Last Updated: 4/25/05**		**SSP-Attach 5: Cold Stress** **Page 2 of 2**	

CG ICS SSP LOG/RECORD OF SAFETY BREIFINGS ATTACHMENT	1. Incident Name	2. Site Location:	3. Site Supervisors:	
4. Type of Briefing	5. Presented by:		6. Date	7. Time
Start Shift [ ] Pre-Entry [ ] Exit [ ] End of Shift [ ] Specify Other:				
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CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Helicopter Operations Additional Attachments:	2. Helicopter Location	3. Emergency contacts:

Activity	Safe Work Practice	4. Checked [3]
Pre-boarding	- Receive Safety briefing from helicopter operators	
	- Receive emergency extrication briefing	
	- Know location of emergency equipment	
	- Know water landing procedures	
	- Loose fitting hats, clothing & other gear removed at minimum 100 ft away	
	- Ensure operator knows how to contact emergency services	
	- Ensure operator has good communications with coordinating vessels	
	-	
Approaching and Exiting Helicopter	- Approach from front	
	- Approach only when signaled by pilot	
	- Never walk under tail blade	
	- Approach in clear view of pilot	
	- Approach in crouching position	
Onboard Helicopter/Helicopter Startup	- Wear seatbelts	
	- Wear hearing protection	
	- Ground crew & other persons maintain minimum 50 ft from operating helo	
	- Be alert for ground traffic and air traffic to assist pilot	
Other	-	
	-	
	-	
	-	
	-	
	-	
	-	
	-	
	-	
	-	
	-	
	-	

5. Prepared by:	6. Date/time briefed:	**Last Updated: 4/25/05**	**SSP-Attach 7: Helicopter Safety** **Page ____ of _____**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Small Boat Operations Additional Attachments:	2. Small Boat Unit Assignment	3. Emergency contacts:

Activity	**Safe Work Practice**	4. **Checked [3]**
Pre-boarding	- Receive safety briefing from boat crew operators	
	- Receive emergency extrication briefing	
	- Know location of emergency equipment	
	- Ensure operator knows how to contact emergency services	
	- Ensure operator has good comms with coordinating vessels & shore units	
	- Ensure comms schedule with parent unit is understood	
	- Ensure distress signals are available for day & night operations (3 per shift)	
	- Ensure qualified operators are running the boats	
	- Ensure appropriate number of CG approved Type I & II preservers	
	- Confirm location of safe seating from boat operator	
	- Ensure portable fuel tanks are full prior to boarding	
	- Keep all sources of ignition away from fueling area	
	- Ensure boat does not exceed safe load capacity (personnel & equipment)	
	- Ensure proper footwear for maintaining adequate boat deck contact	
	- Ensure equipment on boat is distributed evenly to ensure stability	
	- Ensure at least 2 people are operating the boat	
	- Ensure sun protection is available (glasses, and sun screen)	
	- Ensure adequate food & water is available for duration of operation	
	- Ensure first aid kits, fire extinguishers, alternate means of propulsion	
	- Ensure adequate fenders and mooring lines are available	
Boat Operations	- Remain seated whenever possible. Keep low in the boat.	
	- Ensure boat is able to maintain direct contact visually or by radio	
	- Avoid anchoring the boat by the stern	
Boat mooring and egress	- Keep hands & feet away from pinch points between boat & dock	
	- Stay clear of lines being used for mooring	
	- Do not disembark with bulky or heavy equipment, get assistance	
	- If not assisting in the mooring operation, remain seated until lines are tied	

5. Prepared by:	6. Date/time briefed:	**Last Updated: 4/25/05**	**SSP-Attach 8: Small Boat Safety** **Page ____ of _____**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Vehicle Operations:	2. Vehicle Unit Designator	3. Emergency contacts:

Activity	Safe Work Practice	4. Checked [3]
Before driving	- Ensure tires are inflated	
	- Ensure gas cap is in place & tight	
	- Ensure front hood and trunk are secured	
	- Ensure spare tire is in good condition	
	- Locate tire changing equipment	
	- Locate emergency road kit	
	- Check headlights, brake, emergency, turn signals and parking lights	
	- Adjust side mirrors	
	- Adjust review mirrors	
	- Ensure horn is in working order	
	- Ensure seat belts fasten	
	- Ensure sunglasses are available	
	- Locate operating switches for lights, wipers, temperature control, defroster	
	- Ensure adequate directions to destination are available	
	- Check to ensure driving route avoids high crime areas	
	- Ensure adequate fuel (keep half full during emergencies)	
Vehicle Operations	- After ignition, look for warning lights.	
	- Test braking system	
	- Obey all traffic signs and speeds	
	- Do not drive if hearing, sight or appendages are impaired	
	- Take frequent breaks; once every 100 miles	
	- During breaks, if sleeping, park in lighted lot and keep doors locked	
	- Do not drive if tired, on medication or under influence of alcohol	
	- Monitor traffic reports for accidents, weather and construction	
Other Precautions	-	
	-	
	-	
	-	
	-	
	-	

5. Prepared by:	6. Date/time briefed:	**Last Updated: 4/25/05**	**SSP-Attach 9: Vehicle Safety** **Page ____ of _____**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Insect Hazards Additional Attachments:	2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:
Hazard Type	Potential Sources	Signs & Symptoms	Control	Medical Treatment
Insect Bites & Stings	Bees	<u>Allergic person</u>: -Swollen throat -Difficult breathing -Noisy breath -Sudden pain -Severe itching, hives, acute redness, swelling -white firm swelling -reduced consciousness, shock	- Recon area prior to work & identify nests & habitats - Identify as hazard areas & place on SSP map - Provide insect repellent - Encourage long sleeves & pants if practical - Conduct tick & bite inspection during breaks and prior to departing site - Identify persons with insect allergies & restrict them where necessary - Obtain emergency insect bite kits	- Wash wound with soap & water - Request med assistance for allergic persons - Remove stinger without pinching or squeezing - Use cold pack to reduce swelling, use pad between skin and pack - Keep wounded area below heart to slow spread of venom - Do not administer aspirin or alcohol
	Black Widow Spider	-Systemic poison -Flu – like symptoms -Severe abdominal pain -Rigidity, muscle pain, cramping, -Chest tightness, breathing difficulty, -Pain in soles of feet -Alternating dry & salivating mouth, -Nausea, vomiting -Profuse sweating or swollen eyelids		- Wash wound with soap & water - Request med assistance address symptoms - Use cold pack to reduce swelling, use pad between skin and pack
	Brown Recluse	-Severe redness -Red circle around bite -Bite takes several months to heal		- Wash wound with soap & water - Request med assistance for allergic persons - Remove stinger without pinching or squeezing - Use cold pack to reduce swelling, use pad between skin and pack
	Ticks	-Flu like symptoms -Fever -Rash, joint pain, headaches		- Wash wound with soap & water - Request med assistance for allergic persons - Remove tick with oil, alcohol or heated tweezers - Use tweezers to remove imbedded head - If fever, rash, unusual markings develop around bite, contact physician
4. Prepared by:	5. Date/time briefed:	**Last Updated: 4/25/05**		**SSP-Attach 10: Insect Hazards** **Page 1 of _____**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Animal Hazards Additional Attachments:	2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:
Hazard Type	Potential Sources	Signs & Symptoms	Control	Medical Treatment
Mammal Bites	Dogs, Cats Skunks, Raccoons Foxes, Badgers Wolves, Bears Cows	-Pain & tenderness of wound -Redness, heat, swelling -Puss under the skin -Red streaks around wound -Swollen lymph nodes in arm pits, groin & neck	- Recon area prior to work & identify nests & habitats - Identify animals & any unusual behavior - Relocate animals if necessary using wildlife experts - Report rabid animals to local wildlife authorities - Obtain emergency bite kits	- Get medical attention ASAP to address infection - Ensure tetanus shot is updated - Interview individual to determine appearance/disposition of animal - Control serious bleeding - Apply pressure using gauze pad, tourniquets are inadvisable - Wash before touching wound - Wear rubber gloves when treating victim - Wash wounds that are not bleeding heavily - Cover with clean dressing and bandage
		<u>Rabies</u> -Drooling -Irritability -Strange, abnormal behavior		- Get medical assistance immediately
Snake Bites	Coral Snakes Water Moccasins Rattle Snakes Pit Vipers Ticks	*Some or all of these symptoms may be present:* -Fang marks -Swelling, discoloration, pain -Heat around fang marks -Weakness, sweating, faintness, shock <u>Coral snake</u>: -Respiratory paralysis -Bizarre behavior -Unusual eye movement	- Recon area prior to work & identify nests & habitats - Place locations on SSP map - Identify animals & any unusual behavior - Relocate animals if necessary using wildlife experts - Report agressive animals to local wildlife authorities - Obtain emergency bite kits	- Get medical attention ASAP - Ensure tetanus shot is updated - Interview individual to determine appearance/disposition of snake - Control serious bleeding - Apply pressure using gauze pad, tourniquets are inadvisable - Wash before touching wound - Wear rubber gloves when treating victim - Wash wounds that are not bleeding heavily - Cover with clean dressing and bandage
				Poisoned Victim - Get immediate medical attention - Keep patient still to slow spread of venom - Place bite area below heart to slow venom - Wash with soap & water - Use splint to immobilize bitten arms/legs - Use cold pack with gauze before skin - Do not administer aspirin or alcohol - Do not suck out poison - Do not use tournequets
4. Prepared by:	5. Date/time briefed:	**Last Updated: 4/25/05**		**SSP-Attach 11: Animal Hazards** **Page 1 of _____**

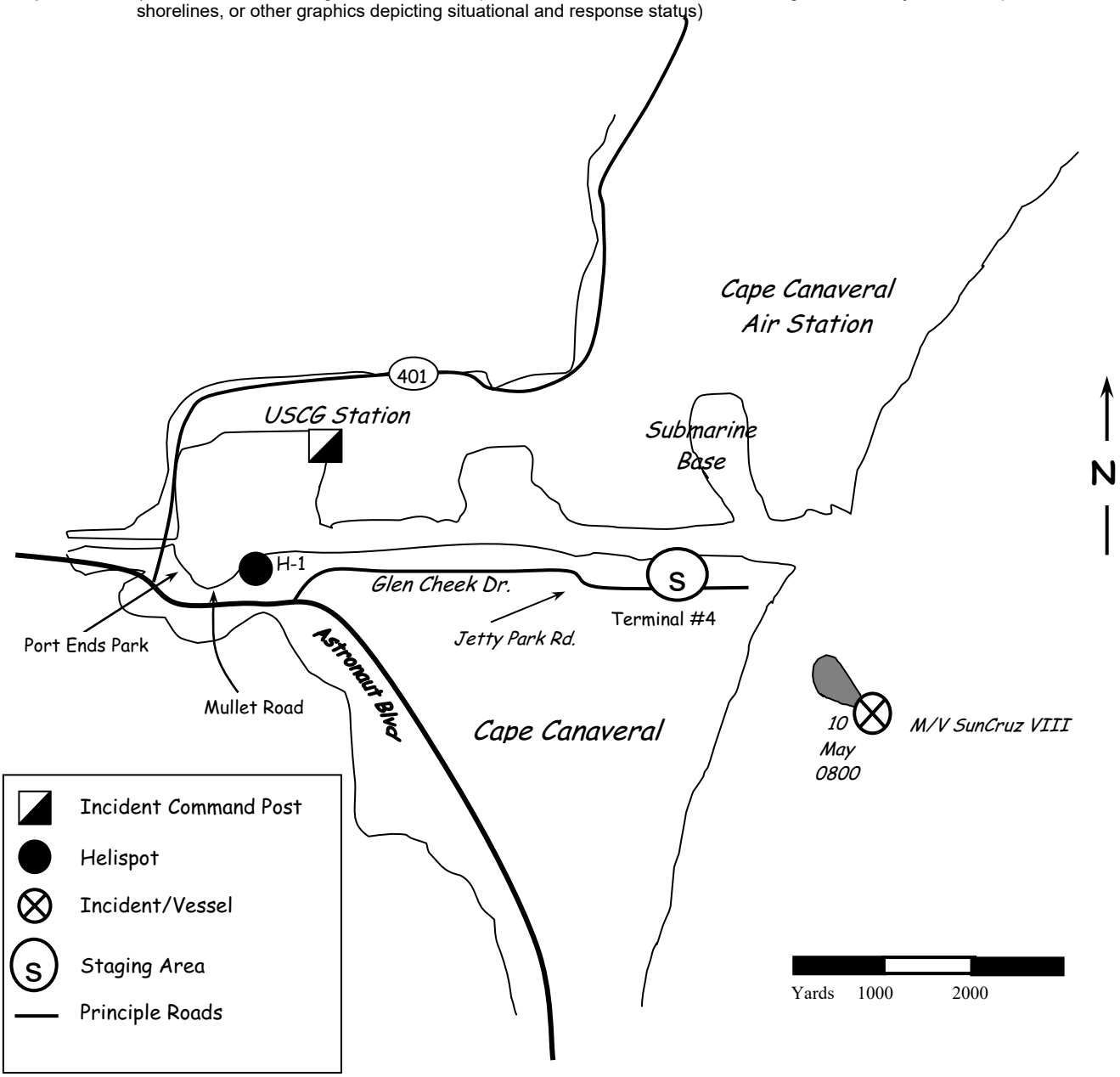
CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Marine Animal and Plant Hazards Additional Attachments:	2. Divisions/Groups/Units affected:		3. Job Tasks Involving Hazard:
Hazard Type	Potential Sources	Signs & Symptoms	Control	Medical Treatment
Animal Stings & Punctures	<u>*Group I*</u> Jellyfish, Portuguese Man-o-war Anemones Corals Hydras <u>*Group II*</u> Urchins, Cone Shells, Stingrays, Spiny fish	-Pain & tenderness of wound -Redness, heat, swelling -Puss under the skin -Red streaks around wound *Sensitive Individuals* -Allergic reactions -Respiratory arrest -Fainting -Infections & tetanus may develop	- Recon area prior to work & identify nests & habitats - Place locations on SSP map - Outfit workers with protective clothing for water activities and to prevent bites	- Get medical attention ASAP to address infection - Ensure tetanus shot is updated - Interview individual to determine appearance of animal - Control serious bleeding <u>*Group I*</u> - Do not rub or scratch affected area - Sprinkle alcohol on affected area, follow with meat tenderizer or talcum if available (denatures toxin) <u>*Group II*</u> - Soak in very warm water for 30 minutes - Do not use very hot water
Plants	Poison Ivy Poison Oak Poison Sumac	*Some or all of these symptoms may be present:* -Itching -Burning -Blistering -Rash & bumpy skin	- Recon area prior to work & identify plant types - Place locations on SSP map - Remove if necessary - Long sleeve shirts and pants should be worn - Gloves should be worn - Wash frequently during breaks & prior to departing work site. - Employ body screen salves	- If contact occurs, wash with soapy water immediately - Do not scratch - Provide medical attention of spreading is severe
4. Prepared by:	5. Date/time briefed:	**Last Updated: 4/25/05**		**SSP-Attach 11: Animal Hazards** **Page 2 of _____**

Example of an ICS-201 Form

9710 Example 201

1. Incident Name	2. Prepared by: B. Nelson, IC	INCIDENT BRIEFING
M/V ATHOS	Date: 20XX Time: 0800	ICS 201-CG

. Map/Sketch (include sketch, showing the total area of operations, the incident site/area, overflight results, trajectories, impacted shorelines, or other graphics depicting situational and response status)



4. Current Situation At 0410 hours today the M/V Sun Cruz VIII, a 600 passenger, 23 crew, 350 ft casino ship reported an explosion aboard and remains on fire. The following key points are known at this time.

- Fire is spreading on board
- The vessel is located about 1½ miles south of Port Canaveral entrance
- An oil slick has been observed in vessel vicinity and is moving in a northwest direction
- Evacuation has been ordered and is underway
- Other vessels are in the area and offering assistance
- There are injuries among the passengers and crew
- Some passengers are in life rafts and are drifting in a northerly direction
- Media helicopters have been observed over the area

9710 Example 201

1. Incident Name **M/V ATHOS**	2. Prepared by: B. Nelson, IC Date: 20XX Time: 0800	INCIDENT BRIEFING ICS 201-CG

5. Initial Response Objectives, Current Actions, Planned Actions

Initial Response Objectives:

- Provide for the safety and welfare of the passengers and nonessential crew.
- Secure scene and immediate area surrounding incident site.
- Ensure accountability and provide temporary shelter for displaced passengers and crew.
- Initiate salvage assessment.
- Initiate efforts to mitigate effects of spilled oil.

Current Actions:

- Establishing safety zone 1 nautical mile around vessel
- Assisting vessel to evacuate passengers
- Picking up persons in lift rafts and transporting to Port End Park
- Attempting to establish a system to account for all passengers and crew
- Establishing medical triage at Jetty Park Road with transport to hospital

Planned Actions:

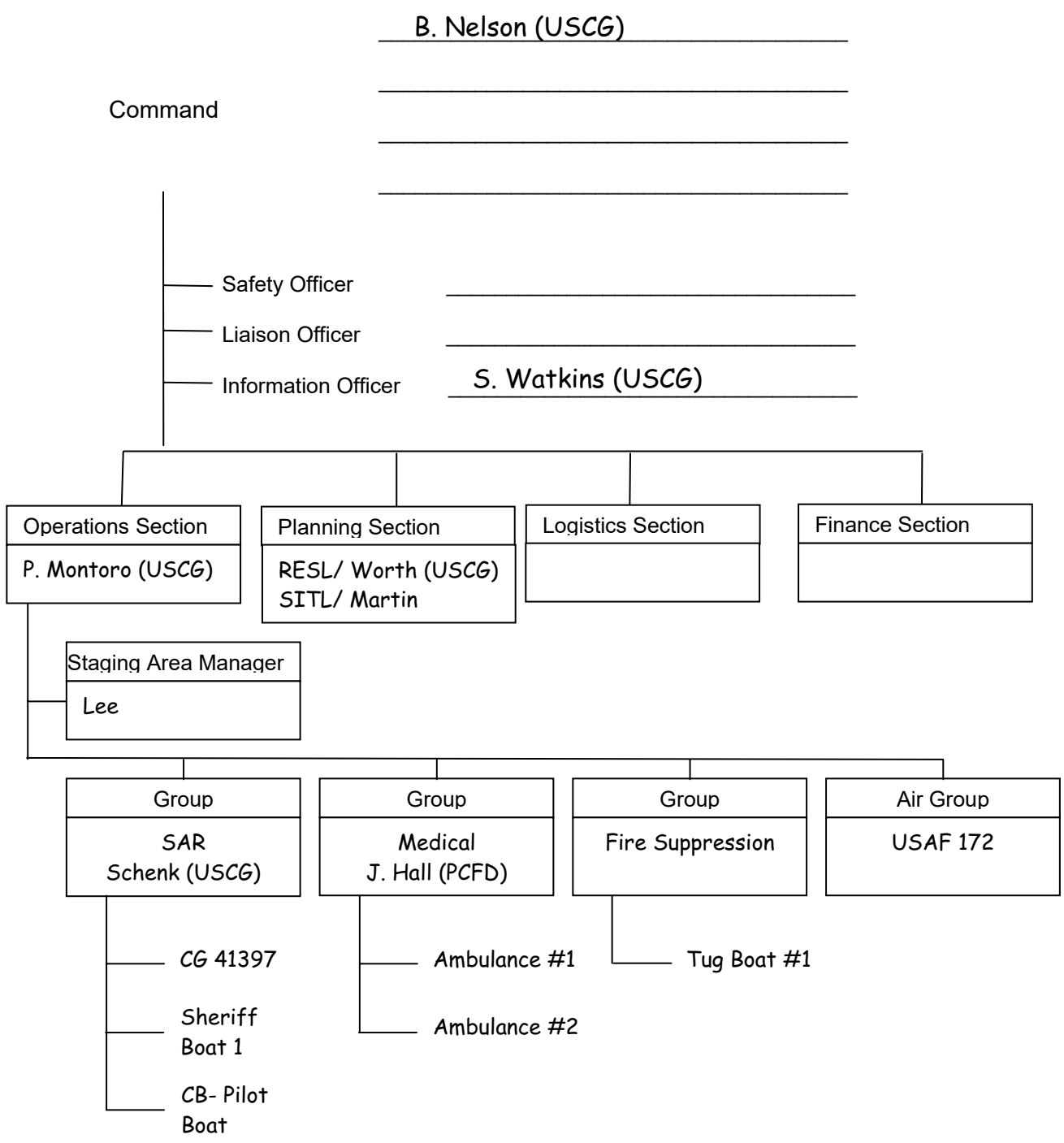
- Complete accountability of all passengers and crew
- Locate and remove all passengers from life rafts
- Complete triage of injured passengers and crew and transport to hospital
- Order additional resources to begin containment of spill
- Initiate preliminary damage assessment
- Determine extent of oil spill
- Put resources in place to establish and enforce a safety zone
- Order resources for fire suppression operations

Summary: Focus on SAR mission is beginning to phase down and focus on marine safety issues is gearing up. It appears there will need to be a multi-day commitment to mitigate this incident.

9710 Example 201

1. Incident Name	2. Prepared by: B. Nelson, IC	INCIDENT BRIEFING
M/V ATHOS	Date: 20XX Time: 0800	ICS 201-CG

6. Current Organization (fill in additional appropriate organization)



9710 Example 201

1. Incident Name	2. Prepared by: B. Nelson, IC	INCIDENT BRIEFING
M/V ATHOS	Date: 20XX Time: 0800	ICS 201-CG

7. Resources Summary

Resource	Resource Identifier	Date Time Ordered	ETA	On-Scene (X)	NOTES: (Location/Assignment/Status)
	B. Nelson			X	ICP/IC
	P. Montoro			X	ICP/OPS
	Sheriff Boat 1			X	SAR Group
	CG-41397			X	SAR Group
	CB-Pilot			X	SAR Group
	USAF-172			X	Air Group
	S. Watkins			X	ICP/IO
	B. Lee			X	Terminal #4 Stg Mgr.
	A. Worth			X	ICP/RESL
	S. Schenk			X	SAR Grp Sup
	K. Martin			X	ICP/SITL
	Ambulance #1			X	Medical Group
	Ambulance #2			X	Medical Group
	J. Hall			X	Medical Grp Sup
	PortTugBoat #1			X	Fire Suppression Grp.
Command Vsl	USCGC Sapelo		0830		SAR Group
Rescue Boat	CG 21212 (RHI)		0840		SAR Group
Tug Boat	PortTugBoat #2		0840		Staging
Triage Crew	CC Triage		0800		Medical Group
SERT Team	MSC		0900		ICP/THSP
Division Sup	K. Bell		0830		Fire Suppression Grp
Logistics Chief	P. Gill		0830		ICP/LSC

Sample Vessel Decontamination Plan

9736 Vessel Decontamination Plan (sample)

The following plan outlines the equipment and proposed methodology to conduct hull decontamination of marine vessels prior to departure from the Captain of the Port Philadelphia zone. The purpose of the plan is to ensure timely and cost effective decontamination of impacted assets related to the casualty and subsequent oil spill.

(5) Decontamination Task Forces are to be utilized with additional systems being available as needed. Each task force will consist of the following:

- (1) Shallow Water Portable Barge System
- (1) Tender Boat
- (2) 16'-18' Flat Boats
- (2) Steam Cleaner
- Containment Boom
- Adsorbent Materials
- (6) Personnel

Prior to commencement of steam cleaning operations, containment boom will be placed alongside or around the vessel as needed. Adsorbent sweep materials will be placed inside the containment boom to collect any residual oil being removed. No detergents or chemicals will be utilized during the decontamination process. All oiled adsorbent material will be bagged and placed in appropriate containers for disposal at an approved TSD facility.

Upon completion of vessel decontamination, each vessel will be inspected and approved by Federal/State representative(s) in accordance with the established Waterways Management protocol prior to transiting outbound.

Responsible Party: _____.
FOSC _____.
SOSC _____.

Real World

Tarball Removal Plan

9744 Tarball and Oiled Debris Removal Plan

T/V *Athos I*

Revised Tarball & Oiled Debris Removal Plan for Delaware River and Bay and Atlantic Ocean Beaches

April 11, 2005

Approved by:

FOSC – Captain Sarubbi _____

SOSC (DE) - _____

SOSC (PA) - _____

SOSC (NJ) - _____

SMTIC – Steven Kegelman - _____

9744 Tarball and Oiled Debris Removal Plan

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9744 Tarball and Oiled Debris Removal Plan

I. INTRODUCTION

At 9:30 PM on 26 November, the T/V *Athos I* struck a submerged object while preparing to dock at the Citgo Paulsboro, New Jersey facility. This collision resulted in two holes in the No. 7 port and center tanks. Initial reports indicated that the vessel released 30,000 gallons of a heavy Venezuelan crude oil. On 30 November, the volume spilled was increased to a maximum potential of 473,500 gallons. The final estimate of 265,000 gallons became known on 1/11/05.

The O'Brien's Group (O'Brien's) was notified on the evening of 26 November, as Tsakos Shipping and Trading S.A.'s Qualified Individual, to mobilize their spill management team (SMT) to manage the spill on the Owner's behalf. O'Brien's immediately mobilized their SMT and formed a Unified Command with the U.S. Coast Guard, the State of Delaware, State of New Jersey and the State of Pennsylvania. The Incident Command System continues to be utilized to manage the response.

Given the type and quantity of oil spilled, the National Oceanic and Atmospheric Administration (NOAA) has predicted that tarballs will persist for several months in the Delaware River System. Some tarballs are anticipated to impact the outer coast. The exact location and amount of tarballs depends on the wind, current and tides. Since the mean current along the outer coast is southward, it is anticipated that most of the tarball shoreline contacts will occur south of the Delaware Bay (in Delaware). Local wind events, however, could push tarballs and oiled debris on to New Jersey ocean beaches north of Cape May.

While the general trend for the number of tarballs contacting the outer coast is expected to decrease with time, the exact amount remains uncertain. Thus, there is a possibility that a strong meteorological event or vessel movement could mobilize oil resulting in an episodic increase of tarballs.

This draft plan outlines the actions to be taken by the States and the *Athos I* Unified Command to minimize to environmental and economic impacts of beached tarballs.

II. GENERAL COMMUNITY OUTREACH PLAN

An important part of the tarball and oiled debris removal plan involves outreach to the potentially affected communities. An effective outreach program will provide community members with the information that they need to make informed decisions concerning tarballs in their environment.

In time, it is the goal of this project to develop a specific outreach program for each impacted community. This section describes the general objectives of such a program and lists some possible mechanisms to disseminate this information.

The objectives of the *Athos I* tarball and oiled debris community outreach program are to: (1) Provide the public with contact information should they observe tarballs or oiled debris on the beach, (2) Provide assurance to beach goers that tarballs and oiled debris will be removed from the beach in a timely manner, (3) Provide evidence to community leaders and the tourist industry that the *Athos I* response has a comprehensive plan to manage beached tarballs and oiled debris.

Modes used to disseminate this information may include:

- News releases and advisories with one page fact sheet, contact information including phone number and website (both the states web sites as well as USCG web site).
- Informational letters to elected officials, public agencies, mariners, environmental and conservation groups, tourist groups, health agencies, and law enforcement.
- Website updates and promotion.
- Speaking engagements (selective and targeted).
- Public Service Announcements
- Beachside signage, postings at yacht clubs, marinas, boat stores, lifeguard stations.

9744 Tarball and Oiled Debris Removal Plan

III NEW JERSEY PLAN

A. Community Outreach Plan

In New Jersey, the general community outreach program described in section two will be modified to meet the specific demands of areas where significant beach impacts occur. The New Jersey phone number to report tarballs or oiled debris on the beach is 1-877-WARNDEP (1-877-927-6337). This is the New Jersey Department of Environmental Protection's (NJDEP) Toll Free 24-hour emergency number.

B. Tar Ball & Oiled Debris Response

The New Jersey Department of Environmental Protection (NJDEP) will be contacted should oiled debris or tar balls be sighted on New Jersey beaches. Once contacted, the NJDEP will notify the Cape May County Office of Emergency Management of the situation and then appoint a local state representative to conduct the initial investigation of the beach. The NJDEP Bureau of Emergency Response will decide on the next step in the cleanup process. If the amount of tarballs and/or oiled debris is small, it is likely that the NJDEP will clean the site without using contractors. If the amount of tarball and/or oiled debris is larger, the NJDEP may decide to contact the Operations Section Chief in the *Athos I* Command Center. Depending on the size of the affected area, the Operations Section Chief will either activate local contractors or dispatch a larger crew from the primary response area. In either case, the contractors will remove the tarballs or oiled debris under the supervision of the NJDEP or local state representative. It is not recommended that local state or county representatives remove tarballs or oily debris from the beach.

C. Notifications & Record Keeping

The Operations Section Chief or the Environmental Unit Leader will notify interested parties once cleanup activities have been completed. Notifications may include the NJDEP, Cape May County Office of Emergency Management, and the citizen that made the observation/report. The Environmental Unit Leader will make a record of the report and the cleanup activities and these records will be on file in the *Athos I* Command Center.

IV. DELAWARE PLAN

A. Community Outreach

In Delaware, the general community outreach program described in section two will be modified to meet the specific demands of Sussex County. Specific beach communities in Delaware are likely to include: Slaughter Beach, Fowler Beach, Primehook Beach, Lewes Beach, Rehoboth Beach, State Parks (Cape Henlopen, Delaware Seashore and Fenwick Island), Dewey Beach, Bethany Beach, Fenwick Beach, and Broadkill Beach.

The Delaware phone number to report tarballs or oiled debris on the beach is 800-662-8802 (in Delaware), 302-739-5072 (anywhere), or #DNR (on a Verizon cell phone). This number will connect the caller with the Delaware Department of Natural Resources & Environmental Control (DNREC).

B. Tarball & Oiled Debris Response

The DNREC will be contacted should oiled debris or tar balls be sighted on Delaware beaches. Once contacted, it is likely that the DNREC will assign one of their Environmental Protection Officers and/or an Emergency Response Scientist to conduct the initial investigation. The Environmental Protection Officer and/or an Emergency Response Scientist will decide on the next step in the cleanup process. If the amount of tarballs and/or oiled debris is small, it is likely that the DNREC will clean the site without using contractors. If the affected area is larger, the DNREC may decide to contact the Operations Section Chief in the *Athos I* Command Center. Depending on the size of the affected area, the Operations Section Chief will either activate local contractors or dispatch a larger crew from the primary response area. In either case, the contractors will remove the tarballs or oiled debris under the supervision of the DNREC Environmental Protection officer.

C. Notifications & Record Keeping

The Operations Section Chief or the Environmental Unit Leader will notify interested parties once cleanup activities have been completed. Notifications may include the DNREC, the Sussex County Emergency Operation Center, and the citizen that made the observation/report. The Environmental Unit Leader will make a record of the report and the cleanup activities and these records will be on file in the *Athos I* Command Center.

V. PENNSYLVANIA PLAN

A. Community Outreach Plan

In Pennsylvania, the general community outreach program described in section two will be modified to meet the specific demands of the impacted areas of Pennsylvania. The Pennsylvania phone number to report tarballs or oiled debris on the beach is 1-484-250-5900. This is the Pennsylvania Department of Environmental Protection's (PADEP) 24-hour emergency number Bucks, Chester, Delaware, and Montgomery counties and the city of Philadelphia

.

B. Tar Ball & Oiled Debris Response

The Pennsylvania Department of Environmental Protection (PADEP) will be contacted should oiled debris or tar balls be sighted on Pennsylvania beaches. Once contacted, the PADEP will send a representative to conduct the initial investigation of the beach. The PADEP will decide on the next step in the cleanup process. If the amount of tarballs and/or oiled debris is small, it is likely that the PADEP will clean the site without using contractors. If the amount of tarball and/or oiled debris is larger, the PADEP may decide to contact the Operations Section Chief in the *Athos I* Command Center. The Operations Section Chief will then activate a crew from the primary response area to move to the affected area. The contractors will remove the tarballs or oiled debris under the supervision of the PADEP.

C. Notifications & Record Keeping

The Operations Section Chief or the Environmental Unit Leader will notify interested parties once cleanup activities have been completed. Notifications may include the PADEP and the citizen that made the observation/report. The Environmental Unit Leader will make a record of the report and the cleanup activities and these records will be on file in the *Athos I* Command Center.

VI. MARYLAND PLAN

A. Community Outreach Plan

In Maryland, the general community outreach program described in section two will be modified to meet the specific demands of areas where significant beach impacts occur. The Maryland phone number to report tarballs or oiled debris on the beach is 1-866-MDE-GOTO (1-866-633-4686). This is the Maryland Department of Environment (MDE) Toll Free 24-hour emergency number.

B. Tar Ball & Oiled Debris Response

The Maryland Department of Environment, Emergency Response Division, will be contacted should oiled debris or tar balls be sighted on Maryland beaches. Once contacted, it is likely that the MDE will assign someone from the Emergency Response Division to conduct the initial investigation of the beach. The MDE will decide on the next step in the cleanup process. If the amount of tarballs and/or oiled debris is small, it is likely that the MDE will clean the site without using contractors. If the amount of tarball and/or oiled debris is larger, the MDE may decide to contact the Operations Section Chief in the *Athos I* Command Center. Depending on the size of the affected area, the Operations Section Chief will either activate local contractors or dispatch a larger crew from the primary response area. In either case, the contractors will remove the tarballs or oiled debris under the supervision of the MDE or local state representative. It is not recommended that local state or county representatives remove tarballs or oily debris from the beach.

C. Notifications & Record Keeping

The Operations Section Chief or the Environmental Unit Leader will notify interested parties once cleanup activities have been completed. Notifications will include the MDE, and may include the local Office of Emergency Management, and the citizen that made the observation/report. The Environmental Unit Leader will make a record of the report and the cleanup activities and these records will be on file in the *Athos I* Command Center.

VII. VIRGINIA PLAN

A. Community Outreach Plan

In Virginia, the general community outreach program described in section two will be modified to meet the specific demands of areas where significant beach impacts occur. The Virginia phone number to report tarballs or oiled debris on the beach is 804-674-2400. This is the Virginia Department of Emergency Management (VDEM) 24-hour emergency number at the Virginia Emergency Operations Center (VEOC). The 24-hour toll-free number at the VEOC is 1-800-468-8892.

B. Tar Ball & Oiled Debris Response

Reports of oiled debris or tarballs received by the VEOC will be forwarded to the Virginia Department of Environmental Quality (VDEQ) Tidewater Regional Office (TRO) at 757-518-2077 for appropriate action. VDEQ TRO staff will conduct the initial investigation of the beach or affected area to determine the presence and extent of the tarballs or oiled debris. If the volume of the material is not significant VDEQ TRO will exercise the option to have the tarballs or oiled debris removed as appropriate. If there is a significant amount of material requiring removal, after consultation with the local emergency coordinator and the VDEM Regional Hazardous Materials Officer, VDEQ TRO will contact the Operations Section Chief in the *Athos I* Command Center at 267-765-3445. Depending on the size of the affected area, the Operations Section Chief will either activate local contractors or dispatch a larger crew from the primary response area. In either case, the contractors will remove the tarballs or oiled debris under the supervision of the VDEQ TRO. It is not recommended that any state or local representatives remove tarballs or oily debris from the beach or affected area.

C. Notifications & Record Keeping

The Operations Section Chief or the Environmental Unit Leader will notify interested parties once cleanup activities have been completed. Notifications will include the VDEQ, the local emergency coordinator and the citizen that made the observation/report. The Environmental Unit Leader will make a record of the report and the cleanup activities and these records will be on file in the Athos I Command Center.

Response Functions

With Corresponding Management Units

9749 Potential Response Functions with Corresponding Management Units

The Operations Section Chief (OSC) must identify the response functions that must be accomplished to effectively develop their organization and employ tactical resources. Table 1 lists several response functions (list not inclusive) and the management unit (Groups or Divisions) that provides the best method for accomplishing the particular function. For example, if search and rescue has been identified as a response function, Groups might be the best way to organize search and rescue within the incident command organization.

Response Functions	Management Units
Open water	
□ Product recovery	Group
□ Booming	Group
□ Medical treatment	Group
□ Decontamination	Group
□ Wildlife recovery/rehabilitation	Group
□ Search and Rescue	Group
□ Safety and Security	Group/Division
□ Fire Fighting/overhaul	Group/Division
□ Damage Assessment	Group/Division
□ Salvage	Group/Division
□ Investigation	Group
□ Mass evacuation	Group
□ Skimming	Group
□ Triage	Group
Shoreline	
□ Assessment	Group/Division
□ Pre-impact beach cleanup	Group/Division
□ Safety and Security	Group/Division
□ Beach cleanup	Division
□ Resource protection	Division

Table 1. List of response functions and management units that may be used by the Operations Section Chief to organize their Section.

General Waste Containment & Disposal Checklist

9781 GENERAL WASTE CONTAINMENT AND DISPOSAL CHECKLIST

Consideration	Initials
Estimate types and potential quantities of liquid and solid wastes that will likely be generated	
Make initial determination of hazardous nature of waste materials	
Determine if decanting recovered water will be required and if so begin permitting process	
Identify storage tanks and areas and determine if sufficient capacity is available for each waste type and if not, acquire necessary portable storage	
Identify and contact potential waste transportation contractors to determine capabilities and availability	
Prepare waste management plan [See Waste Management & Disposal Plan]	
Ensure PPE and safe waste-handling procedures are included in the Site Safety Plan and all personnel have reviewed plan and don appropriate PPE	
Construct solid waste storage area including underlying liner and surrounding berms to prevent escapement of contamination	
If offsite waste storage areas are required, collect soil samples prior to use to establish baseline levels of contamination	
Gauge all tanks prior to use to determine quantity of existing contents and enable greater accuracy of quantifying recovered oil accounting	
Designate liquid waste transfer areas and ensure compatibility of transfer equipment with vacuum/tank trucks and/or barges/skimmers	
Ensure proper waste segregation to minimize generation of waste requiring special disposal and assist recovered oil accounting	
Ensure wastes are adequately containerized and secured to reduce potential for further leakage during storage	
Collect representative sample of each waste stream as required for characterization and treatment or disposal	
If the waste is hazardous, contract services of a registered hazardous waste transporter, if not ensure the transporter is registered	
Develop system of recovered oil accounting and waste tracking	
Ensure wastes are transported to approved treatment/disposal sites	
Ensure bill of ladings or manifests are properly completed per DOT requirements and that all copies are maintained in the appropriate files	
Ensure all federal, state, and local laws/regulations are being followed and the appropriate permits have been obtained	

Waste Management & Disposal Plan

9782 Waste Management and Disposal Plan

WASTE DESIGNATION AND MANAGEMENT (CONTINUED)	
Waste Stream No. 2 (WS-2)	
Type:	Est. Quantity
Hazardous?: yes/no	Analytical?: yes/no (attach lab reports)
EPA/State Waste Code:	Storage Location/Tank No:
Special Handling/Transfer Requirements:	
Description of Segregation Procedures:	
Description of Recovered Oil Accounting Procedures:	
Waste Stream No. 3	
Type:	Est. Quantity
Hazardous?: yes/no	Analytical?: yes/no (attach lab reports)
EPA/State Waste Code:	Storage Location/Tank No:
Special Handling/Transfer Requirements:	
Description of Segregation Procedures:	
Description of Recovered Oil Accounting Procedures:	

9782 Waste Management and Disposal Plan

WASTE DESIGNATION AND MANAGEMENT (CONTINUED)	
Waste Stream No. 4	
Type:	Est. Quantity
Hazardous?: yes/no	Analytical?: yes/no (attach lab reports)
EPA/State Waste Code:	Storage Location/Tank No:
Special Handling/Transfer Requirements:	
Description of Segregation Procedures:	
Description of Recovered Oil Accounting Procedures:	
INTERIM WASTE STORAGE SITES	
Interim Storage Site No. 1	
Location/Site Description:	
Site Capacity:	
Permit Requirements:	
Containers (roll-off boxes, tanks, drums, pits, etc.):	
Site Construction (berms, liners, coverings, leachate/rainwater collection):	
Decontamination Area (location, set up, pollution prevention measures):	

9782 Waste Management and Disposal Plan

INTERIM WASTE STORAGE SITES (CONTINUED)
Interim Storage Site No. 2
Location/Site Description:
Site Capacity:
Permit Requirements:
Containers (roll-off boxes, tanks, drums, pits, etc.):
Site Construction (berms, liners, coverings, leachate/rainwater collection):
Decontamination Area (location, set up, pollution prevention measures):
Interim Storage Site No. 3
Location/Site Description:
Site Capacity:
Permit Requirements:
Containers (roll-off boxes, tanks, drums, pits, etc.):
Site Construction (berms, liners, coverings, leachate/rainwater collection):
Decontamination Area (location, set up, pollution prevention measures):

9782 Waste Management and Disposal Plan

DECANTING REQUEST (IF APPLICABLE)		
Description of Proposed Decanting Procedures:		
Attach Decanting Authorization Form:		
TREATMENT/DISPOSAL		
Waste Stream	**Treatment/Disposal Method**	**Treatment/Disposal Facility**
WS-1		
WS-2		
WS-3		
WS-4		
WASTE TRACKING		
Description of Waste Tracking Procedures:		
WASTE TRANSPORTATION		
WS-1		
Proposed Method:		
Contractor:	Certification No.	
Spill Prevention Measures:		

9782 Waste Management and Disposal Plan

WASTE TRANSPORTATION (CONTINUED)	
WS-2	
Proposed Method:	
Contractor:	Certification No.
Spill Prevention Measures:	
WS-3	
Proposed Method:	
Contractor:	Certification No.
Spill Prevention Measures:	
WS-4	
Proposed Method:	
Contractor:	Certification No.
Spill Prevention Measures:	

WASTE STATUS SUMMARY

TYPE	RECOVERED	STORED	DISPOSED OF
Oil (bbls)			
Oily Liquids (bbls)			
Oily Solids (tons)			
Solids (tons)			

PPE

PPE Required for Waste Handling:

OTHER

Additional Information:

Example Incident Demobilization Plan

9785 INCIDENT DEMOBILIZATION PLAN

Prepared by_____
Demobilization Unit Leader

Approved by_____
Incident Commander

Approved by_____
Planning Section Chief

Approved by_____
Logistics Section Chief

Approved by_____
Finance Section Chief

Approved by_____
Operations Section Chief

Approved by_____

PLAN OUTLINE:

1. General Information
2. Guidelines
3. Responsibilities
4. Release Procedures
5. Travel Information

I. GENERAL INFORMATION

Functional Units (Operations, Logistics, Finance & Command) will advise the Planning Section of resources that are surplus to the unit needs. The Planning Section will identify resources surplus to the incident needs. The Demob Function will manage the release and return or reassignment of the surplus resources. The Demob Function consists of two (2) sections, the incident base Demob Unit and Expanded Dispatch. All resources will have a minimum of ___ hours rest prior to leaving the Incident.

The size and location of the Incident Base lends itself to the holding of surplus equipment and personnel while in the Demob process.

II. GENERAL GUIDELINES

A. **NO RESOURCES WILL LEAVE THE INCIDENT UNTIL AUTHORIZED TO DO SO BY THE DEMOB UNIT.**

B. Efforts will be made to ensure that all released personnel arrive home by 2200. All resources must meet individual agency regulations pertaining to rest and travel.

C. All government and hired vehicles leaving the incident will have a safety inspection and deficiencies will be corrected prior to departure for home unless agency head signs a waiver of inspection.

D. All Party Chiefs, Crew Supervisors and Strike Team Leaders will be briefed by the Demob Unit prior to leaving the incident.

E. Notification to incident personnel will be by posting the Projected Releases in advance. Finance and Logistics will be notified as soon as possible when surplus resources are identified for DEMOB.

F. Operators of oversize vehicles (e.g. transports) are responsible for obtaining their own permits required for the return trip back to their point of hire.

G. Actual departure times and ETA at final destination will be relayed to Expanded Dispatch upon departure of all resources from the base. This includes all contract equipment and services.

H. Performance Ratings are required prior to the resource being declared excess to functional needs for:

- **Trainees**
- **Outstanding performances**
- **Deficient performances**
- **By personal request**
- **All Unit Leaders and above**

III. RESPONSIBILITIES

Functional Heads (e.g. Section Chiefs) are responsible for determining resources surplus to their needs and submitting lists (see example attached) to the Planning Section with **Request numbers**, Agency, tentative release date/time, destination, travel needs and availability.

The Demob Unit Leader is Responsible for:

- Preparing the Demobilization Plan.
- Providing Expanded Dispatch with "Projected Releases."
- Providing Expanded Dispatch with confirmation of departing resources (including contract equipment) with their departure time and ETA at their final destination (if they have their own transportation)
- Making notifications to the surplus incident personnel regarding tentative and final releases.
- Ensuring that all signatures are obtained on the Demob Checkout form (ICS-221)

Monitoring the Demob process and making necessary adjustments in the process to avoid untimely delays and ensure accurate and timely flow of release information.

The Incident Commander is responsible for:

- Establishing Incident release priorities in concert with the Santa Barbara County Fire Department.
- Review and approval of the Demobilization Plan.
- Review and approval of projected release lists.

The Safety Officer is responsible for:

- Identifying any special safety considerations of the Demob Plan.
- Approval of projected surplus functional resources.

The Planning Section Chief is responsible for:

- Review and approval of the Demob Plan.
- Review and approval of projected release lists.
- Approval of projected surplus Functional Section resources.

The Logistics Section Chief is responsible for:

- Insuring, through Facilities, that all sleeping and work areas are cleaned up before personnel are released.
- Insuring, through Supply, that all non-expendable property items are returned or accounted for prior to release.
- Insuring, through Ground Support, that there will be adequate ground transportation during the release process and that all government vehicles and hired equipment receive a safety inspection prior to leaving the incident. Any deficiencies must be corrected prior to leaving.
- Insuring, through Communications, that all radios and cell phones have been returned or accounted for.
- Insuring, through Food Unit, that there will be adequate meals for those being released and for those remaining in camp.
- Review and approval of the Demob plan.
- Approval of projected surplus functional resources.

The Finance Section Chief is responsible for:

- Completion of all time and equipment reports, compensation and claims packages for released resources.
- Contract equipment payments for released vendors.
- Providing justification (i.e. excessive shift, coyote, meal breaks etc.) with IC signature to released personnel requesting it.
- Approval of projected surplus Functional Resources.
- Review and approval of the Demob Plan.

The Operations Section Chief is responsible for:

- Review and approval of the Demob Plan.
- Approval of projected surplus Functional Resources.

IV. RELEASE PRIORITIES

The Incident Commander has established the following release priorities:

1.
2.
3.
4.
5.

V. RELEASE PROCEDURES

Section Chiefs will identify surpluses within their units and submit a list (or lists) to the Demob Unit in the Planning Section.

Demob will combine lists and form a "Tentative Release" list to be submitted to the IC for review and approval. Demob will work with Resources Unit so that the resource status board can be kept current. Any incident formed Strike Teams must be disbanded before IC approval and release from the incident.

After IC approval, Demob will notify Expanded Dispatch of the tentative releases and obtain approval. Demob will give Ground Support lead-time to arrange for ground transportation for crews and overhead from the base to the departure point.

Crew Leaders or individuals will take the Demob Checkout form (ICS-221) to:

1. Communications Unit (to return communications equipment).
2. Ground Support (for vehicle safety inspection as needed).
3. Supply Unit (to return all non-expendable property.)
4. Documentation Unit (logs and performance ratings).
5. Time Unit and obtain completed Fire Time Report.
6. DEMOB UNIT WITH ALL SIGNATURES.

DEMOB UNIT WILL BE THE LAST STOP IN THE RELEASE PROCESS. Demob will:

- Collect and sign off the Demob Checkout Form (ICS-221)
- Brief the released personnel on method of travel, schedule, time frames and radio travel frequency.
- Release the resource from the base.
- Advise Expanded Dispatch of ETD & ETA to the home base or transportation point.
- Co-ordinate with the Resource Unit so that resource status is kept current.

V. TRAVEL INFORMATION

Phone numbers:

Radio Call Frequencies:

Sample Demobilization Plan

9786 Sample Demobilization Plan

DEMOBILIZATION PLAN

M/V BANEASA

PREPARED BY: _____ DATE: 27 Dec 97
Demobilization Unit Leader

REVIEWED BY: _____ DATE: 27 Dec 96
Planning Section Chief

REVIEWED BY: _____ DATE: 27 Dec 96
Logistics Section Chief

REVIEWED BY: _____ DATE: 27 Dec 96
Finance Section Chief

REVIEWED BY: _____ DATE: 27 DEC 96
Operations Section Chief
See Initialed Changes

REVIEWED BY: _____ DATE: 27 Dec 96
Incident Commander

REVIEWED BY: _____ DATE: 27 Dec 96
Incident Commander

REVIEWED BY: _____ DATE: 27 Dec 96
Incident Commander

9786 Sample Demobilization Plan

DEMOBILIZATION PLAN
M/V BANEASA

GENERAL INFORMATION:

Demobilization will occur in two phases. Phase one will go into effect once the vessel is safely anchored in Adak Harbor. *Phase* two will commence once final disposition of the vessel is safely completed.

All field deployed personnel and equipment can only be demobilized by LCDR Theriault.

No personnel or equipment will leave the incident until authorized to do so.

Demobilization will be accomplished in a cost effective manner

Phase One: Release priorities for personnel and equipment resources will be guided by the following priorities:

1. Non-local responders.
2. Response resources not listed in phase two demobilization.

USCGC Midgett will remain on scene until it is determined it is operational no longer needed or after the vessel is safely anchored in Adak Harbor. Release of the USCGC Midgett will also depend upon the report received from the attending Marine Inspector.

Phase Two: The following resources will remain attached to the incident until ordered to demobilize by the Unified Command. Personnel and equipment will remain with the
vessel.

1 One MSO Anchorage Marine Inspector.
2. One Pacific Strike Team personnel.
3. One "M" type Inmarsat.
4. Commercial towing assets as specified by the Captain of the Port in consultation with other members of the Unified Command.

COMMON RESPONSIBILITIES

1. Safety of personnel is paramount during demobilization
2. All incident response personnel shall follow the guidelines put forth in this plan.
3. ICS Form 221 will be used to check personnel out of the incident.
4. All equipment checked out must be returned to the appropriate section.

9786 Sample Demobilization Plan

SECTION CHIEFS RESPONSIBILITIES

The Planning Section Chief:

1. Shall ensure demobilization information is disseminated in sufficient time to ensure the orderly downsizing of incident resources.

2. Submit proposed release of resources for Unified Command approval. Ensure approved releases receive and comply with Demobilization check-out form ICS Form 221.

Operations Section chief:

1. Identify and communicate excess personnel and equipment available for demobilization to the Planning Section Chief.

Logistics Section Chief:

1. Coordinate all personnel and equipment transportation needs to final destinations.
2. Ensure all communications equipment is checked in and verified.

Finance/Administration Section Chief:

I. Is responsible for completion of personnel time reports.

2. Completion of equipment time reports.

AIRCRAFT

C-130: Demobilization will be contingent upon all Adak Harbor response personnel and equipment being returned to Anchorage/Sacramento.

H-60: Demobilization will be determined after evaluation of operational requirements in Adak Harbor

ACTUAL CHECKOUT PROCEDURES

When final approval and instructions are obtained the Demobilization Unit will:

1. Notify personnel to be released as soon as possible.
2. Prepare ICS Form 221.

COMMAND POST RELOCATION

9786 Sample Demobilization Plan

The Unified Command will evaluate and establish the date to transfer all command post functions from the state emergency operations center to MSO Anchorage.

Example

Real World

ICP Move Plan

INCIDENT COMMAND POST MOVING PLAN T/V ATHOS I

NOVEMBER 29, 2004

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PG. 2-3.....USCG COMMAND POST CHECKLIST
PG. 4..... PARKING
PG. 5-6.....MAP
PG. 7..... MEALS
PG. 8-9..... COMMAND POST LAYOUT
PG. 10..... PHONE NUMBERS

OBJECTIVE:

The purpose of this plan is to ensure a timely and effective movement of the Incident Command Post, from Sector Delaware Bay to the Holiday Inn Historic District (see Mapquest directions and map on pages 5-6).

All personnel are requested to bring all equipment necessary to conduct work in their ICS positions

(printers, laptops, etc.)

2.0 INCIDENT COMMAND POST CHECK OFF SHEET

2.1 Site Selection Criteria

- ❑ Determine organization size and the space requirements of each function
- ❑ Is the facility in a secure area
- ❑ Locate in proximity to the incident
- ❑ Convenient for Agency/ Organization Executives to access
- ❑ Adequate secure parking
- ❑ Appropriate work space separation
- ❑ Adequate meeting/ briefing room space
- ❑ Additional telephone lines are available and the facility will accommodate the
- ❑ Able to control public access
- ❑ Proximity to helo [pad/landing zone
- ❑ Quite area away form major distractions such as airports and railroads
- ❑ Close proximity to billeting and feeding facilities such as other agency operations centers and EOC's
- ❑ Rental or lease cost of facility
- ❑ Adequate wall space for required displays
- ❑ Locate of harms way
- ❑ Need for a separate Joint Information Center
- ❑ Additional space available for co-locating the incident base

2.2 Setup and Operating Requirements

- ❑ Develop sketch map of facility
- ❑ Designate name of ICP (incident name)
- ❑ Develop clear directions map along with reference points for locations facility
- ❑ Establish a check-in desk with recorder and ICS 211 forms
- ❑ Assign work space and identify each functional area
- ❑ Ensure that check-in has location of all functions
- ❑ Provide security for the facility and parking area
- ❑ Establish facility and services contract and agreement to include daily maintenance
- ❑ Procure required furniture, equipment, and supplies
- ❑ Install communications system
- ❑ Conduct facility and grounds safety and security evaluation and mitigate problems as needed
- ❑ Develop and post an emergency evacuating plan and brief staff
- ❑ If required, augment sanitation facilities
- ❑ If required, negotiate facility use agreement

2.3 Equipment Requirements

- ❑ Fax machines incoming and outgoing

- Professional quality copy machine
- Video projector and projection screen
- Easels and flip charts
- Wall clocks
- Television with necessary connections to be comparable with audio visual equipment
- Computers and printers radios display processor for displays digital and video camera
- ICS position vest
- Maps and charts as needed
- Dry erase boards
- T-card racks (resource status)
- Admin support kits for plans, logistics and finance

PARKING

1. Parking is free to all Command Post Personnel.

2. Personnel are to park in the garage and report to Command Post Sign-in. This area is located in front of the Franklin Room.

3. Upon signing in, you will receive a parking pass to be displayed in your vehicle windshield.

Driving Directions
Sector Delaware Bay
To
Holiday Inn, Historic District

1. From Sector Delaware Bay, Philadelphia turn RIGHT onto Columbus Blvd. Proceed approx. 1 mile.

2. Take RIGHT ramp toward HISTORIC AREA / MARKET STREET / CENTER CITY.

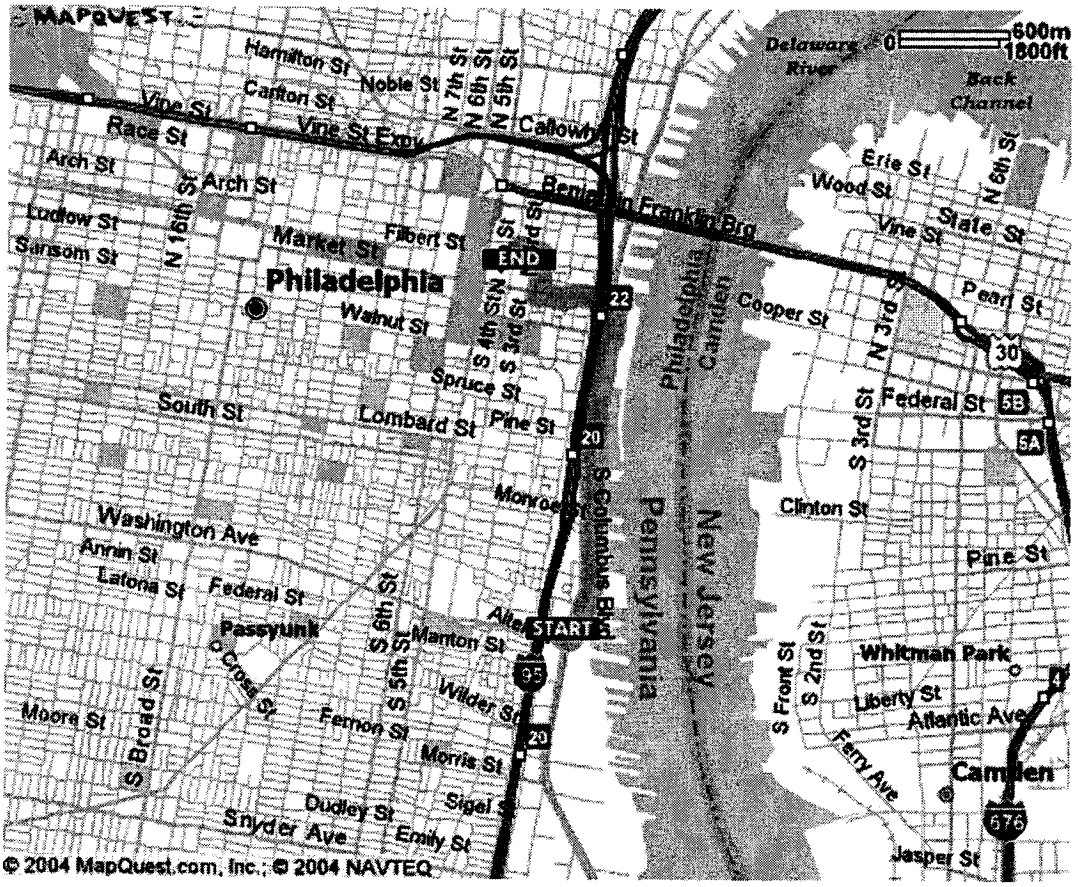
3. Turn LEFT onto Market Street.

4. Turn RIGHT onto 3rd Street.

5. Turn LEFT onto Arch Street.

6. Turn LEFT onto 4th Street.

7. Holiday Inn Parking Entrance is on the RIGHT.



All rights reserved. Use Subject to License/Copyright | Map Legend

NAVTEQ ON BOARD

These directions are informational only. No representation is made or warranty given as to their content, road conditions or route usability or expeditiousness. User assumes all risk of use. MapQuest and its suppliers assume no responsibility for any loss or delay resulting from such use.

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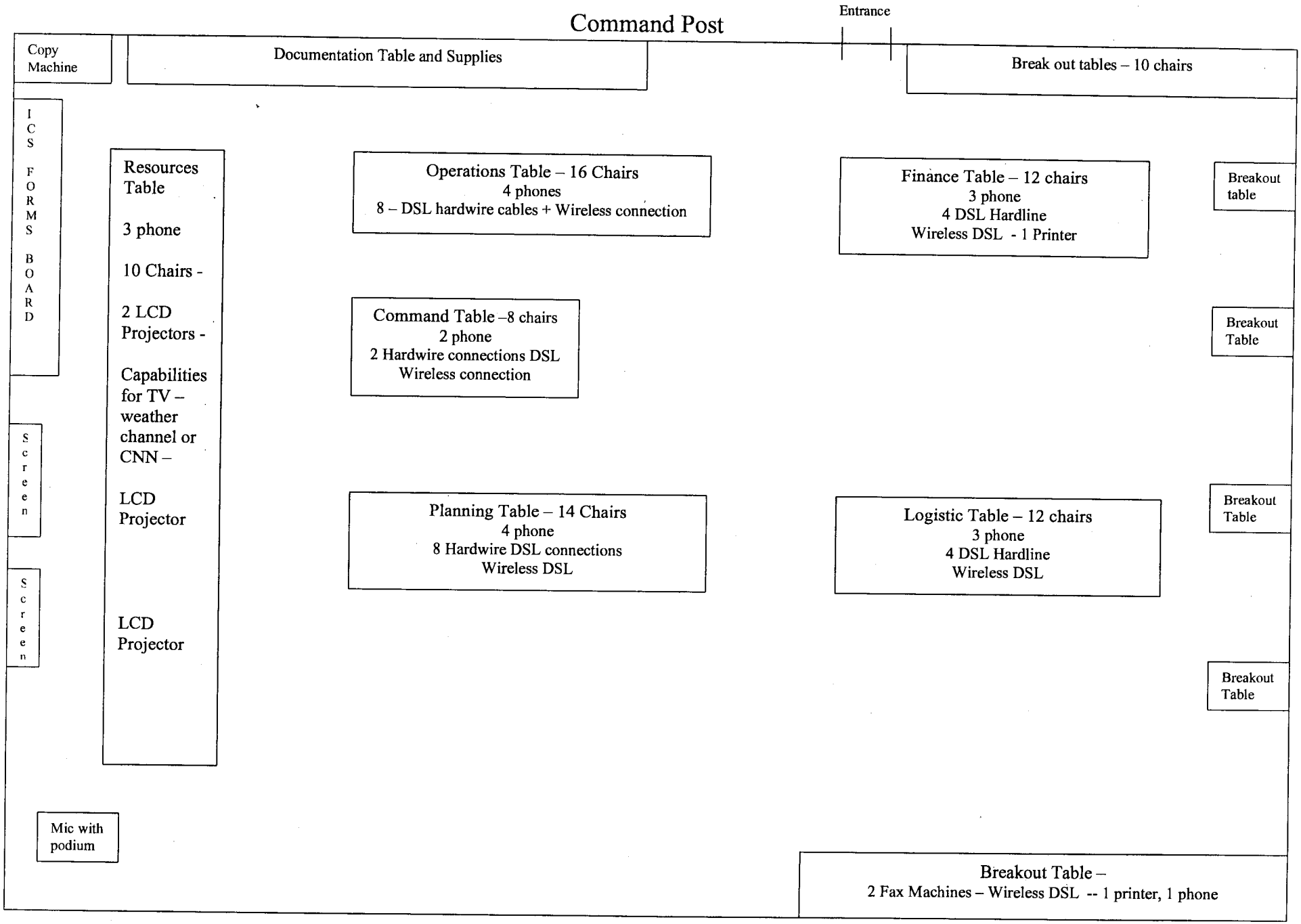
PG 01

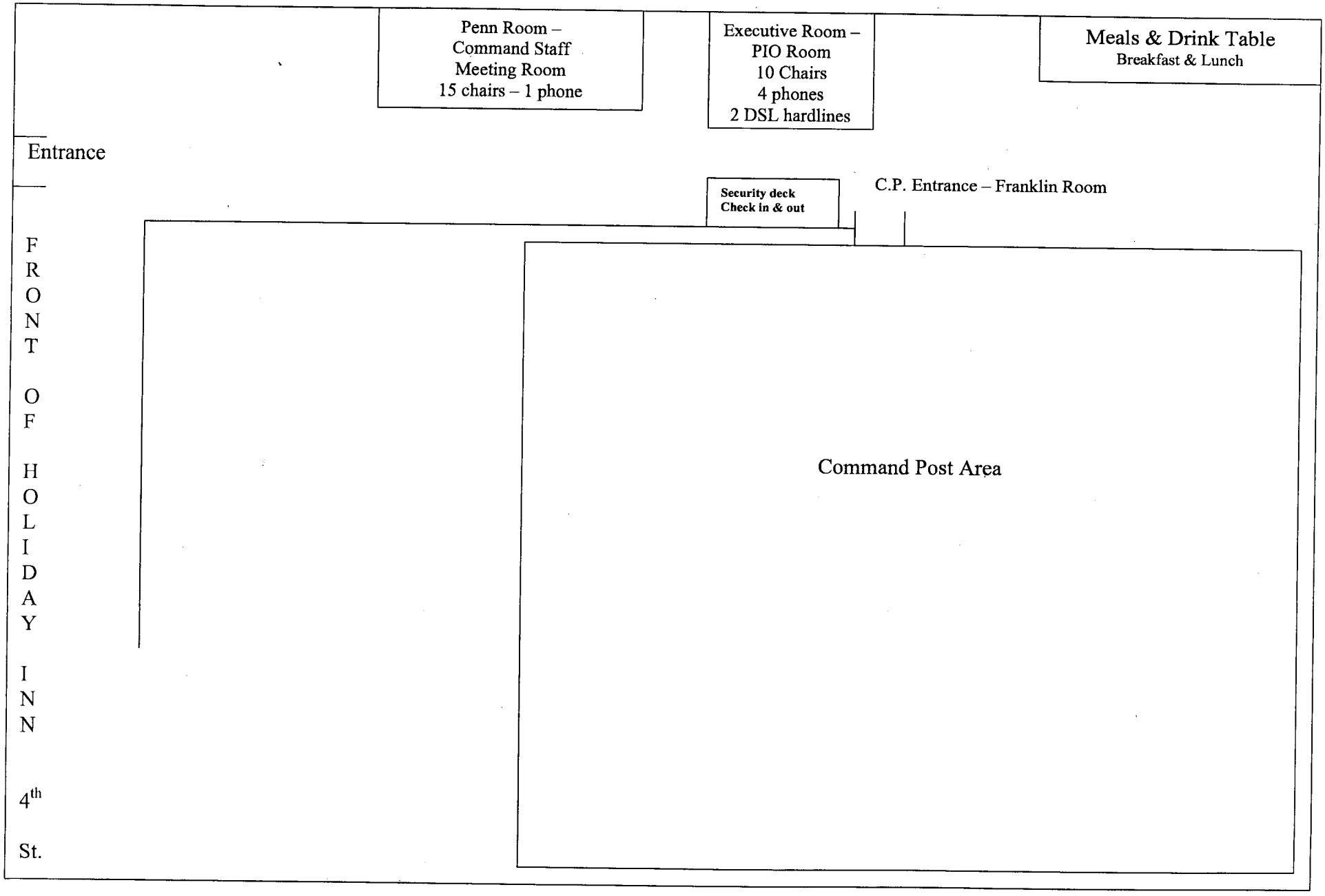
MEALS

1. A working Breakfast, Lunch, and Beverage Service will be provided.

2. These services will be provided to Command Post Personnel **ONLY!!!**


Command Post
Entrance
Copy Machine
Documentation Table and Supplies
Break out tables – 10 chairs
ICS FORMS BOARD
Resources Table
3 phone
10 Chairs -
2 LCD Projectors -
Capabilities for TV – weather channel or CNN –
LCD Projector
LCD Projector
Operations Table – 16 Chairs
4 phones
8 – DSL hardwire cables + Wireless connection
Command Table –8 chairs
2 phone
2 Hardwire connections DSL
Wireless connection
Planning Table – 14 Chairs
4 phone
8 Hardwire DSL connections
Wireless DSL
Finance Table – 12 chairs
3 phone
4 DSL Hardline
Wireless DSL - 1 Printer
Logistic Table – 12 chairs
3 phone
4 DSL Hardline
Wireless DSL
Breakout table
Breakout Table
Breakout Table
Breakout Table
Screen
Screen
Mic with podium
Breakout Table –
2 Fax Machines – Wireless DSL -- 1 printer, 1 phone

Holiday Inn – Command Post



pg 4

Phone Numbers for Holiday Inn CP

Command Table	**267-765-3433**
	267-765-3445
Operations Table	**267-765-3434**
	267-765-3439
	267-765-3449
	267-765-3450
Planning Table	**267-765-3440**
	267-765-3437
	267-765-3443
	267-765-3444
Logistics Table	**267-765-3432**
	267-765-3453
	267-765-3454
Finance/Admin Table	**267-765-3435**
	267-765-3451
	267-765-3452
	267-765-3455
Fax – Incoming	**215-923-4476**
Fax – Outgoing	**276-765-3456**
Command Staff Room	**267-765-3431**
PIO Room	**267-765-3436**
	267-765-3438
	267-765-3441
	267-765-3442
Resources	**267-765-3446**
	267-765-3447
	267-765-3448

Example

Real World

Shoreline Signoff Plan

9797 Shoreline Sign Off Example

T/V ATHOS I Response Shoreline Sign-Off Plan

I – Introduction

It has been recognized that a method is needed to assess the status of affected shoreline with respect to the Unified Command (UC) approved cleanup endpoints. The following procedures detail the persons required to conduct the assessment, what data is necessary to be documented, and what actions are warranted in response.

II – Purpose

This document outlines the procedures used to determine if a shoreline segment meets the UC approved endpoints and to release that segment from planned cleanup operations.

III – Scope

These procedures are effective for all identified SCAT zones of the Delaware River and Delaware Bay shoreline, unless otherwise determined by the UC.

IV – Method

A flowchart illustrating the procedures for Sign-Off is provided as Figure 1.

A –Preliminary Inspection

While a segment of shoreline is in active cleanup it is the responsibility of a site supervisor and an FOSC representative under the operations section. At such time as the responsible supervisor and the FOSCR deems a segment to meet the UC Approved Endpoints, or that further action will not yield a net environmental benefit, the supervisor will notify the Environmental Unit (EU) and request an preliminary inspection. The EU will then conduct a review of shoreline conditions in the segment. This review will result in an internal report to the Operations section that indicates either continuing deficiencies with respect to the endpoints and/or a recommendation for a formal inspection.

B – Formal Inspection

Once a segment of shoreline passes EU review, a formal inspection will be scheduled. This inspection will be conducted by a Shoreline Inspection Team (SIT). The SIT will evaluate the segment with respect to the UC approved cleanup endpoints.

C – Shoreline Inspection Team

Formal inspection of shoreline will be conducted by a Shoreline Inspection Team (SIT). Each team will consist of the FOSC, the SOSC for the segment being inspected, and any additional representative deemed appropriate by them. In addition, an SOSC from the other two states is requested to be in attendance but not required. The OSCs may be substituted by authorized agents. A representative of the EU will also attend as a non-signatory facilitator and recorder.

D – Inspection Dates

Formal inspection will take place as soon as possible after recommendation by the EU, taking into consideration tide and weather conditions.

E – Recorded Data

During a formal inspection, the SIT will document their findings on the Shoreline Sign-Off Inspection Form (SSIF). This form is a recommendation to the UC on shoreline conditions. Each form will document whether a segment meets the approved endpoints and any recommendation for future actions in that segment.

- For any segment where additional work is recommended, the SIT must record specific sites, along with photo documentation, where the work is to be performed and indicate precisely what work should be undertaken.
- In all cases, the SIT should strive for consensus on recommendations. If, however, consensus cannot be reached, the dissenting party should indicate their disapproval in the appropriate checkbox and provide a written explanation of the reason for the dissent.
- All OSCs, or their representatives, in attendance, as well as any invited interested parties, must sign the inspection form in order for the recommendation to be passed to the UC.

F – Post Inspection

All SSIFs will be presented to the UC for review. After considering the findings of the SIT, the UC will determine what actions, if any, will be take in a particular segment. If further action is required in a segment, the UC will return the recommendations, in whole or in part, to the Planning section, along with any other recommended action it deems necessary. The segment will then reenter a cycle of internal review until all items are corrected or it is determined by operations that no further work is feasible. The site will then be presented for re-inspection by a SIT.

- Once a SIT determines that a segment meets the endpoints, or that no further action is feasible, the segment can be recommended for monitoring. The duration and type of monitoring will be recommended by the SIT, taking into consideration previous oiling conditions, conditions of adjacent segments and seasonal variations. Final determination on monitoring status will also be reserved to the Unified Command.
- The UC will indicate their acceptance of the recommendations of the SIT for each segment on the Shoreline Sign-Off Record (SSR) for that segment.

G – Sign-Off

The UC reserves to itself the final determination of the status of any shoreline segment. When a segment is ready to be released from the response, the UC will indicate this on the SSR by checking the appropriate box. There are two options: Sign-Off and Sign-Off with Comments.

- Sign-Off – this indicates that a segment of shoreline is released from the response with respect to further planning and action.
- Sign-Off with Comments – this indicates that the shoreline is released from the response with some special consideration. These considerations can include, but are not limited to, a condition below the approved endpoints, special monitoring instructions, and/or future maintenance actions. The comments are to be written in the given space on the SSR. Sign-Off, with or without comments, of any segment does not preclude any subsequent action that may be deemed necessary by the Unified Command.

Flow Chart of Sign Off Procedures

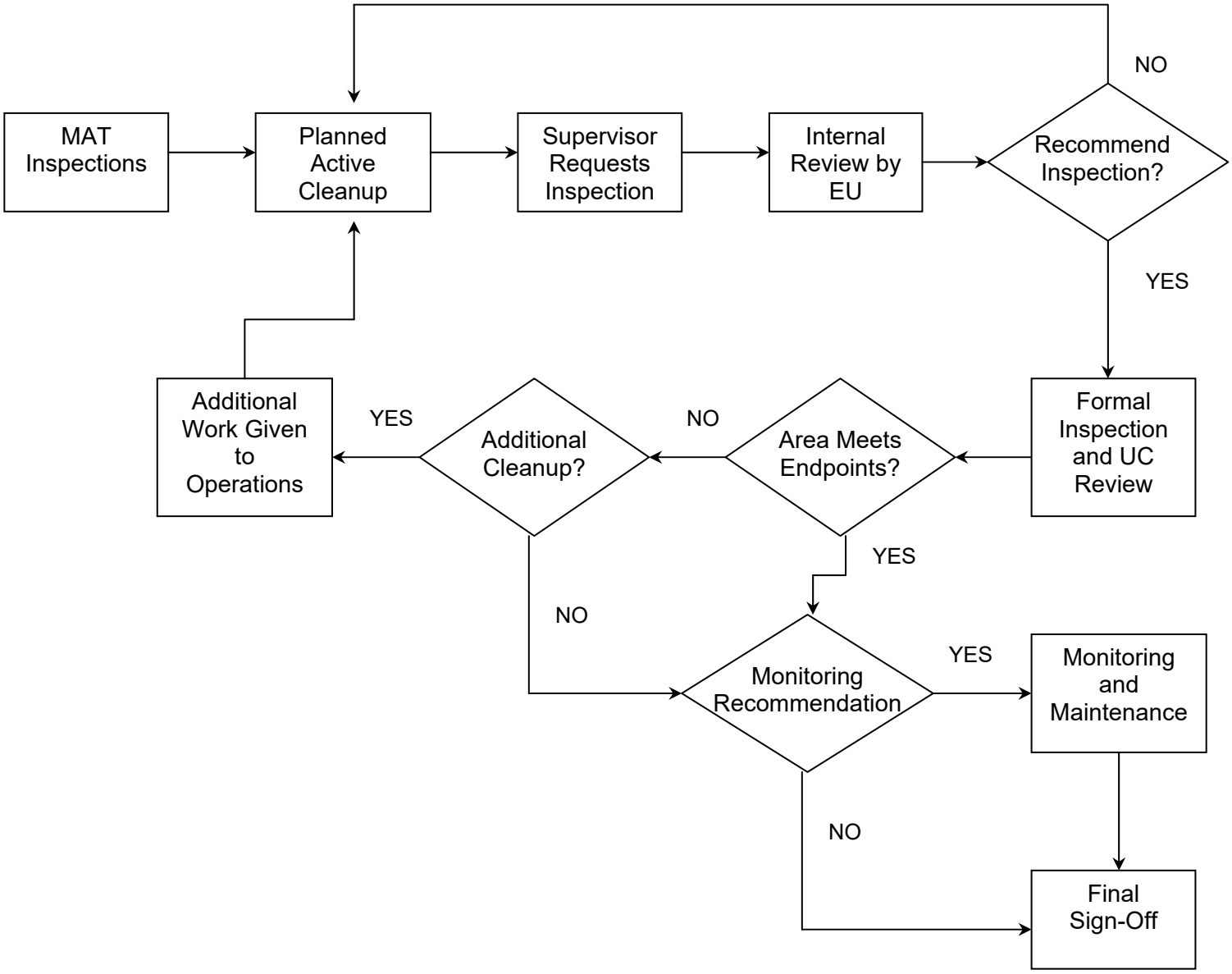


Figure 1. Flowchart Identifying the Procedure for Sign-Off

ATHOS I INCIDENT RESPONSE

SHORELINE SIGN-OFF INSPECTION FORM

GENERAL INFORMATION

Zone & Segment ID:	Date: (mm/dd/yy)	Tide Height: Ebb H / M / L FloodL / M / H	Air Temp: °F °C	Water Temp: °F °C
Inspection No. (circle one): 1 2 3 4 5 ….. ____	Time:	Weather (circle one): Sun / Clouds / Fog / Rain / Snow / Windy		

SURVEY TEAM

Printed Name	Organization	Phone Number

CLEANUP STATUS

Endpoint Assessment		Agree	Disagree	Signatures
❑ Segment meets cleanup endpoint criteria	FOSC	❑	❑	
	PA SOSC	❑	❑	
	NJ SOSC	❑	❑	
❑ Segment does not meet cleanup endpoint criteria	DE SOSC	❑	❑	
	Other (write-in)	❑	❑	
	Other (write-in)	❑	❑	

RECOMMENDATIONS

❑ Active Cleanup (see reverse)	❑ Passive Cleanup (see reverse)	❑ Monitoring (see reverse)

GENERAL COMMENTS

Shoreline sign-off shall not be construed as a waiver of NRDA liability.

Forms must be completed in blue ink.

Attach additional sheets as needed.

Return to Planning Section Chief upon completion.

ADDITIONAL ACTIONS	*Attach additional sheets as needed*	*OPS Use Only*
Item 1	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 2	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 3	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 4	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 5	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude

ADDITIONAL WORK NOT FEASIBLE

Comments & rationale for decision

MONITORING RECOMMENDATION

❑ Tarballs / oiled debris	❑ Weekly	Notes (rationale, duration, hot-spots, etc.)
❑ Mobilization of residual oil	❑ Bi-weekly	
❑ Exposure of buried tar mats	❑ Monthly	
❑ Other:	❑ Other:	

Shoreline sign-off shall not be construed as a waiver of NRDA liability.
Forms must be completed in blue ink.
Attach additional sheets as needed.
Return to Planning Section Chief upon completion.

GENERAL INFORMATION

Division:	Segment:	Inspection No. (circle one): 1 2 3 4 5 …..	Date: (mm/dd/yy)

ADDITIONAL ACTIONS

OPS Use Only

	Description of Work	❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____	Photo File Names	❑ Completed Date Latitude Longitude
Item 6				
Item 7				
Item 8				
Item 9				
Item 10				
Item 11				
Item 12				

Shoreline sign-off shall not be construed as a waiver of NRDA liability.

Forms must be completed in blue ink.

Attach additional sheets as needed.

Return to Planning Section Chief upon completion.

GENERAL INFORMATION			
Division:	Segment:	Inspection No. (circle one): 1 2 3 4 5 …..	Date: (mm/dd/yy)

ADDITIONAL ACTIONS		OPS Use Only
Item 13	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 14	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 15	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 16	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 17	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 18	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names	❑ Completed Date Latitude Longitude
Item 19	Description of Work ❑ Active ❑ Passive ❑ Flagging ❑ Stake Flags ❑ Spray Paint Color: _____ Photo File Names Photo File Names	❑ Completed Date Latitude Longitude Longitude

Shoreline sign-off shall not be construed as a waiver of NRDA liability.
Forms must be completed in blue ink.
Attach additional sheets as needed.
Return to Planning Section Chief upon completion.

Example

Real World

Decontamination Plan

DECONTAMINATION PLAN

Incident Name: M/T ATHOS I

Date: 12/09/2004

CC: Chris Gregory
Dan Sobieski
& Salem Nuclear Plant
Melanie Jarrell

FOSC

SOSC (DE)

SOSC (PA)

SOSC (NJ) Gary Pearson

RPIC

PREPARED BY:

Operations Section Chief Chris Gregory 12/9/04

REVIEWED BY:

Safety Staff Safety Officer 12/9/04

PURPOSE

This plan serves to identify general guidance procedures to be followed by personnel involved in the decontamination of oil spill recovery vessels, boats, boom, vehicles, equipment, etc. either contaminated or suspected of being contaminated with oil, to return it to a non-oiled state.

SITE SPECIFICS

Site Location: The Lagoon, Essington, Pennsylvania

Description: Crude oil spill from the M/T ATHOS I

Contact Person: _____

Phone: _____

CONCEPT OVERVIEW

In view of the extensive equipment inventory involved in this response effort, the responsible party will oversee decontamination of oil spill recovery vessels and equipment.

METHODOLOGY

Spill Response Vessels

Decontamination of spill response vessels will occur at The Lagoon, Essington, PA.

All vessels that can be hauled from the water for cleaning will be hauled out utilizing the crane available in the decon area. The vessel will be transferred to a decontamination pool. The vessels will be blocked using jack stands and wood cribbing or appropriate size trailers. Some response vessels may also require cleaning of skimming units, tanks, decks and other ancillary equipment.

Large vessels that cannot be removed from the water will be placed inside standard contractor containment boom (~8x12) during the decontamination process. This decontamination zone area may utilize a boom anchoring system to prevent the collapse of the perimeter protection during tidal changes and surges. Sheen emanating from the process of decontaminating these vessels will be collected with sorbents. Floating sorbent materials shall be utilized in

natural collection points as needed to retain free-floating oil. These sorbents will be tended and replaced as necessary.

If necessary for larger vessels, a mobile decontamination team will be assigned to its moored location. A vessel specific work plan will be developed for the each to ensure that skimming equipment, storage tanks, piping systems, deck gear and the vessel hull is cleaned to agreed-upon standards. A marine chemist or a ***shipyard competent person*** may be utilized to determine tank entry (if required) and the Qualified Individual or designated representative will certify cleanliness of affected equipment.

If necessary, a decontamination work plan may be created for each response vessel. These plans may be added as appendices to this document. Preplanning for protection of adjacent areas shall be accomplished in order to minimize cross contamination.

CONFINED SPACE

If a tank or space fits the definition of a Confined Space as outlined in the attached NRCES Injury and Illness Prevention Program procedure, a confined space permit will completed as outlined and a confined space rescue plan will completed. These confined spaces entry will be conducted in compliance with all applicable State and Federal regulations.

Recovered oil retained in cargo tanks will be removed from the cargo tanks. A citrus-based cleaner may be sprayed onto the floors and walls of the cargo tanks to facilitate cleaning. The walls, floor, ladders, domes, hatchways, etc. will be cleaned with hot water pressure washers. Sludge, scale, cleaning wastes and rinse waters will be removed by vacuum truck or by hand as appropriate.

Before confined space entry and cleaning begins, a personnel decon station will be established on the vessel being cleaned. The decon station will consist of sorbent rug, boot wash tubs, scrub brushes, cleaning solvent, and a container for contaminated PPE.

CONTAINMENT BOOM & PORTABLE EQUIPMENT

Containment boom, skimmers and other small equipment will be decontaminated in decon pools. Items to be decontaminated will be placed within a decon pool where it will be washed with diesel or an approved degreaser followed by a fresh water wash.

EQUIPMENT PRIORITY

A priority assessment will be attached to each piece of equipment to ensure a timely flow of equipment through the cleaning process. The Decon Site Manager will prioritize the spill response to be cleaned. Depending upon priority, equipment will be hauled by the mobile crane.

CLEANING PROCESS

All wastewater will be pumped to a portable storage tank or vacuum truck for disposal. All pumps, hoses and piping will be left in place to facilitate speedy evacuation of retain. The final disposal of wash water, oiled sorbents and materials will be accomplished in accordance with the Disposal Plan.

A citrus-based cleaning solution will be utilized as a degreaser. The degreaser may be applied by Hudson sprayer. When applying the degreaser the technician will stand upwind. By utilizing the citrus-based degreaser product, which will not emulsify the oily water, it is possible to recycle / reclaim the rinsates. Because this cleaning solution is citrus based is does not leave a petroleum sheen on the equipment after the cleaning process.

Actual pressure washing, if required, will utilize a hot/cold pressure washer with a temperature range up to 220° F and a pressure rating up to 3000 psi.

All personnel involved in the cleaning operation will wear modified PPE Level D including rain gear, gloves, rubber boots, and eye protection (face shield and safety glasses). In addition, any personnel working within the arc of an overhead crane or travelift will wear a hard hat.

Once the piece has been determined clean to the accepted standard, the equipment is transferred to the designated "clean" holding area.

DIESEL OIL

The use of diesel oil as a cleaning agent requires additional safety procedures including air monitoring, respiratory protection and appropriate PPE. The Safety Staff must be notified before an decontamination with diesel oil commences.

AIR MONITORING

The Safety Staff has devised an air monitoring plan for the application of the citrus-based degreaser and if utilizing diesel oil.

APPENDIX A

MSDS

CITRUS BASED CLEANER

ZEP MANUFACTURING COMPANY
Acuity Specialty Products Group, Inc.
P.O. BOX 2015
ATLANTA, GA 30301
1-877-1-BUY-ZEP

Material Safety Data Sheet
and Safe Handling and Disposal Information

Section 1. Chemical Product and Company Identification

Product name	BIG ORANGE (LIQUID)
Product Use	Industrial Solvent Degreaser
Product Code	0415
Date of Issue	08/22/03 Supersedes 05/05/03
Emergency Telephone Numbers	For MSDS Information: Acuity Specialty Products Group, Inc. Compliance Services 1-877-1-BUY-ZEP For Medical Emergency: INFOTRAC (877) 541-2016 Toll Free - All Calls Recorded For a Transportation Emergency: CHEMTREC (800) 424-9300 - All Calls Recorded In the District of Columbia (202) 483-7616
Printing date: 12/06/04	
Prepared by	Compliance Services Group Acuity Specialty Products Group 1420 Seaboard Industrial Blvd. Atlanta, GA 30318

Section 2. Composition, Information on Ingredients

Name of Hazardous Ingredients	CAS #	% by Weight	Exposure Limits
D-LIMONENE - orange distillate; citrus terpene; cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)-	5989-27-5	>90	Not available.

Section 3. Hazards Identification

HMIS

	1
	2
Reactivity	0
Personal Protection	B

Acute Effects Routes of Entry Eye contact. Skin contact Inhalation.

Skin	Hazardous in case of skin contact (irritant, sensitizer). May cause allergic reactions to certain individuals. Prolonged or repeated contact may dry skin and cause irritation.
Eyes	Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.
Inhalation	Hazardous in case of inhalation. Over-exposure by inhalation may cause respiratory irritation.
Ingestion	Aspiration hazard if swallowed- can enter lungs and cause damage. No data on acute toxicity of the product when ingested.

Carcinogenic Effects Ingredients: Not listed as carcinogen by OSHA, NTP or IARC.

Chronic Effects Prolonged or repeated contact may dry skin and cause irritation. Defatting properties, may aggravate an existing dermatitis

See Toxicological Information (section 11)

Section 4. First Aid Measures

Eye Contact	Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention if irritation develops.
Skin Contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.
Inhalation	If excessive quantities inhaled, remove to fresh air. If symptoms persist, seek immediate medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If affected person is conscious, give plenty of water to drink. Get medical attention immediately.

Section 5. Fire Fighting Measures

Flash Point	CLOSED CUP: 49.4°C (120.9°F). (Tagliabue.)
Flammable Limits	Not determined.
Flammability	COMBUSTIBLE.
Fire Hazard	Combustible liquid and vapor.
Fire-Fighting Procedures	Use foam or all purpose dry chemicals to extinguish. Carbon Dioxide (CO_2). Cool closed containers exposed to fire with water. Wear special protective clothing and positive pressure, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Spill Clean up Eliminate all ignition sources. Put on appropriate personal protective equipment (see Section 8). Absorb with an inert material and place in an appropriate waste disposal container. To clean the floor and all objects contaminated by this material, use detergent. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Product Code (HS) Last Safety Data Sheet Product Name: BIO ORANGE (LIQUID)

Section 7. Handling and Storage

Handling Keep away from heat, sparks and flame. Avoid contact with skin and eyes. Avoid breathing vapors of this product. Wash thoroughly after handling. Wash contaminated clothing before reusing.

Storage Store and use away from heat, sparks, open flame or any other ignition source. Keep container tightly closed in a cool, well-ventilated place. Store between 40°F - 120°F. Keep out of the reach of children.

Section 8. Exposure Controls/Personal Protection

Personal Protection

Protective Clothing (Pictograms)

Eyes Safety glasses.

Body Gloves.

Respiratory Use with adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Wear appropriate respirator when ventilation is inadequate.

Section 9. Physical and Chemical Properties

Physical State	Liquid.	**Color**	Orange.
pH	Not applicable.	**Odor**	Orange. (Strong.)
Boiling Point	170°C (338°F)	**Vapor Pressure**	0.3 kPa (1.9 mmHg) (at 20°C)
Specific Gravity	0.85 (Water = 1)	**Vapor Density**	4.7 (Air = 1)
Solubility	Emulsifies in water.	**Evaporation Rate**	<1 compared to Water
		VOC (Consumer)	789 (g/l). (92.7%)

Section 10. Stability and Reactivity

Stability and Reactivity The product is stable.

Incompatibility Avoid contact with strong oxidizers, excessive heat, sparks or open flame. Incompatible with some strong acids. Reactive with acidic Cl[illegible].

Hazardous Polymerization Will not occur.

Hazardous Decomposition Products Carbon Dioxide, Carbon Monoxide and Other organic materials.

Section 11. Toxicological Information

Toxicity to Animals d-Limonene:

ORAL (LD50): Acute: 5600 mg/kg [Mouse]. 4400 mg/kg [Rat].

DERMAL (LD50): Acute: >5000 mg/kg [Rabbit

Section 12. Ecological Information

Ecotoxicity Not available.

Biodegradable/OECD Not available.

Section 13. Disposal Considerations

Waste Information Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Waste Stream Code: D001
Classification: Hazardous Waste
Origin: RCRA

Consult your local or regional authorities.

Section 14. Transport Information

Proper shipping name Not applicable.

DOT Classification Not a DOT controlled material (United States). **UN number** Not applicable.

Section 15. Regulatory Information

U.S. Federal Regulations

SARA 313 toxic chemical notification and release reporting: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

APPENDIX B

NRCES INJURY AND ILLNESS PREVENTION PROGRAM PROCEDURES

The Safety Staff has reviewed these procedures and requires the following modifications when doing Confined Space Entry.

23.4 Rescue Services

23.4.2.1 NRCES Entry Supervisor shall ensure at least one standby personnel at the site is trained and immediately available to perform non-entry rescue and emergency services.

23.4.2.3 If Fire Department rescue teams are not available, the Safety Staff must be notified. An appropriate rescue team must be made available from another source.

21.0 Cold Stress

21.1 PURPOSE

FES recognizes that work must be performed in various weather conditions, including cold weather. In order to minimize cold related illnesses, site supervisors are to be aware of the symptoms of and environmental conditions that lead to cold-related illnesses. Appropriate steps must be taken to prevent cold-related illnesses. This procedure describes the causes, symptoms, treatment and/or prevention of cold-related illness.

21.2 GENERAL INFORMATION

21.2.1 When the temperature of the surrounding air or water is much colder than the worker, the body's physical processes must increase to maintain thermal balance. Shivering is the body's attempt to generate increased heat.

21.2.2 Shivering, pain and numbness are not trustworthy indicators to cold exposures, because prolonged cold exposure numbs all body sensations.

21.2.3 Wind-chill temperature is a better means of evaluation as it takes into account the wind's ability to strip heat from the body through convection.

21.2.4 Protective clothing that is wet with sweat or from rain will cause heat loss through conduction.

21.2.5 Personnel are at an extreme cold stress hazard when performing spill clean-up in boats in cold weather situations. Falling into cold water can rob body heat very quickly.

21.3 COLD INJURY

21.3.1 **TRENCH FOOT** occurs as a result of extended exposure of the feet to cold and moisture. Capillary walls of the feet are injured, resulting in tingling, itching and pain. Blisters may form followed by ulceration of the skin.

21.3.2 **FROST-NIP** is localized superficial freezing of extremities such as ears, nose, toes, and fingers. Initially there is a dark bluish color due to bleeding under the skin that at times can become gangrenous.

Worker experiencing frost nip are susceptible to future injury and should avoid chilling.

21.3.3 **FROSTBITE** occurs when the moisture in the skin actually freezes, forming ice crystals, resulting in the damage of skin cells. The injured area becomes red, then blue/red. A burning pain is noted initially, then pain decreases and numbness sets in. The skin becomes waxy pale in appearance because of lack of oxygen. The ears, nose, toes and fingers are most susceptible. The damaged area can become gangrenous resulting in the loss of tissue, finger tips and toes.

21.3.4 **HYPOTHERMIA** occurs when heat production of the body is not sufficient to replace heat lost to the environment. The results are a lowering of the core body temperature, the pulse rate slows, muscular weakness occurs, mental abilities dull and the worker becomes uncoordinated. Signs of hypothermia are evident at 95 degrees Fahrenheit body core temperature and consciousness is lost between 89.6 - 86.0 degrees Fahrenheit. At lower core temperatures, cardiac arrest is possible.

Exposure to cold water decreases the body core temperature rapidly and consciousness is quickly lost. Workers on or over water should be acutely aware of the danger of immersion during cold weather.

Hypothermia results in dulling of the senses and could result in poor decision making. Workers that are exposed to extreme cold should not be given tasks that are critical to their health and safety and that of others.

21.4 PREVENTION

Just as with heat stress, cold stress must be controlled in order to prevent cold related illness. The following are cold stress prevention guidelines.

21.4.1 **EDUCATION** - All personnel will receive training on the cause, symptoms, and most importantly, methods of prevention of cold stress injuries.

21.4.2 **CLOTHING** - Prevention of hypothermia and other cold injuries is best accomplished by protecting workers from cold and moisture. Clothing is the most important factor in prevention of injury. Personnel working on land should layer clothing with the outer layer being wind and water-resistant. The layers should be capable of being vented at the

wrist, neck and waist to reduce wetting by perspiration. Feet should be kept dry and socks should be changed when they become wet. Gloves that protect the hands from cold, but allow freedom of movement, are necessary. Never allow bare skin to contact metal surfaces at sub-zero temperatures.

21.4.3 **ACCLIMAZATION** - A limited degree of acclimatization can occur from exposure and working in cold environments. Some physiological changes do occur but people also learn how to more effectively protect themselves from temperature extremes.

21.4.4 **FLUID REPLACEMENT** - Cold weather does cause significant water loss as a result of the dryness of the air. Fluid intake should be increased to prevent dehydration, which directly affects blood volumes and flow to the extremities. Warm, sweet, caffeine-free, nonalcoholic drinks and soup offer the best fluid replacement and provide caloric energy.

21.4.6 **WORK/REST REGIMENS** - When air temperatures are less than 20^0F (actual or wind-chill), heated warming shelters should be made available. Workers should use these on regular basis.

21.4.7 **DIET** - As with any work in extreme temperatures, personnel will be instructed to eat a well-balanced diet to replace calories burned and to provide necessary vitamins and nutrients.

21.4.8 **ENVIRONMENTAL MONITORING** - Regular monitoring of the environment by recording wind speed and actual thermometer readings for comparison to the wind-chill chart should occur at regular intervals depending on conditions.

21.4.8 **PROHIBITED ACTIVITIES** - Alcohol should not be consumed because it increases blood circulation to the skin and interferes with internal thermostatic control. Alcohol also interferes with mental acuity, which can lead to risk taking. Cigarette smoking should be prohibited since the nicotine restricts the flow of blood to the extremities.

21.4.9 **MARINE OPERATIONS** - Personnel involved in marine operations aboard vessels, skimmers and/or shoreline cleanup will be provided with Mustang (or equivalent) full exposure suits. Great care should be taken to reduce the risk of personnel falling into the water due to ice or slippery conditions on vessel decks, ladders, docks and rocks.

23.0 Confined Space Entry

23.1 PURPOSE

The purpose of this procedure is to establish confined space entry standards for all NRCES employees and subcontractors. This procedure exceeds the guidelines contained in the Occupational Safety and Health Administration (OSHA) Permit-required Confined Spaces standard 29 CFR 1910.146 and requirements outlined in Cal OSHA Article 108 -5157.

NRC Environmental Services Corporation (NRCES) and subcontractors shall enforce this procedure as a means of protecting the health and safety of workers while entering, working in, and exiting confined spaces. Before entry, the worker will be made aware of the hazards of confined space work and the safe work practices necessary.

23.2 DEFINITIONS

23.2.1 **Acceptable entry conditions:** The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

23.2.2 **Attendant:** An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

23.2.3 **Authorized entrant:** An employee who is authorized by the employer to enter a permit space.

23.2.4 **Confined space:** A space that:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and

(3) Is not designed for continuous employee occupancy.

23.2.5 **Entry:** The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work

activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

23.2.6 **Entry permit (permit):** The written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in paragraph (f) of this section.

23.2.7 **Entry supervisor:** The person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section. An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

23.2.8 **Hazardous atmosphere:** An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

(1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

(2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

(3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of 29 CFR 1910 and which could result in employee exposure in excess of its dose or permissible exposure limit;

(5) Any other atmospheric condition that is immediately dangerous to life or health.

23.2.9 **Immediately dangerous to life or health (IDLH):** Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space. **(Note: in virtually all instances, spaces that are 10% LFL or below, may still be in excess of the IDLH for that substance.)**

23.2.10 **Oxygen deficient atmosphere:** An atmosphere containing less than 19.5 percent oxygen by volume.

23.2.11 **Oxygen enriched atmosphere:** An atmosphere containing more than 23.5 percent oxygen by volume.

23.2.12 **Permit-required confined space (permit space):** A confined space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere

(2) Contains a material that has the potential for engulfing an entrant

(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section, or

(4) Contains any other recognized serious safety or health hazard

23.2.13 **Rescue service:** The personnel designated to rescue employees from permit spaces.

23.2.14 **Retrieval system:** The equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

23.2.15 **Testing:** The process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

23.3 RESPONSIBILITIES

23.3.1 Attendants shall:

- Know the hazards that may be faced during entry in the permit-required confined space, including the signs, symptoms and consequences of over-exposure.
- Be aware of possible behavioral effects of hazard exposure to the entrants.
- Continuously maintain an accurate count of authorized entrants.
- Remain outside the permit-required confined space during entry operations until relieved by another attendant.
- Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space if necessary.
- Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the authorized entrants to evacuate the permit-required confined space immediately if necessary.
- Summon rescue and other emergency services if necessary.
- Take the appropriate actions when unauthorized persons approach or enter a permit space while entry is underway.
- Perform non-entry rescues as specified by this procedure
- Perform no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

23.3.2 Authorized entrants shall:

- Know the hazards that may be faced during entry, including information on the route of entry, signs or symptoms, and consequences of the exposure.
- Properly use the required equipment.

- Communicate with the attendant, as necessary, to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate as necessary.

- Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or the entrant detects a prohibited condition.

- Exit from the permit-required confined space as quickly as possible whenever:

  (1) An order to evacuate is given by the attendant or the entry supervisor,

  (2) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,

  (3) The entrant detects a prohibited condition, or

  (4) An evacuation alarm is activated.

23.3.3 **Entry supervisors shall:**

- Know the hazards that may be faced during entry, including information on the routes of entry, signs or symptoms, and consequences of the exposure.

- Verify, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

- Terminate the entry and cancel the permit when entry operations covered by the permit are complete or when a prohibited condition arises in or near the space.

- Verify that rescue services are available and that the means for summoning them are operable.

- Remove, or have removed, unauthorized individuals who enter or who attempt to enter the permit-required confined space during entry operations.

- Determines that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

23.4 RESCUE SERVICES

23.4.1 Rescue Plan

Prior to any confined space work, a site-specific written rescue plan will be developed that addresses minimum requirements. The rescue plan will be addressed on the confined space permit and covered with the entrants prior to initial entry.

23.4.2 Basic Rescue Requirements

23.4.2.1 NRCES Entry Supervisor shall ensure that at least one standby personnel at the site is trained and immediately available to perform rescue and emergency services.

23.4.2.2 A trained attendant will be assigned to each confined space with a fully charged SCBA or airline and egress unit in the event that monitoring indicates Oxygen deficient or atmospheres >PELs. The attendant is to keep life lines clear, to maintain contact with all workers within the confined space and to summon help if needed.

23.4.2.3 If Fire department rescue teams will be utilized, the supervisor must ensure that the rescue team has been contacted in advance and has the capability to perform a rescue. It should be understood, that the time required to recognize the need for rescue; contact the fire department and allow them to safely perform the rescue may require at least 45 minutes. For this reason, any rescue plan should be realistic. It should be noted that in may states or cities, FD rescue is not an option.

23.4.2.4 The equipment required to rescue an unconscious victim must be in-place before the first person enters the confined space. This means that personnel must be wearing harnesses; and rescue tripod /winch is set-up and operational.

23.4.2.5NRCES Entry Supervisor shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.

23.4.2.6Training Requirements for Rescue Team Members

- Each member of the rescue service must have been trained to perform the assigned rescue duties.
- Each member of the rescue service must also receive the training required of authorized entrants.
- Each member of the rescue service must practice making permit space rescues at least once every 12 months by means of a simulated rescue operation (i.e. remove dummies, manikins or actual persons) from spaces representative of the type they may encounter.
- Each member of the rescue team shall be trained in basic first-aid, cardiopulmonary resuscitation. At least one member of the rescue service holding a current certification in First aid shall be available on the team.

23.4.3 **Entry Rescue Procedures**

23.4.3.1 Entry rescue procedures should be specifically designed for each permit-required confined space and should be included, where applicable, in the written site health and safety plan. The rescue plan shall:

- Include provisions for emergency communication.
- State how the rescue team and other emergency services will be summoned to the site.
- State what level of personal protective equipment is necessary for rescue operations.
- State what other types of equipment may be needed, including escape personal protective equipment for injured entrant(s), if necessary.

23.4.3.2 Attendants may perform entry rescue operations only if properly trained **and** if relieved of the attendant duties by another qualified attendant.

23.4.4 Non-entry Rescue Procedures

23.4.4.1 Non-entry rescue operations shall be facilitated as much as possible in order to decrease the risks associated with emergency entry into a confined space. All company attendants shall be trained to perform non-entry procedures.

23.4.4.2 Retrieval systems or methods shall be used for all entries into permit-required confined spaces unless the retrieval system would increase the overall risk of the entry or would not work adequately in the space being entered.

23.4.4.3 Retrieval systems shall consist of chest or body harnesses with a retrieval line attached to the center of the entrant's back, near shoulder level. The retrieval line shall be attached to either a fixed point or, for spaces more than five feet deep, a mechanical device. The fixed point or mechanical device shall be located outside the confined space.

23.4.4.4 Wristlets may be used in lieu of the chest or full body harness if it can be demonstrated that the use of a chest or full body harness is infeasible or creates a hazard and that the use of wristlets is the saNRCESt and most effective alternative.

23.5 CONFINED SPACE ENTRY PROCEDURE

23.5.1 Permit System

23.5.1.1 All "permit required confined space" entries will be preceded by the completion of a confined space entry permit.

23.5.1.2 All confined space entry permits will address the following:

- Location
- Past and present contents of the tank

- Hazards Isolation
- Lockout / Tagout
- PPE and special equipment
- Air monitoring requirements and results of such monitoring
- Personal monitoring
- Training required
- Attendants to be present as alternates
- Communication procedures
- Emergency / rescue procedures
- Confined space classification
- Posting of notification

23.5.2Training

NRCES will train employees involved in confined space entry, confined space rescue and the hazards associated with confined space work. This training will, as a minimum, cover the following:

- Hazard recognition
- Air monitoring, capabilities and limitations
- Emergency entry and exit
- Respirator use
- First aid
- Lock-out procedures
- Safety equipment

- Rescue drills
- Permit system
- Work practices
- Communication requirements

23.5.3 Atmospheric Testing and Monitoring

23.5.3.1 Initial Monitoring - Entry into a confined space is prohibited until initial monitoring of the atmosphere for oxygen content and toxic gas concentration is conducted from the outside. Initial monitoring gives critical information concerning oxygen level, flammability and toxicity hazards.

23.5.3.2 Hot Work - All hot work is prohibited in confined spaces in which monitoring indicates that there are flammable compounds in excess of 10% of the Lower Explosive Limit (LEL). The monitoring device must be intrinsically safe for flammable atmospheres or explosion proof. If hot work must be performed in the confined space, a hot work permit must be completed. Cutting gas cylinders and welding machines will not be taken into confined space.

23.5.3.3 Calibration - All monitoring equipment will be calibrated before each use and those calibrations will be logged in the equipment records. The calibration record will be kept for a minimum of one year from the date of measurement. In addition, the response charts associated with the calibration gas will be kept with the CGI at all times.

23.5.3.4 Oxygen Requirement - The percent oxygen for entry will not be less than 19.5% for confined space entry unless supplied air respirators are utilized. If oxygen levels are greater than 22%, the confined space must be ventilated prior to any "hot work." Any oxygen reading above or below 20.9% will be reported to the project manager before further entry is attempted. IN the event of deficient oxygen, the tank will be ventilated until such time as the level of O2 is brought up to 20.9%

23.5.3.5 Permissible Exposure Limits (PEL) - NRCES employees will be provided with and will be required to properly use protective

clothing and respiratory protective equipment when contaminants in the atmosphere reach or exceed the PEL. The personal protective equipment (PPE) selected will reduce exposure to contaminants to acceptable levels.

23.5.4 Labeling and Posting

23.5.4.1 Any signs warning of dangers in the work area will be in English and the predominant language of any non-English reading workers.

23.5.4.2 All entrances to confined spaces at NRCES facilities and on-going projects will have appropriate signs posted. The signs should include the following, if applicable:

Danger
Confined Space
Entry by Permit Only

The following statements shall be added where necessary:

Respirator Required for Entry
Lifeline Required for Entry
Hot Work Permitted

or

No Hot Work

23.5.4.3 Emergency numbers will be conspicuously posted near the work area or at the telephone nearest the work area.

23.5.5 Safety Equipment and PPE

The project manager or site supervisor shall determine, and list on the confined space permit, the necessary safety equipment and PPE. The site supervisor will ensure that the safety equipment is properly used and is maintained in the proper working condition. These items may include, but are not limited to:

- Eye / face protection
- Head protection
- Foot protection
- Protective clothing
- Hearing protection
- Respiratory protection
- Safety bells/Alarms
- Harnesses
- Lifelines
- Wrist harnesses
- Life jackets
- Fall nets
- Barricades
- Retrieval systems

23.5.6 Work Practices

23.5.6.1 Purge and Ventilation - During purge and ventilation procedures, blower controls will be a safe distance from the confined space. Initial testing is to be conducted prior to purge/ventilation to determine what precautions are necessary. If a flammable atmosphere exists, all electrical equipment must be intrinsically safe or explosion proof. Continuous ventilation will be required when welding or painting in a confined space, or where a toxic atmosphere may form from desorption from walls, or evaporation of chemicals. Ventilation systems must not prevent egress from the area or interfere with communications.

23.5.6.2 Exhaust of Confined Space Gases – duct work will be installed on the exhaust outlet for the confined space to insure that any purged gases are directed away from work/decon/support or ignition source areas.

23.5.6.3 Bonding/Grounding – all ventilation equipment will be bonded and grounded to isolate and remove the potential static discharge.

23.5.6.4Isolation / Lock-out / Tag-out - Each confined space will have isolation procedures specifically developed. The confined space must be completely isolated from all systems by physical disconnect, block and bleed, or blanking and tagging. Electrical systems must be de-energized and locked out. All systems should be checked for stored energy before any entry into confined space is attempted.

23.5.6.5Cleaning - Cleaning procedures will be reviewed and approved by the qualified person. Initial cleaning will be conducted from outside the tank whenever possible to minimize exposures to employees. Cleaning may be accomplished by flushing with water or chemical cleaners. At times the use of a "Butterworth" cleaning head may be required. In any case, the cleaning method must be reviewed before entry is performed.

23.5.7 Equipment and Tools

All equipment that is used in confined space will be inspected and as a minimum, will meet the following requirements:

- Hand tools will be kept clean and in proper working condition.
- Electric tools, equipment and lighting will be intrinsically safe or explosion proof for flammable atmospheres and be equipped with ground fault circuits interrupters (GFCI).
- Extension cords will be industrial quality, 3 wire and 12 gauge as a minimum.
- With the exception of SCBA tanks or life saving equipment, compressed gas cylinders will never be taken into a confined space,.

- Ladder and scaffolding will meet or exceed OSHA requirements contained in 29 CFR 1910.25-28.

32.0 Forklifts (Powered Industrial Trucks)

32.1 PURPOSE

The purpose of this procedure is to describe the requirements for the inspection use and maintenance of forklifts (and other powered industrial trucks). This procedure is based upon the requirements of 29 CFR 1910.178 and standard safe operating practices. NRC personnel who operate forklifts and other powered industrial trucks must be specifically qualified and trained in their inspection, maintenance, and safe operation.

32.2 GENERAL REQUIREMENTS

32.2.1 All forklifts used at the decontamination facilities and project sites must meet the design and construction requirements of the American National Standards Institute (ANSI) standard B-56.1 - 1969 "Standard for Powered Industrial Trucks, Part II" and bear a plate indicating compliance with this standard. No modifications shall be made to the forklift except by the manufacturer.

32.2.2 Forklifts used in hazardous locations should be appropriate for that hazardous location. The OSHA regulations contained in 29 CFR 1910.178 outline the requirements for forklifts used in potentially flammable or combustible atmospheres, confined spaces, or in general use. For general use in non-hazardous areas, industrial trucks designated by the manufacturer as Type D, E, G, or LP may be used (as approved for intended use by a nationally recognized testing laboratory). In Class I, Division I locations, only "EX" designated trucks will be used. In Class I, Division II locations, only "EX", "EE" or "DS" trucks may be used.

32.2.3 Fuel handling and storage shall be in accordance with the National Fire Protection Association (NFPA) standard 58 - 1969 for liquefied petroleum gas and 29 CFR 1910.178 (f). If batteries are used as power, battery changing and storage shall be as required in 29 CFR 1910.178 (g).

32.2.4 The rated lifting capacity of the forklift must appear in a prominent location.

32.2.5 Forklift trucks shall be fitted with overhead guards and flashing lights.

32.2.6 Spinner knobs on steering wheels are prohibited.

32.3 OPERATING REQUIREMENTS

32.3.1 Lighting in operating areas shall be adequate (at least 2 lumens per square foot). If lighting is not adequate the forklift most be provided with auxiliary directional lighting.

32.3.2 Care shall be exercised inside buildings to ensure that internal combustion forklifts do not create a hazard from carbon monoxide.

32.3.3 Only trained and authorized operators shall be allowed to operate forklifts. A forklift training program has been devised by the Corporate Health and Safety Manager for operators in each region. Contractor personnel must also be trained and qualified and must present FEIS with appropriate written documentation prior to truck operation.

32.3.4 Operators shall perform "pre-use" inspections of the forklift to be operated. The "pre-use" inspections shall be performed each shift that the forklift is operated. All inspection discrepancies must be corrected prior to operation of the forklift. The "Forklift Pre-Use Inspection Sheet" is contained in the appendix of this manual. If the discrepancy can not be corrected immediately, the forklift must be tagged out of service.

32.4 FORKLIFT OPERATION

32.4.1 When a forklift is left unattended, the load shall be fully lowered, controls neutralized, power shut off, and brake set. The wheels must be chocked if parked on an incline. A forklift is unattended when the operator is more that 25 feet away, or out of view of the forklift. Forklifts shall not be parked where they obstruct aisles, stairways, or fire protection equipment.

32.4.2 If loading or unloading by forklift from trucks, freight cars, or other wheeled vehicles, the wheels of the vehicle being unloaded must be chocked to prevent movement.

32.4.3 Forklifts shall not be used to lift personnel.

32.4.4 Face the direction of travel at all times when you operate the forklift; do not go over the speed limit; and travel with the forks carried as low as possible.

32.4.5 Give pedestrians the right-of-way. Warn them with your horn well ahead of time. Be alert at intersections. Sound the horn and move ahead cautiously at blind corners. Come to a full stop before you go through a doorway.

32.4.6 Stay a safe distance behind other vehicles. Under normal conditions, three truck lengths are safe.

32.4.7 When ascending or descending grades in excess of 10 percent, always drive with the load upgrade. Drive slowly and cautiously when proceeding down ramps to allow yourself enough room to stop.

32.4.8 Watch out for storage racks, stock and other obstacles when you raise or lower a load.

32.4.9 Look behind you before you back up.

32.4.10 Check the load capacity of floors, elevators, trucks and trailers. Be sure they can handle the weight of your forklift and the load.

32.4.11 Keep your arms, legs and other body parts inside the operator's compartment at all times. Do not reach between the mast arms to turn off the key or to move the forks. Do not remove guards on your forklift.

32.4.12 Do not exceed the load capacity of your forklift. If the load is too heavy, it may damage the vehicle, make it hard to steer, or cause the forklift to tip forward or overturn.

32.4.13 When you carry a load, make sure it rests against the carriage. Keep the mast of the forklift tilted backward to hold the load in place. Lift and lower loads slowly and avoid sudden movements.

32.4.14 For proper balance and stability, position forks all the way into the load. Also, adjust forks to the width of the load.

32.4.15 Do not lift loads with only one fork.

32.4.16 Do not push heavy loads with a forklift.

32.4.17 Do not carry passengers on your forklift or lift anyone on the forks except in an approved safety platform.

32.4.18 Wear the proper personal protective equipment when operating a forklift.

32.4.19 Do not take part in stunt driving or horseplay.

32.4.20 Never stand or pass under elevated forks.

32.4.21 Refuel forklifts at locations specifically designed for that purpose and pay attention to posted instructions. Refueling locations should be

well-ventilated and at least 10 feet from all sources of ignition. Forklifts must have at least a 2½ lb ABC dry chemical fire extinguisher attached.

32.4.22 Never elevate the forks when you travel, turn or move the truck into position.

32.4.23 Park at safe distances from the edges of all ramps and platforms.

32.4.24 Forklift safety rules shall be posted in the areas in which forklifts are being operated.

36.0 Safety Showers and Eyewash Stations

36.1 PURPOSE

This procedure describes the types and locations of safety showers and eyewash stations to address the requirements found in 29 CFR 1910.151(c) and the American National Standards ANSI Z358.1-1990 for emergency eyewash and shower equipment. It is the policy of NRC to provide suitable facilities for quick drenching or flushing of the eyes and body within the work area when employees may be exposed to hazardous chemicals.

36.2 REQUIREMENTS

36.2.1 Eyewash stations shall be located throughout the decon facilities and jobsites for emergency first aid in the event of chemical splashes to the eyes and skin. The general requirements for emergency eyewash stations are as follows:

- In general when a chemical exposure occurs to the eyes, they should be flushed immediately for a minimum of 10 minutes. Flush both eyes simultaneously.
- Eyewash units shall be in an accessible location, located no further than 100 feet from the hazard. Where strong caustics or acids are present, the travel distance should be 10 feet or less.
- Identify the location of the eyewash station with a highly visible sign in a well-lighted area.
- Eyewash unit shall be positioned so that the water nozzles are 33-45 inches from the floor and 6 or more inches from the wall
- The supply line for plumbed units shall provide an uninterrupted supply of potable water at a minimum of 30 lbs. per square inch of pressure.
- Eyewash units shall deliver not less than 0.4 gpm for 15 minutes.
- Provide freeze protection of the eyewash station when the possibility of freezing conditions exist.
- There shall be no sharp projections in operating area of unit.
- The nozzles must have quickly removable caps to protect them from airborne contaminants.

- Self-contained units shall be constructed of materials that will not corrode in the presence of flushing fluid.

- The valves must have "stay open" feature allowing both hands free to open eyelids.
- The valves must be capable of being turned on in 1 second or less.
- The valve activator shall be large enough to be easily located and operated by user.

36.2.2 Safety showers shall be located throughout company facilities and jobsites for emergency first aid in the event of chemical splashes to the face, head and/or body. The general requirements for safety showers are as follows:

- The height of the safety shower head should be at least 82 inches and not more than 96 inches from standing level.
- The water spray pattern should be a minimum of 20 inches in diameter, 60 inches from standing level.
- The center of the water spray should be at least 16 inches from any obstruction.

- The safety shower should deliver 30 gallons of water per minute, meeting the water spray pattern.

- Provide freeze protection of the safety shower when the possibility of freezing conditions exist.

- The control valve should stay on once activated, and should be able to be activated from "off" to "on" in one second.

- Safety showers should be located the closer of no more than 10 seconds or 100 feet from the hazard. In situations where strong caustics or acids are present, the distance should be 10 feet or less.

- The safety shower should be identified with a sign and should be located in a well lit, brightly painted area.

36.2.3 In order to ensure proper working conditions, all safety showers and eyewash stations must be inspected on a weekly basis. Records of these inspections should be kept on the device. Substandard conditions must be repaired immediately.

All safety showers and plumbed eyewash stations must also be tested as part of the inspection. For eyewash stations that are not plumbed, the water should also be checked and replaced per the manufacturer's instructions. Trash or debris should be removed from any eyewash basins.

APPENDIX C

SAFETY MESSAGE, DECEMBER 2, 2004

SAFE USE OF PRESSURE WASHERS AND STEAM CLEANERS

SAFE USE OF PRESSURE WASHERS AND STEAM CLEANERS

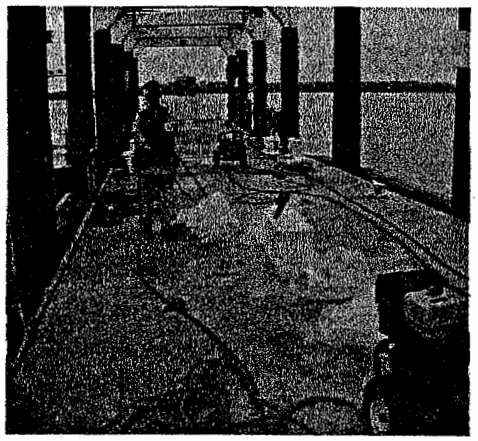
Work to Be Done: Removal of contaminants from equipment, shoreline, piers, and similar structures.

Equipment: Steam cleaners, and pressure washers powered by internal combustion engines.

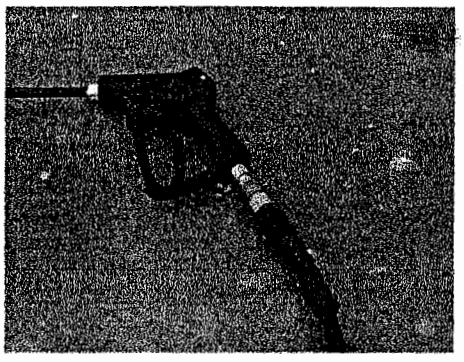
Site Description: Various types of work surfaces, rocks, sand, oily surfaces.

Potential Hazards: Slips, trips, falls, steam burns, injuries from excess pressure, excessive noise, injuries from hot surfaces on the hotsy or pressure washers, insect and animal bites, and potential drowning.

Special notes: All personnel should adhere to the following precautions with steam cleaners and pressure washers:



- All personnel will wear proper personal protective equipment when working operating the steam or pressure wands or assisting personnel using this equipment. This will include Tyvek coveralls, rubber boots, nitrile or neoprene gloves, **face shield with clear or tinted safety glasses with side shields under the shield**.
- All personnel working around pressure washers or steam cleaners must, at a minimum, wear regular safety glasses.
- **Equipment operators should never direct the power spray of the wand to themselves or other personnel.** Steam washers are for decontamination of equipment only. Personal Protective Equipment should not be washed or decontaminated by using steam or power washers.
- Prior to starting the equipment caution should be exercised when filling the tank with gasoline. No smoking will be allowed in the area while equipment is being refueled. Prior to startup all hoses and wand should be connected and rechecked to ensure the connections are secure.
- All supply and wand hoses should be free of kinks and where possible secured to not present a tripping hazard to other personnel.
- Operators should be cautious when using the rope pull to start the engine. Wet hands, slippery hands, pulls or frayed pull rope can lead to injury.
- Operators should ensure that personnel in the area are a safe distance from the wand and equipment operations.
- Noise surveys should be taken to check noise exposure to workers. Generally personnel working on or within 5 feet of steam or pressure should wear hearing protection.
- When working near water, Personal Flotation Devices (PFD's) must be worn.
- Contaminated areas, where personnel are working, should be marked and barricaded, and the surface covered to prevent spread of contamination. NOTE: If plastic is used for coverage of the surfaces, personnel must exercise care when walking on the plastic surfaces as they can become slick with a combination of contaminant and water. The wearing of rubber oil resistant non-skid boots or the use of cloth covering on the surface instead of plastic is preferable.
- Wand levers should always be held and triggered by the operator's hand. At no time should the lever be wired or taped in the open position.



Example

Real World

Marina Decontamination Plan

M/T Athos I
Marina Decontamination Procedures

February 6, 2005

Approved by:

FOSC – Captain Sarubbi _____

SOSC (DE) - _____

SOSC (PA) - _____

SOSC (NJ) - _____

RPIC – Steven Kegelman - _____

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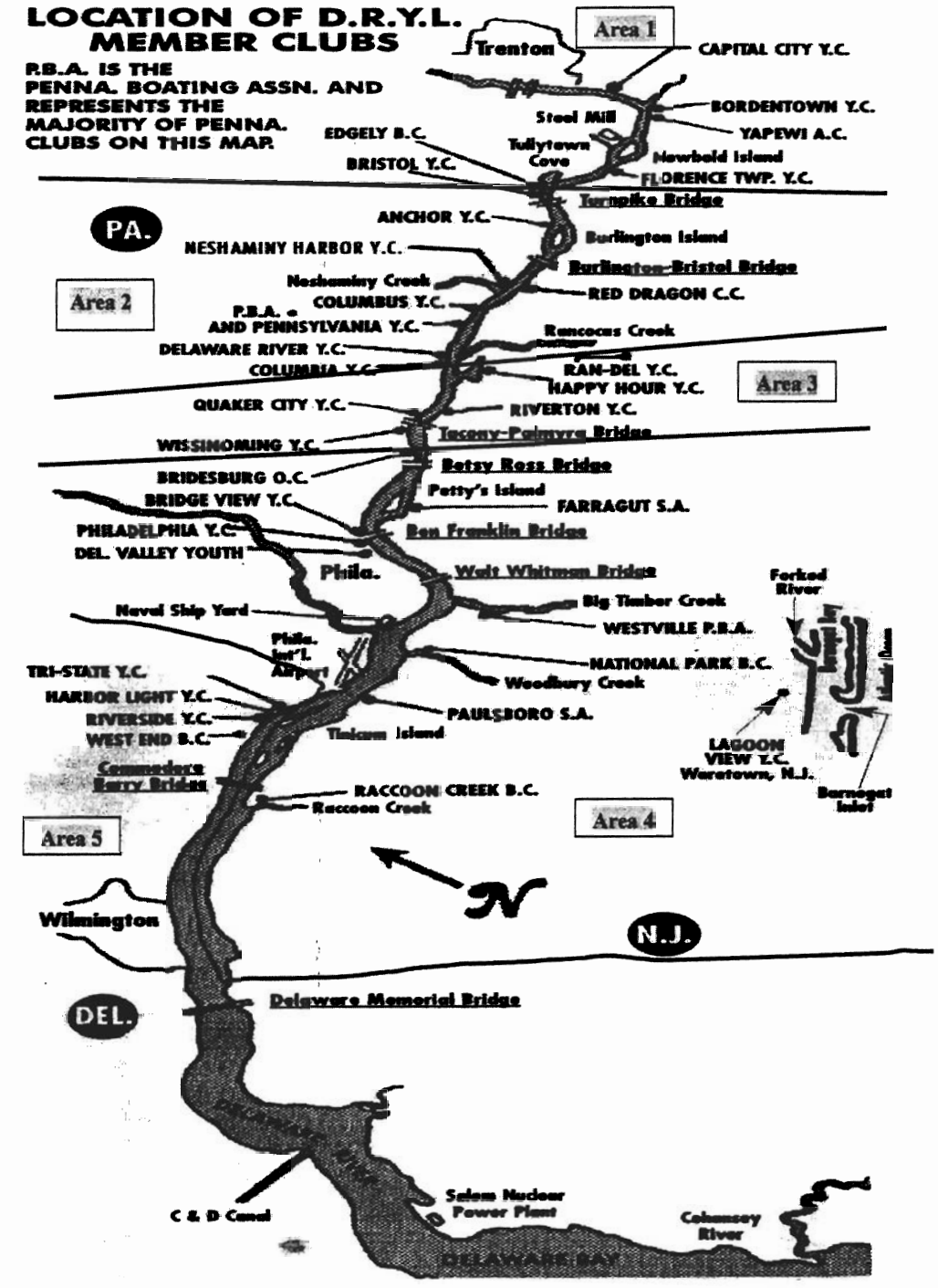
Overview

The Marina Decontamination Procedure is applicable to decontamination of marinas at multiple locations throughout the Delaware River Valley as required. Individual operations will be sized to effectively meet site-specific needs.

All operations will be conducted in accordance with the site safety plan. Proper PPE appropriate for the operations being conducted including PFDs will be worn in an approved manner.

All decontamination operations will depend on weather conditions. Severe weather will require cancellation of operations until operations can be conducted safely in accordance with the site safety plan.

Delaware Valley Marinas



Northern End of Navigable Delaware River (before Trenton)

1	**Capital City Yacht Club** 1595 Lamberton Road Trenton, NJ 08610 (609) 392-6798	**Affected Area** None	**Comments** Not affected by incident.
2	**Bordentown Yacht Club** P.O. Box 11 Bordentown, NJ 08505 (609) 298-9754	**Affected Area** None	**Comments** Not affected by incident.
3	**Yapewi Aquatic Yacht Club** Foot of Park Street Bordentown, NJ 08505 (609) 298-0844	**Affected Area** None	**Comments** Not affected by incident.
4	**Florence Township Yacht Club** P.O. Box 72 Florence, NJ 08518 (609) 499-8891	**Affected Area** None	**Comments** Not affected by incident.
5	**Edgely Yacht Club** 23 Spicebush Road Levittown, PA 08518 (215) 945-2674	**Affected Area** None	**Comments** Not affected by incident.

Northern Clubs Bristol Yacht Club and South

6	**Bristol Yacht Club** 7230 Parkwyn Avenue Edgely, PA 08518 (215) 946-9763 http://bristolyachtclub.net byc032003@yahoo.com	**Affected Area** None	**Comments** Not affected by incident.
7	**East End Yacht club** Curtin Marina Burlington, NJ	**Affected Area** None	**Comments** Not affected by incident.
8	**Anchor Yacht Club** 1232 Pine Grove Street Bristol, PA 08016 (215) 788-9757 rbhart@localnet.com	**Affected Area** None	**Comments** Not affected by incident.
9	**Neshaminy Harbor Yacht Club** 408 Woodbine Ave Feasterville, PA 19053 (215) 396-1021 pjusino@comcast.net	**Affected Area** None	**Comments** Not affected by incident.
10	**Red Dragon Yacht Club** 408 Edgewater Ave Edgewater Park, NJ 08010 (609) 387-9847 http://www.reddragoncanoeclub.org/ membership@reddragoncanoeclub.com	**Affected Area** None	**Comments** Not affected by incident.
11	**Columbus Yacht Club** 2909 State Road Bensalem, PA 08010 (215) 245-9871	**Affected Area** None	**Comments** Not affected by incident.

Yacht Clubs near Rancocas Creek

12	**Pennsylvania Yacht Club** 2189 State Road Bensalem, PA 19020 (215) 245-9883 pycnews@hotmail.com	**Affected Area** None	**Comments** Not affected by incident.
13	**Delaware River Yacht Club** 9635 Milnor Street Philadelphia, PA 19114-3109 (215) 637-9900 www.dryc.net FPCFAC@aol.net	**Affected Area** None	**Comments** Not affected by incident.
14	**Columbia Yacht Club** 9202 N. Delaware Avenue Philadelphia, PA 08075 (215) 824-0628	**Affected Area** None	**Comments** Not affected by incident.
15	**Ran-Del Yacht Club** 11 Needlepoint Lane Willingboro, NJ 08046 (609) 877-2561 boatervoter@verison.net	**Affected Area** None	**Comments** Not affected by incident.
16	**Happy Hour Yacht Club** Delran, NJ	**Affected Area** None	**Comments** Not affected by incident.

Clubs near the Tacony Palmyra Bridge

17	**Riverton Yacht Club** Bank & Main Streets P.O. Box 75 Riverton, NJ 08077 (856) 829-8524 RYC Sailing@msn.com http://www.rivertonyachtclub.org	**Affected Area** None	**Comments** Not affected by incident.
18	**Quaker City Yacht Club** 7101 North Delaware Avenue Philadelphia, PA 08077 (215) 624-9811 http://qcyc.com/ CCummi727@aol.com	**Affected Area** None	**Comments** Not affected by incident. Docks not in water during incident.
19	**Wissinoming Yacht Club** Delaware Ave & Devereauz St. Philadelphia, PA 19135 (215) 331-4530 Editorwissyc@aol.com	**Affected Area** None	**Comments** Not affected by incident. Docks not in water during incident.
20	**Bridesburg Outboard Club** P.O. Box 5991 Philadelphia, PA 19137 boc1945@netzer	**Affected Area** None	**Comments** Not affected by incident.
21	**Neshaminy Harbor Yacht Club** Located in Bridgeport, NJ P.O. Box 4 Gibbstown, NJ 08027 http://www.myrcbc.com	**Affected Area** None	**Comments** Not affected by incident.

Clubs near Philadelphia/Camden

22	**Philadelphia Yacht Club** **Liberty Sailing Group** 303 N. Front Street Philadelphia, PA 19106 (215) 627-SAIL contact@libertysailing.com http://libertysailing.com	**Affected Area** N/A	**Comments** Not located on the water.
23	**Delaware Valley Youth Club** Ernst Below (609) 265-9393	**Affected Area** N/A	**Comments** Sea Scout organization. No docks.
24	**Farragut Sportsman's Association** 1417 N. 25th Street Camden, NJ 08105 (856) 365-9772	**Affected Area** Fixed Dock	**Comments** Permission given for decon operations. Floating docks not in water during incident.
25	**Bridge View Yacht Club** 1015 Ford St. Bridgeport, PA 19405 (610) 279-5536 rpbusillo@comcast.net	**Affected Area** N/A	**Comments** Not on the water.
26	**The Philadelphia Yacht Club** Front & Vine Streets 303 North Front Street Philadelphia, PA 19106 (215) 238-9393 http://www.philadelphiayachtclub.com/	**Affected Area** N/A	**Comments** Not on the water

Clubs near Philadelphia/Camden (Continued)

27 Penn's Landing	Affected Area	Comments
Pier 3 Marina 31 N. Columbus Blvd. Philadelphia, PA 19106 Chuck Pukanecz (215) 351-4101	Bulkhead Floating Dock Pilings Boats - In Water	Permission given for decon operations. Need two week notice. 50+ boats to decon. Would like to discuss decon method.

28 Penn's Landing	Affected Area	Comments
Pier 5 Marina 31 N. Columbus Blvd. Philadelphia, PA 19106 Chuck Pukanecz (215) 351-4101	Bulkhead Floating Dock Pilings Boats - In Water	Permission given for decon operations. Need two week notice. 30+ boats to decon. Would like to discuss decon method.

29 Philadelphia Marine Center	Affected Area	Comments
Pier 12 North 235 Christopher Columbus Street Philadelphia, PA 19106 Pat Keavney (215) 931-1000	Bulkhead Floating Dock Pilings Boats - In Water	Owner hired an engineering company to evaluate needs. Authorized by his insurance company. 30+ boats to decon Permission given for decon operations.

30 Penn's Landing Marina	Affected Area	Comments
301 S. Columbus Blvd. Philadelphia, PA 19106 Joseph Forkin (215) 928-8801	Bulkhead Floating Dock Pilings	Permission given for decon operations.

Clubs near the Philadelphia Shipyard & Others

31	**Westville Power Boat Assoc.** 901 Edgewater Ave Westville, NJ Jim Cromley	**Affected Area** Floating Dock Pilings 2 - Boats	**Comments** Permission given for decon operations. Requires water access to docks.
32	**National Park Boat Club** 58 Riverview Ave. P.O. Box 112 National Park, NJ 08063 (609) 845-9749	**Affected Area** Bulkhead	**Comments** Permission given for decon operations. Docks not in water during incident.
33	**Paulsboro Sportsmen's Assoc.** 32 Riverview Avenue Paulsboro, NJ 08066 (609) 423-7552	**Affected Area** N/A	**Comments** No water front facilities.
34	**Ziggy & Sons Boat Yard** 200 E. Washington St. Paulsboro, NJ 08066	**Affected Area** Shoreline	**Comments** Permission given for decon operations. Docks not in water during incident.
35	**Glenview Marina** 901 Edgewater Ave. Westville, NJ Jim Cromley	**Affected Area** Docks Pilings Shoreline	**Comments** Permission given for decon operations. Some docks not in water during incident.

Clubs near Essington/Tinicum Island

36 Tri-State Yacht Club	Affected Area	Comments
22 Lewis Ave. E Lansdowne PA 19050 (610) 623-0826	N/A	Sailing club. No water front facilities.

37 Harbor Light Yacht Club	Affected Area	Comments
Bartram Avenue and Delaware River Essington, PA 19029 Butch Gricco (610) 237-0399	Floating Dock Pilings	Permission given for decon operations.

38 Riverside Yacht Club	Affected Area	Comments
End of Wanamaker Ave. Essington, PA 19029 Eddie Kalesnik (610) 329-8501	Floating Dock	Permission given for decon operations.

39 West End Yacht Club	Affected Area	Comments
P.O. Box 7 2nd & Corinthian Streets Essington, PA 19029 (215) 521-4747 http://www.meritsystems.us/westend/	Shoreline Bulkhead Floating Dock Pilings Boats on Land	Permission given for decon operations.

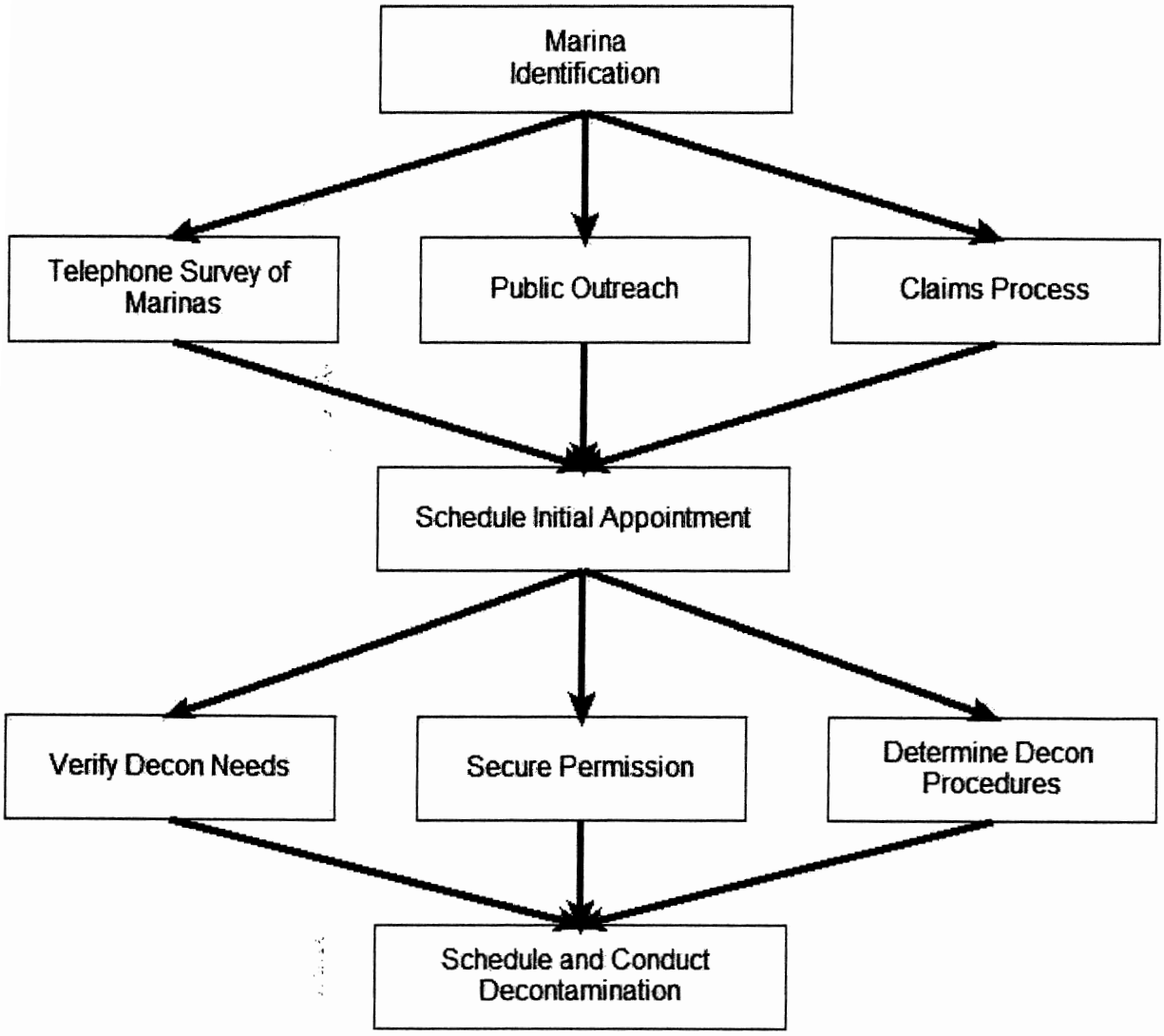
40 Anchorage Marina	Affected Area	Comments
Tinicum Township 86 Jansen Avenue Essington, PA 19029 Jim Martinovich (610) 521-0660	Floating Dock	Permission given for decon operations.

Clubs near Essington/Tinicum Island (Continued)

41	**Corinthian Yacht Club** 300 West 2nd Street Essington, PA 19029 Chip Selter H (610) 525-6531 C (215) 805-2925	**Affected Area** Shoreline Floating Dock Boats - work punts in water	**Comments** Waiting for improved weather to move floating docks to the Lagoon for decontamination.
42	**Fox Grove Marina** 6 Bartram Avenue Essington, PA 19029 Chief Marr (610) 633-0294	**Affected Area** Shoreline Floating Dock Pilings Boats - On Land	**Comments** Working shoreline. Working boats. Permission given for decon operations.
43	**Island Marine, Inc.** 1 Wanamaker Ave. Essington, Pa 19029 Bill Lincoln (610) 633-0294	**Affected Area** Shoreline Floating Dock Pilings Boats - On Land	**Comments** Pending investigation.
44	**Ridley Township Marina** 1401 S. Swarthmore Ave. Ridley Park, PA 19078	**Affected Area** Floating Dock Pilings Boats - In Water	**Comments** Pending investigation.
45	**Raccoon Creek Boat Club** 66 Island Road Bridgeport, NJ John Franklin (856) 854-6743	**Affected Area** Docks 110' Barge	**Comments** Permission given for decon operations.
46	**Lagrange Associates LLC** 2 Lagrange Avenue Essington, PA Bob Missel (610) 461-0550	**Affected Area** Docks	**Comments** Permission given for decon operations.
47	**Golden Point Marina**		

Marina Decontamination Procedures

Marina Decontamination Flow Diagram



Marina Identification

The Delaware River Valley is an important area for both commercial and recreational users. The Athos I incident has impacted both categories of users. Commercial activities are a year round operation. Recreational activities slow down during the fall and winter seasons.

The decontamination of commercial activities is the subject of separate plans and procedures.

The O'Brien's Group under the guidance and direction of the Unified Command has pursued an aggressive effort to identify, examine and develop procedures for the decontamination of recreational facilities. Recreational boat decontamination operations are currently proceeding in accordance with other plans. This plan for decontamination of marinas was developed to ensure that the marinas are prepared to open the spring season.

As required by OPA90, Hudson Marine Management Services (HMMS) advertised the claims phone number (866-401-0353) in six (6) newspapers covering the impacted area. This generated a number of claims inquiries for marinas that were then communicated to the O'Brien's Group.

In a parallel effort, marinas in the area were contacted by the O'Brien's Group via telephone to identify if the marinas and boat owners are aware of the claims phone number (866-401-0353). This also served to start the process for the boat and marina decontamination procedure.

In addition, O'Brien's personnel, in the normal course of their duties while directing other decontamination operations, met with boat owners, marina owners and other interested citizens to develop listings of marinas. The O'Brien's Group personnel also met with marina and yacht club owner/operators at different community outreach and town hall meetings.

Schedule Appointment

From the contacts developed above, The O'Brien's Group personnel will schedule an appointment with each marina owner/operator to verify and identify the following:

1. Impact on the marina resulting from the incident. This includes identifying the portion of the marina that was impacted and the extent of the impact.

2. If the marina was impacted, what steps have been taken by the marina owner/operator with regard to personal insurance claims and filing claims with HMMS.

3. The decontamination procedures to be implemented.

4. Permission necessary from the owner/operator to access the marina property and commence decontamination operations.

5. Any special conditions applicable to the marina.

Schedule Decontamination

Based on the weather conditions and available personnel and equipment resources, decontamination of the marina will be scheduled. The marina owner/operator will be contacted and informed of the decontamination schedule. Note it may not be possible to complete a marina in a single period of time. In any case the owner/operator will be kept informed.

Decontamination Procedures

General

In most cases, decontamination will be accomplished with high-pressure washers. In all cases a test will be conducted prior to full decontamination. If necessary, approved and permitted cleaning agents may be used in this process. The usage shall be in the minimum amount necessary and in accordance with application guidelines.

All contaminated debris and sludge resulting from the decontamination process, will be collected, removed from the water and disposed of in an approved manner. Waste minimization practices will be followed in all cases.

The below procedures are applicable to the three general portions of a typical marina (bulkheads/sea walls, floating and fixed dock structures and pilings). They may be modified to more properly reflect the actual conditions at the individual marina.

Decontamination standards will comply with the "end points" document approved by the Unified Command.

Bulkheads/Sea Walls

Every effort will be made to prevent overspray or additional contamination of surrounding areas due to the decontamination operations. The following procedures will be followed in the decontamination of bulkheads and sea walls:

1. A temporary plywood wall will be erected between the bulkhead/sea wall and the surrounding area.
2. Hard boom, lined with sausage boom, will be placed at the base of the bulkhead/sea wall.
3. A small area of the bulkhead/sea wall will be tested to determine the best technique for decontamination. The test will be carefully observed to determine if adjustments are necessary to prevent overspray.
4. As each area of the bulkhead/sea wall is decontaminated, all soiled sausage boom and other materials will be collected and disposed of in an approved manner. Dislodged contaminated material will be collected with sorbent pads as necessary. The temporary plywood wall will be moved along the bulkhead/seawall and the procedure repeated as necessary.

Floating/fixed dock structures

Every effort will be made to prevent overspray or additional contamination of surrounding areas due to the decontamination operations. The following procedures will be followed in the decontamination of floating/fixed dock structures:

1. Hard boom, lined with sausage boom, will be placed around the floating/fixed dock structure.
2. A small area of the floating/fixed dock structure will be tested to determine the best technique for decontamination. The test will be carefully observed to determine if adjustments are necessary to prevent overspray. In addition, the floatation will be carefully examined to prevent damage.
3. Particular attention shall be paid to the underside of the floating/fixed dock structure and connecting wiring and piping to prevent damage.
4. As each area of the floating/fixed dock structure is decontaminated, all soiled sausage boom and other materials will be collected and disposed of in an approved manner. Dislodged contaminated material will be collected with sorbent pads as necessary.
5. The procedures will be repeated as each section of floating/fixed dock structure is decontaminated.

Pilings

Every effort will be made to prevent overspray or additional contamination of surrounding areas due to the decontamination operations. The following procedures will be followed in the decontamination of the pilings:

1. Hard boom, lined with sausage boom, will be placed around the pilings.
2. A small area of the pilings will be tested to determine the best technique for decontamination. The test will be carefully observed to determine if adjustments are necessary to prevent overspray.
3. Particular attention shall be paid to rollers and sliding mechanisms on the pilings that move with the tide to insure that they are decontaminated and free of debris.
4. As each area of the pilings is decontaminated, all soiled sausage boom and other materials will be collected and disposed of in an approved manner. Dislodged contaminated material will be collected with sorbent pads as necessary.
5. The procedures will be repeated as each section of piling structure is decontaminated

Decontamination Closure

A TOG claims adjuster(s) will be present during decontamination operations and will consult with the marina owner/operator to close each decontamination request.

All day-to-day scheduling, direction, supervision of decontamination operations, and closing of claims will be under the responsibility and supervision of The O'Brien's Group. Necessary work force levels will be determined by The O'Brien's Group.

Situation Status

The Claims Unit will provide a daily update of Marina Decontamination Activity. The daily update will include the following information:

Location(s) of decontamination activity
Decontamination activities underway
Percentage of decontamination completed.

Real World

Incident Action Plans

ATHOS I

Example IAPs

03, 04, 05, 07, 09, 12,

21, 25, 26, 31, 32

IAP Cover Sheet

Incident Name:	Operational Period to be covered by IAP:
MV Athos I	Period 3 (11/29/2004 06:00 to 11/30/2004 06:00)

Approved by:

FOSC : _____

SOSC (DE) : _____

SOSC (PA) : _____

SOSC (NJ) : _____

RPIC : _____

Incident Action Plan

Prepared By:	Prepared Date/Time:	
IAP Cover Sheet	Printed: 11/29/2004 01:10	© 1997-2004 dbSoft, Inc.

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. ICS 202 - General Response Objectives
4. ICS 204 - Assignment List
5. ICS 205 - Communications Plan
6. ICS 206 - Medical Plan
7. ICS 207 - Organization Chart
8. ICS 220 - Air Operations
9. ICS 223 - Health and Safety Message
10. ICS 230 - Daily Meeting Schedule
11. ICS 232 - Resources at Risk

Weather Report

Incident:	MV Athos I	**Prepared By:**	CDR Tim Deal	**at** 11/27/2004 20:21
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	11/28/04 1900 Hrs	

Present Conditions

Wind Speed:	10 knots	**Wave Height:**	<= 2 feet
Wind Direction From The:	NW	**Wave Direction:**	
Air Temperature:	55 Fahrenheit	**Swell Height:**	
Barometric Pressure:		**Swell Interval:**	
Humidity:		**Current Speed:**	
Visibility:	Unlimited	**Current Direction Toward:**	
Ceiling:	4000 - 5000 feet	**Water Temperature:**	
Next High Tide (Time):		**Next Low Tide (Time):**	
Next High Tide (Height):		**Next Low Tide (Height):**	
Sunrise:	08:00	**Sunset:**	17:37

Notes:

24 Hour Forecast

Sunrise:	08:02	**Sunset:**	17:37
High Tide (Time):		**High Tide (Time):**	
High Tide (Height):		**High Tide (Height):**	
Low Tide (Time):		**Low Tide (Time):**	
Low Tide (Height):		**Low Tide (Height):**	

Forecast: Overnight winds are forcast to decrease to be from the NW at 10-15 knots by morning. Ceilings currently 4000-5000 feet and are forecast to slowly increase this afternoon and evening. By tomorrow morning skies are expected to be unobstructed.

48 Hour Forecast

Sunrise:		**Sunset:**	
High Tide (Time):		**High Tide (Time):**	
High Tide (Height):		**High Tide (Height):**	
Low Tide (Time):		**Low Tide (Time):**	
Low Tide (Height):		**Low Tide (Height):**	

Forecast: Wednesday afternoon winds are expected to be from the NW at 5-10 knots.

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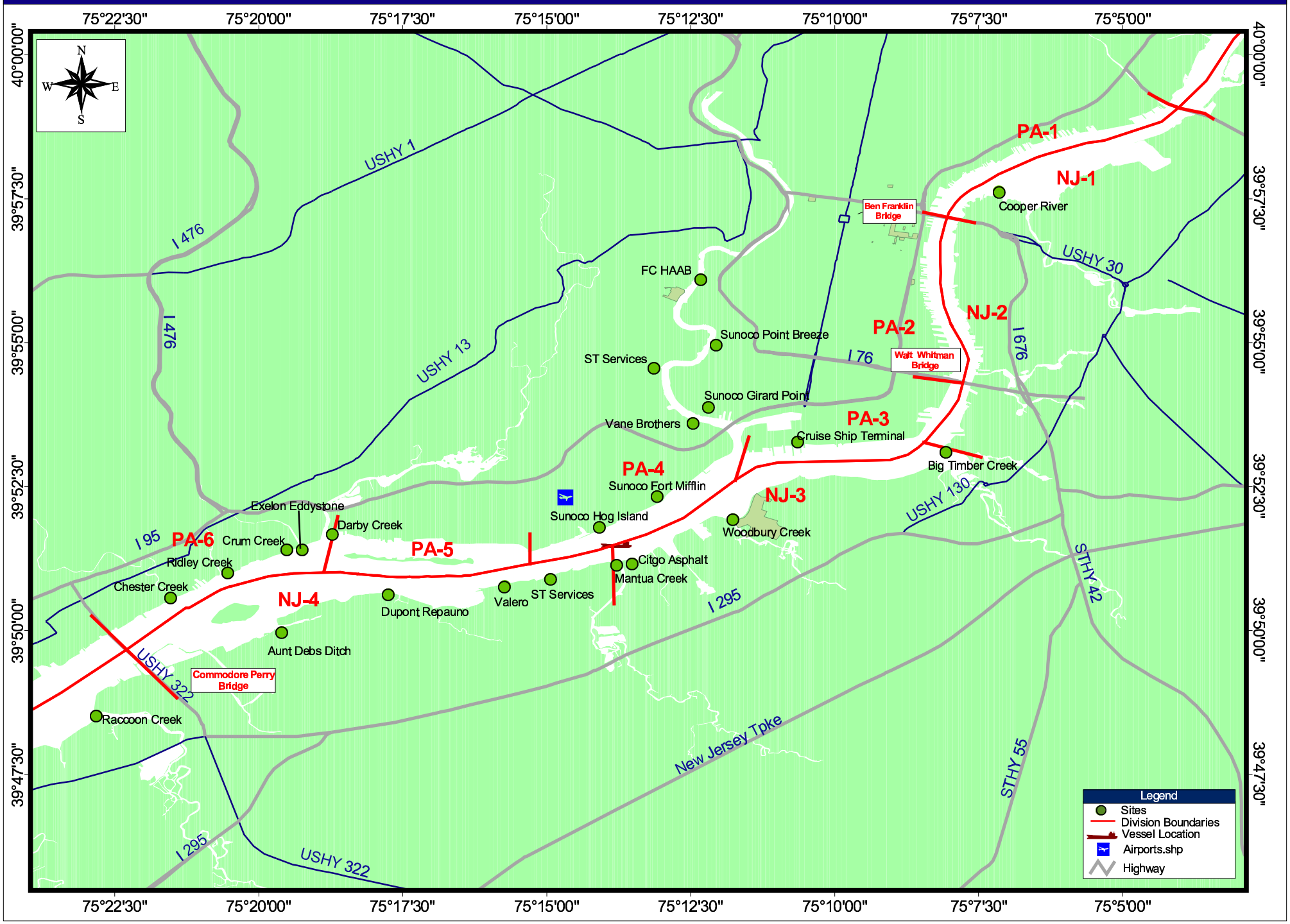
Athos I Incident Area Overview Map

Delaware Bay - November 28, 2004

2 0 2 Miles

The Response Group
Emergency Response Pre-Planning & Support



ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Section, Planning **at** 11/28/2004 11:43
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct shoreline cleanup assessment operations.		
Stabilize vessel & take corrective action through implementation of salvage plan.		
Monitor exiting sensitive site booming strategies & implement additional strategies as appropriate.		
Collect and recover free-floating oil.		
Collect and recover injured wildlife.		
Implement decon plan (including decon of commercial and recreational vessels, personnel and equipment).		
Continue to enforce safety zone.		
Implement vessel transit protocols to facilitate vessel movement in effective port areas, as possible.		
Continue to keep state holders and public informed.		
Conduct operations I.A.W. safe work practices.		

Approved By

: _____

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Air Ops Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Air Ops Branch Director	Jim Sanil		856-266-3810	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Air Ops Branch					
Horizon Helicopters	Aircraft: Helo	Helo for overflights	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Air Ops Branch					
Horizon Helicopters	Manpower: Operator	Pilot and copilot	2 each		Assigned

Assignments

Surveillance - Overflights and coordinating vessel movement

- First light overflight, estimated departure time: 0730
- U/C overflight, estimated departure time: 1030
- All other overflights conducted as needed
- Overflights need to be prescriptive in determining extent of free floating oil to facilitate commercial vessel transit.
- All overflight personnel report oiled wildlife to Situation Unit Leader at 271-4909.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Emergency Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Salvage Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Salvage Group	Titan - Bob Umbdenstock		908-230-8075	
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salvage Group	Diver	Damage Assessment Tea	1 each	
Salvage Group	Vessel	Greater than 21'	1 each	21 feet

Assignments

Conduct lightering operations, shift vessel to berth, and conduct dive operations for repairs in accordance with the Unified Command approved plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-1 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Assignments

No reported impacts. Evaluate on overflight at first light.

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-1 Division
Prepared By Signature:		**Task Force:**	Boat Team - PA-18
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Branch Director	ED LEVINE NOAA		206-849-9941	
Division/Group Supervisor	JACKIE MICHELLE		803-513-5650	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - PA-18					
PA DEP	Vessel	PA Response Boat	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - PA-18					
USCG	Manpower: Responder	Braver	1 each		Assigned
PA DEP	Manpower: Responder	J. Harley	1 each		Assigned

Assignments

Special Instructions for Division / Group

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-228-7240	

Location of Work

Schuylkill River

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-1 Division
Prepared By Signature:		**Task Force:**	Vehicle Team - PA North
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - PA North					
USCG	Manpower: Responder	Erickson	1 each		Assigned
PA DEP	Manpower: Responder	Newmyer	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-307-1614	

Location of Work

North - Betsy Roth to Schulkill

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Division/Group Supervisor				
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-2 Division	Boom	Containment Boom	8600 feet	18 inch(es)
PA-2 Division	Manpower: Responder	Laborers	42 each	
PA-2 Division	Vessel	Less than 21'	14 each	12 feet

Assignments

Protection and Recovery
Penns Landing & USCG Base
1. Ensure protective measures are adequate if not supplement.
2. Continue removal of recovered oil
3. Report progress in barrels to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Location of Work

Shoreline at Penns Landing & USCG Base

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-2 Division
Prepared By Signature:		**Task Force:**	Vessel Team - Delaware
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Vessel Team - Delaware					
Delaware DNREC	Vessel	Boston Whaler	1 each	24 feet	Assigned
Delaware DNREC	Vessel	Boston Whaler	1 each	24 feet	Decontamination
Wilmington Fire	Vessel	Fire Boat	1 each		Demobilized

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vessel Team - Delaware					
Wilmington Fire	Manpower: Responder	Fire Boat Team	4 each		Demobilized
Delaware DNREC	Manpower: Responder	Survey Team	2 each		Assigned
Delaware DNREC	Manpower: Responder	Survey Team	3 each		Demobilized

Assignments

Pollution survey from the MSO Philly Station to the Christina River

Location of Work

Delaware - MSO Philly Station to Christina River

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-2 Division
Prepared By Signature:		**Task Force:**	Vehicle Team - Delaware
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - Delaware					
USCG	Manpower: Responder	Matulonis	1 each		Assigned
USCG	Manpower: Responder	Merry	1 each		Assigned

Assignments

Pollution survey from the MSO Philly Station to the Christina River

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		715-271-4894	

Location of Work

Delaware - MSO Philly Station to Christina River

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Division/Group Supervisor				
Safety Officer	Bud Kline		985-960-0585	

Assignments

No reported impacts. Evaluate on overflight at first light.

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-3 Division
Prepared By Signature:		**Task Force:**	Boat Team - NRC-1
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - NRC-1					
NRC - National Response Cc	Vessel	NRC-1	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - NRC-1					
EPA	Manpower: Responder	Bectal	1 each		Assigned
USCG	Manpower: Responder	Grey	1 each		Assigned
EPA	Manpower: Responder	Neil	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-228-7254	

Location of Work

Schuylkill to Ben Franklin Bridge (Cooper River)

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-4 Division	Barge: Inland	Portable Barge Sets	1 each	
PA-4 Division	Manpower: Responder	Laborers	20 each	
PA-4 Division	Manpower: Supervisor	Supervisors	1 each	
PA-4 Division	Vessel	Less than 21'	3 each	12 feet
PA-4 Division	Vessel	Greater than 21'	1 each	21 feet

Assignments

Airport shoreline cleanup
1. Ensure protective measures are adequate if not supplement.
2. Continue removal of recovered oil
3. Report progress to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	Boat Team - NRC-2
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - NRC-2					
NRC - National Response Cc	Vessel	NRC-2	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - NRC-2					
USCG	Manpower: Responder	Henderson	1 each		Assigned
EPA	Manpower: Responder	Solecki	1 each		Assigned

Assignments

Special Instructions for Division / Group

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-228-7253	

Location of Work

Comm Barry Bridge to Schuylkill

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-5 Division	Barge: Inland	Portable Barge Sets	4 each	
PA-5 Division	Manpower: Responder	Laborers	40 each	
PA-5 Division	Manpower: Supervisor	Supervisors	2 each	
PA-5 Division	Roll Off Box	Roll Off Boxes	2 each	
PA-5 Division	Skimmer	Skimmer Units	2 each	
PA-5 Division	Vessel	Greater than 21'	4 each	21 feet

Assignments

Continue with nearshore skimming operations if practical and shoreline cleanup operations.
1. Ensure protective measures are adequate if not supplement.
2. Continue removal of recovered oil
3. Report progress to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Location of Work

Tinicum Island Area

Special Environmental Considerations

This is an especially sensitive area. Conduct operations in a careful manner to minimize impacts. CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	PA-6 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Assignments

No reported impacts. Evaluate on overflight at first light.

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-1 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-1 Division	Manpower: Responder	Laborers	15 each	
NJ-1 Division	Pressure Washers / Wash	Hot Wash Sprayers	2 each	
NJ-1 Division	Vacuum Truck	Vacuum Truck	2 each	
NJ-1 Division	Vessel	Less than 21'	2 each	12 feet

Assignments

Protection and Recovery Operations at Glouchester Marine
1. Ensure protective measures are adequate if not supplement.
2. Continue removal of recovered oil
3. Report progress to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-2 Division	Manpower: Responder	Laborers	50 each	
NJ-2 Division	Vessel	Less than 21'	6 each	12 feet

Assignments

Beach cleanup at Eagle Point
1. Ensure protective measures are adequate if not supplement.
2. Continue removal of recovered oil
3. Report progress to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Barge: Inland	Portable Barge Sets	2 each	
NJ-3 Division	Manpower: Responder	Laborers	35 each	
NJ-3 Division	Pressure Washers / Wash	Hot Wash Sprayers	3 each	
NJ-3 Division	Skimmer	Skimmer Units	2 each	
NJ-3 Division	Vessel	Greater than 21'	3 each	21 feet
NJ-3 Division	Vessel	Less than 21'	6 each	12 feet

Assignments

Recovery Operations at Woodbury Creek
1. Ensure protective measures are adequate if not supplement.
2. Continue removal of recovered oil
3. Report progress to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Location of Work

EAGLE POINT

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	Vehicle Team - NJ North
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - NJ North					
USCG	Vehicle	Chevy Venture	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - NJ North					
USCG	Manpower: Responder	Mellot	1 each		Assigned
USCG	Manpower: Responder	Neyland	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-549-4852	

Location of Work

NJ North - Betsey Ross to Woodbury Creek

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	Vehicle Team - NJ South
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - NJ South					
USCG	Vehicle	Jeep	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - NJ South					
USCG	Manpower: Responder	Dunn	1 each		Assigned
USCG	Manpower: Responder	SCPO Distefano	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		215-778-4076	

Location of Work

Woodbury Creek to Old Man Creek

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	Boat Team - F&W #1
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - F&W #1					
NJ Fish & Wildlife	Vessel	F&W #1	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - F&W #1					
NJ DEP	Manpower: Responder	Camargo	1 each		Assigned
NJ F&W	Manpower: Responder	T. Eisenhoth	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-228-7297	

Location of Work

Big Timber Creek

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	Boat Team - F&W #2
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - F&W #2					
NJ Fish & Wildlife	Vessel	F&W #2	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - F&W #2					
Entrix	Manpower: Responder	Gilden	1 each		Assigned
NJ F&W	Manpower: Responder	Person	1 each		Assigned
NJ DEP	Manpower: Responder	Weeks	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-228-7263	

Location of Work

Mantua Creek

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	Boat Team - Entrix #1
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - Entrix #1					
NJ F&W	Manpower: Responder	D. Bean	1 each		Assigned
NJ DEP	Manpower: Responder	J. Manual	1 each		Assigned
Entrix	Manpower: Responder	Saunder	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-228-7265	

Location of Work

Woodbury Creek

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Recovery & Protection Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Bud Kline		985-960-0585	

Assignments

No reported impacts. Evaluate on overflight at first light.

Location of Work

Mantua Creek and Commodore Perry Bridge.

Special Environmental Considerations

LONG, NARROW CREEK WITH SPOTTY OIL THROUGHOUT SAUSAGE BOOM REQUIRED. NO GRASSES SHOULD BE CUT WITHOUT SCAT APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	Vehicle Team - PA South
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - PA South					
USCG	Vehicle	ATV	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vehicle Team - PA South					
USCG	Manpower: Responder	Pickett	1 each		Assigned
USCG	Manpower: Responder	Suevo	1 each		Assigned
USCG	Manpower: Responder	Wilson	1 each		Assigned

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
		267-549-4853	

Location of Work

Schulkill (Delaware) and Commodore Perry to State Line

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	Boat Team - NJ Police Boat
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - NJ Police Boat					
NJ Police	Vessel	NJ Police Boat	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Boat Team - NJ Police Boat					
NJ DEP	Manpower: Responder	Charlton	1 each		Assigned
NJ Police	Manpower: Responder	NJ Police	1 each		Assigned

Location of Work

Racoon Creek Area

Conduct survey of designated area, map extent & coverage of stranded or pooled oil. Classify habitat & recommend preferred cleanup method. Report findings to sitstat by 1400 hrs.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Mobile Recovery Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Division/Group Supervisor				
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Mobile Recovery Group	Barge: Inland	Portable Barge Sets	1 each	
Mobile Recovery Group	Manpower: Responder	Laborers	3 each	
Mobile Recovery Group	Manpower: Supervisor	Supervisors	1 each	
Mobile Recovery Group	Skimmer	Skimmer Units	1 each	

Assignments

Bridges - Catch pockets of oil as opportunity presents
1. Ensure protective measures are adequate if not supplement.
2. Continue recovery of oil
3. Report progress in barrels to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Wildlife Recovery /Rehab Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Branch Director	ED LEVINE NOAA		206-849-9941	
Division/Group Supervisor	CLAY STERN USFWS		609-214-7895	
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Wildlife Recovery /Rehab Grou	Manpower: Responder	Laborers	32 each	
Wildlife Recovery /Rehab Grou	Manpower: Supervisor	Supervisors	6 each	
Wildlife Recovery /Rehab Grou	Vessel	Less than 21'	6 each	12 feet

Assignments

Identify, recover, and rehabilitate any impacted wildlife

Special Instructions for Division / Group

WILDLIFE RECOVERY TEAMS WILL ADVISE SITUATION UNIT AND GROUP SUPERVISOR OF ANY OBSERVED SHORELINE OIL IMPACT.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Debris Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Division/Group Supervisor				
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Debris Group	Manpower: Responder	Laborers	12 each	
Debris Group	Manpower: Supervisor	Supervisors	1 each	
Debris Group	Roll Off Box	Roll Off Boxes	12 each	
Debris Group	Vehicle	Crew Trucks	3 each	

Assignments

Pre-shoreline cleanup down river beyond PA-6 and NJ-4.
1. Ensure protective measures are adequate if not supplement.
2. Report pooled oil or heavily impacted shoreline areas to the Situation Unit Leader by 0400hrs., 1300hrs, and 1600hrs. at 271-4909

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P - Big Timber Creek					
Delaware Bay & River COOF	Boom	American Marine Boo	2500 feet	12 inch(es)	Assigned
Clean Venture, Inc.	Vessel	Boom Tender	1 each		Assigned
P - Little Timber					
Delaware Bay & River COOF	Boom	Boom	100 feet	12 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Sorbent Boom	100 feet		Assigned
P - Woodbury Creek					
Delaware Bay & River COOF	Boom	American Marine Boo	2500 feet	12 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Bottom Seal - SV-80(	300 feet	20 inch(es)	Assigned
Miller Environmental Group,	Vessel	Boom Tender	1 each		Assigned
P59 - Oldmans Creek - NJ 76.97					
Delaware Bay & River COOF	Boom	AB&B Boom - BT- 91	700 feet	27 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Bottom Seal - BT- 91	150 feet	20 inch(es)	Assigned
P60 - Raccoon Creek - NJ 80.66					
Delaware Bay & River COOF	Boom	AB&B Boom - SV-79	1600 feet	26 inch(es)	Assigned
Delaware Bay & River COOF	Boom	American Marine Boo	1400 feet	12 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Bottom Seal - SV-62(	300 feet	20 inch(es)	Assigned
P61 - Aunt Debs Ditch - NJ 85.35					
Delaware Bay & River COOF	Boom	American Marine Boo	400 feet	12 inch(es)	Assigned
P62 - Mantua Creek - NJ 89.66					
Delaware Bay & River COOF	Boom	American Marine Boo	900 feet	12 inch(es)	Assigned
Miller Environmental Group,	Vessel	Boom Tender	1 each		Assigned
P66 - Darby Creek - PA 85.28					
Delaware Bay & River COOF	Boom	American Marine Boo	2300 feet	12 inch(es)	Assigned
P67 - Crum Creek - PA 84.9					
Delaware Bay & River COOF	Boom	American Marine Boo	600 feet	7 inch(es)	(Unknown)
P68 - Ridley Creek - PA 83.80					
Delaware Bay & River COOF	Boom	American Marine Boo	500 feet	7 inch(es)	Assigned
P69 - Chester Creek - PA 82.93					
Delaware Bay & River COOF	Boom	American Marine Boo	600 feet	7 inch(es)	Assigned
Miller Environmental Group,	Vessel	Boom Tender	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P70 - Naamans Creek - DE 77.65					
Delaware Bay & River COOF	Boom	American Marine Boo	200 feet	12 inch(es)	Assigned
Clean Venture, Inc.	Vessel	Boom Deployment B	1 each		Assigned
Protective Booming Group					
NRC - National Response Co	Boom	Boom	5000 feet	18 inch(es)	Assigned
NRC - National Response Co	Sorbent	Snare boom	5000 feet		Enroute/Sourced
Clean Venture, Inc.	Vessel	Boom Tender	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
P - Big Timber Creek					
Clean Venture, Inc.	Manpower: Responder	Boom Tender Crew	2 each		Assigned
P - Woodbury Creek					
Miller Environmental Group,	Manpower: Responder	Boom Tender Crew	2 each		Assigned
P62 - Mantua Creek - NJ 89.66					
Miller Environmental Group,	Manpower: Responder	Boom Tender Crew	2 each		Assigned
P69 - Chester Creek - PA 82.93					
Miller Environmental Group,	Manpower: Responder	Boom Tender Crew	2 each		Assigned
P70 - Naamans Creek - DE 77.65					
Clean Venture, Inc.	Manpower: Responder	Deployment Crew	10 each		Assigned
Protective Booming Group					
Clean Venture, Inc.	Manpower: Responder	Boom Tender Crew	2 each		Assigned

Assignments

Identify & protect sensitive sites as requested. Monitor & maintain boom at GRP sites already deployed. Assure it's effectiveness.

Special Environmental Considerations

CUT NO GRASSES WITHOUT SCAT TEAM APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P59 - Oldmans Creek - NJ 76.97
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P59 - Oldmans Creek - NJ 76.97					
Delaware Bay & River COOF	Boom	AB&B Boom - BT- 91	700 feet	27 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Bottom Seal - BT- 91	150 feet	20 inch(es)	Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Oldmans Creek is difficult to locate while traveling downstream on the Delaware River because of the angle with which its mouth opens towards downstream. Its mouth is characterized by dredge spoil deposits on both shores. Tidal flats exist upstream of the Rt. 130 Bridge. There are two launching areas at the Gateway Truck Terminal on Rt. 130 south in Oldmans Township. The boom is stored at Sunoco Marcus Hook. Land access to the mouth is possible via the US Army Corps of Engineers dirt road off of Rt. 130 approximately 2 miles south of Oldmans Creek drawbridge.

Location of Work

NJ 76.97
Access:Water

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P60 - Raccoon Creek - NJ 80.66
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P60 - Raccoon Creek - NJ 80.66					
Delaware Bay & River COOF	Boom	AB&B Boom - SV-79	1600 feet	26 inch(es)	Assigned
Delaware Bay & River COOF	Boom	American Marine Boo	1400 feet	12 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Bottom Seal - SV-62(	300 feet	20 inch(es)	Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Raccoon Creek has a relatively wide mouth at the Delaware River. The upstream side rises from the Delaware due to deposits of dredge spoil. The downstream side is characterized by old bulkheading and pilings which are just visible at high water. Tidal flats exist just upstream of the Rt. 130 Bridge. There is no land access to the mouth. Access is off of Rt. 130, Bridgeport. The boom is stored at the Tosco Refinery. Installation of the shore seal boom must be done quickly due to the narrow tide window and very shallow water. Hip waders are necessary for the down river deployment. A second scenario is not shown. The closest place an attempt might be made is where the Rt. 130 bridge crosses Raccoon Creek.

Location of Work

NJ 80.66
Access:Water

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P61 - Aunt Debs Ditch - NJ 85.35
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P61 - Aunt Debs Ditch - NJ 85.35					
Delaware Bay & River COOF	Boom	American Marine Boo	400 feet	12 inch(es)	Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Aunt Debs Ditch is a narrow channel between Monds Island and the New Jersey river bank. It is open only on the south end.. There is an access road to the boom site and a small jon boat can be launched from a bridge on the access road. Recovery of oil can be accomplished using a vacuum truck.

Location of Work

NJ 85.35
Access:Water/Land

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P62 - Mantua Creek - NJ 89.66
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P62 - Mantua Creek - NJ 89.66					
Delaware Bay & River COOF	Boom	American Marine Boo	900 feet	12 inch(es)	Assigned
Miller Environmental Group,	Vessel	Boom Tender	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
P62 - Mantua Creek - NJ 89.66					
Miller Environmental Group,	Manpower: Responder	Boom Tender Crew	2 each		Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Mantua Creek runs between facilities at its mouth. It broadens into tidal flats approximately 3/4 mile upstream. The boom and anchors are stored at the Valero Refinery.

Location of Work

NJ 89.66
Access:Water/Land

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P66 - Darby Creek - PA 85.28
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P66 - Darby Creek - PA 85.28					
Delaware Bay & River COOF	Boom	American Marine Boo	2300 feet	12 inch(es)	Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

The mouth of Darby Creek opens into a wide cove. Upstream of the mouth are two railroad bridges, the Rt. 291 Bridge and the I-95 Bridge. Upstream marshes on Darby Creek are very sensitive and are considered of great value. The John Heinz National Wildlife Refuge is located on Darby Creek. A series of collection booms can be run between the railroad bridges and the Rt. 291 Bridge. A removal effort will need to be mounted here. The boom is stored at EXCELON Eddystone.

Location of Work

PA 85.28
Access:Water/Land

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P67 - Crum Creek - PA 84.9
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P67 - Crum Creek - PA 84.9					
Delaware Bay & River COOF	Boom	American Marine Boo	600 feet	7 inch(es)	(Unknown)

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Access is through the EXCELON Eddystone Power Plant.

Location of Work

PA 84.9
Access:Water/Land
e

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P68 - Ridley Creek - PA 83.80
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P68 - Ridley Creek - PA 83.80					
Delaware Bay & River COOF	Boom	American Marine Boo	500 feet	7 inch(es)	Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Access is through the Penn Terminal on the north side.

Location of Work

PA 83.80
Access:Water/Land

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P69 - Chester Creek - PA 82.93
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P69 - Chester Creek - PA 82.93					
Delaware Bay & River COOF	Boom	American Marine Boo	600 feet	7 inch(es)	Assigned
Miller Environmental Group,	Vessel	Boom Tender	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
P69 - Chester Creek - PA 82.93					
Miller Environmental Group,	Manpower: Responder	Boom Tender Crew	2 each		Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Access via Rt. 352 {Avenue of States) to River.

Location of Work

PA 82.93
Access:Water/Land

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P70 - Naamans Creek - DE 77.65
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P70 - Naamans Creek - DE 77.65					
Delaware Bay & River COOF	Boom	American Marine Boo	200 feet	12 inch(es)	Assigned
Clean Venture, Inc.	Vessel	Boom Deployment B	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
P70 - Naamans Creek - DE 77.65					
Clean Venture, Inc.	Manpower: Responder	Deployment Crew	10 each		Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

Description of Work

Naamans Creek has a narrow mouth with rip rap and concrete banks. It drains an industrial area.
Approximately 200 yards up the creek there is a dam like obstruction which will stop almost all oil from going further upstream. Land access is through Cities Steel (formerly Phoenix Steel).

Location of Work

DE 77.65
Access:Water/Land

Special Site-Specific Safety Considerations

See "Site Safety Plan"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P - Big Timber Creek
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P - Big Timber Creek					
Delaware Bay & River COOF	Boom	American Marine Boo	2500 feet	12 inch(es)	Assigned
Clean Venture, Inc.	Vessel	Boom Tender	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
P - Big Timber Creek					
Clean Venture, Inc.	Manpower: Responder	Boom Tender Crew	2 each		Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P - Little Timber
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P - Little Timber					
Delaware Bay & River COOF	Boom	Boom	100 feet	12 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Sorbent Boom	100 feet		Assigned

Assignments

Verify deployment at first light.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Protective Booming Group
Prepared By Signature:		**Task Force:**	P - Woodbury Creek
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Protection Group Supervisor	Mike Noel		713-824-3991	
Safety Officer	Bud Kline		985-960-0585	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
P - Woodbury Creek					
Delaware Bay & River COOF	Boom	American Marine Boo	2500 feet	12 inch(es)	Assigned
Delaware Bay & River COOF	Boom	Bottom Seal - SV-80(	300 feet	20 inch(es)	Assigned
Miller Environmental Group,	Vessel	Boom Tender	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
P - Woodbury Creek					
Miller Environmental Group,	Manpower: Responder	Boom Tender Crew	2 each		Assigned

Assignments

Monitor & maintain deployed boom at site. Assure it's effectiveness.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Vessel Safety Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Safety Zone Enforcement Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Branch Director	LT HONEYCUTT USCG		(215) 778-3117	
Division/Group Supervisor	LT VLIET		(732) 773-9681	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Safety Zone Enforcement Grou	Manpower: Responder	Laborers	8 each	
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	21 feet

Assignments

Safety zone enforcement. Enforce COTP Safety Zone

Special Instructions for Division / Group

CGC CLEAT LIASON WITH CGC CAPSTAN AND WORK OUR RELIEF SKD.
CG STATION PHILADELPHIA - FATIGUE STANDARDS WAIVED BY GRU CDR; AUTH TO MAN 12 HR SHIFTS. MAINTAIN 24X7 PRESENCE.
DO NOT ALLOW ANY VESSELS IN SAFETY ZONE EXCEPT FOR VESSELS ASSOCIATED WITH SPILL-MSDO CAN ASSIST IN DETERMINING LEGITIMATE VESSELS.
IF A RECREATIONAL VESSEL INSISTS ON ENTERING SAFETY ZONE, STOP/BOARD/CITE CFR 33 CFR 165.209. IF A COMMERCIAL VESSEL INSISTS ON ENTERING SAFET ZONE, OBTAIN NAME OF VESSEL AND PASS TO OPCEN FOR COTP TO CITE.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Vessel Safety Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Vessel Management Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Vessel Safety Branch	Lt. Sligh		215-778-5453	
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Management Group	Manpower: Supervisor	USCG Vessel Manageme	6 each	

Assignments

Coordinate entry / exit of commercial vessel traffic.

- Prioritize departing vessels for cleanup.
- Coordinate with Vessel Decon Group Supervisor for priority vessels for cleanup and departure.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Vessel Safety Branch
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Division/Group:**	Vessel Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Vessel Decon Group	LCDR Schee/Fettgetter			
Safety Officer	Bud Kline		985-960-0585	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Cleanup Assessment Te	Manpower: Responder	Vessel Cleanup Assessm	6 each	
Vessel Cleanup Task Force	Barge: Inland	Portable Barge Sets	1 each	
Vessel Cleanup Task Force	Manpower: Responder	Laborers	20 each	
Vessel Cleanup Task Force	Manpower: Supervisor	Supervisors	1 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan.
- Note any heavily impacted facilities and report information to ops.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

- See attached Vessel Decon Plan and waterways reporting instructions.

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 11/27/2004 20:35
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	11/28/2004 1100 Hr	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Federal Capt. Sarubbi			-	-	○ Yes ● No
State Bob VanFossen(NJ)/Kurt Reuther (DE			-	-	○ Yes ● No
Incident Commander Steve Kagelman			732-774-4703 - Mobile	-	○ Yes ● No
Safety Officer Ed Doyle			-	-	○ Yes ● No
NRDA Representative Frank Csulak			-	-	○ Yes ● No
Operations Section Chief Theo Camlin			425-501-5430 - Mobile	-	○ Yes ● No
Operations Section Deputy Nelson Fetgatter/J. Bethard			713-342-0460/ - Mobile	-	○ Yes ● No
EUL Ed Levine(NOAA)/B. Anderson(DE)			206-849-9941/ - Mobile	-	○ Yes ● No
IAP Specialist Geremy George			409-454-3999 - Mobile	-	○ Yes ● No
IAP Specialist Aaron Little			409-748-0122 - Mobile	-	○ Yes ● No
Planning Section Chief CMD Deul USCG			-	-	○ Yes ● No
Planning Section Deputy Dan Sobieski			714-342-6358 - Mobile	-	○ Yes ● No
Situation Unit Leader Dean Mathews/Herb Oertli			-	-	○ Yes ● No
Resource Unit Leader Anicia Hokanson/G. Conrad			-	-	○ Yes ● No
Documentation Unit Leader Chuck Anglin			-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	11/27/2004 20:35
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	11/28/2004 1100 Hr		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Shoreline Cleanup Assessment Speci Chris Pfiefer (Entrix)			-	-	○ Yes ● No
Communications Unit Leader Mike Brown			-	-	○ Yes ● No
Ground Support Unit Leader Thad King			-	-	○ Yes ● No
Logistics Section Chief Vince Velasquez/P. Bissaillon			713-569-1788/ - Mobile	-	○ Yes ● No
Supply Unit Leader Rod Medders			-	-	○ Yes ● No
Finance Section Chief Don Costanzo			713-503-6367 - Mobile	-	○ Yes ● No
Obrien's Rep James A. Samial			-	-	○ Yes ● No
Owner's Rep. QI John Hill			-	-	○ Yes ● No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group Continuous Guard, other while U/W
VHF-FM	81A	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene safety zone enforcement primary working frequency
Nextel/Cell		Tactical	Cell/Nextel	Safety Team Coordination	POC: Mr. Archie Gresham 302-293-8960
Nextel/Cell		Tactical	Cell/Nextel	PA Shore Recovery Coordination	POC: Mr Jim Godfrey 516-383-8005
Nextel/Cell		Tactical	Cell/Nextel	NJ Shore Recovery Coordination	POC: Mr Demir

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 11/27/2004 20:35
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	11/28/2004 1100 Hr	

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
Nextel/Cell		RAT/Tactical	Cell/Nextel	Rapid Assessment Team	POC: Jacqui Michelle
VHF-FM	81A	Command/Control	157.175 MHZ	MSO/Group Philly	Grd w/ patcoms, aircraft in AOR
Cell/Nextel		SCAT/Tactical	Cell/Nextel	Wildlife Recovery	POC: Mr. Clay Stern 609-214-7895

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ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 11/27/2004 20:59
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	Medical Plan - 11/27/04

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	No	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856-342-2345	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
For Dive accidents: contact 911. Member will be transferred via Fire Rescue or EMS to University of Pennsylvania Hospital.
Only Hospital with a Hype baric Chamber in the local area.

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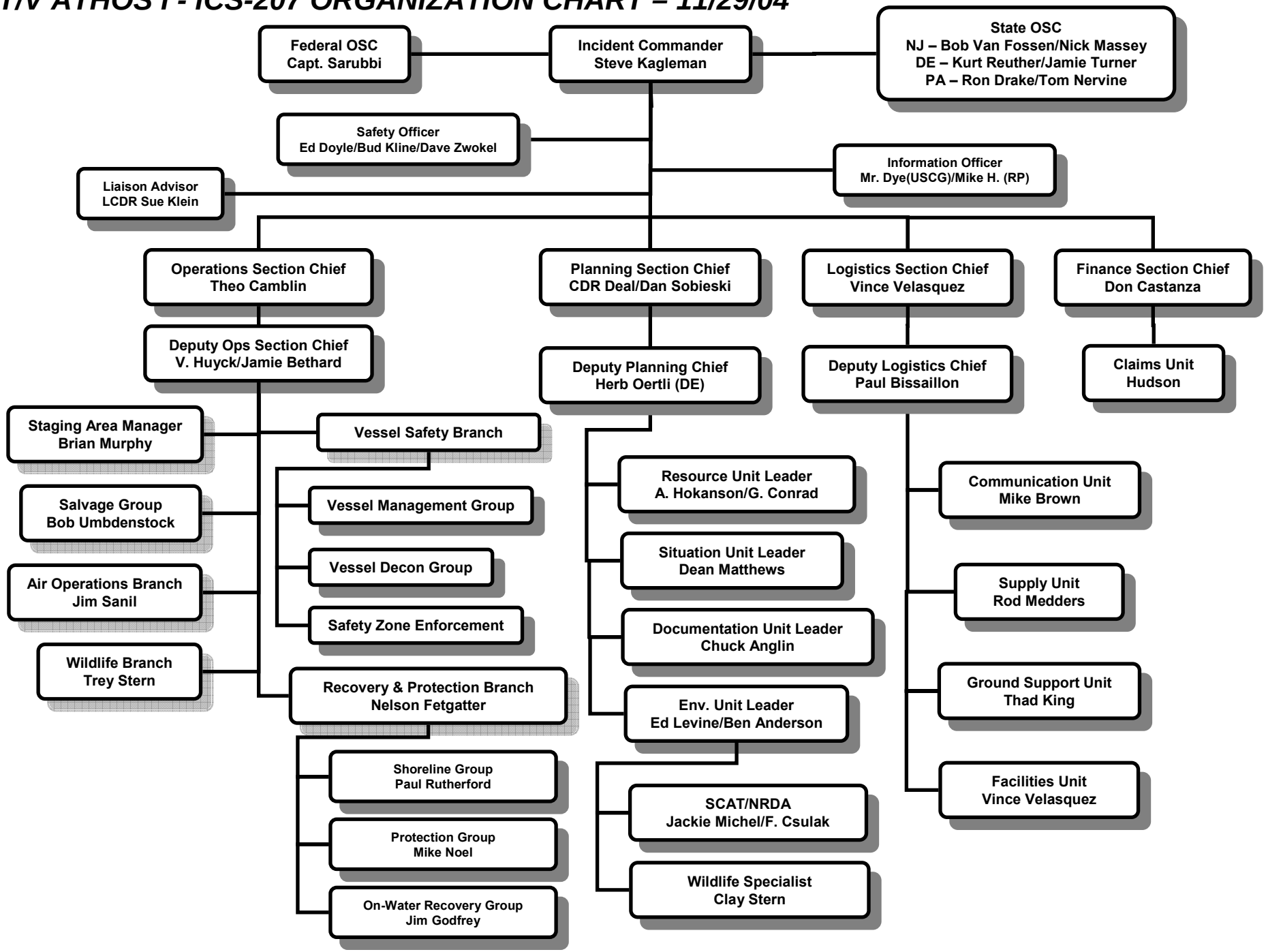
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 11/29/04



ICS 220 - Air Operations

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	11/28/2004 08:26
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	11/28/2004 09:30 hrs		

Personnel and Communications

Title/Position	Name	Air/Air Frequency	Air/Ground Frequency	Phone
Air Ops Branch Director	JIM SANAIL			856-266-3810

Planned Flight Information

Type Of Aircraft	Operating Base	Aircraft Company	Passenger Capacity	Purpose	Scheduled Flights
Bell 206 L	Pier 36	Horizon	6	Surveillance N98KR	As Needed
Bell Jet Ranger	Pier 36	Horizon	4	N4015G	10:30

Notes (Special Instructions, Safety Notes, Hazards, Priorities)

Refrain from air ops in the following areas: (Known Eagle Nesting Areas)
Petty Island
Mantua Creek
Monds Island

Operational Requirements:
1/4 mi. radius
>= 500' AGL

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ICS 223 - Health and Safety Message

Incident:	MV Athos I	**Prepared By:**	Section, Safety	**at** 11/29/2004 18:00
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	November 29, 2004	

Major Hazards and Risks

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure, slips, trips and falls; and boat operations.

Narrative

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure, slips, trips and falls; and boat operations.

General Safety Concerns:

ADHERANCE TO ALL PPE REQUIREMENTS

Level D (no known hazards) For Exclusion/Safety Zone Operations involving oil removal operations

- Tyvek-type and/or rain gear
- Hard hat when overhead hazards exist
- Safety glasses/ goggles/ face shield
- Work shoes
- Disposable boots
- Chemical resistant gloves
- Hearing protection

Special Notes -

In the event clean up activities involve entry to industrial/ commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this plan.

ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AT 215-271-4911 AND SAFETY IMMEDIATELY AND AN INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE

In the event of a non-life threatening emergency the patient should, if possible, be transported out of the hot zone and decontaminated as much as possible. In life threatening emergencies, where a patient cannot be moved, ambulance personnel will respond into the hot zone properly attired. A second ambulance will be dispatched to transport.

ALL PERSONNEL VISITING THE EXCLUSION ZONE MUST BE WEARING THE APPROPRIATE PPE - NO SNEAKERS ALLOWED.

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 11/28/2004 16:00
Period:	Period 3 (11/29/2004 06:00 - 11/30/2004 06:00)	**Version Name:**	11/29/04 Meeting Schedule

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 11/29/2004 05:30	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Situation Display
Unified Command Objectives Briefing 11/29/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	Unified Command members; Command and General Staff, as appropriate	UC
Command & General Staff Meeting 11/29/2004 10:00	Coordinate Command Staff functions, responsiblities and objectives.	UC AND GENERAL STAFF	Ward Room
Tele Conference Lobiondo 11/29/2004 14:00			
Tactics Meeting 11/29/2004 14:30	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Ward Room
Press Briefing 11/29/2004 15:00			
Planning Meeting 11/29/2004 17:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Ward Room

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IAP Cover Sheet

Incident Name:	Operational Period to be covered by IAP:
MV Athos I	Period 4 (11/30/2004 06:00 to 12/1/2004 06:00)

Approved by:

FOSC - Captain Sarubbi : _____

SOSC (DE)-Jamie Betha : _____

SOSC (PA)-Tom Nerville : _____

SOSC (NJ)-gary Pearso : _____

RPIC-Steve Kegleman : _____

Incident Action Plan

Prepared By:	Prepared Date/Time:	
IAP Cover Sheet	Printed: 11/29/2004 17:52	© 1997-2004 dbSoft, Inc.

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. ICS 202 - General Response Objectives
4. ICS 204 - Assignment List
5. ICS 205 - Communications Plan
6. ICS 205a - ICP List
7. ICS 206 - Medical Plan
8. ICS 207 - Organization Chart
9. ICS 220 - Air Operations
10. ICS 223 - Health and Safety Message
11. Clean-up Recommendations
12. ICS 230 - Daily Meeting Schedule

MV Athos I, Delaware River
1500 EST, Monday November 29, 2004

NOTE: This is a site specific forecast from the National Weather Service generated specifically for this incident region.

Sunset (11/29): 1737 EST

Sunrise (11/30): 0803
Sunset (11/30): 1737

36 Hour Forecast
Winds:
Tonight, light and variable winds are predicted. Tomorrow, light and variable winds are forecast, becoming SE at 10 knots in the evening.

Waves:
The waves are expected to be 2 feet or less.

Precipitation:
Tonight through tomorrow afternoon, dry weather is forecast. Evening showers are predicted for tomorrow.

Ceiling/Visibility:
Tonight, partly cloudy skies are expected, becoming mostly cloudy by tomorrow.

Temperatures:
Tonight, the low is expected to be in the low to mid 30s. Tomorrow, the high is forecast to be near 50 F.

Extended Outlook

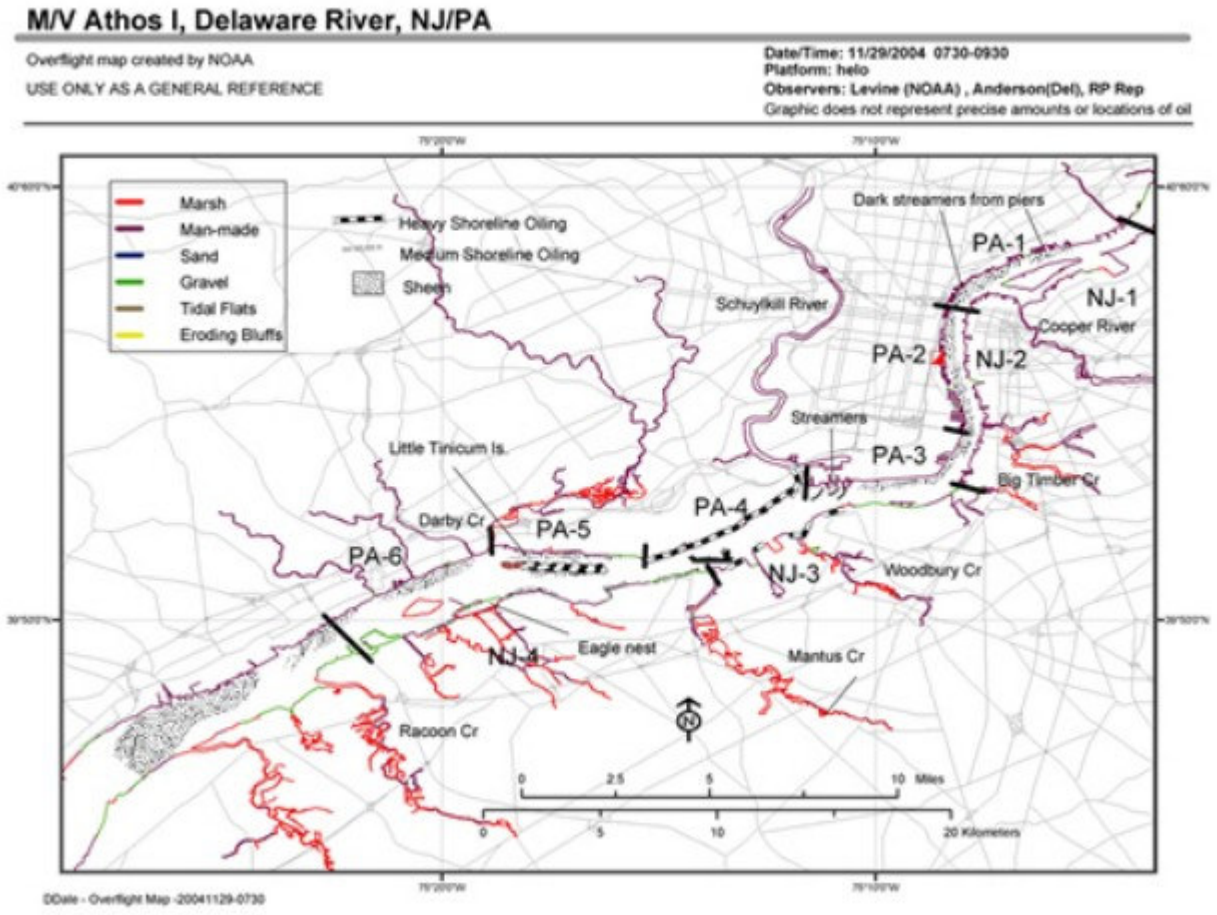
Wednesday, S winds at 10-15 knots are predicted, becoming SW at 15-20 knots by the afternoon and then W-NW at 10-15 knots overnight. Mostly cloudy skies and rain are forecast.

Thursday, NW winds 10-15 knots are forecast, becoming W-SW at 10-15 knots overnight. Partly cloudy skies and dry weather are predicted.

Friday, W winds at 10 knots or less are expected. Partly cloudy skies and dry weather is forecast.

Incident:	MV Athos I	**Prepared By:**	**at** 11/29/2004 19:00
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Version Name:**	NOAA Overview Map

NOAA Overview Map



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ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 11/29/2004 11:43
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct shoreline cleanup and assessment operations.		
Stabilize vessel & take corrective action through implementation of salvage plan.		
Monitor exiting sensitive site booming strategies & implement additional strategies as appropriate.		
Collect and recover free-floating oil.		
Collect and recover injured wildlife.		
Implement decon plan (including decon of commercial and recreational vessels, personnel and equipment).		
Continue to enforce safety zone.		
Continue implementation of vessel transit protocols to facilitate vessel movement in effected port areas.		
Continue to keep stake holders and public informed.		
Conduct operations I.A.W. safe work practices.		

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Column Monitoring Team
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	SCAT/NRDA
Prepared By Signature:		**Task Force:**	Shoreline Cleanup Assessment Team
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	Dan Sobieski/Tim Deal		267-549-4849	
SCATTeam Leader	JACKIE MICHELLE		803-513-5650	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Shoreline Cleanup Assessment	Manpower: Responder	SCAT Teams	6 each	
Shoreline Cleanup Assessment	Vehicle	Car	3 each	
Shoreline Cleanup Assessment	Vessel	SCAT vessels	3 each	

Assignments

Direct all SCAT Teams in assessing and compiling shoreline cleanup and areas requiring cleanup resources.
Communicate priorities to operations for deployment of response resources.
Report information to the SCAT Team Leader

Location of Work

Throughout Delaware

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Salvage Group
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Salvage Group	Titan - Bob Umbdenstock/Ja		908-230-8075	
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Safety Officer	Ed Doyle		302-993-9081	

Assignments

Complete operations in accordance with approved salvage plan (attached)

Notify Situation Unit Leader (267) 765-3440 of "Start" and "Stop" points and progress of lighting morning, noon, and afternoon before 1530

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Wildlife Recovery Group
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Division/Group Supervisor	Mr. Clay Stern USFWS		609-214-7895	
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Environmental Unit Leader	ED LEVINE NOAA		206-849-9941	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Wildlife Recovery Group	Manpower: Responder	Laborers	20 each	
Wildlife Recovery Group	Manpower: Supervisor	Supervisors	5 each	
Wildlife Recovery Group	Vessel	Greater than 21'	1 each	
Wildlife Recovery Group	Vessel	Less than 21'	3 each	

Assignments

Identify, recover, and rehabilitate any impacted wildlife

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT (267) 765-3440

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

REVIEW SAFETY MESG IN THE IAP

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Management Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	Vessel Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Waterways Management Branch	LT Sligh			
Vessel Decon Group				

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Decon Group	Barge: Inland	Portable Barge Set	5 each	
Vessel Decon Group	Manpower: Responder	9 person decon taskforce	5 each	
Vessel Decon Group	Manpower: Responder	2 person assessment tea	2 each	
Vessel Decon Group	Manpower: Supervisor	Supervisors	2 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan.
- Note any heavily impacted facilities and report information to ops.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

- See attached Vessel Decon Plan and waterways reporting instructions.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Management Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	Vessel Decon Task Force
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Waterways Management Branch	LT Sligh			
Vessel Decon Group	LCDR T. Schee		215-778-4076	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Decon Task Force	Barge: Inland	Portable Barge Set	5 each	
Vessel Decon Task Force	Boom	Bomm	200 feet	
Vessel Decon Task Force	Manpower: Responder	9 person decon taskforce	5 each	
Vessel Decon Task Force	Manpower: Responder	2 person assessment tea	2 each	
Vessel Decon Task Force	Manpower: Supervisor	Supervisors	2 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan.
- Note any heavily impacted facilities and report information to ops.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

- See attached Vessel Decon Plan and waterways reporting instructions.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Column Monitoring Team
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	Dan Sobieski/Tim Deal		267-549-4849	
WCM Team Leader	Allen Humphreys		To Be Assigned	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Shoreline Cleanup Assessment	Manpower: Responder	SCAT Teams	6 each	
Shoreline Cleanup Assessment	Vehicle	Car	3 each	
Shoreline Cleanup Assessment	Vessel	SCAT vessels	3 each	
Water Column Monitoring Tean	Equipment: Small	Flourometer	2 each	

Assignments

Deploy to areas as needed under direction of Environmentl Unit Leader to conduct monitoring of water column to determine hydrocarbon dispersion.

Special Instructions for Division / Group

Wear PPE to avoid oil skin contact. Wear goggles to avoid oil splash into eyes

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Management Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	Safety Zone Enforcement Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Branch Director	LT Sligh		(215) 778-3117	
Division/Group Supervisor	LT HONEYCUTT USCG		(215) 778-3117	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Safety Zone Enforcement Grou	Manpower: Responder	Laborers	10 each	
Safety Zone Enforcement Grou	Manpower: Supervisor	Supervisor	1 each	
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	21 feet
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	21 feet
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	65 feet

Assignments

Safety zone enforcement. Enforce COTP Safety Zone

Special Instructions for Division / Group

CGC CLEAT LIASON WITH CGC CAPSTAN AND WORK OUR RELIEF SKD.
CG STATION PHILADELPHIA - FATIGUE STANDARDS WAIVED BY GRU CDR; AUTH TO MAN 12 HR SHIFTS. MAINTAIN 24X7 PRESENCE.
DO NOT ALLOW ANY VESSELS IN SAFETY ZONE EXCEPT FOR VESSELS ASSOCIATED WITH SPILL-MSDO CAN ASSIST IN DETERMINING LEGITIMATE VESSELS.
IF A RECREATIONAL VESSEL INSISTS ON ENTERING SAFETY ZONE, STOP/BOARD/CITE CFR 33 CFR 165.209. IF A COMMERCIAL VESSEL INSISTS ON ENTERING SAFET ZONE, OBTAIN NAME OF VESSEL AND PASS TO OPCEN FOR COTP TO CITE.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Oil Recovery Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
NJ-3 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Barge: Inland	Portable Barge Sets	2 each	
NJ-3 Division	Equipment: Small	Vacuum Transfer Unit	2 each	
NJ-3 Division	Manpower: Responder	Laborers	45 each	
NJ-3 Division	Manpower: Supervisor	Supervisors	3 each	
NJ-3 Division	Manpower: Supervisor	NSF Supervisors	2 each	
NJ-3 Division	Pressure Washers / Wash	Hot Wash Sprayers	4 each	
NJ-3 Division	Skimmer	Skimmer Units	2 each	
NJ-3 Division	Vessel	Less than 21'	6 each	12 feet
NJ-3 Division	Vessel	Greater than 21'	6 each	21 feet

Assignments

1. Physically remove free surface oil and contaminated debris.
2. Employ Vacuum Transfer Unit at low tide
3. National Strike Force to be on hand to assess effectiveness
4. Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"

Location of Work

Eagle Point

Special Environmental Considerations

Cut no grasses without State approval. Report oiled wildlife to Situation Unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Oil Recovery Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Oil Recovery Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-4 Division	Boom	Boom	6100 feet	
NJ-4 Division	Manpower: Responder	Labor Tech	50 each	
NJ-4 Division	Manpower: Supervisor	Fish and Wildlife Rep	1 each	
NJ-4 Division	Manpower: Supervisor	Supervisor	1 each	
NJ-4 Division	Manpower: Supervisor	NSF Reps	2 each	
NJ-4 Division	Pressure Washers / Wash	Pumps	2 each	
NJ-4 Division	Skimmer	Skimmer Unit	2 each	
NJ-4 Division	Vacuum Transfer Unit	VTU	2 each	
NJ-4 Division	Vessel	Greater than 21'	1 each	
NJ-4 Division	Vessel	Less than 21'	2 each	

Assignments

-Manually recover oil and oil coated debris.
-Employ and assess effectiveness of various techniques:
  -Low pressure flushing
  -Squigees
  -Snares
  -Vacuum Unit
-Line area with hard boom and snare during flushing.

Location of Work

Mantua Creek and Commodore Perry Bridge.

Special Environmental Considerations

LONG, NARROW CREEK WITH SPOTTY OIL THROUGHOUT SAUSAGE BOOM REQUIRED. NO GRASSES SHOULD BE CUT WITHOUT STATE APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Oil Recovery Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Oil Recovery Branch Director	Nelson Fettgatter		713-569-9304	
Division/Group Supervisor	Archie Cook		901-262-4996	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Debris Group	Manpower: Responder	Laborers	55 each	

Assignments

Manually recover oil snd oil covered debris.

Special Environmental Considerations

CUT NO GRASSES WITHOUT STATE APPROVAL. REPORT OILED WILDLIFE TO SITUATION UNIT

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Recovery & Protection Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Branch Director	Nelson Fettgatter		713-569-9304	
Division/Group Supervisor	Steve Smith		504-382-8351	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-7 Division	Barge: Inland	Deck Barge	1 each	
PA-7 Division	Manpower: Responder	Laborers	100 each	
PA-7 Division	Manpower: Supervisor	NSF Supervisor	2 each	
PA-7 Division	Manpower: Supervisor	Supervisor	5 each	
PA-7 Division	Pressure Washers / Wash	Wash pump/hose assem	10 each	
PA-7 Division	Vessel	NSF Boat	1 each	
PA-7 Division	Vessel	Push Boat	1 each	

Assignments

-Manually recover oil and oil covered debris
-Employ and assess effectiveness of various techniques:
  -Squiggies
  -Snares
  -Low pressure flushing
  -Vacuum transfer

Special Instructions for Division / Group

Review site safety plan. Be aware of slips, trips and falls. Always wear proper PPE. Follow decon procedures in Site Safety Plan.

Communications

Name / Function	Radio: Freq. / System / Channel	Phone	Pager
	Nextel		

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Management Branch
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Division/Group:**	Vessel Decon Task Force
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Waterways Management Branch	LT Sligh		215-778-4534	
Vessel Decon Group	LCDR T. Schee		215-778-4076	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Decon Task Force	Barge: Inland	Portable Barge Set	5 each	
Vessel Decon Task Force	Boom	Boom	200 feet	
Vessel Decon Task Force	Manpower: Responder	9 person decon taskforce	5 each	
Vessel Decon Task Force	Manpower: Responder	2 person assessment tea	2 each	
Vessel Decon Task Force	Manpower: Supervisor	Supervisors	2 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan.
- Note any heavily impacted facilities and report information to ops.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

- See attached Vessel Decon Plan and waterways reporting instructions.

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1. Incident Name MV ATHOS I	2. Operational Period (Date / Time) From: 11/30/04 0600 To: 12/01/04 0600	INCIDENT RADIO COMMUNICATIONS PLAN ICS 205-OS

3. BASIC RADIO CHANNEL USE

SYSTEM / CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
VHF-FM	16	HAIL/DISTRESS	156.8 MHZ	ALL	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Guard frequency for patcoms, aircraft and ground units within AOR
Cell / Nextel		Tactical	Cell / Nextel	Safety Team Coordination net	POC: Mr. Archie Gresham 302-293-8960
Cell / Nextel		Tactical	Cell / Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center
Cell / Nextel		Command	Cell / Nextel	Wildlife Recovery Command net	POC: Mr. Clay Stern 609-214-7895
Cell / Nextel		Tactical	Cell / Nextel	PA shore recovery/cleanup NJ Shore recovery/cleanup	PA POC: Mr. Jim Godfrey 516-383-8005 NJ POC: Mr. Demir Aksehieli 651-236-2509
Cell / Nextel		Tactical	Cell / Nextel	Shoreline cleanup assessment	POC: Ms. Jacqui Michelle 803-513-5650

4. Prepared by: (Communications Unit)	Date / Time
LT Michael Brown, USCG	11/29/04 18:30

11/29/2004 5:12 PM

Phone Numbers for Holiday Inn CP

Command Table	**267-765-3433**
	267-765-3445
Operations Table	**267-765-3434**
	267-765-3439
	267-765-3449
	267-765-3450
Planning Table	**267-765-3440**
	267-765-3437
	267-765-3443
	267-765-3444
Logistics Table	**267-765-3432**
	267-765-3453
	267-765-3454
Finance/Admin Table	**267-765-3435**
	267-765-3451
	267-765-3452
	267-765-3455
Fax – Incoming	**215-923-4476**
Fax – Outgoing	**276-765-3456**
Command Staff Room	**267-765-3431**
PIO Room	**267-765-3436**
	267-765-3438
	267-765-3441
	267-765-3442
Resources	**267-765-3446**
	267-765-3447
	267-765-3448

11/29/2004 5:12 PM

Phone Numbers for Holiday Inn CP

Command Table	**267-765-3433**
	267-765-3445
Operations Table	**267-765-3434**
	267-765-3439
	267-765-3449
	267-765-3450
Planning Table	**267-765-3440**
	267-765-3437
	267-765-3443
	267-765-3444
Logistics Table	**267-765-3432**
	267-765-3453
	267-765-3454
Finance/Admin Table	**267-765-3435**
	267-765-3451
	267-765-3452
	267-765-3455
Fax – Incoming	**215-923-4476**
Fax – Outgoing	**276-765-3456**
Command Staff Room	**267-765-3431**
PIO Room	**267-765-3436**
	267-765-3438
	267-765-3441
	267-765-3442
Resources	**267-765-3446**
	267-765-3447
	267-765-3448

ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 11/27/2004 20:59
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Version Name:**	Medical Plan - 11/27/04

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospita	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospita	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffe	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	No	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Sta	Yes	No	(856-342-2345	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
For Dive accidents: contact 911. Member will be transferred via Fire Rescue or EMS to University of Pennsylvania Hospital. Only Hospital with a Hype baric Chamber in the local area.

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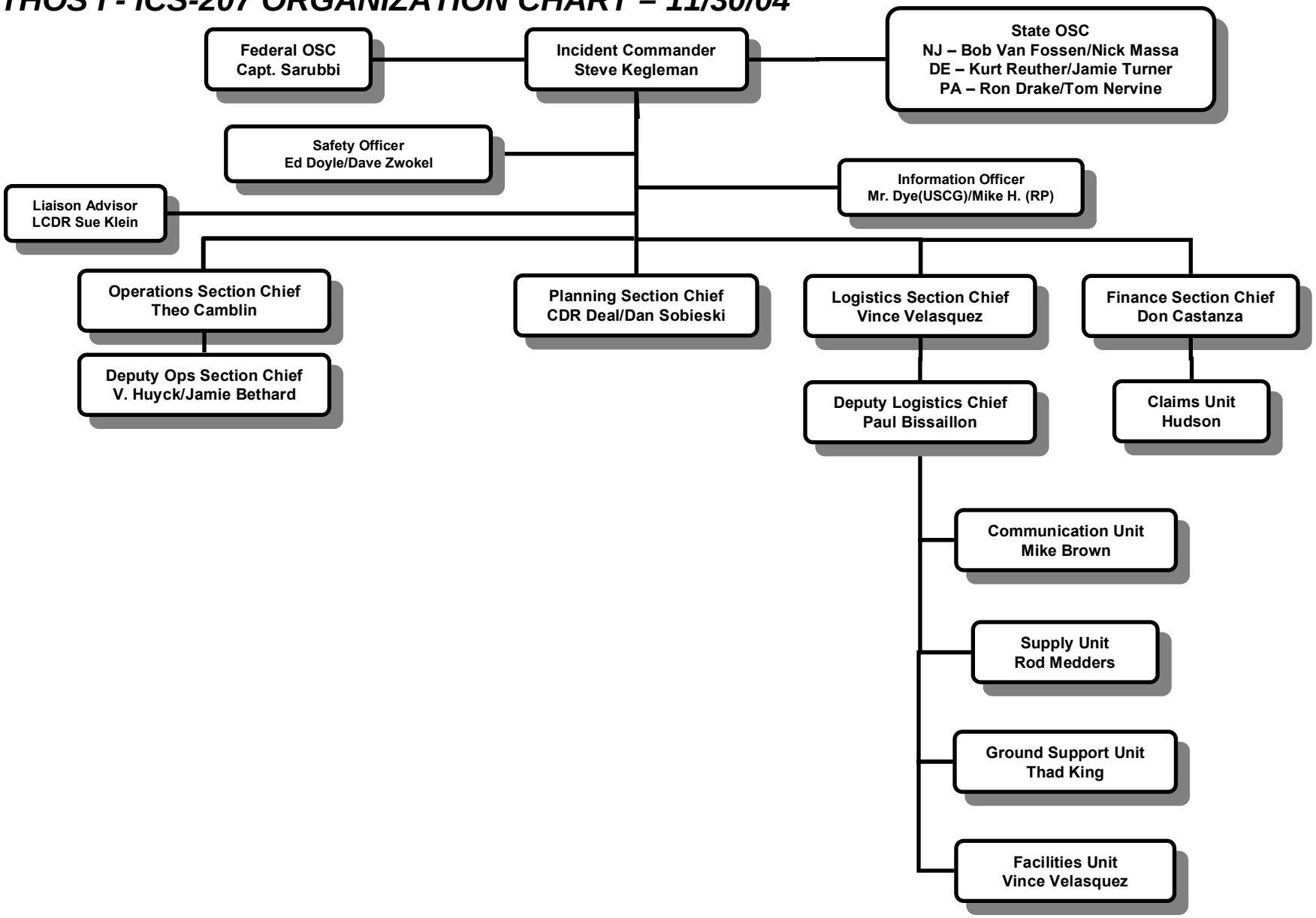
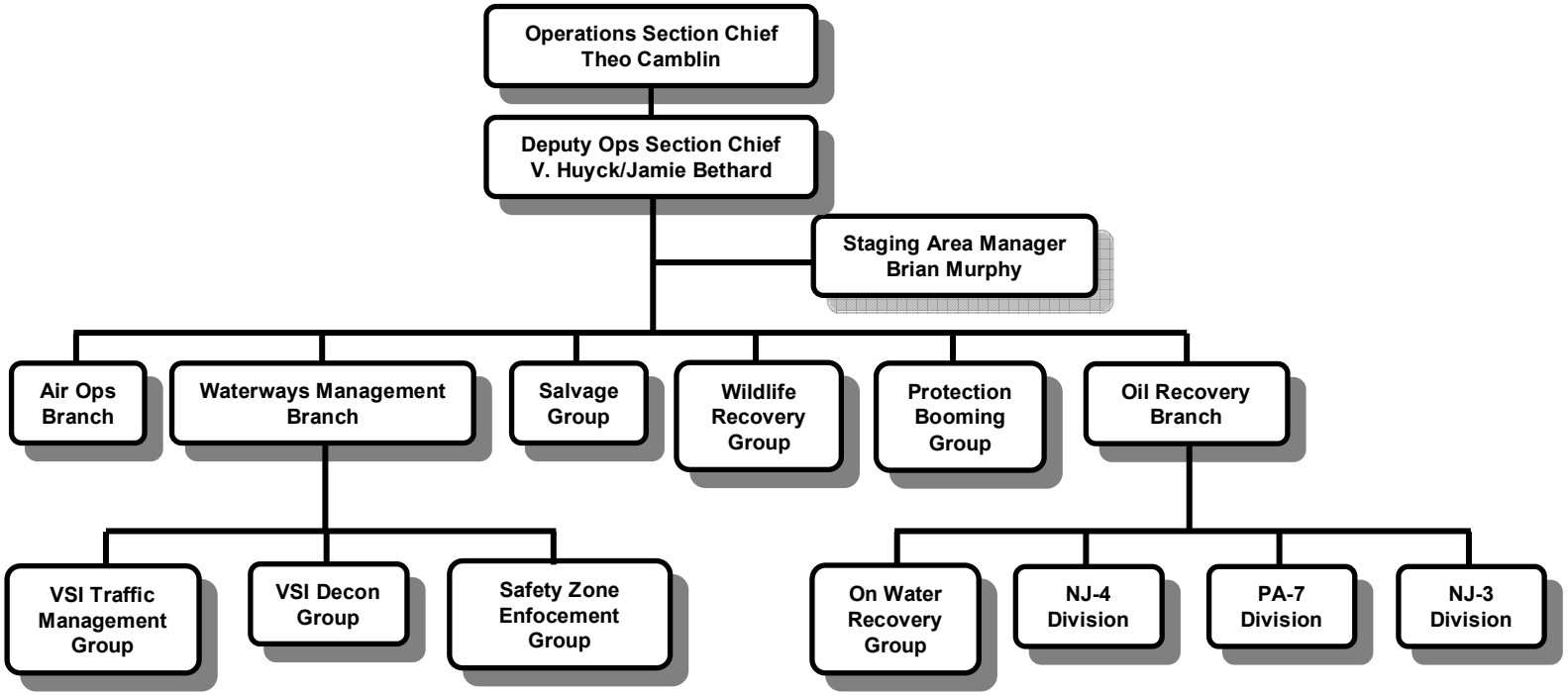
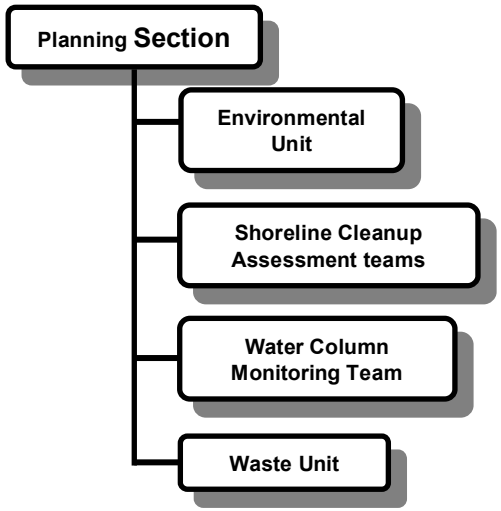
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 11/30/04



T/V ATHOS I - ICS-207 OPERATIONS ORGANIZATION CHART – 11/30/04



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 11/30/04



ICS 220 - Air Operations

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	11/29/2004 18:00
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Version Name:**	11/28/2004 09:30 hrs		

Personnel and Communications

Title/Position	Name	Air/Air Frequency	Air/Ground Frequency	Phone
Air Ops Branch Director	JIM SANIAL			856-266-3810

Planned Flight Information

Type Of Aircraft	Operating Base	Aircraft Company	Passenger Capacity	Purpose	Scheduled Flights
Bell 206 L	Pier 36	Horizon	6	Surveillance N98KR	As Needed
Bell Jet Ranger	Pier 36	Horizon	4	N4015G	10:30

Notes (Special Instructions, Safety Notes, Hazards, Priorities)

Refrain from air ops in the following areas: (Known Eagle Nesting Areas)
Petty Island
Mantua Creek
Monds Island

Operational Requirements:
1/4 mi. radius
>= 500' AGL

If injured/contaminated wildlife is sighted, contact the Situation Unit at 267-765-3440/3437/3443/3444

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Incident Name:	MV ATHOS I	Location:	Philadelphia, PA

Daily Health and Safety Message
November 30, 2004

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; and boat operations

General Safety Concerns:

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decon-tamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes –

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **In the event of a <u>non-life threatening</u> emergency the patient should, if possible, be transported out of the hot zone and decontaminated as much as possible. In life threatening emergencies, where a patient cannot be moved, medical personnel will respond into the hot zone properly attired. A second ambulance will be dispatched to transport.**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**

Safety Contact (302) 293-8958 Ed Doyle x8960 Archie Gresham

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Planning Section	**at** 11/28/2004 16:00
Period:	Period 4 (11/30/2004 06:00 - 12/1/2004 06:00)	**Version Name:**	11/30/04 Meeting Schedule

Meeting Name & Date/Time	Purpose	Attendees	Location
Sit Rep 11/30/2004 00:00			
Operations Briefing 11/30/2004 05:30	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Holiday Inn
Unified Command Objectives Meeting 11/30/2004 08:00	Review/Identify and prioritize objectives for the next operational period. Situation Brief.	Unified Command members; Command and General Staff, as appropriate	Penn Room
RRT 11/30/2004 09:00	Informational brief	Atlantic Strike Team	Holiday Inn
Command & General Staff Meeting 11/30/2004 09:00	Coordinate Command Staff functions, responsiblities and objectives.	UC AND GENERAL STAFF	Penn Room
ICS 209 11/30/2004 10:00	Resource Summary	Planning Section	Cmd Post
Sit Rep 11/30/2004 12:00			
Tactics Meeting 11/30/2004 12:00	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Penn Room
ICS 209 11/30/2004 14:00	Resource Summary	Planning Section	Cmd Post
Press Briefing 11/30/2004 15:00			
Planning Meeting 11/30/2004 16:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Penn Room
IAP Approval 11/30/2004 18:30			

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IAP Cover Sheet

Incident Name:	Operational Period to be covered by IAP:
MV Athos I	Period 5 (12/1/2004 06:00 to 12/2/2004 06:00)

Approved by:

FOSC - Captain Sarubbi : _____

SOSC (DE)-Jamie Betha : _____

SOSC (PA)-Tom Nervine : _____

SOSC (NJ)-gary Pearso : _____

RPIC-Steve Kegleman : _____

Incident Action Plan

Prepared By:	Prepared Date/Time:	
IAP Cover Sheet	Printed: 11/30/2004 07:32	© 1997-2004 dbSoft, Inc.

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 11/30/2004 11:43
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with site safety plan.		
Continue to enforce safety zone.		
Continue aggressive shoreline cleanup operation.		
Continue to assess the location and extent of oil impact.		
Continue execution of salvage plan.		
Monitor existing sensitive site booming strategies & implement additional strategies as appropriate.		
Collect and recover free-floating oil.		
Collect, recover, and rehabilitate injured wildlife.		
Continue implementation of vessel transit protocols to facilitate vessel movement in affected port areas.		
Implement decon plan (including decon of commercial/government vessels		
Continue to keep stake holders and public informed.		
A strict adherence to the ICS		

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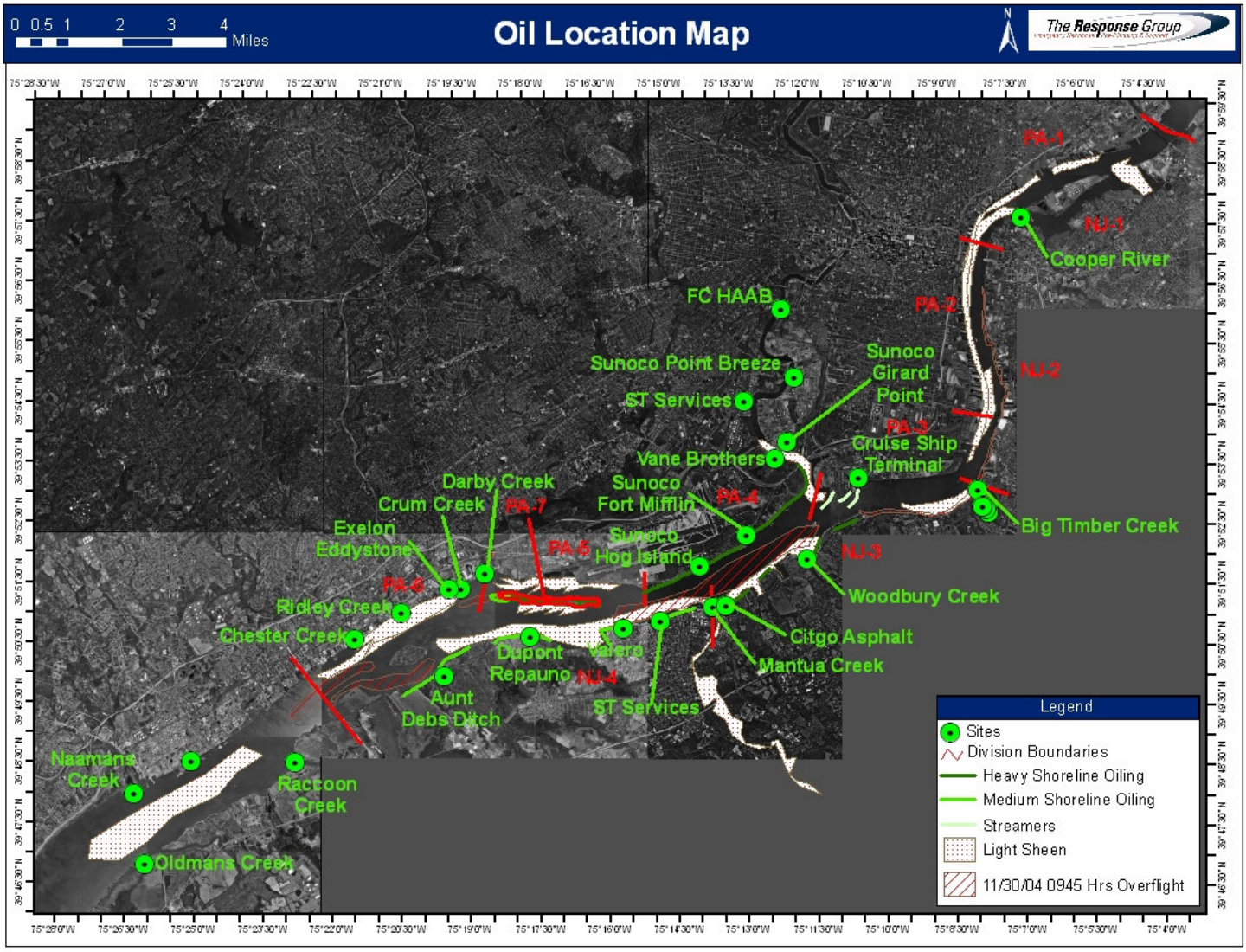
Oil Location Map

Incident:	MV Athos I	**Prepared By:**	**at** 11/30/2004 14:13
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Version Name:**	Oil Location Map 11/30/04

Oil Location Map



Weather Report

MV Athos I, Delaware River
0500 EST, Tuesday November 30, 2004

NOTE: This is a site specific forecast from the National Weather Service generated specifically for this incident region.

Sunrise (11/30): 0803 EST
Sunset (11/30): 1737

Sunrise (12/1): 0804
Sunset (12/1): 1737

36 Hour Forecast
Winds:
Today, the winds are forecast to be from the NE at 3-5 knots, becoming SE at 3-5 knots by the afternoon. Tonight, SE winds at 5-10 knots are predicted, becoming S at 15 knots overnight. Tomorrow, SW winds at 20-25 knots are forecast, with gusts to 35 knots. Tomorrow night, the winds are expected to be from the W at 20 knots.

Waves:
The waves are expected to be 2 feet or less.

Precipitation:
Today, dry weather is forecast, but with rain likely overnight and into tomorrow morning. Afternoon showers are predicted for tomorrow. No precipitation is expected for tomorrow night.

Ceiling/Visibility:
Today, mostly cloudy skies are expected. Tomorrow, overcast skies are forecast.

Temperatures:
Today, the temperatures are expected to range from highs in the lower 50s to overnight lows in the mid 40s. Tomorrow, the high is predicted to be in the mid to upper 50s and the low is expected to be in the mid 40s.

Extended Outlook

Thursday, W winds 10-15 knots are forecast. Partly cloudy skies and dry weather are predicted.
Friday, SW winds at 10-15 knots are expected. Partly cloudy skies and dry weather is forecast.
Saturday, W winds at 10 knots are forecast. Partly cloudy skies and dry weather is forecast.

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Branch Director	Demir Aksehirli		631-236-2509	
Protection Group Supervisor	DBRC			
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
P59 - Oldmans Creek - NJ 76.9	Boom	Boom	3000 feet	
P59 - Oldmans Creek - NJ 76.9	Vessel	Small Boat	1 each	
P59 - Oldmans Creek - NJ 76.9	Vessel	Work Boat	2 each	
P60 - Raccoon Creek - NJ 80.6	Boom	Boom	2850 feet	
P60 - Raccoon Creek - NJ 80.6	Boom	Shore Seal Boom	200 feet	
P60 - Raccoon Creek - NJ 80.6	Vessel	Work Boat	2 each	
P60 - Raccoon Creek - NJ 80.6	Vessel	Small Boat	1 each	
P61 - Aunt Debs Ditch - NJ 85.3	Boom	Boom	400 feet	
P61 - Aunt Debs Ditch - NJ 85.3	Vessel	Small Boat	1 each	
P62 - Mantua Creek - NJ 89.66	Vessel	Work Boat	1 each	
P62 - Mantua Creek - NJ 89.66	Vessel	Small Boat	1 each	
P66 - Darby Creek - PA 85.28	Boom	Boom	2200 feet	
P66 - Darby Creek - PA 85.28	Vessel	Small Boat	1 each	
P66 - Darby Creek - PA 85.28	Vessel	Work Boat	2 each	
P67 - Crum Creek - PA 84.9	Boom	Boom	500 feet	
P67 - Crum Creek - PA 84.9	Vessel	Work Boat	1 each	
P68 - Ridley Creek - PA 83.80	Boom	Boom	800 feet	
P68 - Ridley Creek - PA 83.80	Vessel	Work Boat	1 each	
P69 - Chester Creek - PA 82.93	Boom	Boom	800 feet	
P69 - Chester Creek - PA 82.93	Vessel	Work Boat	1 each	
P70 - Naamans Creek - DE 77.	Boom	Boom	1000 feet	
P70 - Naamans Creek - DE 77.	Vessel	Work Boat	1 each	
P70 - Naamans Creek - DE 77.	Vessel	Small Boat	1 each	
Protection Group	Boom	Peach House Ditch	1500 feet	
Protection Group	Boom	Salem River (Collection)	500 feet	
Protection Group	Boom	Ray's Ditch	1500 feet	
Protection Group	Boom	Tom's Creek (Protection)	1400 feet	
Protection Group	Boom	Containment Boom	8050 feet	18 inch(es)
Protection Group	Boom	Eisenboro Point (Collecti	1500 feet	
Protection Group	Boom	Lower Break	1500 feet	

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Protection Group	Boom	Dragon Run, DE City	1500 feet	
Protection Group	Boom	1000 - Acre Marsh - Multi	4500 feet	
Protection Group	Boom	Silver Run	1500 feet	
Protection Group	Boom	Upper Break	1500 feet	
Protection Group	Boom	Appoquinimink River	2500 feet	
Protection Group	Boom	Gambles Gut (Protection)	400 feet	
Protection Group	Boom	Shell Pot Creek (Protecti	500 feet	
Protection Group	Boom	Oakweed Beach (Collecti	1500 feet	
Protection Group	Boom	Kelly Point (Collection)	1500 feet	
Protection Group	Boom	Protection Boom	11900 feet	7 inch(es)
Protection Group	Boom	Cedar Swamp Creek at C	2000 feet	
Protection Group	Boom	C & D Canal and Brach C	3500 feet	
Protection Group	Boom	Red Lion Creek (Protecti	500 feet	
Protection Group	Boom	Blackbird Creek	2500 feet	
Protection Group	Boom	Augustine Creek	1500 feet	
Protection Group	Boom	New Castle (Protection)	3500 feet	
Protection Group	Boom	Hahn's Cave (Collection)	1500 feet	
Protection Group	Manpower: Responder	Laborers	18 each	
Protection Group	Manpower: Supervisor	Supervisors	2 each	
Protection Group	Vessel	Less than 21'	10 each	12 feet

Assignments

Identify & protect sensitive sites as requested. Monitor & maintain boom at GRP sites already deployed. Assure it's effectiveness.

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS.
ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Salvage Group
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Salvage Group	Titan - Bob Umbdenstock/Ja		908-230-8075	
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salvage Group	Boom	Boom to surround vessel		
Salvage Group	Manpower: Responder	Salvor	1 each	
Salvage Group	Manpower: Responder	Monitors	4 each	
Salvage Group	Manpower: Responder	Pumping Team Damage	2 each	
Salvage Group	Manpower: Supervisor	Supervisors	2 each	
Salvage Group	Skimmer	Skimming Unit	1 each	

Assignments

Lighter vessel , carry out Salvage Plan.

Special Instructions for Division / Group

Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Miller Paulsboro Staging
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Staging Area Manager	John Foster		985-788-8649	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Miller Paulsboro Staging	Vacuum Truck	Water Taxi (Boat) 24' to 3	1 each	
Miller Paulsboro Staging	Vessel	Air Mover Super Sucker	1 each	

Assignments

Stage and deploy additional skimmers, barges, steam units, super sucker, water taxi, and wash pumps. Launch Site. Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Location of Work

Paulsboro, NJ

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Protection Group
Prepared By Signature:		**Task Force:**	Monitoring Team
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	V. Huyck		215-778-5453	
Operations Section Deputy	Pat McNeilly		609-351-8516	
Division/Group Supervisor	TBN			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Monitoring Team	Manpower: Responder	NSF Monitor	2 each	
Monitoring Team	Manpower: Responder	DEDNR Monitor	1 each	

Assignments

Evaluate Christin/Brandywine Creek for oil intrusion up to Seventh Street. Determine response methods needed for potection and oil removal. Report findings to Ops - McNeilley ASAP.

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.
Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Citgo Paulsboro Staging
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Staging Area Manager	Brian Murphy		713-503-6389	
Safety Officer	Ed Doyle		302-993-9081	

Assignments

Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Air Ops Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Air Ops Branch Director	Jim Sanial		856-266-3810	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Air Ops Branch	Aircraft: Helo	Aircraft: Helo	1 each	
Air Ops Branch	Manpower: Supervisor	Supervisors	2 each	

Assignments

Surveillance - Overflights and coordinating vessel movement

- First light overflight, estimated departure time: 0730 from heloport
- Ops overflight, estimated departure time: 0745 - 0800 from heloport
- Overflights need to be prescriptive in determining extent of free floating oil to facilitate commercial vessel transit.
- All overflight personnel report oiled wildlife to Situation Unit Leader at 267-765-3440.
-Ensure helo is available to support on water skimming operations.
- All other overflights conducted as needed

One Helo to go Long Ranch to the Southern Edge w/Gene Johnson to direct Skimmers appropriately.

One Helo to conduct oil spill survey, assessment

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Oil Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	On Water Recovery Group A
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Branch Director	Gene Johnson		302-462-0191	
Division/Group Supervisor	TBN			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
On Water Recovery Group A	Manpower: Supervisor	Supervisor	1 each	
On Water Recovery Group A	Skimmer	Skimming Unit	2 each	

Assignments

Conduct on water recovery operations between Shuylkill River and north end of Tinicum Island.

Special Instructions for Division / Group

Review Site Safet Plan (contractors) with special attention to PPE, slips, trips and falls, all personnel are required to follow Decon procedures in Site Safety Plan.
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Oil Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	On Water Recovery Group B
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Branch Director	Gene Johnson		302-462-0191	
Division/Group Supervisor	TBN			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
On Water Recovery Group B	Manpower: Supervisor	Supervisor	1 each	
On Water Recovery Group B	Skimmer	Skimming Unit	2 each	

Assignments

Conduct on water recovery operations between north end of Tinicum Island and Commodore Perry Bridge.

Special Instructions for Division / Group

Review Site Safet Plan (contractors) with special attention to PPE, slips, trips and falls, all personnel are required to follow Decon procedures in Site Safety Plan.
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Oil Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	On Water Recovery Group C
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Branch Director	Gene Johnson		302-462-0191	
Division/Group Supervisor	TDN			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
On Water Recovery Group C	Aircraft: Helo	Helo	1 each	
On Water Recovery Group C	Manpower: Supervisor	Supervisor	1 each	
On Water Recovery Group C	Skimmer	Skimming Unit	2 each	

Assignments

Pre-position skimming units at Premcor facility ready to deploy in vicinity of Reedy Island.

Special Instructions for Division / Group

Review Site Safet Plan (contractors) with special attention to PPE, slips, trips and falls, all personnel are required to follow Decon procedures in Site Safety Plan.
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Beach Pre-Clean Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Branch Director	Demir Aksehirli		631-236-2509	
Division/Group Supervisor	TBN			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Beach Pre-Clean Group	Manpower: Responder	Laborers	20 each	
Beach Pre-Clean Group	Manpower: Supervisor	Supervisor	2 each	

Assignments

Deploy to areas of potential impact as directed by supervisor to move debris above high water mark.

Special Instructions for Division / Group

Review Site Safety Plan with special attention to PPE, Slips, and trips and falls. All personnel are required to follow Decon procedures in Site Safety Plan.
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Hot Shot Task Force
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Branch Director	Demir Aksehirli		631-236-2509	
Task Force Leader	Jim Godfrey		516-383-8005	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Hot Shot Task Force	Equipment: Small	Hand Tools	16 Sets	
Hot Shot Task Force	Manpower: Responder	Labor Tech	16 each	
Hot Shot Task Force	Manpower: Supervisor	Supervisor	1 each	

Assignments

Using information from overflight survey to clean-up pooled oil that is not accessible to skimmers.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.
Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	NJ-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	V. Huyck		215-778-5453	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-5 Division	Manpower: Responder	NSF Monitoring Team	2 each	
NJ-5 Division	Manpower: Responder	NJDEP Monitor	1 each	

Assignments

-Manually recover oil and oil coated debris.
-Employ and assess effectiveness of various techniques:
  -Low pressure flushing
  -Squigees
  -Snares
  -Vacuum Unit
-Line area with hard boom and snare during flushing.
-Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"

Description of Work

Ensure area of Racoon Creek remains clear of oil to protect Eagle Nesting Area

Location of Work

Racoon Creek at Hwy 130 Bridge

Work Assignment Special Instructions

Frequently monitor area for oil contamination and report any visible oil for recovery. Evaluate current for best protective booming strategies

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Oil Recovery Branch Director	Nelson Fettgatter		713-569-9304	
Division/Group Supervisor	Archie Cook		901-262-4996	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-4 Division	Manpower: Responder	Laborers	55 each	

Assignments

Conduct Shoreline Cleanup on Pa Shreline from North of Tinicum Island up to entrance of Schuykill

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with specil attention to PPE, Slips, trips, and Falls. All personnel are required to follow Decon procedures in Site Safety Plan. Report situation status to the situation unit each day at 0900, 1100, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

Special Environmental Considerations

Cut No Grasses Without State Approval. Report Oiled Wildlife To Situation Unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Speacial Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Branch Director	Demir Aksehirli		631-236-2509	
Division/Group Supervisor	Steve Smith		504-382-8351	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-7 Division	Barge: Inland	Deck Barge	1 each	
PA-7 Division	Equipment: Heavy	Bobcat	1 each	
PA-7 Division	Manpower: Responder	Laborers	100 each	
PA-7 Division	Manpower: Supervisor	Supervisor	5 each	
PA-7 Division	Manpower: Supervisor	NSF Supervisor	2 each	
PA-7 Division	Pressure Washers / Wash	Wash pump/hose assem	10 each	
PA-7 Division	Vehicle	ATV's w/ Trailers	2 each	
PA-7 Division	Vessel	NSF Boat	1 each	
PA-7 Division	Vessel	Push Boat	1 each	

Assignments

-Manually recover oil and oil covered debris
-Employ and assess effectiveness of various techniques:
  -Squiggies
  -Snares
  -Low pressure flushing
  -Vacuum transfer

Special Instructions for Division / Group

Review site safety plan. Be aware of slips, trips and falls. Always wear proper PPE. Follow decon procedures in Site Safety Plan.

Report situation status to the situation unit each day at 0900, 1300, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy	Nelson Fetgatter		713-342-0460	
Branch Director	Demir Aksehirli		631-236-2509	
NJ-3 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Barge: Inland	Portable Barge Sets	1 each	
NJ-3 Division	Equipment: Small	Vacuum Transfer Unit	2 each	
NJ-3 Division	Manpower: Responder	Laborers	45 each	
NJ-3 Division	Manpower: Supervisor	NSF Supervisors	2 each	
NJ-3 Division	Manpower: Supervisor	Supervisors	3 each	
NJ-3 Division	Skimmer	Skimmer Units	2 each	
NJ-3 Division	Vacuum Transfer Unit	Transfer Unit	2 each	
NJ-3 Division	Vessel	Greater than 21'	1 each	21 feet

Assignments

1. Physically remove free surface oil and contaminated debris.
2. Employ Vacuum Transfer Unit at low tide
3. National Strike Force to be on hand to assess effectiveness
4. Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"

Location of Work

Eagle Point

Special Environmental Considerations

Cut no grasses without State approval. Report oiled wildlife to Situation Unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Oil Recovery Branch Director	Nelson Fettgetter		713-569-9304	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-4 Division	ATV	ATV	1 each	
NJ-4 Division	Boom	Boom	600 feet	
NJ-4 Division	Equipment: Heavy	Bobcat	4 each	
NJ-4 Division	Manpower: Responder	Labor Tech	50 each	
NJ-4 Division	Manpower: Supervisor	Fish and Wildlife Rep	1 each	
NJ-4 Division	Manpower: Supervisor	Supervisor	1 each	
NJ-4 Division	Manpower: Supervisor	NSF Reps	2 each	
NJ-4 Division	Pressure Washers / Wash	Pumps	2 each	
NJ-4 Division	Skimmer	Skimmer Unit	2 each	
NJ-4 Division	Vacuum Transfer Unit	VTU	2 each	
NJ-4 Division	Vessel	Greater than 21'	1 each	
NJ-4 Division	Vessel	Less than 21'	2 each	

Assignments

-Manually recover oil and oil coated debris.
-Employ and assess effectiveness of various techniques:
  -Low pressure flushing
  -Squigees
  -Snares
  -Vacuum Unit
-Line area with hard boom and snare during flushing.
-Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"

Location of Work

Mantua Creek and Commodore Perry Bridge.

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No grasses should be cut without State approval. Report oiled wildlife to Situation Unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Speacial Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	NJ-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Branch Director	Demir Aksehirli		631-236-2509	
Supervisor	TBD			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-7 Division	Boom	Boom	2500 feet	
NJ-7 Division	Equipment: Small	Manual Removal Tools	20 Sets	
NJ-7 Division	Manpower: Responder	Laborers	20 each	
NJ-7 Division	Storage: Solid	Roll Off Box	4 each	
NJ-7 Division	Vessel	Less than 21'	1 each	

Assignments

Physically remove free floating oil in vicinity of Eagles Nest, use manual removal, flushing, bagging. Line area with hard boom and snare during flushing.

Location of Work

Carneys Point, Helm's Cove

Special Equipment / Supplies Needed for Assignment

Report situation status to the situation unit each day at 0900, 1100, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	NJ-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Branch Director	Demir Aksehirli		631-236-2509	
Division/Group Supervisor	TBD			

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-8 Division	Boom	Boom	2500 feet	
NJ-8 Division	Equipment: Small	Hand Tools	20 Sets	
NJ-8 Division	Manpower: Responder	Laborers	20 each	
NJ-8 Division	Storage: Solid	Roll Off Box	4 each	
NJ-8 Division	Vessel	Less than 21'	1 each	

Assignments

Collect, contain oil with boom strategies and recover (Kelly Pt., Penns Beach)
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Location of Work

Kelly Pt., Penn's Beach

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Safety Zone Enforcement Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	CDR V. Huyck USCG		(215) 778-5453	
Branch Director	LT Sligh		(215) 778-4534	
Division/Group Supervisor	LT HONEYCUTT USCG		(215) 778-3117	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	21 feet
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	65 feet

Assignments

Continue to enforce safety zones between Tacony - Palmyrs and Southern end Marcus Hook Anchorage.

Special Instructions for Division / Group

CGC CLEAT LIASON WITH CGC CAPSTAN AND WORK OUT RELIEF SKD.
CG STATION PHILADELPHIA - FATIGUE STANDARDS WAIVED BY GRU CDR; AUTH TO MAN 12 HR SHIFTS. MAINTAIN 24X7 PRESENCE.
DO NOT ALLOW ANY VESSELS IN SAFETY ZONE EXCEPT FOR VESSELS ASSOCIATED WITH SPILL-MSDO CAN ASSIST IN DETERMINING LEGITIMATE VESSELS.
IF A RECREATIONAL VESSEL INSISTS ON ENTERING SAFETY ZONE, STOP/BOARD/CITE CFR 33 CFR 165.209.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Vessel Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Waterways Management Branch	LT Sligh		215-778-4534	
Vessel Decon Group	LCDR T. Schee		215-778-4076	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Decon Group	Barge: Inland	Portable Barge Set	1 each	
Vessel Decon Group	Boom	Boom	200 feet	
Vessel Decon Group	Manpower: Responder	2 person assessment tea	2 each	
Vessel Decon Group	Manpower: Responder	VCAT	2 each	
Vessel Decon Group	Manpower: Responder	9 person decon taskforce	9 each	
Vessel Decon Group	Manpower: Supervisor	Supervisors	2 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan (steamcleaning).
- Note any heavily impacted facilities and report information to ops.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

- See attached Vessel Decon Plan and waterways reporting instructions.

*** 10 Task Forces Total

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	Vessel Traffic Management Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Waterway Management Branch	LT Sligh		215-778-4534	
Vessel Management Group	ENS Munch		215-271-4805	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Traffic Management Grc	Manpower: Supervisor	USCG Vessel Manageme	6 each	

Assignments

Coordinate entry / exit of commercial vessel traffic.

- Prioritize departing vessels for cleanup.
- Coordinate with Vessel Decon Group Supervisor for priority vessels for cleanup and departure.

Report situation status to the situation unit each day at 0900, 1300, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

Additional Information

Provide following information at each report:

Vessels Activity:
- Authorized Inbound
- Authorized & Arrived Inbound
- Departed
- Authorized Shift/Conduct Business
- Decon List
- Enroute Decon
- Being Deconed
- Decon Completed
- Inspection List (PA)
- Inspection List (NJ)

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Column Monitoring Team
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	Dan Sobieski/Tim Deal		267-549-4849	
WCM Team Leader	Allen Humphreys		To Be Assigned	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Water Column Monitoring Tean	Equipment: Small	Flourometer	2 each	

Assignments

Deploy to areas as needed under direction of Environmentl Unit Leader to conduct monitoring of water column to determine hydrocarbon dispersion.

Special Instructions for Division / Group

Wear PPE to avoid oil skin contact. Wear goggles to avoid oil splash into eyes

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Wildlife Recovery Group
Period: Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Environmental Unit Leader	ED LEVINE NOAA		206-849-9941	
Division/Group Supervisor	Mr. Clay Stern USFWS		609-214-7895	
Safety Officer	Ed Doyle		302-993-9081	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Wildlife Recovery Group	Manpower: Responder	Laborers	36 each	
Wildlife Recovery Group	Manpower: Supervisor	Supervisors	5 each	
Wildlife Recovery Group	Vehicle	Utility Trucks	6 each	
Wildlife Recovery Group	Vessel	Less than 21'	6 each	
Wildlife Recovery Group	Vessel	Greater than 21'	1 each	

Assignments

Identify, recover, and rehabilitate any impacted wildlife

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Environmental Considerations

REPORT OILED WILDLIFE TO SITUATION UNIT (267) 765-3440

Special Site-Specific Safety Considerations

REVIEW SITE SAFETY PLAN(CONTRACTORS) WITH SPECIAL ATTENTION TO PPE, SLIPS, AND TRIPS & FALLS. ALL PERSONNEL ARE REQUIRED TO FOLLOW DECON PROCEDURES IN SITE SAFETY PLAN.

Review Safety Message in the IAP.

Report situation status to the situation unit each day at 0900, 1300, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

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1. Incident Name ATHOS I	2. Operational Period (Date / Time) From: 12/01/04 0600 To: 12/02/04 0600	INCIDENT RADIO COMMUNICATIONS PLAN ICS 205-OS

3. BASIC RADIO CHANNEL USE

SYSTEM / CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMAKRS
VHF-FM	16	HAIL/DISTRESS	156.8 MHZ	ALL	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A	Tactical	157.175	MSO/Group Philly	Group/MSO working frequency
Nextel / Cell		Tactical		Vessel Traffic Management Gp	POC: LTJG Kevin Sligh 267-549-4848
Nextel / Cell		Tactical		Decontamination Group	POC: LTJG Kevin Sligh 267=549-4848
NRC	5	Shoreside support	Repeater (vhf) RX 158.455 Mhz TX 154.585 MHZ	On water recovery Groups and booming group tactical freq	POC: Mr. Jene Johnson
Cell / Nextel		Tactical	Cell / Nextel	Safety Team Coordination net	POC: Mr. Archie Gresham 302-293-8960
Cell / Nextel		Tactical	Cell / Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center
Cell / Nextel		Command	Cell / Nextel	Wildlife Recovery Command net	POC: Mr. Clay Stern 609-214-7895
Cell / Nextel		Command	Cell / Nextel	Near shore Recovery Branch net	POC: Theo Camlin 425-501-5430 or Mr. Nelson Fetgatter 713-569-9304 days POC: Mr. Jeff Hard 609-374-1055 Nights
Cell / Nextel		Tactical	Cell / Nextel	Salvage Group	POC: Mr. Bob Ombdenstock 908-230-8075
Cell / Nextel		Tactical	Cell / Nextel	Shoreline cleanup assessment	POC: Ms. Jacqui Michel 803-513-5650
VHF-FM	81A Primary Cell Secondary	Tactical	157.175 Mhz	Safety Zone Enforcxement	On scene tactical working freq Poc: LTJG Kevin Sligh 267-549-4848

4. Prepared by: (Communications Unit) **Date / Time**

LT Michael Brown, USCG 11/30/04 18:00

11/29/2004 5:12 PM

Phone Numbers for Holiday Inn CP

Command Table	**267-765-3433**
	267-765-3445
Operations Table	**267-765-3434**
	267-765-3439
	267-765-3449
	267-765-3450
Planning Table	**267-765-3440**
	267-765-3437
	267-765-3443
	267-765-3444
Logistics Table	**267-765-3432**
	267-765-3453
	267-765-3454
Finance/Admin Table	**267-765-3435**
	267-765-3451
	267-765-3452
	267-765-3455
Fax – Incoming	**215-923-4476**
Fax – Outgoing	**276-765-3456**
Command Staff Room	**267-765-3431**
PIO Room	**267-765-3436**
	267-765-3438
	267-765-3441
	267-765-3442
Resources	**267-765-3446**
	267-765-3447
	267-765-3448

ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 11/30/2004 09:00
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Version Name:**	Medical Plan - 11/27/04

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	No	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856-342-2345	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)

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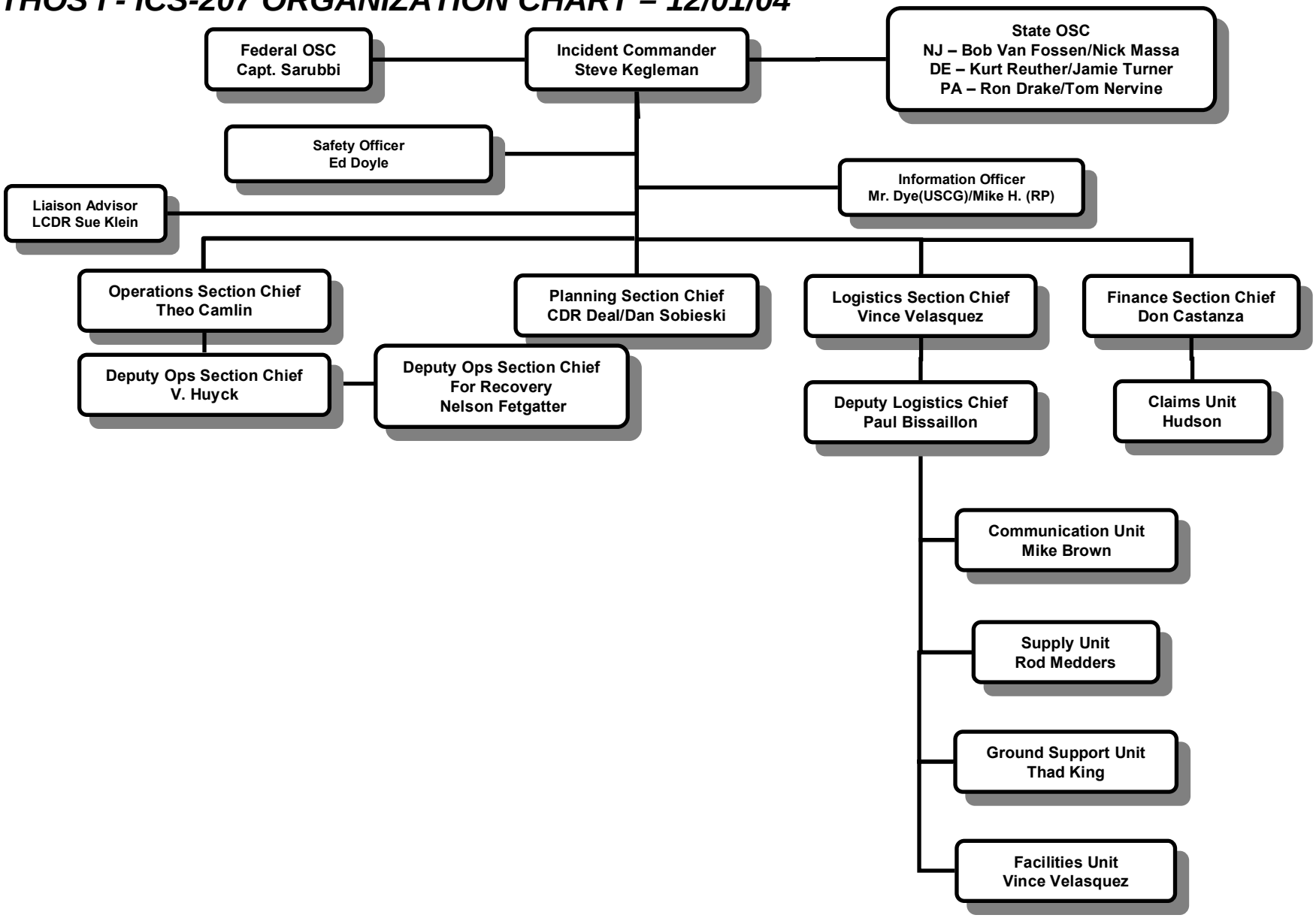
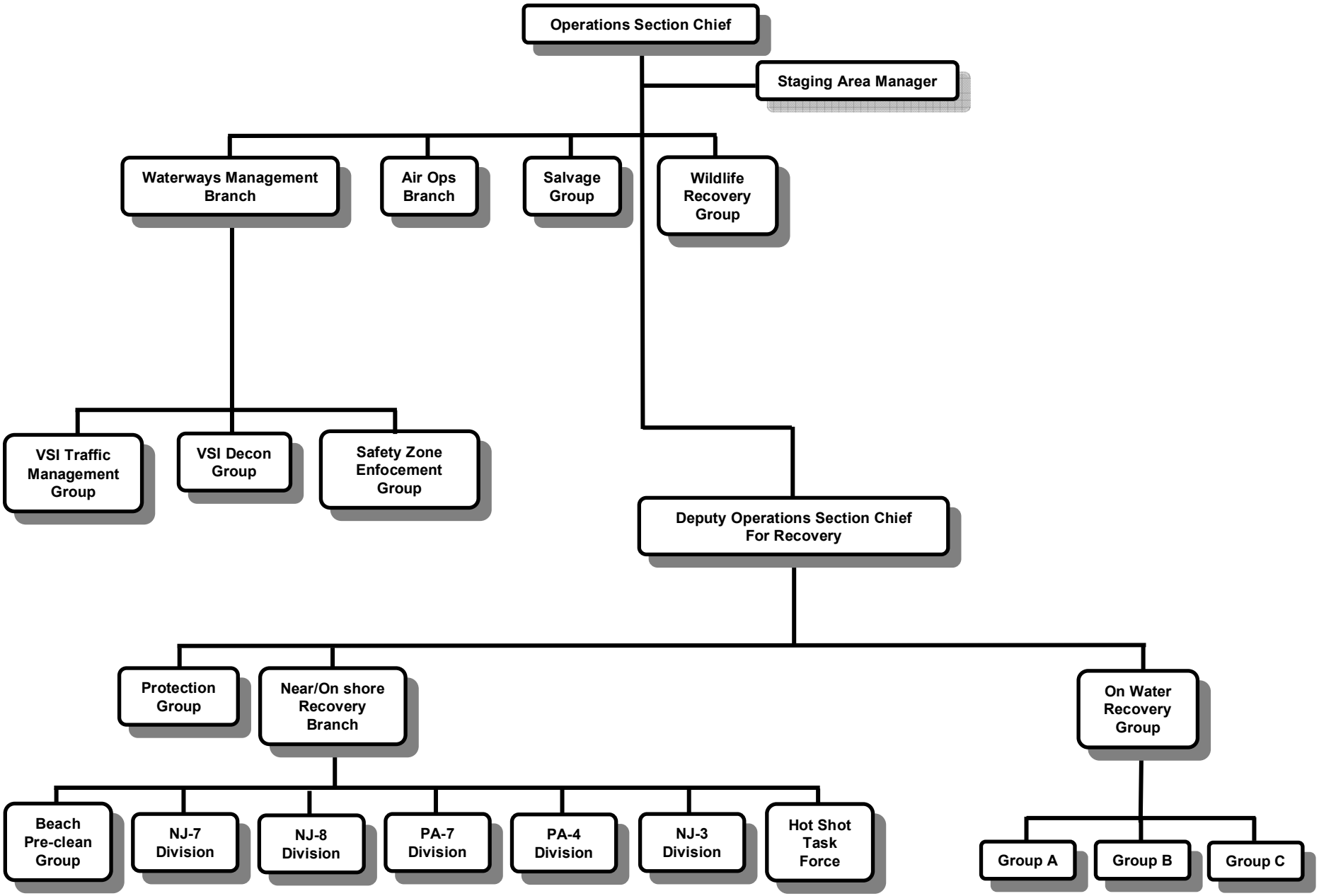
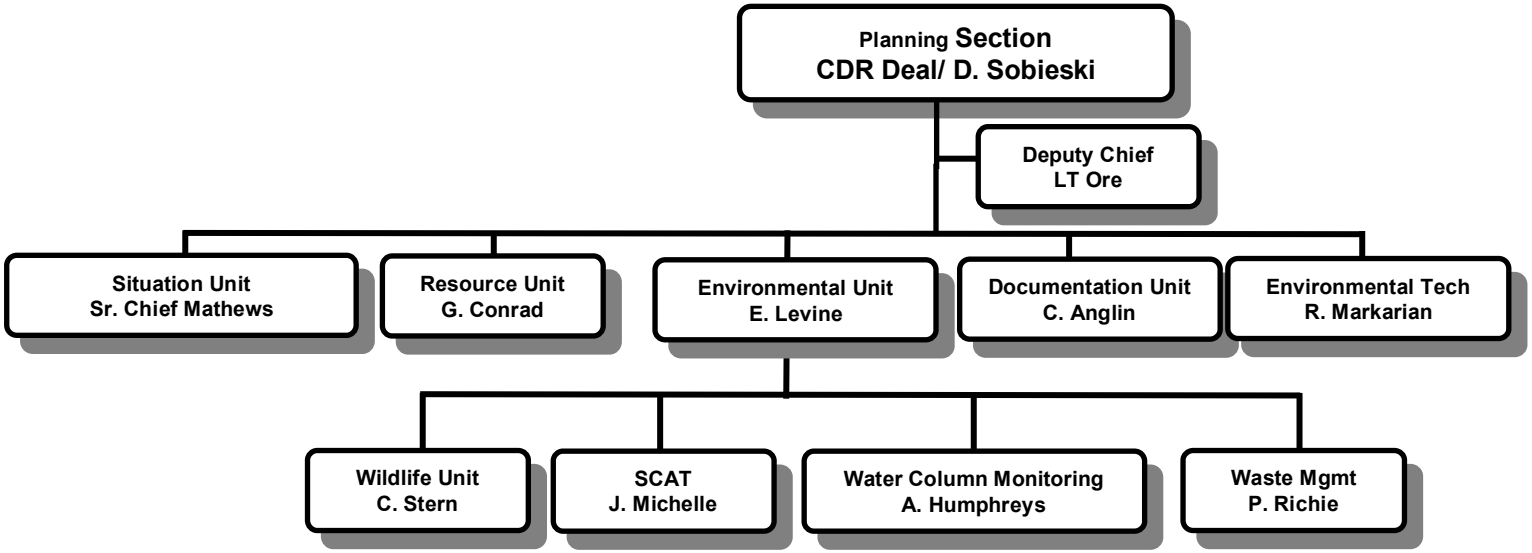
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 12/01/04



T/V ATHOS I - ICS-207 OPERATIONS ORGANIZATION CHART – 12/01/04



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 12/01/04



ICS 220 - Air Operations

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	11/29/2004 18:00
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Version Name:**	11/30/2004 09:30 hrs		

Personnel and Communications

Title/Position	Name	Air/Air Frequency	Air/Ground Frequency	Phone
Air Ops Branch Director	JIM SANIAL			856-266-3810

Planned Flight Information

Type Of Aircraft	Operating Base	Aircraft Company	Passenger Capacity	Purpose	Scheduled Flights
Bell 206 L	Pier 36	Horizon	6	Surveillance N98KR	As Needed
Bell Jet Ranger	Pier 36	Horizon	4	N4015G	10:30

Notes (Special Instructions, Safety Notes, Hazards, Priorities)

Refrain from air ops in the following areas: (Known Eagle Nesting Areas)
Petty Island
Mantua Creek
Monds Island

Operational Requirements:
1/4 mi. radius
>= 500' AGL

If injured/contaminated wildlife is sighted, contact the Situation Unit at 267-765-3440/3437/3443/3444

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Incident Name:	MV ATHOS I	Location:	Philadelphia, PA

Daily Health and Safety Message

December 1, 2004

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations.

General Safety Concerns:

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decon-tamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes –

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **In the event of a <u>non-life threatening</u> emergency the patient should, if possible, be transported out of the hot zone and decontaminated as much as possible. In life threatening emergencies, where a patient cannot be moved, medical personnel will respond into the hot zone properly attired. A second ambulance will be dispatched to transport.**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Planning Section	**at** 11/30/2004 16:00
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Version Name:**	12/01/04 Meeting Schedule	

Meeting Name & Date/Time	Purpose	Attendees	Location
Sit Rep 12/1/2004 00:00			
Operations Briefing 12/1/2004 05:30	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Holiday Inn
UC Objectives, Command & General Staff 12/1/2004 08:00	Review/Identify and prioritize objectives for the next operational period. Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	UC members; Command and General Staff, as appropriate	Sherman Room
RRT 12/1/2004 09:00	Informational brief	Atlantic Strike Team	Holiday Inn
Field Reports 12/1/2004 09:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
ICS 209 12/1/2004 10:00	Resource Summary	Planning Section	Cmd Post
Field Reports 12/1/2004 11:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
Tactics Meeting 12/1/2004 12:00	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Sherman Room
Sit Rep 12/1/2004 12:00			
ICS 209 12/1/2004 14:00	Resource Summary	Planning Section	Cmd Post
Press Briefing 12/1/2004 15:00			
Planning Meeting 12/1/2004 16:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Sherman Room
Field Reports 12/1/2004 16:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Planning Section	**at** 11/30/2004 16:00
Period:	Period 5 (12/1/2004 06:00 - 12/2/2004 06:00)	**Version Name:**	12/01/04 Meeting Schedule	

Meeting Name & Date/Time	Purpose	Attendees	Location
IAP Approval 12/1/2004 18:30			

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IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 7 (12/3/2004 06:00 to 12/4/2004 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) – Kurt Reuther: _____

SOSC (PA) – Bob Bauer : _____

SOSC (NJ) – Gary Pearson: _____

RPIC – Steve Kegleman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. ICS 202 - General Response Objectives
4. ICS 204 - Assignment List
5. ICS 205 - Communications Plan
6. ICS 205a - ICP List
7. ICS 206 - Medical Plan
8. ICS 207 - Organization Chart
9. ICS 220 - Air Operations
10. ICS 223 - Health and Safety Message
11. ICS 230 - Daily Meeting Schedule
12. Website: www.incidentinfo.com

M/V ATHOS I, DELAWARE RIVER
1515 EST, Thursday December 02, 2004

NOTE: This is a site specific forecast from the National Weather Service generated specifically for this incident region.

Sunset (12/02): 1641

Sunrise (12/03): 0710
Sunset (12/03): 1641

36 Hour Forecast
Winds:
This afternoon through Tonight, the winds are expected to be from the W to SW at 5-10 knot. Friday morning, the winds are forecast to be from the W at 10-15. Friday afternoon, the winds are predicted to be from the W to NW at 15-20 knots with gust to 30 knots.

Seas:
Today through Friday morning, the seas are expected to be 1-2 feet. Friday afternoon, the seas are forecast to be 2-3 feet.

Precipitation:
Today through Friday, no precipitation is expected.

Ceiling/Visibility:
Today through Friday, partly cloudy skies are expected.

Temperatures:
Today through Friday, the temperatures are expected to range from lows in the low 30’s to highs in the mid 40’s.

Extended Outlook:
Saturday, the winds are forecast to be from the W winds 5-10 knots. Partly cloudy skies. No precipitation is expected. Seas, 1-2 feet.
Sunday, the winds are predicted to be from the SW at 5-10 knots. No precipitation is forecast.

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 12/2/2004 12:00
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with site safety plan.		
Continue implementation of vessel transit protocols to facilitate vessel movement in affected port areas.		
Implement decon plan (including decon of commercial/government vessels)		
Continue to enforce safety zone.		
Continue aggressive shoreline cleanup operation.		
Continue to assess the location and extent of oil impact.		
Continue execution of salvage plan.		
Monitor existing sensitive site booming strategies & implement additional strategies as appropriate.		
Collect and recover free-floating oil.		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Implement Disposal Plan		
Conduct assessment on submerged oil. Review options for removal		
Unified Command Emphasis:		
• Equate economic impact of spill on an equal level with environmental impacts without diverting any resources from environmental protection and cleanup		
• Accelerate effort to collect maritime industry economic information, prioritize cleanup efforts, and increase cleanup resources to minimize economic impact		
• Safety Officer to ensure that all safety issues/concerns are tailored to operations.		

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Vessel Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	V. Huyck		215-778-5453	
Waterways Management Branch	LT Sligh		215-778-4534	
Vessel Decon Group	LCDR T. Scheel/Jim Kearne		215-778-4076	
Tactical Rep	Mike Noel		713-824-3991	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Decon Group	Barge: Inland	Portable Barge Set	1 each	
Vessel Decon Group	Boom	Boom	200 feet	
Vessel Decon Group	Manpower: Responder	5 person decon team	1 each	
Vessel Decon Group	Manpower: Responder	2 person assessment tea	8 each	
Vessel Decon Group	Manpower: Supervisor	Supervisors	1 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan (steamcleaning).
- Note any heavily impacted facilities and report information to ops.

Accomodate testing of surface washing agents

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

- See attached Vessel Decon Plan and waterways reporting instructions.

10 Task Forces Total:

Vessel Decon Task Force 1
Vessel Decon Task Force 2
Vessel Decon Task Force 3
Vessel Decon Task Force 4
Vessel Decon Task Force 5
Vessel Decon Task Force 6
Vessel Decon Task Force 7
Vessel Decon Task Force 8
Vessel Decon Task Force 9
Vessel Decon Task Force 10

Each Task Force is comprised of equipment listed above.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Survey Coordination Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Port Ops	V. Huyck		215-778-5453	
Branch Director	LT Kevin Sligh		215-778-4534	
Group Supervisor	Mickey Mulvenna		215-313-1131	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Assignments

Coordinate all river survey efforts between NOAA, ACOE & Commercial Entities.
Conduct complete bottom surveys of Delaware River including the Mantua Creek Anchorage and the navigation channel south to the Commodore Barry Bridge.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Vessel Traffic Mgmt Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Port Ops	CDR V. Huyck USCG		215-778-5453	
Waterway Management Branch	LT Sligh/LT Knight		215-778-4534	
Vessel Management Group	ENS Munch/CPO Erickson		215-271-4805	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Traffic Mgmt Group	Manpower: Responder	Responder	3 each	
Vessel Traffic Mgmt Group	Manpower: Supervisor	Assistant Supervisor	1 each	
Vessel Traffic Mgmt Group	Manpower: Supervisor	USCG Vessel Managem	1 each	

Assignments

Coordinate entry / exit of commercial vessel traffic.
- By 0800 every morning ensure that the 204 information for the Safety Zone Enforcement Group is communicated to the OINC of the 65 footer and to the Coxswain securing the northern end of the safety zone

- Prioritize departing vessels for cleanup.
- Coordinate with Vessel Decon Group Supervisor for priority vessels for cleanup and departure.

Report situation status to the situation unit each day at 0900, 1300, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Provide following information at each report:

Vessels Activity:
- Authorized Inbound
- Authorized & Arrived Inbound
- Departed
- Authorized Shift/Conduct Business
- Decon List
- Enroute Decon
- Being Deconed
- Decon Completed
- Inspection List (PA)
- Inspection List (NJ)

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Safety Zone Enforcement Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Port Ops	V. Huyck		215-778-5453	
Branch Director	LT Kevin Sligh		215-778-4534	
Division/Group Supervisor	LT Honeycutt		215-778-3117	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	21 feet
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	65 feet

Assignments

Continue to enforce safety zones from the Tacony - Palmyra Bridge to the Marcus Hook/Bellevue Range Intersection

Special Instructions for Division / Group

CGC Cleat will liason with CGC Capstan to work out relief skd.
CG station Philadelphia - fatigue standards waived by GRU CDR; auth to man 12 Hr Shifts.
Maintain 24X7 presence.

- COMMERCIAL AND MERCHANT VESSELS ARE NO LONGER REQUIRED TO REQUEST PERMISSION FOR ENTERING OR SHIFTING WITHIN THE SAFETY ZONE.
- COMMERCIAL AND MERCHANT VESSELS ARE STILL REQUIRED TO SUBMIT A REQUEST FOR DEPARTURE, BE ASSESSED BY A VESSEL CLEAN-UP ASSESSMENT TEAM (VCAT), AND OBTAIN PERMISSION FOR DEPARTURE OF THE ATHOS 1 SAFETY ZONE. REQUESTS CAN BE SUBMITTED VIA FAX AT (215) 271-4903.
- ALL COMMERCIAL AND MERCHANT VESSELS TRANSITING NORTH OF THE TACONY PALMYRA BRIDGE ARE CONSIDERED A "DEPARTURE" AND MUST SUBMIT A REQUEST FOR DEPARTING THE SAFETY ZONE.
- TWO-WAY TRAFFIC (OUTBOUND TRANSITS) OCCURRING AT NIGHT WILL BE ASSESSED ON A DAY-TO-DAY BASIS.

If a recreational vessel insists on entering safety zone, stop/board/cite CFR 33 CFR 165.209.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Salvage Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Port Ops	V. Huyck		215-778-5453	
Salvage Group	Titan - Bob Umbdenstock/Ja		908-230-8075	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salvage Group	Barge: Inland	Lightering Barge	1 each	
Salvage Group	Barge: Inland	Work Barge	1 each	
Salvage Group	Manpower: Responder	Pumping Team Damage	2 each	
Salvage Group	Manpower: Responder	Monitors	4 each	
Salvage Group	Manpower: Responder	Salvor	1 each	
Salvage Group	Manpower: Supervisor	Supervisors	2 each	
Salvage Group	Skimmer	Skimming Unit	1 each	

Assignments

Lighter vessel , carry out Salvage Plan.

Report any deviations from Salvage Plan to Operations.

Special Instructions for Division / Group

Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Sun Hog island Staging
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Staging Area Manager	Paul Rutherford		631-926-4700	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Sun Hog island Staging	Vacuum Truck	Super Sucker	2 each	
Sun Hog island Staging	Vessel	Water Taxi 24' to 30'	1 each	

Assignments

Stage and deploy additional skimmers, barges, steam units, and wash pumps. Launch site.

Location of Work

Sun Hog Island

Additional Information

Fax situation status to the Situation Unit Leader each day at 1200 and report at 1600 hrs to "Resource Unit". 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Premcor Staging
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Staging Area Manager	Brian Murphy		713-503-6389	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Premcor Staging	Sorbent	Snare	101 bags	
Premcor Staging	Sorbent	Visqueen	4 rolls	
Premcor Staging	Sorbent: Boom	Sorbent Boom	39 bales	
Premcor Staging	Trailer	Trailer	4 each	
Premcor Staging	Vehicle	Vehicle	4 each	

Assignments

Be prepared to deploy resources to combat oil pooled nearshore or stranded on sensitive shoreline.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Fax situation status to the Situation Unit Leader each day at 1200 and report at 1600 hrs to "Resource Unit". 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Miller Paulsboro Staging
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
Staging Area Manager	John Foster		985-788-8649	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Miller Paulsboro Staging	Vacuum Truck	Air Mover Super Sucker	1 each	
Miller Paulsboro Staging	Vessel	Water Taxi 4' to 30'	1 each	

Assignments

Stage and deploy additional skimmers, barges, steam units, super sucker, water taxi, and wash pumps. Launch Site.

Location of Work

Paulsboro, NJ

Additional Information

Fax situation status to the Situation Unit Leader each day at 1200 and report at 1600 hrs to "Resource Unit". 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Protection Group Supervisor	B. Polle		302-462-0191	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Group D	Manpower: Responder	Boom Maint. Teams	3	each
Group D	Vessel	Small Boat <21'	1	each
Group E	Manpower: Responder	Boom Maint. Team	3	each
Group E	Vessel	Small Boat <21'	1	each
Group F	Manpower: Responder	Boom Maint. Team	3	each
Group F	Vessel	Small Boat <21'	1	each
Protection Group	Barge: Inland	Deck Barge	3 each	
Protection Group	Boom	See Note Below	20000 feet	
Protection Group	Manpower: Responder	Laborers	18 each	
Protection Group	Manpower: Supervisor	Supervisors	1 each	
Protection Group	Vessel	Boom Team Boats	9 each	12
Protection Group	Vessel	Small Boat	3 each	
Protection Group	Vessel	Push Boats	3 each	
TF I: Salem R. - Alloway Creek	Barge: Inland	Work Barge	1 each	
TF I: Salem R. - Alloway Creek	Manpower: Responder	Responders on Barge	6 each	
TF I: Salem R. - Alloway Creek	Vessel	Boat to deploy boom	1 each	21
TF II: Cohansey	Barge: Inland	Work Barge	1 each	
TF II: Cohansey	Manpower: Responder	Responders on Barge	6 each	
TF II: Cohansey	Vessel	Boat to deploy boom	1 each	21
TF III: DE South of DE-1	Barge: Inland	Work Barge	1 each	
TF III: DE South of DE-1	Manpower: Responder	Responders on Barge	6 each	
TF III: DE South of DE-1	Vessel	Boat to deploy boom	1 each	21

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Assignments

Identify & protect sensitive sites as requested. Monitor & maintain boom at GRP sites already deployed. Assure it's effectiveness.

An additional 34 Southern booming locations identified

Maintain boom deployed at Salem Creek
Maintain boom deployed at Pea Patch
Deploy boom across Cedar Creek
Deploy boom across Delaware City Branch Channel
Deploy boom gate at Chesepeake and Delaware Canal
Deploy Cascading deflection boom to protect Salem Nuclear Power Plant water intakes
Maintain boom around Salem Nuclear Power Plant
Evaluate need to deploy boom at Goose Point to Fort Mott

Special Instructions for Division / Group

Conduct boom tending operations 24x7.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	Salem Marine Terminal
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
Staging Area Manager	Jim Sanial		856-266-3810	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salem Marine Terminal	Manpower: Responder	Responders	100 each	
Salem Marine Terminal	Vehicle	20 Person Vehicles	5 each	

Assignments

Rapidly deploy Shoreline Cleanup Teams to priority areas based on spill impacts and SCAT analysis

Additional Information

Fax situation status to the Situation Unit Leader each day at 1200 and report at 1600 hrs to "Resource Unit". 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
NJ-2 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-2 Division	Manpower: Responder	Laborers	20 each	
NJ-2 Division	Manpower: Supervisor	Supervisor	2 each	

Assignments

Recover and removal of oily debris.

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
NJ-3 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Barge: Inland	Portable Barge Sets	1 each	
NJ-3 Division	Boom	Boom	9250 feet	
NJ-3 Division	Equipment: Small	Vacuum Transfer Unit	2 each	
NJ-3 Division	Manpower: Responder	Laborers	145 each	
NJ-3 Division	Manpower: Supervisor	Supervisors	3 each	
NJ-3 Division	Manpower: Supervisor	NSF Supervisors	2 each	
NJ-3 Division	Pumps	Wash Pumps/Hose Asse	4 each	
NJ-3 Division	Skimmer	Skimmer Units	1 each	
NJ-3 Division	Storage: Solid	Roll Off Boxes	4 each	
NJ-3 Division	Vehicle	Utility Vehicles	15 each	
NJ-3 Division	Vessel	Greater than 21'	1 each	21 feet
NJ-3 Division	Vessel	Small Boats	11 each	
NJ-3 Division	Vessel	Push Boat	1 each	

Assignments

1. Physically remove free surface oil and contaminated debris.
2. Employ Vacuum Transfer Unit at low tide
3. National Strike Force to be on hand to assess effectiveness
4. Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"
5. Prioritize cleanup of Eagle's Nest Area, when impacted.

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Eagle Point

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
Near/On Shore Recovery Branch Director	Issac Wills		952-250-3161	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-4 Division	ATV	ATV	1 each	
NJ-4 Division	Boom	Boom	600 feet	
NJ-4 Division	Equipment: Heavy	Bobcat	4 each	
NJ-4 Division	Manpower: Responder	Labor Tech	50 each	
NJ-4 Division	Manpower: Supervisor	NSF Reps	2 each	
NJ-4 Division	Manpower: Supervisor	Fish and Wildlife Rep	1 each	
NJ-4 Division	Manpower: Supervisor	Supervisor	1 each	
NJ-4 Division	Vacuum Transfer Unit	VTU	2 each	
NJ-4 Division	Vessel	Greater than 21'	4 each	
NJ-4 Division	Vessel	Less than 21'	1 each	

Assignments

-Manually recover oil and oil coated debris.
-Employ and assess effectiveness of various techniques:
  -Low pressure flushing
  -Squigees
  -Snares
  -Vacuum Unit
-Line area with hard boom and snare during flushing.
-Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Mantua Creek and Commodore Berry Bridge.

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No wetland vegetation should be cut without State approval. Report oiled wildlife to Situation Unit. Do not walk through or work in Mud Flats.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	On-Water Recovery Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Gene Johnson		302-462-0191	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
On-Water Recovery Group	Manpower: Supervisor	Supervisor	1 each	
On-Water Recovery Group	Skimmer	Skimming Unit	6 each	

Assignments

Conduct on water recovery operations as directed by Air Ops

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:** Hot Shot Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Jim Godfrey		516-383-8005	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Hot Shot Group	Equipment: Small	Hand Tools	16 Sets	
Hot Shot Group	Manpower: Responder	Labor Tech	16 each	
Hot Shot Group	Manpower: Supervisor	Supervisor	1 each	
Hot Shot Group	Vessel	Less than 21'	8 each	

Assignments

Using information from overflight survey to clean-up pooled oil that is not accessible to skimmers.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.
Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Priority: Check on Logan generating Plant, Salem Generating Plant, and Philadelphia Electric Company Plant in the morning.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Randy Anzalone		713-960-9995	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-4 Division	Boom	Boom	4850 feet	
PA-4 Division	Manpower: Responder	Laborers	185 each	
PA-4 Division	Vessel	Boat < 21'	4 each	
PA-4 Division	Vessel	Large Boat > 21'	3 each	

Assignments

Conduct Shoreline Cleanup on PA Shoreline from North of Tinicum Island up to entrance of Schuykill River. Ft Mifflin is priority

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Branch Director	Chris Gregory		714-273-8036	
Supervisor	Steve Smith		504-382-8351	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-7 Division	Barge: Inland	Deck Barge	1 each	
PA-7 Division	Equipment: Heavy	Bobcat	1 each	
PA-7 Division	Manpower: Responder	Laborers	100 each	
PA-7 Division	Manpower: Supervisor	Supervisor	5 each	
PA-7 Division	Manpower: Supervisor	NSF Supervisor	2 each	
PA-7 Division	Pressure Washers / Wash	Wash pump/hose assem	10 each	
PA-7 Division	Vehicle	ATV's w/ Trailers	2 each	
PA-7 Division	Vessel	Push Boat	1 each	
PA-7 Division	Vessel	NSF Boat	1 each	

Assignments

-Manually recover oil and oil covered debris
-Employ and assess effectiveness of various techniques:
  -Squiggies
  -Snares
  -Low pressure flushing
  -Vacuum transfer

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review site safety plan. Be aware of slips, trips and falls. Always wear proper PPE. Follow decon procedures in Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	NJ-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Near/On Shore Recovery Branch Director	Chris Gregory		714-273-8036	
Division/Group Supervisor	Chris Stadiem		TBD	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-7 Division	Boom	Boom	2500 feet	
NJ-7 Division	Equipment: Small	Manual Removal Tools	20 Sets	
NJ-7 Division	Manpower: Responder	Laborers	20 each	
NJ-7 Division	Storage: Solid	Roll Off Box	4 each	
NJ-7 Division	Vessel	Less than 21'	1 each	

Assignments

Physically remove free floating oil in vicinity of Eagles Nest, use manual removal, flushing, bagging. Line area with hard boom and snare during flushing.

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Carneys Point, Helm's Cove

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	NJ-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Near/On shore Recovery Branch	Chris Gregory		714-273-8036	
Division/Group Supervisor	Chris Stadiem		TBD	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-8 Division	Boom	Boom	2500 feet	
NJ-8 Division	Equipment: Small	Hand Tools	20 Sets	
NJ-8 Division	Manpower: Responder	Laborers	20 each	
NJ-8 Division	Storage: Solid	Roll Off Box	4 each	
NJ-8 Division	Vessel	Less than 21'	1 each	

Assignments

Collect, contain oil with boom strategies and recover (Kelly Pt., Penns Beach)
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Special Instructions for Division / Group

Conduct boom tending operations 24x7.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Kelly Pt., Penn's Beach

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

Additional Information

Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Air Ops Branch
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Air Ops Branch Director	Brad Barker		TBD	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Air Ops Branch	Aircraft: Helo	Aircraft: Helo	3 each	
Air Ops Branch	Manpower: Supervisor	Supervisors	1 each	

Assignments

Surveillance - Overflights and coordinating vessel movement

- First light overflight, estimated departure time: 0830 from heloport to support SCAT
- Ops overflight, estimated departure time: 0800 - 0830 from heloport
- Overflights need to be prescriptive in determining extent of free floating oil to facilitate commercial vessel transit.
- All overflight personnel report oiled wildlife to Situation Unit Leader at 267-765-3446.
-Ensure helo is available to support on water skimming operations.
- All other overflights conducted as needed

One helo will be used to support SCAT, another will be used to direct skimming operations and to monitor boom deployments and the third will be used at the discretion of the UC.

There are currently flight restrictions scheduled for the weekend due to the Army/Navy game and the Presidential visit. Unified Command is working on a flight exemption. More info to follow.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Wildlife Recovery Group
Period: Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	CMD Deal/Dan Sobieski		267-549-4849	
Environmental Unit Leader	ED LEVINE NOAA		206-849-9941	
Division/Group Supervisor	Mr. Clay Stern USFWS		609-214-7895	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Wildlife Recovery Group	Manpower: Responder	Laborers	45 each	
Wildlife Recovery Group	Manpower: Supervisor	Supervisors	5 each	
Wildlife Recovery Group	Vehicle	Utility Trucks	8 each	
Wildlife Recovery Group	Vessel	Greater than 21'	4 each	
Wildlife Recovery Group	Vessel	Less than 21'	4 each	

Assignments

Identify, recover, and rehabilitate any impacted wildlife. Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Environmental Considerations

Do Not Cut Wetland Vegetation Without State Approval. Report Oiled Wildlife To Situation Unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Shoreline Cleanup Assessment Team
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	Dan Sobieski/Tim Deal		267-549-4849	
Environmental Unit	Ed Levine		206-849-9941	
SCAT Leader	Jacqui Michel		803-513-5650	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Shoreline Cleanup Assessmen	Manpower: Responder	SCAT Teams	9 each	
Shoreline Cleanup Assessmen	Vessel	EPA/NJ Boats	4 each	
Shoreline Cleanup Assessmen	Vessel	Small Boat <21' (Shallow	4 each	

Assignments

SCAT will assess and compile cleanup data and identify areas requiring cleanup resources. Communicate priorities to Operations for deployment of response resources. Report information to the SCAT Leader.

Special Instructions for Division / Group

Helicoptor on standby for SCAT (as needed); Helo overflights will provide information to assist/direct SCAT teams.
Conduct boom tending operations 24x7.

Location of Work

SCAT Team #1 will work in NJ-6.
SCAT Team #2 will work in NJ-7.
SCAT Team #3 will work in NJ-8.
SCAT Team #4 will work in PA-7.
SCAT Team #5 will work in PA-4-J, PA-3, PA-2.
SCAT Team #6 will work in DE-1, DE-2, DE-3, DE-4.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Column Monitoring Team
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	Dan Sobieski/Tim Deal		267-549-4849	
WCM Team Leader	A Humphreys		TBN	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Water Column Monitoring Tear	Equipment: Small	Flourometer	2 each	
Water Column Monitoring Tear	Vessel	Entrix Boat	1 each	

Assignments

Deploy to areas as needed under direction of Environmental Unit Leader to conduct monitoring of water column to determine hydrocarbon dispersion.

Special Instructions for Division / Group

Wear PPE to avoid oil skin contact. Wear goggles to avoid oil splash into eyes

Evaluate Need for divers.

Begin survey plan to determine extent of submerged oil.

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1. Incident Name ATHOS I	2. Operational Period (Date / Time) From: 12/03/04 0600 To: 12/04/04 0600	INCIDENT RADIO COMMUNICATIONS PLAN ICS 205-OS

3. BASIC RADIO CHANNEL USE

SYSTEM / CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMAKRS
VHF-FM	16	HAIL/DISTRESS	156.8 MHZ	ALL	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A	Tactical	157.175	MSO/Group Philly	Group/MSO working frequency
VHF-FM	81A Primary Cell Secondary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM		Tactil Oil spill special frequency		On water recovery Groups	POC: Mr. Jene Johnson 302-462-0191
Cell / Nextel		Tactical	Cell / Nextel	Protection Branch Tacical	POC: Bob Poole 302-462-0194
Cell / Nextel		Tactical	Cell / Nextel	Safety Team Coordination net	POC: Mr. Archie Gresham 302-293-8960
Cell / Nextel		Tactical	Cell / Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center
Cell / Nextel		Command	Cell / Nextel	Wildlife Recovery Command net	POC: Mr. Clay Stern 609-214-7895
Cell / Nextel		Command	Cell / Nextel	Near shore Recovery Branch	POC: Chris Gregory 714-273-8036
Cell / Nextel		Tactical	Cell / Nextel	Beach Pre-Clean Group	TBN
Cell / Nextel		Tactical	Cell / Nextel	Shoreline cleanup assessment	POC: Ms. Jacqui Michelle 803-513-5650
Cell / Nextel		Tactical	Cell / Nextel	Monitoring Group	Operations: PO McNeilly 267-765-3439 Scat Info: Situations 267-765-3446/3448

4. Prepared by: (Communications Unit)	Date / Time
LT Michael Brown, USCG	12/02/04 09:00

M/V ATHOS I
INCIDENT COMMAND POST

Holiday In Phone Numbers updated 12/2/04 15:50

Unified Command Staff	267-765-3431
	267-765-3460
	267-765-3459
Conference Phone	267-765-3457
Operations	267-765-3439
	267-765-3449
	267-765-3450
Waterways Management Branch	267-765-3445
	267-765-3434
	267-765-3450
Planning	267-765-3440
	267-765-3437
	267-765-3443
	267-765-3444
Resources/Situation	267-765-3446
	267-765-3447
	267-765-3448
Logistics	267-765-3464
	267-765-3432
	267-765-3453
	267-765-3454
	267-765-3471
	267-765-3472
NRC Logistics	267-765-3455
Finance/Admin	267-765-3435
	267-765-3451
	267-765-3452
Public Information Room	267-765-3436
	267-765-3441
	267-765-3442
Safety	267-765-3433
NOAA	267-765-3465

		267-765-3467
Fax	Receive	215-923-4476
		267-765-3493
	Transmit	267-765-3456
Break-out room		267-765-3461

ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 12/2/2004 09:00
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Version Name:**	Medical Plan

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856-342-2345	
Christians Care Hospital	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)

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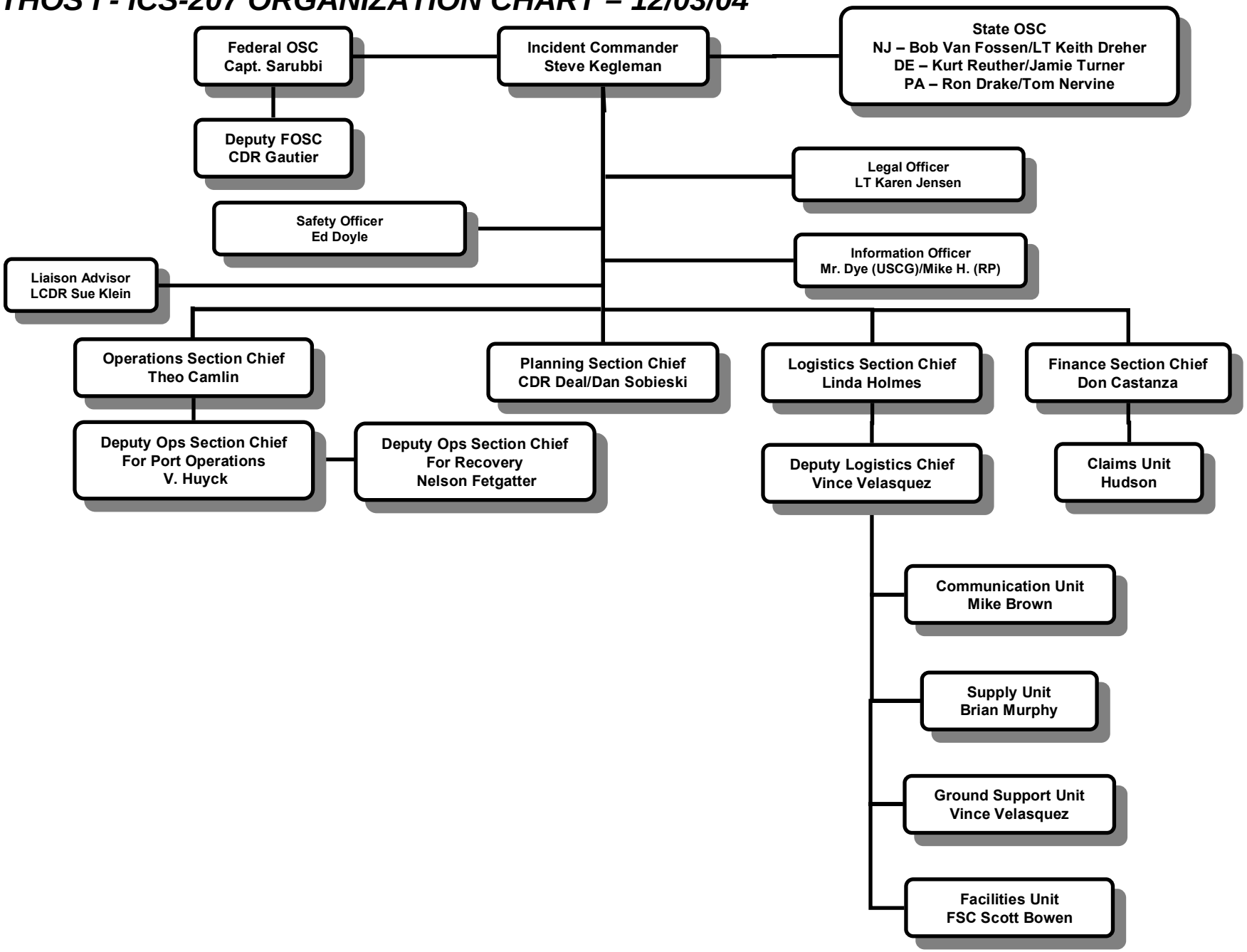
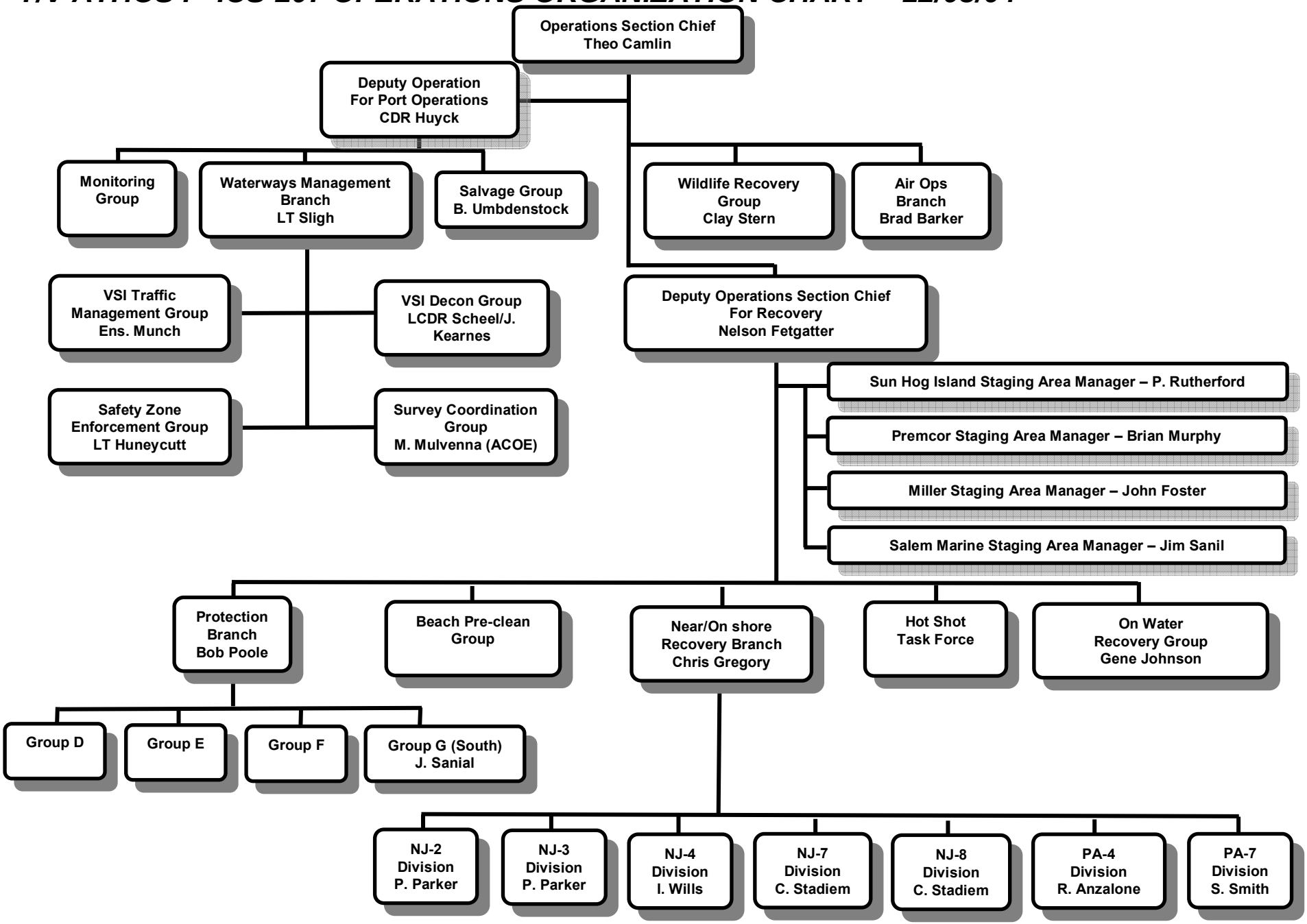
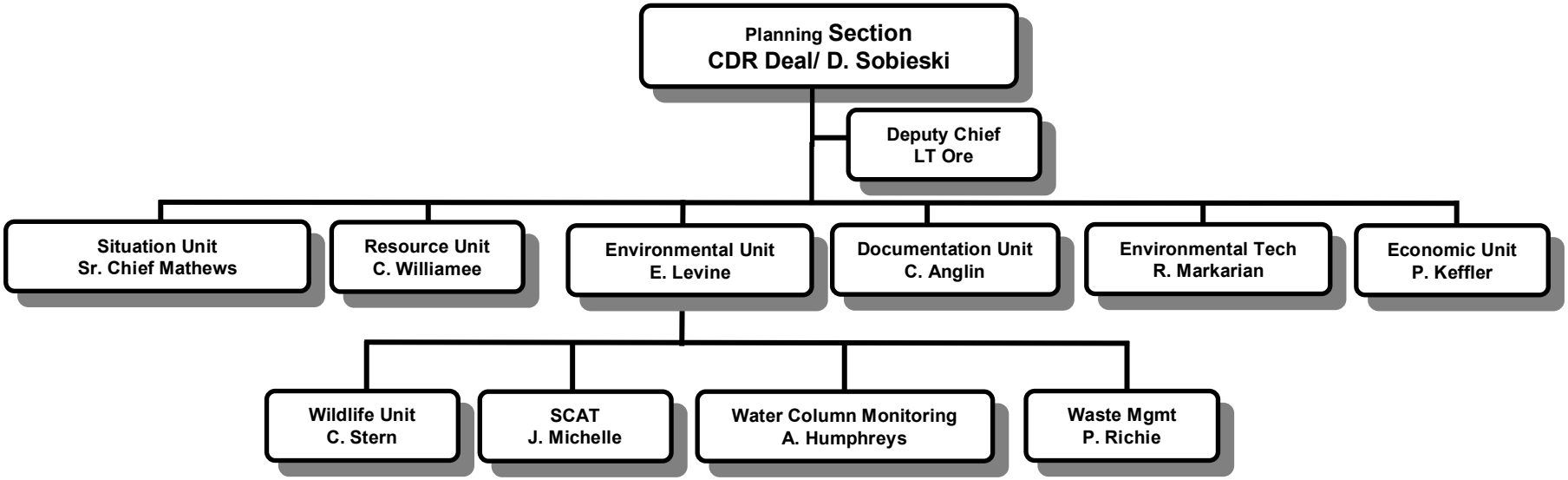
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 12/03/04



T/V ATHOS I - ICS-207 OPERATIONS ORGANIZATION CHART – 12/03/04



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 12/03/04



ICS 220 - Air Operations

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/2/2004 09:00
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Version Name:**	Air Ops	

Personnel and Communications

Title/Position	Name	Air/Air Frequency	Air/Ground Frequency	Phone
Air Ops Branch Director	Brad Barker	VHF 123.05		985-381-0697

Planned Flight Information

Type Of Aircraft	Operating Base	Aircraft Company	Passenger Capacity	Purpose	Scheduled Flights
Bell 206 L	Pier 36	Horizon	5	Surveillance N98KR	As Needed, Available 08:30
Bell Jet Ranger	Pier 36	Analar	3	N50178	08:30
Bell Jet Ranger	Pier 36	Horsham Valley	3	N4015G	As Needed, Available 08:30

Notes (Special Instructions, Safety Notes, Hazards, Priorities)

Refrain from air ops in the following areas: (Known Eagle Nesting Areas)
Petty Island
Mantua Creek
Monds Island

Operational Requirements:
1/4 mi. radius
>= 500' AGL

If injured/contaminated wildlife is sighted, contact the Situation Unit at 267-765-3440/3437/3443/3444

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Incident Name:	MV ATHOS I	Location:	Philadelphia, PA

Daily Health and Safety Message

December 3, 2004

Three Day Weather Forecast

Dec 3 Friday - day

Sun and a few passing clouds. High 49F. Winds W at 10 to 15 mph.

Dec 3 Friday - night

A mostly clear sky. Low 31F. Winds W at 5 to 10 mph.

Dec 4 Saturday

Sunshine. Highs in the upper 40s and lows in the mid 30s.

Dec 5 Sunday

Mostly sunny. Highs in the low 50s and lows in the low 40s.

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations.

General Safety Concerns:

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decon-tamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes –

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**

- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

ATV Safety Practices

Operating ATV's can be hazardous if safety practices are not followed:

- Wear proper protective clothing. This includes an approved helmet, gloves, eye protection, a long-sleeved shirt, and long pants.
- Inspect the ATV before you begin.
- Be aware of potential hazards/obstructions that may be present in the area where you are operating.
- DO NOT carry passengers.
- Be aware of your surroundings.
- Watch out for other personnel and equipment.

Handling characteristics of ATVs vary depending upon basic design and how they are equipped.

ATVs with solid rear axles (and those with locked differentials) turn both rear wheels at the same speed. ATVs with unlocked differentials allow the rear wheels to turn at different speeds. If a rear wheel leaves the ground, it will spin freely. Then when it touches the ground again, it may grab and cause loss of control.

Some ATVs are equipped with four-wheel drive. When operating in a four-wheel drive mode, keep the following in mind:

- Use of only the front brake or only the rear brake has the effect of braking both the front and rear wheels.
- Abrupt deceleration from shifting to a lower gear (engine braking) will affect both the front and rear wheels.

Posture

The correct riding posture will help you to easily operate the controls and help you react more quickly to potential hazards. Proper straight line riding posture includes:

- Head and eyes up, looking well ahead
- Shoulders relaxed, elbows bent slightly out, away from your body
- Hands on the handlebars
- Knees in toward the gas tank
- Feet on the footrests, toes pointing straight ahead
- Always keep both hands on the handlebars and both feet on the footrests. Removing even one hand or foot can reduce your ability to control the ATV, or could cause you to lose your balance and fall off. ATVs are rider-active—to enhance the performance capabilities of the ATV in maneuvers such as turning, negotiating hills, and crossing obstacles, you must shift your body weight.

SAFE USE OF PRESSURE WASHERS AND STEAM CLEANERS

Work to Be Done: Removal of contaminants from equipment, shoreline, piers, and similar structures.

Equipment: Steam cleaners, and pressure washers powered by internal combustion engines.

Site Description: Various types of work surfaces, rocks, sand, oily surfaces.

Potential Hazards: Slips, trips, falls, steam burns, injuries from excess pressure, excessive noise, injuries from hot surfaces on the hotsy or pressure washers, insect and animal bites, and potential drowning.

Special notes: All personnel should adhere to the following precautions with steam cleaners and pressure washers:

- All personnel will wear proper personal protective equipment when working operating the steam or pressure wands or assisting personnel using this equipment. This will include Tyvek coveralls, rubber boots, nitrile or neoprene gloves, **face shield with clear or tinted safety glasses with side shields under the shield**.
- All personnel working around pressure washers or steam cleaners must, at a minimum, wear regular safety glasses.
- **Equipment operators should never direct the power spray of the wand to themselves or other personnel.** Steam washers are for decontamination of equipment only. Personal Protective Equipment should not be washed or decontaminated by using steam or power washers.
- Prior to starting the equipment caution should be exercised when filling the tank with gasoline. No smoking will be allowed in the area while equipment is being refueled. Prior to startup all hoses and wand should be connected and rechecked to ensure the connections are secure.
- All supply and wand hoses should be free of kinks and where possible secured to not present a tripping hazard to other personnel.
- Operators should be cautious when using the rope pull to start the engine. Wet hands, slippery hands, pulls or frayed pull rope can lead to injury.
- Operators should ensure that personnel in the area are a safe distance from the wand and equipment operations.
- Noise surveys should be taken to check noise exposure to workers. Generally personnel working on or within 5 feet of steam or pressure should wear hearing protection.
- When working near water, Personal Flotation Devices (PFD's) must be worn.

- Contaminated areas, where personnel are working, should be marked and barricaded, and the surface covered to prevent spread of contamination. NOTE: If plastic is used for coverage of the surfaces, personnel must exercise care when walking on the plastic surfaces as they can become slick with a combination of contaminant and water. The wearing of rubber oil resistant non-skid boots or the use of cloth covering on the surface instead of plastic is preferable.
- Wand levers should always be held and triggered by the operator's hand. At no time should the lever be wired or taped in the open position.

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Planning Section	**at** 12/2/2004 16:00
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Version Name:**	12/03/04 Meeting Schedule

Meeting Name & Date/Time	Purpose	Attendees	Location
Sit Rep 12/3/2004 00:00			
Operations Briefing 12/3/2004 06:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Holiday Inn
UC Objectives Meeting 12/3/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Sherman Room
Field Reports 12/3/2004 09:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
RRT 12/3/2004 09:00	Informational brief	Atlantic Strike Team	Holiday Inn
Command & General Staff Meeting 12/3/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
ICS 209 12/3/2004 10:00	Resource Summary	Planning Section	Cmd Post
Tactics Meeting 12/3/2004 12:00	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Sherman Room
Sit Rep 12/3/2004 12:00			
Field Reports 12/3/2004 13:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
ICS 209 12/3/2004 14:00	Resource Summary	Planning Section	Cmd Post
Press Briefing 12/3/2004 15:00			
Field Reports 12/3/2004 16:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Planning Section	**at** 12/2/2004 16:00
Period:	Period 7 (12/3/2004 06:00 - 12/4/2004 06:00)	**Version Name:**	12/03/04 Meeting Schedule

Meeting Name & Date/Time	Purpose	Attendees	Location
Planning Meeting 12/3/2004 16:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Sherman Room
IAP Approval 12/3/2004 18:30			

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IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 9 (12/5/2004 06:00 to 12/6/2004 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) – Jamie Bethard: _____

SOSC (PA) – Bob Bauer : _____

SOSC (NJ) – Gary Pearson: _____

RPIC – Steve Kegleman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. ICS 202 - General Response Objectives
4. ICS 204 - Assignment List
5. ICS 205 - Communications Plan
6. ICS 205a - ICP List
7. ICS 206 - Medical Plan
8. ICS 207 - Organization Chart
9. ICS 220 - Air Operations
10. ICS 223 - Health and Safety Message
11. ICS 230 - Daily Meeting Schedule
12. Website: www.incidentinfo.com

T/V ATHOS I SPILL, DELAWARE RIVER, NEW JERSEY
1540 EST, Saturday December 4, 2004

NOTE: This is a site specific forecast from the National Weather Service generated specifically for this incident region.

Sunset (12/04): 1640

Sunrise (12/05): 0700
Sunset (12/05): 1640

36 Hour Forecast:

_____
Winds:
Tonight, the winds are expected to be from the SW at 10-15 knots. Sunday, west winds at 10 knots are predicted to shift and be from the NW at 5 knots by the afternoon hours. Sunday night, NW winds at 5 knots are forecast to shift and be from the east at 5 knots by the late evening hours.

_____
Waves:
Tonight, the seas are expected to be 1-2 feet. Sunday through Sunday night, the seas are predicted to be 1 foot or less.

_____
Precipitation:
Tonight through Sunday night, no precipitation is forecast.

_____
Ceiling/Visibility:
Tonight, clear skies are expected to diminish to partly to mostly cloudy skies by the late evening hours. Sunday, partly cloudy skies are predicted. Sunday night, partly cloudy skies are forecast to become cloudy by the late evening hours. Visibility is expected to be unrestricted.

_____
Temperatures:
Temperatures are forecast to range from highs in the 50’s to lows in the 30’s.

_____
Extended Forecast:
Monday, the winds are expected to be from the east at 5 knots shifting to be from the SE at 10 knots by the afternoon hours. Monday night, south winds at 5-10 knots are predicted. Seas 1 foot. Mostly cloudy skies. Chance of rain.

Tuesday, SE winds at 10 knots are predicted to shift and be from the south at 10-15 knots with gusts to 25 knots by the late morning hours. Tuesday night, SW winds at 15-20 knots are predicted to shift and be from the west at 15-20 knots with gusts to 30 knots by the late evening hours. Seas 1 foot building to 2-3 feet by the evening hours. Mostly cloudy skies. Chance of rain.

Wednesday, west winds at 15 knots with gusts to 25 knots are forecast to shift and be from the NW at 5-10 knots by the afternoon hours. Seas 2 feet. Mostly cloudy skies. Dry.

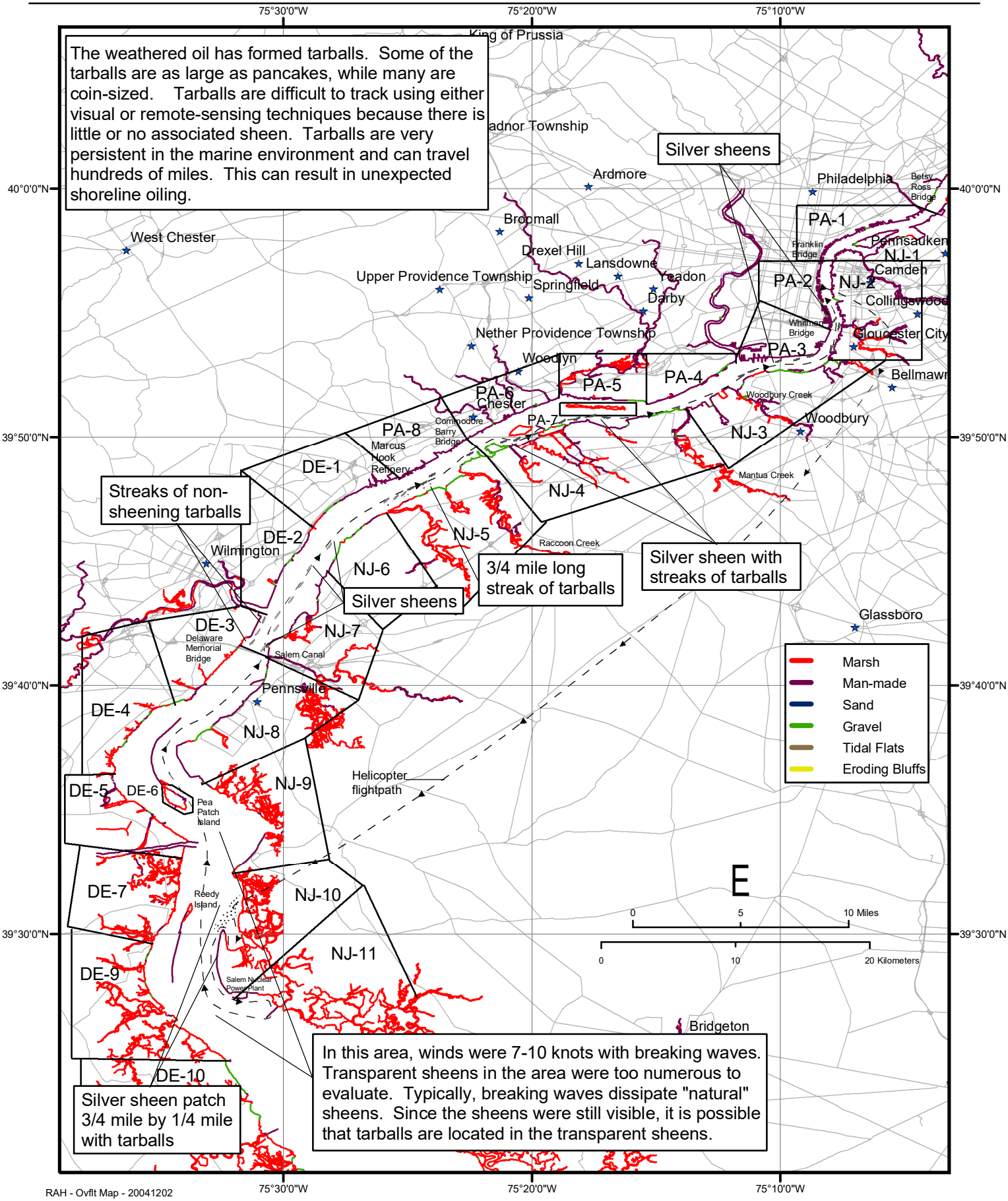
M/V Athos I, Delaware River, NJ/PA

Overflight Map created by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 12/3/2004 0845-1005
Platform: Helicopter (altitude 100-500 feet)
Observers: Simecek-Beatty (NOAA), McCloud (USN), Gregory (RP Rep)

Graphic does not represent precise amounts or locations of oil



RAH - Ovflt Map - 20041202

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 12/3/2004 12:00
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to facilitate vessel movement in affected port areas.		
Expedite decon of vessels.		
Continue to enforce safety zone.		
Salem/Hope Creek Power Plant objective		
• Develop and execute plan to locate and mitigate any sub-surface oil that may threaten the Salem/Hope Creek Nuclear Power Plant water intakes.		
• Provide information and conditions for plant to be reasonably assured that no abundance of oil will clog the intake screens.		
Continue aggressive shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact, aggressively assess the location and extent of submerged oil.		
Continue execution of salvage plan.		
Continue to refine plan and mobilize response resources to confine and recover submerged oil.		
Monitor existing sensitive site booming strategies & implement additional strategies as appropriate.		
Collect, recover and dispose of free-floating oil.		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Unified Command Emphasis:		
• Assess impact to maritime commerce and develop appropriate response priorities.		
• Make Safety a Top Priority. Adhere to SSP and watch out for your fellow responders.		

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Column Monitoring Team
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
TF#1	Jeff Bechtell		908-428-4459	
TF#2	Sean McGleskey		267-228-8536	
TF#3	Pat McNeilly		609-351-8516	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Water Column Monitoring Tean	Manpower: Responder	TF#2 Snare Samplers	12 each	
Water Column Monitoring Tean	Manpower: Responder	TF#3 Crab Pot Samples		
Water Column Monitoring Tean	Manpower: Responder	TF#1 Snare Samplers	12 each	
Water Column Monitoring Tean	Vessel	TF#1 EPA Boat	1 each	
Water Column Monitoring Tean	Vessel	TF#2 AST 32 Feet	1 each	
Water Column Monitoring Tean	Vessel	TF#3 M/V Christine Emily	1 each	

Assignments

TF#1 - Deploy 4 snare sampler transects of 3 Snare Samplers in accordance with attached maps

TF#2 - Pull deployed 12 snare samplers south of Pea Patch Island and document extent of oiling. Contact spervisor of results. Re-deploy samplers as directed by operations.

TF#3 - Deploy 12 crab pot samplers from Aldars Cove to Cedar Swamp, but not in channel.

Special Instructions for Division / Group

Do not deploy samplers inside the channel or in a position where floats may cause navigational hazard.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Vessel Traffic Mgmt Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Port Ops	R. Laferriere		609-351-7142	
Waterway Management Branch	LT Sligh/LT Knight		215-778-4534	
Vessel Management Group	ENS Munch/CPO Erickson		215-271-4805	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Traffic Mgmt Group	Manpower: Responder	Responder	3 each	
Vessel Traffic Mgmt Group	Manpower: Supervisor	Assistant Supervisor	2 each	
Vessel Traffic Mgmt Group	Manpower: Supervisor	USCG Vessel Manageme	2 each	

Assignments

Coordinate entry / exit of commercial vessel traffic.
- By 0800 every morning ensure that the 204 information for the Safety Zone Enforcement Group is communicated to the OINC of the 65 footer and to the Coxswain securing the northern end of the safety zone.

Oversee salvage and recovery of sunken airboat.

- Prioritize departing vessels for cleanup.
- Coordinate with Vessel Decon Group Supervisor for priority vessels for cleanup and departure.

Report situation status to the situation unit each day at 0900, 1300, and 1600 hrs to the Situation Unit Leader at 267-765-3446/3448

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Provide following information at each report:

Vessels Activity:
- Awaiting Berth
- Authorized inbound through Safety Zone
- Departed
- Decon List
- Being Deconed
- Decon Completed
- Inspection List
- Inspections Completed

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Vessel Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy	R. Laferriere/R. Campbell		609-351-7142	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On-Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	
Vessel Decon Group	LCDR T. Scheel/Mike Kearn		215-778-4076	
Waterways Management Branch	LT Sligh/CWO Gamache		215-778-4534	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel Decon Group	Barge: Inland	Portable Barge Set	1 each	
Vessel Decon Group	Boom	Boom	200 feet	
Vessel Decon Group	Manpower: Responder	9 person decon team	1 each	
Vessel Decon Group	Manpower: Responder	2 person assessment tea	8 each	
Vessel Decon Group	Manpower: Supervisor	Supervisors	1 each	
Vessel Decon Group	Vessel	Boats 28'	2 each	

Assignments

- As directed clean commercial vessels in accordance with vessel decon plan (steamcleaning).
- Note any heavily impacted facilities and report information to ops.
- NSF supervisors will actively monitor and ctitique the operation.
- Decon schedule must be communicated to the stakeholders.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Vessel Decon Group Supervisor.

10 Task Forces Total:

Vessel Decon Task Force 1
Vessel Decon Task Force 2
Vessel Decon Task Force 3
Vessel Decon Task Force 4
Vessel Decon Task Force 5
Vessel Decon Task Force 6
Vessel Decon Task Force 7
Vessel Decon Task Force 8
Vessel Decon Task Force 9
Vessel Decon Task Force 10

Each Task Force is comprised of equipment listed above.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Survey Coordination Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Port Ops	R. Laferriere		609-351-7142	
Branch Director	LT Kevin Sligh		215-778-4534	
Group Supervisor	Mickey Mulvenna		215-313-1131	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Assignments

Coordinate all river survey efforts between NOAA, ACOE & Commercial Entities.
Conduct complete bottom surveys of Delaware River including the Mantua Creek Anchorage and the navigation channel south to the Commodore Barry Bridge.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Identification Assessment U
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	CDR Deal/Dan Sobieski		267-549-4849	
Submerged Oil Assessment Unit Leader	Mark Ploen		612-963-5222	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Submerged Oil Identification As	Manpower: Responder	3-person teams	2 each	
Submerged Oil Identification As	Manpower: Responder	4-person dive team	1 each	
Submerged Oil Identification As	Manpower: Responder	LCDR Lynsky	1 each	
Submerged Oil Identification As	Manpower: Responder	LT Cesario	1 each	
Submerged Oil Identification As	Manpower: Responder	J. Michel	1 each	
Submerged Oil Identification As	Manpower: Responder	LT McGlinchey	1 each	
Submerged Oil Identification As	Manpower: Responder	E. Lavine	1 each	
Submerged Oil Identification As	Manpower: Responder	Alan Humphries EPA	1 each	
Submerged Oil Identification As	Manpower: Responder	T. Camlin	1 each	
Submerged Oil Identification As	Sorbent	pom-poms	24 bags	
Submerged Oil Identification As	Vessel	EPA Side-Scan Sonar Bc	1 each	
Submerged Oil Identification As	Vessel	Greater than 21'	1 each	32 feet
Submerged Oil Identification As	Vessel	Greater then 21'	1 each	30 feet
Submerged Oil Identification As	Vessel	Less than 21' (EPA Boats	2 each	

Assignments

Conduct submerged oil assessment in accordance with submerged oil assessment plan.
Specific over all actions will be taken in 3 areas:

Recovery operations alternatives: Institute pilot test protocols to evaluate the efficacy of underwater containment and recovery alternatives.

Test Seine and Pom-Pom drags.

Physical assessment:

Use water column monitoring device (consists of a Norwegian Fender, 50' polly propylene rope with pom-poms attached the length of the rope, and an anchor), crabpots & side-scan sonar. Coordinate placement with appropriate State personnel. Sample techniques and disposition must be coordinated with appropriate State personnel. Initiate or continue dive team operations to verify assessment findings and map/survey results. Physical assessment will be conducted in the Mantua Creek area.

Engineering Alternatives:

Investigate engineering alternatives to divert debris and suspended oil from the Salem Nuclear Power Plant water intakes. Efforts will be directed by Army Corps of Engineers and coordinae with Salem Nuclear Power Plant.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Identification Assessment U
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Shoreline Cleanup Assessment Team
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	Dan Sobieski/Tim Deal		267-549-4849	
Environmental Unit	Ed Levine		206-849-9941	
SCAT Leader	Jacqui Michel		803-513-5650	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Val Garner		850-258-9116	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Shoreline Cleanup Assessment	Manpower: Responder	SCAT Teams	6 each	
Shoreline Cleanup Assessment	Vessel	Boat <21' (Shallow Draft)	3 each	

Assignments

SCAT will assess and compile cleanup data and identify areas requiring cleanup resources. Communicate priorities to Operations for deployment of response resources. Report information to the SCAT Leader.

SCAT Team to go into the Racoon Creek and evaluate the shoreline.

Special Instructions for Division / Group

Helicoptor on standby for SCAT (as needed); Helo overflights will provide information to assist/direct SCAT teams.

Description of Work

Develope protocol for Crab Pots

Location of Work

SCAT Team #1 will work in Tinicum Island - PA7
SCAT Team #2 will work in NJ
SCAT Team #3 will work in Pea Patch - DE6
SCAT Team #4 will work in DE-7
SCAT Team #5 will work in DE-8, DE-9, and DE-10
SCAT Team #6 will work in Racoon Creek

Work Assignment Special Instructions

State of PA Representative to be on board the overflight/Helo Scat Team

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Shoreline Cleanup Assessment Team
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will hCall 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** Salvage Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Port Ops	R. Laferriere		609-351-7142	
Salvage Group	Titan - Bob Umbdenstock/Ja		908-230-8075	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salvage Group	Barge: Inland	Work Barge "High Roller"	1 each	
Salvage Group	Barge: Inland	Lightering Barge "Roanol	1 each	
Salvage Group	Manpower: Responder	Salvor	1 each	
Salvage Group	Manpower: Responder	Monitors	4 each	
Salvage Group	Manpower: Responder	Pumping Team Damage	8 each	
Salvage Group	Manpower: Supervisor	Supervisors	2 each	
Salvage Group	Pumps	Submersible Pump Head	3 each	6 inch(es)
Salvage Group	Pumps	Power Pack	3 each	
Salvage Group	Skimmer	Skimming Unit	1 each	
Salvage Group	Tug	Tug for "Roanoke"	1 each	
Salvage Group	Tug	Tug for "High Roller"	1 each	

Assignments

Lighter vessel , carry out Salvage Plan.

Report any deviations from Salvage Plan to Operations.

24x7 operations.

USN Supsalv: 703-602-7527.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Salem Marine Terminal #4
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
Staging Area Manager	Jim Sanial		856-266-3810	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Bak		484-431-7763	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salem Marine Terminal #4	Manpower: Responder	Responders	100 each	
Salem Marine Terminal #4	Vehicle	20 Person Vehicles	5 each	

Assignments

Rapidly deploy Shoreline Cleanup Teams to priority areas based on spill impacts and SCAT analysis

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** Salem Power Plant
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Group Supervisor Day	TBN		TBN	
Group Supervisor Night	TBN		TBN	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Bak		484-431-7763	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Salem Power Plant	Boat Operator	Crew	1 each	
Salem Power Plant	Equipment: Small	Floats	6 each	
Salem Power Plant	Equipment: Small	3 Cylinder Blocks	6 each	
Salem Power Plant	Equipment: Small	Snare 80 ft.	6 each	
Salem Power Plant	Equipment: Small	Rope 80 ft.	6 each	
Salem Power Plant	Vessel	Boat 32' USCG	1 each	

Assignments

Deploy Upstream and downstream snare samplers as prescribed by NOAA and the Submerged Oil Assessment Unit Leader at various locations.

Maintain 24 x 7 boom tending and mitigation capability

Maintain 24 x 7 NSF oversight and liaison presence.

Special Instructions for Division / Group

Notify the NJ State Police Incident Commander anytime new response assets are deployed to the nuclear power plant site.

Ensure all activities are closely coordinated with nuclear plant officials. During daylight hours call the command post at 856-339-1880/1188 and during nightime hours call the duty fire chief at 856-339-2803.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Safety Zone Enforcement Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Port Ops	R. Laferriere		609-351-7142	
Branch Director	LT Kevin Sligh		215-778-4534	
Division/Group Supervisor	LT Honeycutt		215-778-3117	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	21 feet
Safety Zone Enforcement Grou	Vessel	Greater than 21'	1 each	65 feet

Assignments

Continue to enforce safety zones from the Tacony - Palmyra Bridge to the Marcus Hook/Bellevue Range Intersection

Special Instructions for Division / Group

CGC Cleat will liason with CGC Capstan to work out relief skd.
CG station Philadelphia - fatigue standards waived by GRU CDR; auth to man 12 Hr Shifts.
Maintain 24X7 presence.

- COMMERCIAL AND MERCHANT VESSELS ARE NO LONGER REQUIRED TO REQUEST PERMISSION FOR ENTERING OR SHIFTING WITHIN THE SAFETY ZONE.
- COMMERCIAL AND MERCHANT VESSELS ARE STILL REQUIRED TO SUBMIT A REQUEST FOR DEPARTURE, BE ASSESSED BY A VESSEL CLEAN-UP ASSESSMENT TEAM (VCAT), AND OBTAIN PERMISSION FOR DEPARTURE OF THE ATHOS 1 SAFETY ZONE. REQUESTS CAN BE SUBMITTED VIA FAX AT (215) 271-4903.
- ALL COMMERCIAL AND MERCHANT VESSELS TRANSITING NORTH OF THE TACONY PALMYRA BRIDGE ARE CONSIDERED A "DEPARTURE" AND MUST SUBMIT A REQUEST FOR DEPARTING THE SAFETY ZONE.
- TWO-WAY TRAFFIC (OUTBOUND TRANSITS) OCCURRING AT NIGHT WILL BE ASSESSED ON A DAY-TO-DAY BASIS.

If a recreational vessel insists on entering safety zone, stop/board/cite CFR 33 CFR 165.209.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** Protection Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Protection Group Supervisor	B. Poole		302-462-0191	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
NRC - National Response Cc	Boom	Boom (CHI)	10600 feet		Assigned
NRC - National Response Cc	Boom	Boom (KENS)	3000 feet		Assigned
NRC - National Response Cc	Boom	Boom (MEG)	7900 feet		Assigned
Delaware Bay & River COOF	Boom	DE2 - Christina Rive	3000 feet		Assigned
ConocoPhillips	Boom	DE-2 - ConocoPhillip	1000 feet		Assigned
ConocoPhillips	Boom	DE-2 - ConocoPhillip	2000 feet		At Staging
Unknown	Boom	DE-2 - Rock Salt Ter	1000 feet		Assigned
Delaware Bay & River COOF	Boom	DE-2 - Shell Pot Cre	800 feet		Assigned
Unknown	Boom	DE-2 - Shell Pot Cre	2000 feet		Assigned
Unknown	Boom	DE-2 - Stoney Creek	200 feet		Assigned
Unknown	Boom	DE-2 - Stoney Creek	200 feet		At Staging
Unknown (Probably Sunoco)	Boom	DE-2 - Sun Marcus H	4000 feet		Assigned
Premcor	Boom	DE-4 - Red Lion Cre	500 feet		Assigned
Delaware Bay & River COOF	Boom	DE-6 - Pea Patch Isl	14500 feet		Assigned
Premcor	Boom	DE-6 - Pea Patch Isl	13000 feet		Assigned
NRC - National Response Cc	Boom	DE-9 Boom (NS)	2700 feet		Assigned
Hess	Boom	NJ-1 - Hess Termina	2500 feet		Assigned
Unknown	Boom	NJ-2 - At end of Merc	500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-2 - Big Timber Cr	2500 feet		Assigned
Unknown	Boom	NJ-2 - City Park	600 feet		Assigned
Coastal	Boom	NJ-2 - Coastal Eagle	1500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-2 - Little Timber C	100 feet		Assigned
Unknown	Boom	NJ-2 - Newton Creek	500 feet		Assigned
Unknown	Boom	NJ-2 - Water Steet	300 feet		Assigned
Unknown	Boom	NJ-3 - Drydock area	2500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-3 - Mantua Creek	900 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-3 - Pipeline area /	2000 feet		Assigned
Unknown	Boom	NJ-3 - Pipeline area.	1200 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-3 - Woodbury Cre	2800 feet		Assigned
NRC - National Response Cc	Boom	NJ-3 Boom (KENS)	5100 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Aunt Deb's Dit	400 feet		Assigned
Unknown	Boom	NJ-4 - MEG Staging	100 feet		At Staging

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** Protection Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
Unknown	Boom	NJ-4 - Nassau Ave	1200 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Old Canal	300 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Repaupo Cree	400 feet		Assigned
Valero	Boom	NJ-4 - Valero Dock	3500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Weeks (Barge	600 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-5 - Oldman's Cre	3000 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-5 - Raccoon Cree	3300 feet		Assigned
Unknown	Boom	NJ-9 - Salem River S	3000 feet		Assigned
U.S. Navy	Boom	PA-2 - Navy Base	1200 feet		Assigned
Delaware Bay & River COOF	Boom	PA-2 - Schuylkill Riv	600 feet		Assigned
Sunoco	Boom	PA-2 - Sun Terminal	2300 feet		Assigned
NRC - National Response Co	Boom	PA-3 Boom (NS)	700 feet		Assigned
Unknown	Boom	PA-4 - Airport	100 feet		Assigned
Unknown	Boom	PA-4 - Airport, acros	200 feet		Assigned
Unknown	Boom	PA-4 - Army COE	400 feet		At Staging
Unknown	Boom	PA-4 - Sun Hog Islan	3200 feet		Assigned
NRC - National Response Co	Boom	PA-4 Boom (KENS)	5500 feet		Assigned
Delaware Bay & River COOF	Boom	PA-5 - Darby Creek (	1800 feet		Assigned
Delaware Bay & River COOF	Boom	PA-5 - Governor Prin	400 feet		At Staging
Delaware Bay & River COOF	Boom	PA-6 - Chester Creel	900 feet		Assigned
Unknown	Boom	PA-6 - Eddy Stone (F	100 feet		Assigned
Unknown	Boom	PA-6 - Marcus Hook	1000 feet		Assigned
Delaware Bay & River COOF	Boom	PA-6 - Ridley Creek	500 feet	7 inch(es)	Assigned
Delaware Bay & River COOF	Boom	PA-6 - Ridley Creek	3000 feet		At Staging
NRC - National Response Co	Skimmer	Skimmer (CHI)	1 each		Assigned
NRC - National Response Co	Vehicle	Utility Truck (CHI)	6		(Unknown)
NRC - National Response Co	Vessel	Boat < 21' (CHI)	13 each		Assigned
NRC - National Response Co	Vessel	Boat < 21' (KENS)	11 each		Assigned
NRC - National Response Co	Vessel	Boat > 21' (CHI)	9 each		Assigned
NRC - National Response Co	Vessel	Boat > 21' (KENS)	4 each		Assigned
NRC - National Response Co	Vessel	DE-9 Boat < 21' (NS)	1 each		Assigned
NRC - National Response Co	Vessel	DE-9 Boat >21' (NS)	2 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
NRC - National Response Co	Manpower: Responder	NJ-2 Responder (CH	33 each		Assigned
NRC - National Response Co	Manpower: Responder	PA-4 Responder (KE	30 each		Assigned

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** Protection Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
NRC - National Response Cc	Manpower: Supervisor	DE-3 Responder (NS	9 each		Assigned
NRC - National Response Cc	Manpower: Supervisor	NJ-3 Responder (KE	28 each		Assigned

Assignments

Identify & protect sensitive sites as requested. Monitor & maintain boom at GRP sites already deployed. Ensure it's effectiveness.

Maintain boom tending operation.
Deploy Thousand Acre Marsh
Deploy Port Penn
Priority: Deploy protection boom at Reedy Island
Priority: Reset boom deployed at Salem Creek
Priority: Reset boom deployed at Pea Patch
Priority: Reset boom deployed at Christina River
Maintain boom across Cedar Creek
Maintain boom across Delaware City Branch Channel
Maintain boom gate at Chesepeake and Delaware Canal
Maintain Cascading deflection boom to protect Salem Nuclear Power Plant water intakes
Maintain boom around Salem Nuclear Power Plant
Evaluate need to deploy boom at Goose Point to Fort Mott
Daylight Operations only except for Salem Power Plant and Christina River.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Premcor Staging #3
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Staging Area Manager	Brian Murphy		713-503-6389	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	D. Kennedy		302-293-8964	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Premcor Staging #3	Sorbent	Visqueen	4 rolls	
Premcor Staging #3	Sorbent	Snare	101 bags	
Premcor Staging #3	Sorbent: Boom	Sorbent Boom	39 bales	
Premcor Staging #3	Trailer	Trailer	4 each	
Premcor Staging #3	Vehicle	Vehicle	4 each	

Assignments

Be prepared to deploy resources to combat oil pooled nearshore or stranded on sensitive shoreline.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Branch Director	Chris Gregory		714-273-8036	
Supervisor	Steve Smith		504-382-8351	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-7 Division	Barge: Inland	Deck Barge	1 each	
PA-7 Division	Equipment: Heavy	Tracked Bobcat	1 each	
PA-7 Division	Manpower: Responder	Laborers	300 each	
PA-7 Division	Manpower: Supervisor	Supervisor	5 each	
PA-7 Division	Manpower: Supervisor	NSF Supervisor	2 each	
PA-7 Division	Pressure Washers / Wash	Wash pump/hose assem	10 each	
PA-7 Division	Vehicle	ATV's w/ Trailers	2 each	
PA-7 Division	Vessel	Push Boat	1 each	
PA-7 Division	Vessel	NSF Boat	1 each	

Assignments

-Manually recover oil and oil covered debris
-Employ and assess effectiveness of various techniques:
  -Squiggiees
  -Snares
  -Low pressure flushing
  -Vacuum transfer

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review site safety plan. Be aware of slips, trips and falls. Always wear proper PPE. Follow decon procedures in Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Randy Anzalone		713-569-7237	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Nick Brignola		484-239-4436	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-4 Division	Boom	Boom	4850 feet	
PA-4 Division	Manpower: Responder	Laborers	335 each	
PA-4 Division	Manpower: Supervisor	Supervisor	8 each	
PA-4 Division	Vessel	Boat < 21'	4 each	
PA-4 Division	Vessel	Large Boat > 21'	3 each	

Assignments

Conduct Shoreline Cleanup on PA Shoreline from North of Tinicum Island up to entrance of Schuykill River. Ft Mifflin is priority.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** On-Water Recovery Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Gene Johnson		302-462-0191	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
On-Water Recovery Group	Manpower: Supervisor	Supervisor	1 each	
On-Water Recovery Group	Skimmer	Skimming Unit	2 each	

Assignments

OSRV Assignments
OSRV to maintain lightering location

Skimming Unit 1 Assignment
Skimming Unit on standby in the vicinity if Tinicum Island.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Near/On shore Recovery Branch	Chris Gregory		714-273-8036	
Division/Group Supervisor	Chris Stadiem		206-510-0493	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-8 Division	Boom	Boom	2500 feet	
NJ-8 Division	Equipment: Small	Hand Tools	20 Sets	
NJ-8 Division	Manpower: Responder	Laborers	20 each	
NJ-8 Division	Storage: Solid	Roll Off Box	4 each	
NJ-8 Division	Vessel	Less than 21'	1 each	

Assignments

Collect, contain oil with boom strategies and recover (Kelly Pt., Penns Beach)
Report resource status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Kelly Pt., Penn's Beach

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
Near/On Shore Recovery Branch Director	Chris Gregory		714-273-8036	
Division/Group Supervisor	Chris Stadiem		206-510-0493	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-7 Division	Boom	Boom	2500 feet	
NJ-7 Division	Equipment: Small	Manual Removal Tools	20 Sets	
NJ-7 Division	Manpower: Responder	Laborers	20 each	
NJ-7 Division	Storage: Solid	Roll Off Box	4 each	
NJ-7 Division	Vessel	Less than 21'	1 each	

Assignments

Physically remove free floating oil in vicinity of Eagles Nest, use manual removal, flushing, bagging. Line area with hard boom and snare during flushing.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Carneys Point, Helm's Cove

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
Near/On Shore Recovery Branch Director	Issac Will		952-250-3161	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Sherrow		484-645-4512	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-4 Division	ATV	ATV	1 each	
NJ-4 Division	Equipment: Small	Hand Tools	40 sets	
NJ-4 Division	Manpower: Responder	Labor	90 each	
NJ-4 Division	Manpower: Supervisor	NSF Reps	2 each	
NJ-4 Division	Manpower: Supervisor	Supervisor	1 each	
NJ-4 Division	Manpower: Supervisor	Fish and Wildlife Rep	1 each	
NJ-4 Division	Storage: Solid	Rolloff Boxes	8 each	
NJ-4 Division	Vacuum Transfer Unit	VTU	2 each	
NJ-4 Division	Vessel	Less than 21'	3 each	
NJ-4 Division	Vessel	Greater than 21'	4 each	

Assignments

-Manually recover oil and oil coated debris.
-Employ and assess effectiveness of various techniques:
  -Low pressure flushing
  -Squigees
  -Snares
  -Vacuum Unit
-Line area with hard boom and snare during flushing.
-Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Mantua Creek and Commodore Berry Bridge.

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No wetland vegetation should be cut without State approval. Report oiled wildlife to Situation Unit. Do not walk through or work in Mud Flats.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin/V Huyck		425-501-5430	
Operations Section Deputy Recovery	Nelson Fetgatter		713-342-0460	
NJ-3 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Sherrow		484-645-4512	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Boom	Boom	9250 feet	
NJ-3 Division	Equipment: Small	Vacuum Transfer Unit	2 each	
NJ-3 Division	Manpower: Responder	Responders	295 each	
NJ-3 Division	Manpower: Supervisor	Supervisors	7 each	
NJ-3 Division	Manpower: Supervisor	NSF Supervisors	2 each	
NJ-3 Division	Pumps	Wash Pumps/Hose Asse	4 each	
NJ-3 Division	Storage: Solid	Roll Off Boxes	4 each	
NJ-3 Division	Vehicle	Utility Vehicles	15 each	
NJ-3 Division	Vessel	Small Boats	11 each	
NJ-3 Division	Vessel	Push Boat	1 each	

Assignments

1. Physically remove free surface oil and contaminated debris.
2. Employ Vacuum Transfer Unit at low tide
3. National Strike Force to be on hand to assess effectiveness
4. Conduct cleanup operations following the guidance in the enclosure titled "Cleanup Recommendations"
5. Prioritize cleanup of Eagle's Nest Area, when impacted.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Eagle Point

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
NJ-2 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-2 Division	Manpower: Responder	Laborers	20 each	
NJ-2 Division	Manpower: Supervisor	Supervisor	2 each	

Assignments

Recover and removal of oily debris.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Monitoring Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief for Port Ops	V. Huyck		215-778-5453	
Division/Group Supervisor	Pat McNeilly		609-351-8516	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Monitoring Group	Manpower: Responder	State Monitors	3 each	
Monitoring Group	Manpower: Responder	NSF Monitor	13 each	
Monitoring Group	Manpower: Supervisor	Supervisor	1 each	
Monitoring Group	Vehicle	Utility Vehicles	8 each	
Monitoring Group	Vessel	Small Boats	1 each	18 feet

Assignments

Conduct clean-up monitoring at assigned division. Ensure safe and effective protection and recovery operations. Document detailed work activity, resource use, availability, and measure work productivity via the 214. Evaluate response methods needed for potection and oil removal and make recommendations to Supervisor. Report findings to Ops. Correct gross safety violations immediately. Report to safety.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan. Wear Mustang Suits.

Additional Information

Report situation status to the Situation Unit Leader each day at 1100 and 1400 hrs. 267-765-3446/3448

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Miller Paulsboro Staging #1
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy For Recovery	Nelson Fetgatter		713-342-0460	
Staging Area Manager	John Foster		985-788-8649	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Glenn Sherk		610-742-3202	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Miller Paulsboro Staging #1	Vacuum Truck	Air Mover Super Sucker	1 each	
Miller Paulsboro Staging #1	Vessel	Water Taxi 4' to 30'	1 each	

Assignments

Stage and deploy additional skimmers, barges, steam units, super sucker, water taxi, and wash pumps. Launch Site.

Location of Work

Paulsboro, NJ

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:** Hot Shot Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Jeff Topic		952-201-1002	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Hot Shot Group	Equipment: Small	Hand Tools	14 Sets	
Hot Shot Group	Manpower: Responder	Labor Tech	14 each	
Hot Shot Group	Manpower: Supervisor	Supervisor	1 each	
Hot Shot Group	Vessel	Less than 21'	7 each	

Assignments

Using information from overflight survey to clean-up pooled oil that is not accessible to skimmers.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.
Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Priority: Check on Logan generating Plant, Salem Generating Plant, and Philadelphia Electric Company Plant first thing every morning.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	Hot Shot Group - Raccoon Creek
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Operations Section Deputy for Recovery	Nelson Fetgatter		713-342-0460	
Division/Group Supervisor	Jeff Topic		952-201-1002	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Bak		484-431-7763	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Hot Shot Group - Raccoon Cre	Equipment: Small	Hand Tools	4 each	
Hot Shot Group - Raccoon Cre	Manpower: Responder	Labor Tech	4 each	
Hot Shot Group - Raccoon Cre	Manpower: Supervisor	Supervisor	1 each	
Hot Shot Group - Raccoon Cre	Vessel	Less than 21'	2 each	

Assignments

Using information from overflight survey to clean-up pooled oil that is not accessible to skimmers.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.
Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Priority: Conduct clean-up operations in Raccoon creek and schedule a visit with NJDEP to confirm adequacy of clean-up prior to departure. Northeast of railroad bridge to estuary is area of focus.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Environmental Tech
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	CMD Deal/Dan Sobieski		267-549-4849	
Environmental Unit	Ed Levine		206-849-9941	
SCAT Leader	Ralph Markaran		TBN	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Environmental Tech	Manpower: Responder	SCAT Team	1 each	

Assignments

Assess spill impact to the Penn Groves residential area and recommend specific cleanup methodologies.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Economic Unit
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Division/Group Supervisor	Ed Levine		206-849-9941	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Air Ops Branch
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Theo Camlin		425-501-5430	
Air Ops Branch Director	Brad Barker		TBD	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Air Ops Branch	Aircraft: Helo	Aircraft: Helo	2 each	
Air Ops Branch	Manpower: Supervisor	Supervisors	1 each	

Assignments

Surveillance - Overflights and coordinating vessel movement

- First light overflight, estimated departure time: 0830 from heloport to support SCAT
- Ops overflight, estimated departure time: 0800 - 0830 from heloport
- Overflights need to be prescriptive in determining extent of free floating oil to facilitate commercial vessel transit.
- All overflight personnel report oiled wildlife to Situation Unit Leader at 267-765-3446.
-Ensure helo is available to support on water skimming operations.
- All other overflights conducted as needed

One helo will be used to support SCAT, another will be used to direct skimming operations and to monitor boom deployments and the third will be used at the discretion of the UC.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Wildlife Recovery Group
Period: Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	CMD Deal/Dan Sobieski		267-549-4849	
Environmental Unit Leader	Ed Levine		206-849-9941	
Division/Group Supervisor	Peter McGown		609-214-7895	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Wildlife Recovery Group	Manpower: Responder	Laborers	45 each	
Wildlife Recovery Group	Manpower: Supervisor	Supervisors	5 each	
Wildlife Recovery Group	Vehicle	Utility Trucks	8 each	
Wildlife Recovery Group	Vessel	Greater than 21'	6 each	

Assignments

Identify, recover, and rehabilitate any impacted wildlife. Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact. Provide technical assistance on any wildlife related issues.

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Weekend personnel change
Friday/Saturday: Group Supervisor: C. Stern (Planning Section) 609-214-7895
Assit. Group Supervisor: P. Mc Gowan (operations)
Sun: Group Supervisor: P. McGowan - 609-214-7895

Special Environmental Considerations

Report endangered species observations to the Group Supervisor.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000 - 1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448

Fax all equipment and personnel Check-In sheets to 215-293-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 11/27/2004 20:35
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	11/28/2004 1100 Hr	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Federal Capt. Sarubbi			-	-	○ Yes ● No
State Bob VanFossen(NJ)/Kurt Reuther (DE			-	-	○ Yes ● No
Incident Commander Steve Kagelman			732-774-4703 - Mobile	-	○ Yes ● No
Safety Officer Ed Doyle			-	-	○ Yes ● No
NRDA Representative Frank Csulak			-	-	○ Yes ● No
Operations Section Chief Theo Camlin			425-501-5430 - Mobile	-	○ Yes ● No
Operations Section Deputy Nelson Fetgatter/J. Bethard			713-342-0460/ - Mobile	-	○ Yes ● No
EUL Ed Levine(NOAA)/B. Anderson(DE)			206-849-9941/ - Mobile	-	○ Yes ● No
IAP Specialist Geremy George			409-454-3999 - Mobile	-	○ Yes ● No
IAP Specialist Aaron Little			409-748-0122 - Mobile	-	○ Yes ● No
Planning Section Chief CMD Deul USCG			-	-	○ Yes ● No
Planning Section Deputy Dan Sobieski			714-342-6358 - Mobile	-	○ Yes ● No
Situation Unit Leader Dean Mathews/Herb Oertli			-	-	○ Yes ● No
Resource Unit Leader Anicia Hokanson/G. Conrad			-	-	○ Yes ● No
Documentation Unit Leader Chuck Anglin			-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 11/27/2004 20:35
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	11/28/2004 1100 Hr

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Shoreline Cleanup Assessment Speci Chris Pfiefer (Entrix)			-	-	○ Yes ● No
Communications Unit Leader Mike Brown			-	-	○ Yes ● No
Ground Support Unit Leader Thad King			-	-	○ Yes ● No
Logistics Section Chief Vince Velasquez/P. Bissaillon			713-569-1788/ - Mobile	-	○ Yes ● No
Supply Unit Leader Rod Medders			-	-	○ Yes ● No
Finance Section Chief Don Costanzo			713-503-6367 - Mobile	-	○ Yes ● No
Obrien's Rep James A. Samial			-	-	○ Yes ● No
Owner's Rep. QI John Hill			-	-	○ Yes ● No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency
NRC	5	Command/Tactical	Repeater (VHF) RX 158.455 Mhz TX 154.585 Mhz	On Water Recovery Group	POC: Mr. Gene Johnson 302-462-0191 Command Post Ops 0600-1830 Only
Nextel/Cell		Tactical	Cell/Nextel	Protection Branch Tactical	POC: Mr. Bob Poole 302-462-0194

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	11/27/2004 20:35
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	11/28/2004 1100 Hr		

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
Nextel/Cell		Tactical	Cell/Nextel	Safety Team Coordination	POC: Mr. Archie Gresham 302-293-8960
Nextel/Cell		Tactical	Cell/Nextel	Salvage Group	POC: Bob Umbdenstock
Nextel/Cell		Tactical	Cell/Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center
Nextel/Cell		Command	Cell/Nextel	Wildlife Recovery Command net	POC: Mr. Clay Sterm: 609-214-7895
Nextel/Cell		Tactical	Cell/Nextel	Near shore recovery Branch	POC: Mr. Chris Gregory 714-273-8036
Nextel/Cell		Tactical	Cell/Nextel	Vessel Decontamination Group Command Net	POC: LCDR J. Scheel 267-228-7240
Nextel/Cell		Tactical	Cell/Nextel	Shoreline cleanup assessment	POC: Mr. Jacqui Michelle: 803-513-5650
Nextel/Cell		Tactical	Cell/Nextel	Monitoring Group	Operations: PO McNeilly 267-765-3439 SCAT info: Situations 267-765-3446/3448

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M/V ATHOS I
INCIDENT COMMAND POST

Holiday In Phone Numbers updated 12/2/04 15:50

Unified Command Staff	267-765-3431
	267-765-3460
	267-765-3459
Conference Phone	267-765-3457
Operations	267-765-3439
	267-765-3449
	267-765-3450
Waterways Management Branch	267-765-3445
	267-765-3434
	267-765-3450
Vessel Movement	215-271-4889
	215-778-5841
Planning	267-765-3440
	267-765-3437
	267-765-3443
	267-765-3444
Resources/Situation	267-765-3446
	267-765-3447
	267-765-3448
Oiled Wildlife	215-365-1558
Logistics	267-765-3464
	267-765-3432
	267-765-3453
	267-765-3454
	267-765-3471
	267-765-3472
NRC Logistics	267-765-3455
Claims	866-401-0353
Finance/Admin	267-765-3435
	267-765-3451
	267-765-3452
Public Information Room	267-765-3436
	267-765-3441
	267-765-3442

Safety		267-765-3433
NOAA		267-765-3465
		267-765-3467
Fax	Receive	215-923-4476
		267-765-3463
	Transmit	267-765-3456
Break-out room		267-765-3461

ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 12/3/2004 09:00
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	Medical Plan

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856-342-2345	
Christians Care Hospital	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
Emergency Medical Units are staged during daylight hours on both the PA and the NJ sides of the response. On the NJ side, the unit stands-by at the Miller Paulsboro Staging area; on the PA side at the Lagoon Staging Area.

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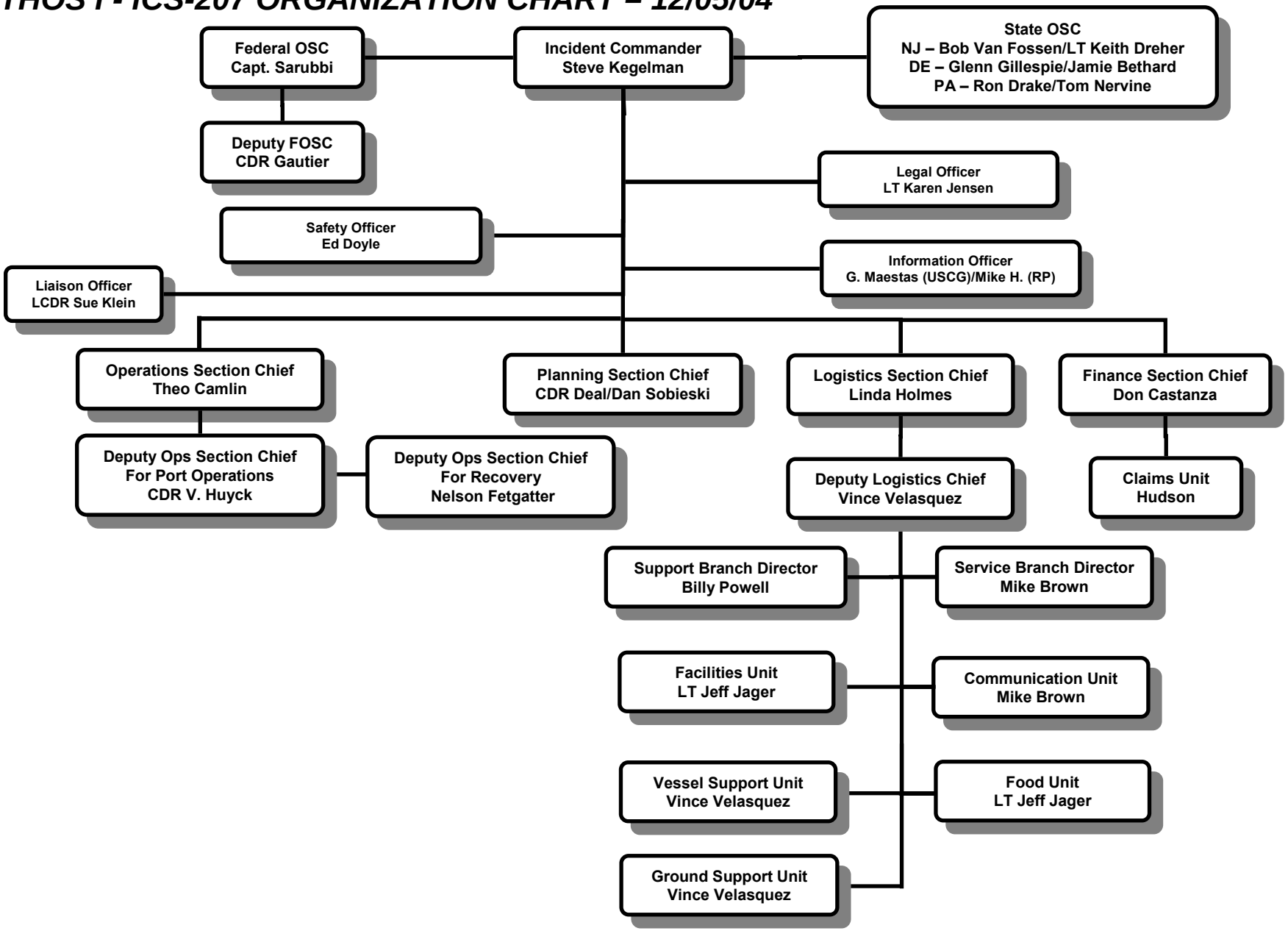
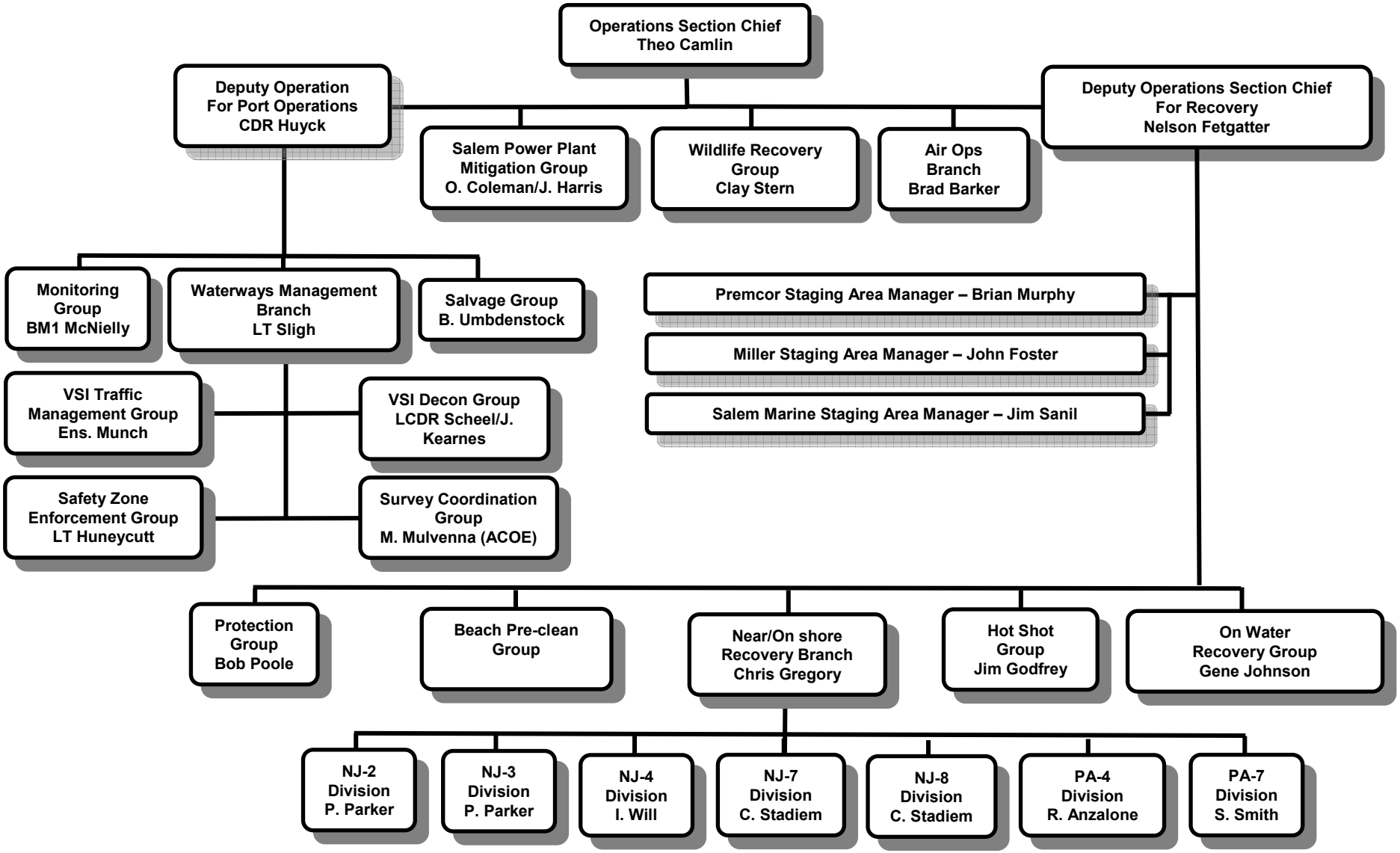
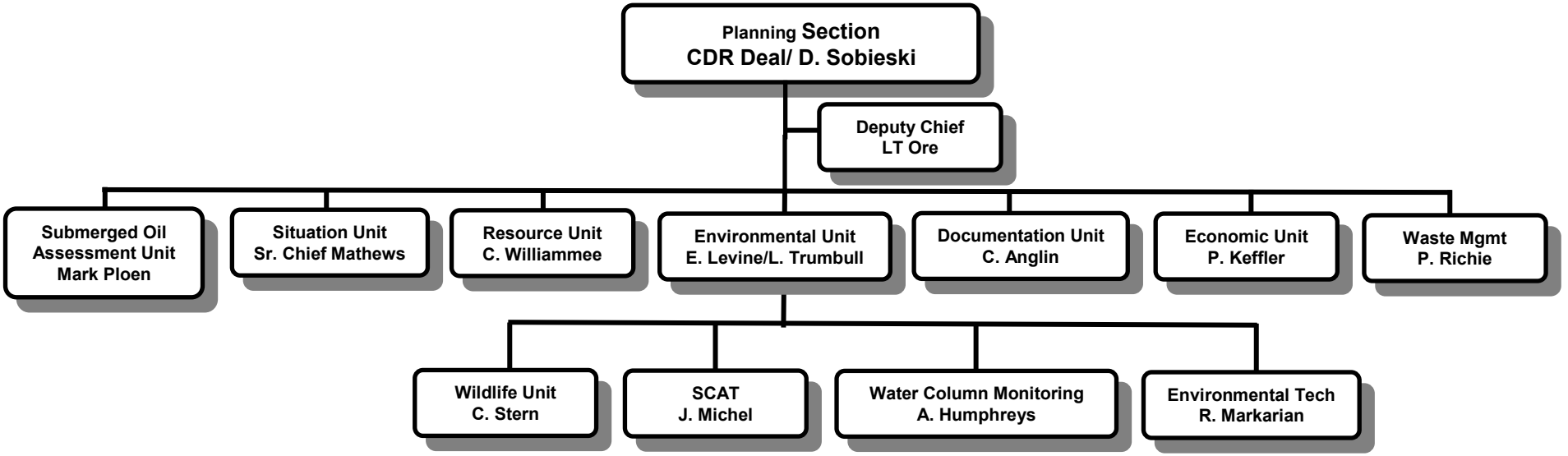
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 12/05/04



T/V ATHOS I - ICS-207 OPERATIONS ORGANIZATION CHART – 12/05/04



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 12/05/04



ICS 220 - Air Operations

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/3/2004 09:00
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	Air Ops	

Personnel and Communications

Title/Position	Name	Air/Air Frequency	Air/Ground Frequency	Phone
Air Ops Branch Director	Brad Barker	VHF 123.05		985-381-0697

Planned Flight Information

Type Of Aircraft	Operating Base	Aircraft Company	Passenger Capacity	Purpose	Scheduled Flights
Bell 206 L	Pier 36	Horizon	5	Surveillance N98KR	As Needed, Available 08:30
Bell Jet Ranger	Pier 36	Analar	3	N50178	08:30
Bell Jet Ranger	Pier 36	Horsham Valley (Standby with 2hrs lead time)	3	N4015G	As Needed, Available 08:30

Notes (Special Instructions, Safety Notes, Hazards, Priorities)

Refrain from air ops in the following areas: (Known Eagle Nesting Areas)
Petty Island
Mantua Creek
Monds Island

Operational Requirements:
1/4 mi. radius
>= 500' AGL

If single engine without floats, no open water operations. All operations <300 AGL MUST be conducted within 1/8 miles of shore

All air operation to terminate NLT 1430

First overflight (ops) shall verify boom is in place around sensitive sites in accordance with protection strategies. Inflatable vest required to be worn on all open water flights.

If injured/contaminated wildlife is sighted, contact the Situation Unit at 267-765-3440/3437/3443/3444

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Incident Name:	MV ATHOS I	Location:	Philadelphia, PA

Three Day Weather Forecast

Dec 5 Sunday - day

Generally sunny despite a few afternoon clouds. High 54F. Winds W at 5 to 10 mph.

Dec 5 Sunday - night

Partly cloudy skies during the evening will give way to cloudy skies overnight. Low around 40F. Winds light and variable.

Dec 6 Monday

Showers. Highs in the low 50s with temperature nearly steady overnight.

Dec 7 Tuesday

Chance of showers. Highs in the upper 60s and lows in the upper 40s.

TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations.

General Safety Concerns:

SPECIAL CAUTION:
STAY CLEAR OF DIVING OPERATIONS BY AT LEAST 200 YDS. THIS WILL BE STRICTLY ENFORCED!

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decon-tamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

VESSEL SAFETY

The operator is responsible for the safety of the crew and vessel at all times. The vessel shall never be operated in a manner that threatens safety of the crew or vessel. The operator is to ensure that ALL personnel aboard the vessel are wearing lifejackets AT ALL TIMES! Under no circumstances are personnel to enter the water while the vessel is underway or the vessel's engine(s) is(are) running.

It is the operators' responsibility to ensure the vessel is seaworthy and in safe operating condition prior to leaving shore. The operator will inspect the vessel and determine that all required operational and safety equipment is on board and in proper working condition.

The operator is responsible for safe transport, launch, operation, and recovery of the vessel.

In the event of a boating accident, the operator is the primary person responsible for the vessel and crew. If vessel or crew is in imminent danger, the operator should contact the US Coast Guard immediately.

Ensure vessels are not overloaded with personnel or equipment, and consult vessel capacity according to the boat plate or sticker.

All vessels will carry on board an air horn to be available for emergency sound signaling.

USE THE RIGHT VESSEL FOR THE RIGHT JOB!

Stop Vessel Operations Criteria (Weather)

Vessels will cease operations when any of the following occur:

1. Visible lightning strike
2. 25 knot winds
3. Sea state:

>60' vessels: 6'	30'-60' vessels: 5'	20'-30' vessels: 4'	<20' vessels: 3'

4. Whenever the Safety Officer or one of his assistants deems operations too hazardous to continue.
5. Whenever the vessel operator deems it too hazardous to continue operations.

Vessel operators and response supervisors need not wait for a Safety Officer to deem operations too dangerous. If you feel that the conditions are too hazardous to safely operate in, discontinue operations, notify your supervisor, and then notify the Safety Officer. You may be the first responder to experience hazardous conditions, and your input to the Safety Officer may provide a valuable heads-up to the rest of the command.

Nighttime vessel operations and restrictions

All vessels with lengths of 20 feet or less are required to be safely moored/recovered prior to sunset.

Flat-bottom, "john boat" style boats are not permitted to operate at night and should be safely moored/recovered prior to sunset.

All vessels not specifically restricted from nighttime ops, as detailed above, may only operate after sunset with the proper use of navigation lights as required by Chapter I of the Navigation Rules.

Personal Protective Equipment (PPE) requirements:

All responders working on or near the water must wear a Personal Floatation Device (PFD).

Responders performing the following operations must wear "Mustang" exposure suits:

- Waterborne SCAT teams
- Boom tending and placement teams
- Waterborne vessel decon teams
- Waterborne wildlife recovery teams
- Permanent boat drivers/crew

Crews of vessels equipped with enclosed, heated cabins, where the crew will primarily remain, are excluded from the exposure suit requirement.

Requests for deviation from the above requirements should be directed to the Site Safety Officer, Ed Doyle (302) 293-8959.

Gasoline Safety

Gasoline is a flammable liquid and should be stored at room temperature, away from potential ignition sources such as sparks and flames, space heater, and any other ignition sources. Gasoline vapors are heavier than air and can travel along the ground to an ignition source.

Refueling Advisory

Be aware that fire incidents involving refueling are not unusual. Many of these incidents may be related to static electricity buildup and discharge.

Safety guidelines on filling containers:

- Do not smoke while refueling.
- Shut off the engine using the gasoline along with any engines in the immediate vicinity.
- Only store gasoline in containers with approved labels. Never store gasoline in glass or unapproved containers.
- Portable containers must be placed on the ground, and the nozzle must stay in contact with the container when filling, to prevent buildup and discharge of static electricity.
- Fill the container at a slow rate. This will decrease the chance of static ignition buildup and minimize incidents of spillage or splattering.
- Keep your face away from the nozzle or container opening.
- Avoid prolonged breathing of gasoline vapors.
- Never siphon gasoline by mouth. Do not put gasoline in your mouth—gasoline can be harmful or fatal if swallowed. If someone swallows gasoline, do not induce vomiting. Call for medical assistance immediately.
- Keep gasoline away from your eyes and skin, because it may cause irritation. Wear safety glasses while filling tanks.
- Use gasoline only in open areas that get plenty of fresh air.
- Never use gasoline to wash your hands.
- Remove gasoline-soaked clothing immediately.
- Fill container to no more than 95 percent full to allow for expansion.
- Place cap tightly on the container after filling. Do not use containers that do not seal properly.
- When transporting gasoline in a portable container, make sure the container is secure from tipping and sliding.

COLD STRESS SAFETY BULLETIN **November 30, 2004**

Cold Stress

Frostbite and hypothermia are the two major hazards of working in cold temperatures. A cold environment can reduce the temperature of the body and cause shivering, reduced mental alertness, and sometimes loss of consciousness. However, a healthy worker who is properly protected and takes reasonable precautions can function efficiently and safely in cold environments.

Factors affecting cold exposures

Factors that can contribute to cold injury include exposure to temperature, wind, humidity, moisture, contact with water or metal, inadequate clothing, age, and general health. Physical conditions that can worsen the effects include fatigue, allergies, vascular disease, smoking, drinking alcohol, and certain specific drugs or medicines.

What is Hypothermia?

Hypothermia is an abnormally low body temperature caused by exposure to cold air or cold water. Hypothermia occurs when the body loses heat faster than it can produce it. When judging cold hazards, reliance on air temperature alone can be misleading. Hypothermia can develop in air temperatures between 30-50 degrees. Chilling winds make the body even more susceptible to hypothermia.

Warning Signs

Pain in the hands, arms, legs, or feet (extremities) may be the first warning of dangerous exposure to cold. Severe shivering must be taken as a sign of danger requiring removal from the cold exposure. Personnel should notify their supervisor and go immediately to a warming shelter if any of the following symptoms occur:

- pain, numbing, tingling, skin whitening or turning very red or red purple in the extremities,
- cold hands and feet that turn blue and sweaty,
- foot swelling with tingling, itching, severe pain and blistering,
- onset of heavy shivering,
- excessive fatigue,
- drowsiness, or
- euphoria (a feeling of well being).

Evaluating cold exposure hazards.

Common sense will generally dictate how much clothing to wear and when to get into a warm area in most cases.

Preventing cold stress.

- Provide sufficient warm clothing. Wear multiple clothing layers.
- The most important parts of the body to protect are the feet, hands, head, and face. Keep the head covered. Up to 40% of body heat is lost through the head.
- Prevent dehydration by drinking plenty of liquids.
- Provide warm locations for breaks.
- Provide wind or draft barriers both inside and outside to limit exposure to air movement.
- The buddy system is important when working in stressful environments.

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Planning Section	**at** 12/3/2004 16:00
Period:	Period 9 (12/5/2004 06:00 - 12/6/2004 06:00)	**Version Name:**	12/05/04 Meeting Schedule

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 12/5/2004 06:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Holiday Inn
UC Objectives Meeting 12/5/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
Field Reports 12/5/2004 09:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
RRT 12/5/2004 09:00	Informational brief	Atlantic Strike Team	Holiday Inn
Command & General Staff Meeting 12/5/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
ICS 209 12/5/2004 09:00	Resource Summary	Planning Section	Cmd Post
Tactics Meeting 12/5/2004 12:00	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Sherman Room
Field Reports 12/5/2004 13:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
Scientific Support Meeting 12/5/2004 15:00	Review Scientific Support Issues	Scientific Support Personnel	Hancock Room
Field Reports 12/5/2004 16:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
Planning Meeting 12/5/2004 16:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Sherman Room
IAP Approval 12/5/2004 18:30			
Sit Rep 12/5/2004 20:00			

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Memorandum

To: **Operations Section Chief**

From: **Group Supervisor, Wildlife Recovery**

Subject: **Protocol for handling dead wildlife carcasses found during shoreline cleanup.**

As workcrews are cleaning oiled-shorelines and structures or removing oiled-debris they are likely to encounter dead oiled wildlife. Please handle wildlife carcasses as follows.

A. Dead Oiled Wildlife

All dead oiled wildlife (birds, fish, mammals, turtles) shall be bagged and held for the Wildlife Recovery Unit, and not disposed with other oiled material.

1. **Carefully approach the carcass and confirm that it is dead. If the animal is not dead do not attempt to capture it – contact the Wildlife Recovery Unit immediately for instructions.**

2. **If the animal is confirmed to be dead, place the carcass into a plastic bag – DO NOT mix carcasses together in the same bag – ONE carcass per bag.**

3. **Tie the bag closed and give it to the crew leader.**

4. **The crew leader shall immediately notify the Wildlife Recovery Triage Center at 215-365-1558 to have the carcasses picked up – do not leave bagged oiled carcasses unattended in the field.**

B. Live Oiled Wildlife

Clean up crews shall not attempt to capture live wildlife.

1. **Live oiled wildlife seen during clean up efforts should be reported by the crew leader to the Wildlife Recovery Triage Center at 215-365-1558 and relay the location, time, number and types of oiled wildlife seen.**

If you have any questions, please contact me at 609-214-7895.

Emailed to: **theo.camlin@theobriensgroup.com**
Ed.levine@noaa.gov
Dorthy_Manera@fws.gov
John_Meehan@fws.gov

cc: Documents Unit Leader

IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 12 (12/8/2004 06:00 to 12/9/2004 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) – Jamie Bethard: _____

SOSC (PA) – Tom Nervine : _____

SOSC (NJ) – Gary Pearson: _____

RPIC – Steve Kegelman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. ICS 202 - General Response Objectives
4. ICS 204 - Assignment List
5. ICS 205 - Communications Plan
6. ICS 206 - Medical Plan
7. ICS 207 - Organization Chart
8. ICS 220 - Air Operations
9. ICS 223 - Health and Safety Message
10. ICS 230 - Daily Meeting Schedule
11. Website: www.incidentinfo.com

T/V ATHOS I SPILL, DELAWARE RIVER, NEW JERSEY
1520 EST, Tuesday December 7, 2004

NOTE: This is a site specific forecast from the National Weather Service generated specifically for this incident region.

Sunset (12/07): 1639

Sunrise (12/08): 0709
Sunset (12/08): 1639

36 Hour Forecast:

_____
Winds:
Tonight, the winds are expected to be from the SE at 5-10 knots shifting to be from the SW at 15-20 knots by the early evening hours shifting to be from the west at 15-25 knots gusting to 35 knots by the late evening hours. Wednesday, W-NW winds at 20-30 knots with gusts to 40 knots are predicted to shift and be from the west at 10-15 knots with gusts to 20 knots by the afternoon hours. Wednesday night, NW winds at 10-15 knots are forecast to shift and be from the E-NE at less than 5 knots by the late evening hours.

_____
Waves (Upper Delaware Bay):
Tonight, the seas are expected to be less than 1 foot increasing to 1-2 feet by the late evening hours. Wednesday, 1-2 foot seas are predicted. Wednesday night, seas less than 1 foot are forecast.

_____
Precipitation:
Tonight, light rain is expected to increase to rain by the late evening hours. Wednesday through Wednesday night, dry weather is predicted.

_____
Ceiling/Visibility:
Tonight, areas of fog and low clouds are forecast. Visibility is expected to be 1-2 miles. Wednesday through Wednesday night, partly cloudy to clear skies are predicted. Visibility is forecast to be unrestricted.

_____
Temperatures:
Temperatures are expected to range from highs in the 50’s to lows in the 40’s. Wind chill is forecast to be in the low to mid 30’s throughout this period.

_____

Extended Forecast:

Thursday, the winds are expected to be light and variable becoming SE at 10 knots by the afternoon hours. Thursday night, east winds at 10-15 knots are predicted. Seas 1 foot or less. Partly cloudy skies diminishing to mostly cloudy skies by the afternoon hours. Chance of evening rain.

Friday, SE winds at 10-15 knots are forecast to shift and be from the south at 15-20 knots by the afternoon hours. Friday night, SW winds at 15-20 knots are predicted. Seas 1-2 feet. Mostly cloudy skies. Dry.

Saturday, west winds at 10-15 knots are forecast to increase to 15-20 knots by the afternoon hours. Seas 1-2 feet. Partly cloudy skies. Slight chance of showers.

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 12/1/2004 13:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to facilitate vessel movement in affected port areas.		
Expedite decon of vessels as needed, including recreational vessels.		
Continue to enforce safety zone.		
Salem/Hope Creek Power Plant objective		
• Execute plan to locate and mitigate any sub-surface oil that may threaten the Salem/Hope Creek Nuclear Power Plant water intakes.		
• Provide information and conditions for plant to be reasonably assured that no abundance of oil will clog the intake screens.		
Continue aggressive shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact.		
Aggressively assess the location and extent of submerged oil.		
Continue execution of salvage plan.		
Continue to mobilize response resources and confine and recover submerged oil.		
Monitor existing sensitive site booming strategies & implement additional strategies as appropriate.		
Collect, recover and dispose of free-floating oil.		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Unified Command Emphasis:		
• Make Safety a Top Priority. Adhere to SSP and watch out for your fellow responders.		

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Shoreline Cleanup Assessment Team
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	D. Sobieski/T. Deal		267-549-4849	
Environmental Unit	E. Levine		206-849-9941	
SCAT Leader	G. Shigenaka		206-719-7441	
Safety Officer	E. Doyle/A. Greshan		302-293-8959/8960	
On Scene Safety Officer	V. Garner		850-258-9116	

Assignments

SCAT will assess and compile cleanup data and identify areas requiring cleanup resources. Communicate priorities to Operations for deployment of response resources. Report information to the SCAT Leader.
ga
SCAT Team to go into the Racoon Creek and evaluate the shoreline.

Special Instructions for Division / Group

Helicoptor on standby for SCAT (as needed); Helo overflights will provide information to assist/direct SCAT teams.

Description of Work

Develop protocol for Crab Pots

Location of Work

The SCAT Leader will divide the planned work into 6 teams. Work areas will include Small Birch Creek, Old Sand Canal, Oldman's Creek, DE-9 creek entrances, Naaman's Creek, PA-4 and PA-8.

In Addition a SCAT team will walk from Bidwell Creek to Cape May

Work Assignment Special Instructions

State of PA Representative to be on board the overflight/Helo Scat Team

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Maurice River Strategy Unit
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	CMD Deal/Dan Sobieski		267-549-4849	
Planning Section Deputy	Chirco, Joe		714-342-0460	
Unit Leader	Kline, Bud		985-960-0585	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Tactical Objective

Conduct a meeting with the NJDEP, Citizens Unified Coalition for a Clean Maurice River, New Jersey State Police, County OEM and the USCG to:
- Brief the Coalition on the spill response.
- Identify areas where the response can work with the local coalition.
- Identify boom staging areas

Before the meeting, review the plan with the Liason Officer. At the conclusion of the meeting, report outcome to the Liason Officer.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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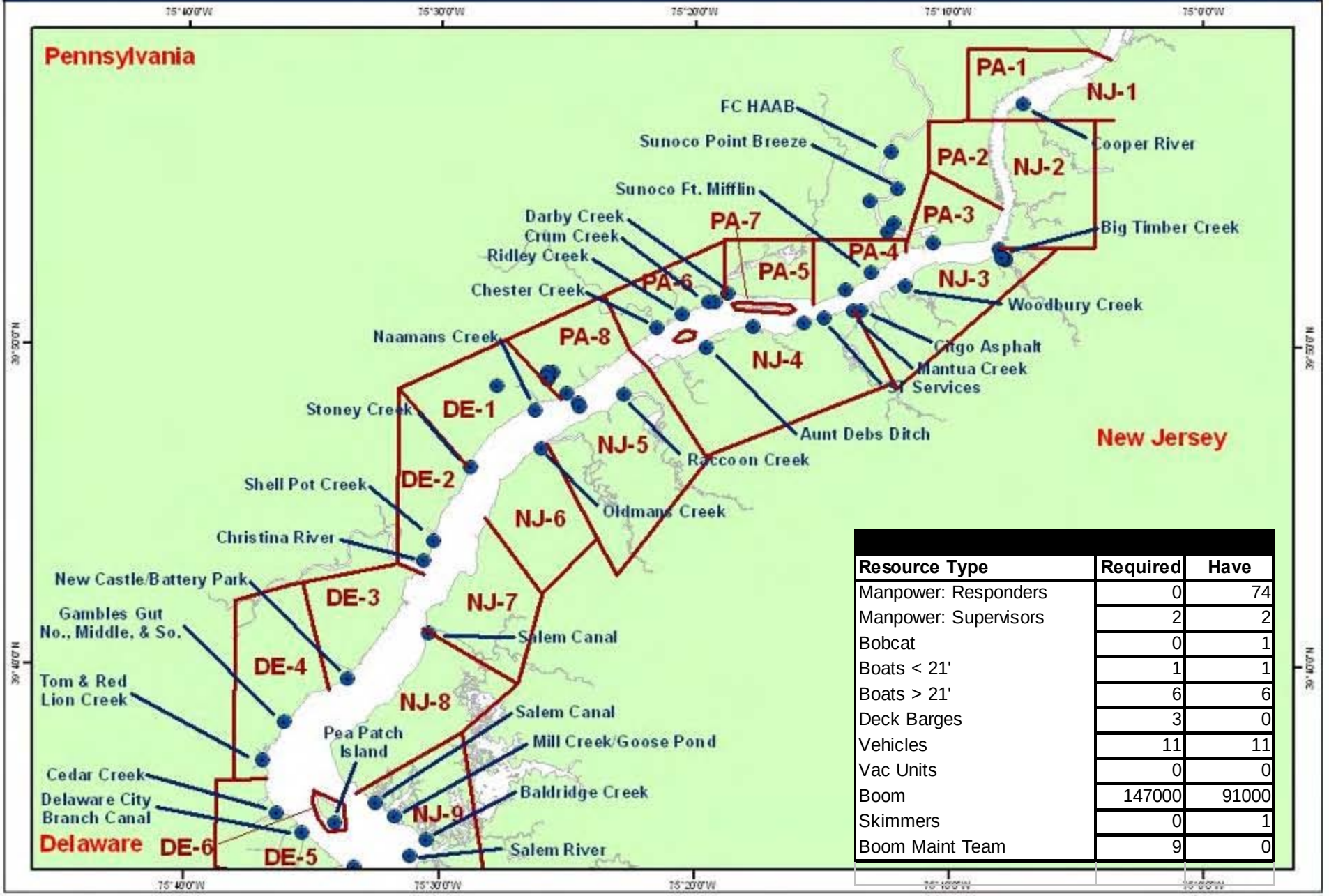
Protection Group Overview Map North



Resource Type	Required	Have
Manpower: Responders	0	74
Manpower: Supervisors	2	2
Bobcat	0	1
Boats < 21'	1	1
Boats > 21'	6	6
Deck Barges	3	0
Vehicles	11	11
Vac Units	0	0
Boom	147000	91000
Skimmers	0	1
Boom Maint Team	9	0

Protection Group
Overview Map South
The Response Group
N
75°40'0"W
75°30'0"W
75°20'0"W
New Jersey
Delaware
DE-4
DE-5
DE-6
DE-7
DE-8
DE-9
DE-10
NJ-8
NJ-9
NJ-10
NJ-11
Gambles Gut No., Middle, & So.
Tom & Red Lion Creeks
Cedar Creek
Delaware City Branch Canal
C&D Canal
St. Georges Creek & Opening So.
Port Penn
Augustine Creek
Silver Run
Upper & Lower Break
Appoquinimink River
Blackbird Creek
Rays & Peach House Ditches
Middle Drain
Cedar Swamp/ Collins Beach
Smyrna River
Bakeoven Point
Woodland Beach No.
Guts No. & So. Woodland Beach
Sluice Ditch
Hay Ditch
Leipsic River
Old Creek & Simons River
Mahon River
Little River
Pea Patch Island
Creeks So. of Ft. Mott
Mill Creek/Goose Pond
Baldridge Creek
Salem River
Mill Creek & Opening So.
Back & Straight Ditches
Alloway & Lower Alloway Creeks
Hope Creek & 3 Guts No.
Fishing Creek/Shore Ditch
Cat Gut
Unnamed Opening No. of Mad Horse Creek
Mad Horse Creek
Cherry Tree & Lower Deep Creek
Stow Creek
Gut So. of Stow Creek
Jacobs Creek & Opening No.
Openings No. of Cohansey River
Drumbo Creek
Middle Marsh Creek
Sea Breeze - Guts No. & So. Oyster Gut
Legend
Sites
Division Boundaries
0 1.5 3 6 9
Miles

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy Recovery	Nelson Fetgatter		610-521-2497	
Protection Group Supervisor	B. Poole		302-462-0194	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
Delaware Bay & River COOF	Boom	DE2 - Christina Rivei	3000 feet		Assigned
Unknown	Boom	DE-2 - Rock Salt Ter	1000 feet		Assigned
Delaware Bay & River COOF	Boom	DE-2 - Shell Pot Cre	800 feet		Assigned
Unknown	Boom	DE-2 - Shell Pot Cre	2000 feet		Assigned
Unknown	Boom	DE-2 - Stoney Creek	200 feet		Assigned
Unknown	Boom	DE-2 - Stoney Creek	200 feet		Assigned
Premcor	Boom	DE-4 - Red Lion Cre	500 feet		Assigned
Delaware Bay & River COOF	Boom	DE-6 - Pea Patch Isl	14500 feet		Assigned
Premcor	Boom	DE-6 - Pea Patch Isl	13000 feet		Assigned
NRC - National Response Cc	Boom	DE-9 Boom (NS)	2700 feet		Assigned
Unknown	Boom	NJ Protection	10000 feet		Enroute/Sourced
Unknown	Boom	NJ Protection	11050 feet		Enroute/Sourced
Unknown	Boom	NJ Protection	20000 feet		Enroute/Sourced
Hess	Boom	NJ-1 - Hess Termina	2500 feet		Assigned
Unknown	Boom	NJ-2 - At end of Merc	500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-2 - Big Timber Cr	2500 feet		Assigned
Unknown	Boom	NJ-2 - City Park	600 feet		Assigned
Coastal	Boom	NJ-2 - Coastal Eagle	1500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-2 - Little Timber C	100 feet		Assigned
Unknown	Boom	NJ-2 - Newton Creek	500 feet		Assigned
Unknown	Boom	NJ-2 - Water Steet	300 feet		Assigned
Unknown	Boom	NJ-3 - Drydock area	2500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-3 - Mantua Creek	900 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-3 - Pipeline area /	2000 feet		Assigned
Unknown	Boom	NJ-3 - Pipeline area.	1200 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-3 - Woodbury Cre	2800 feet		Assigned
Kens Marine Service	Boom	NJ-3 Boom (KENS)	5100 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Aunt Deb's Dit	400 feet		Assigned
Unknown	Boom	NJ-4 - MEG Staging	100 feet		At Staging
Unknown	Boom	NJ-4 - Nassau Ave	1200 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Old Canal	300 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Repaupo Cree	400 feet		Assigned

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:** Protection Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
Valero	Boom	NJ-4 - Valero Dock	3500 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-4 - Weeks (Barge	600 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-5 - Oldman's Cre	3000 feet		Assigned
Delaware Bay & River COOF	Boom	NJ-5 - Raccoon Cree	3300 feet		Assigned
Unknown	Boom	NJ-9 - Salem River S	3000 feet		Assigned
U.S. Navy	Boom	PA-2 - Navy Base	1200 feet		Assigned
Delaware Bay & River COOF	Boom	PA-2 - Schuylkill Riv	600 feet		Assigned
Sunoco	Boom	PA-2 - Sun Terminal	2300 feet		Assigned
NRC - National Response Cc	Boom	PA-3 Boom (NS)	700 feet		Assigned
Unknown	Boom	PA-4 - Airport	100 feet		Assigned
Unknown	Boom	PA-4 - Airport, acros	200 feet		Assigned
Unknown	Boom	PA-4 - Army COE	400 feet		Assigned
Unknown	Boom	PA-4 - Sun Hog Islan	3200 feet		Assigned
Kens Marine Service	Boom	PA-4 Boom (KENS)	5500 feet		Assigned
Delaware Bay & River COOF	Boom	PA-5 - Darby Creek (	1800 feet		Assigned
Delaware Bay & River COOF	Boom	PA-5 - Governor Prin	400 feet		Assigned
Delaware Bay & River COOF	Boom	PA-6 - Chester Creel	900 feet		Assigned
Delaware Bay & River COOF	Boom	PA-6 - Crum Creek	600 feet	18 inch(es)	Assigned
Unknown	Boom	PA-6 - Eddy Stone (F	100 feet		Assigned
Unknown	Boom	PA-6 - Marcus Hook	1000 feet		Assigned
Delaware Bay & River COOF	Boom	PA-6 - Ridley Creek	500 feet	7 inch(es)	Assigned
Delaware Bay & River COOF	Boom	PA-6 - Ridley Creek	3000 feet		Assigned
ConocoPhillips	Boom	PA-8 - ConocoPhillip	2000 feet		Assigned
ConocoPhillips	Boom	PA-8 - ConocoPhillip	1000 feet		Assigned
Unknown (Probably Sunoco)	Boom	PA-8 - Sun Marcus H	4000 feet		Assigned
Delaware Bay & River COOF	Equipment: Heavy	Mack Tractor	1 each		Assigned
Delaware Bay & River COOF	Vehicle	F-150 Pickup	2 each		Assigned
Delaware Bay & River COOF	Vehicle	F-450 Truck	2 each		Assigned
Delaware Bay & River COOF	Vehicle	F-800	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Utility Truck (CHI)	6 each		Assigned
Miller Environmental Group,	Vessel	Boats < 21' - DBRC	1 each		Assigned
Miller Environmental Group,	Vessel	Boats > 21' - DBRC	3 each		Assigned
North Star	Vessel	Boats > 21' - NRC	3 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
NRC - National Response Cc	Manpower: Responder	Responder (Night Op	2 each		Assigned

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:** Protection Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Protection Group					
North Star	Manpower: Responder	Responders	20 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Responders - DBRC	24 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders - DBRC	8 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders (Nght O	30 each		Assigned
Kens Marine Service	Manpower: Responder	Responders (Nght O	2 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders (Nght O	14 each		Assigned
North Star	Manpower: Responder	Responders (Nght O	4 each		Assigned

Assignments

Identify & protect sensitive sites as requested. Monitor & maintain boom at GRP sites already deployed. Assure it's effectiveness.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Salem River Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy Recovery	Nelson Fetgatter		610-521-2497	
Protection Group Supervisor	B. Poole		302-462-0194	
Task Force Leader	Jim Sanial		856-266-3810	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Salem River Group					
Clean Harbors Environmenta	Vessel	Boat > 21'	2 each	22 feet	Assigned
North Star	Vessel	Boat > 21'	1 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Salem River Group					
Hepaco	Manpower: Responder	Responders	35 each		Assigned

Assignments

Maintain boom in the Salem River. Provide hot spot response coverage. Monitor area around Salem Nuclear Power Plant.

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Salem Power Plant
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		425-501-5430	
Group Supervisor Day	Olin Coleman		609-868-5458	
Group Supervisor Night	Jim Harris		302-584-1574	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Bak		484-431-7763	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Salem Power Plant					
North Star	Vessel	Boat > 21'	1 each	22 feet	Assigned

Assignments

Deploy Upstream and downstream snare samplers as prescribed by NOAA and the Submerged Oil Assessment Unit Leader at various locations.

Maintain 24 x 7 boom tending and mitigation capability

Maintain 24 x 7 NSF oversight and liaison presence.

Special Instructions for Division / Group

Notify the NJ State Police Incident Commander anytime new response assets are deployed to the nuclear power plant site.

Ensure all activities are closely coordinated with nuclear plant officials. During daylight hours call the command post at 856-339-1880/1188 and during nightime hours call the duty fire chief at 856-339-2803.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Hot Shot Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Recovery	Nelson Fetgatter		610-521-2497	
Division/Group Supervisor	Jeff Topic		952-201-1002	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	D. Schwartz/M. Doyle		302-293-8961	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
North Star	Vessel	Boat < 21'	3 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat > 21'	4 each	24 feet	Assigned
North Star	Vessel	Boat > 21'	2 each	20 each	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
Clean Harbors Environmenta	Manpower: Responder	Responders	8 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders (Night C	6 each		Assigned

Assignments

Using information from overflight survey to clean-up pooled oil that is not accessible to skimmers.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"
Work must follow environmental sensitivity guidelines.

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.

Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Priority: Check on Logan generating Plant, Salem Generating Plant, and Philadelphia Electric Company Plant first thing every morning.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Hot Shot Group - Raccoon Creek
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Recovery	Nelson Fetgatter		610-521-2497	
Division/Group Supervisor	Jeff Topic		952-201-1002	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Bak		484-431-7763	

Assignments

Using information from overflight survey to clean-up pooled oil that is not accessible to skimmers.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"
Work must follow environmental sensitiity guidelines.

As the situation allows, they are available to do other "Hot Shot" work.

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.
Report situation status each day at 0900, 1300, and 1600 hrs. to the Situation Unit Leader at 267-765-3446 or 3448.

Priority: Conduct clean-up operations in Raccoon creek and schedule a visit with NJDEP to confirm adequacy of clean-up prior to departure. Northeast of railroad bridge to estuary is area of focus.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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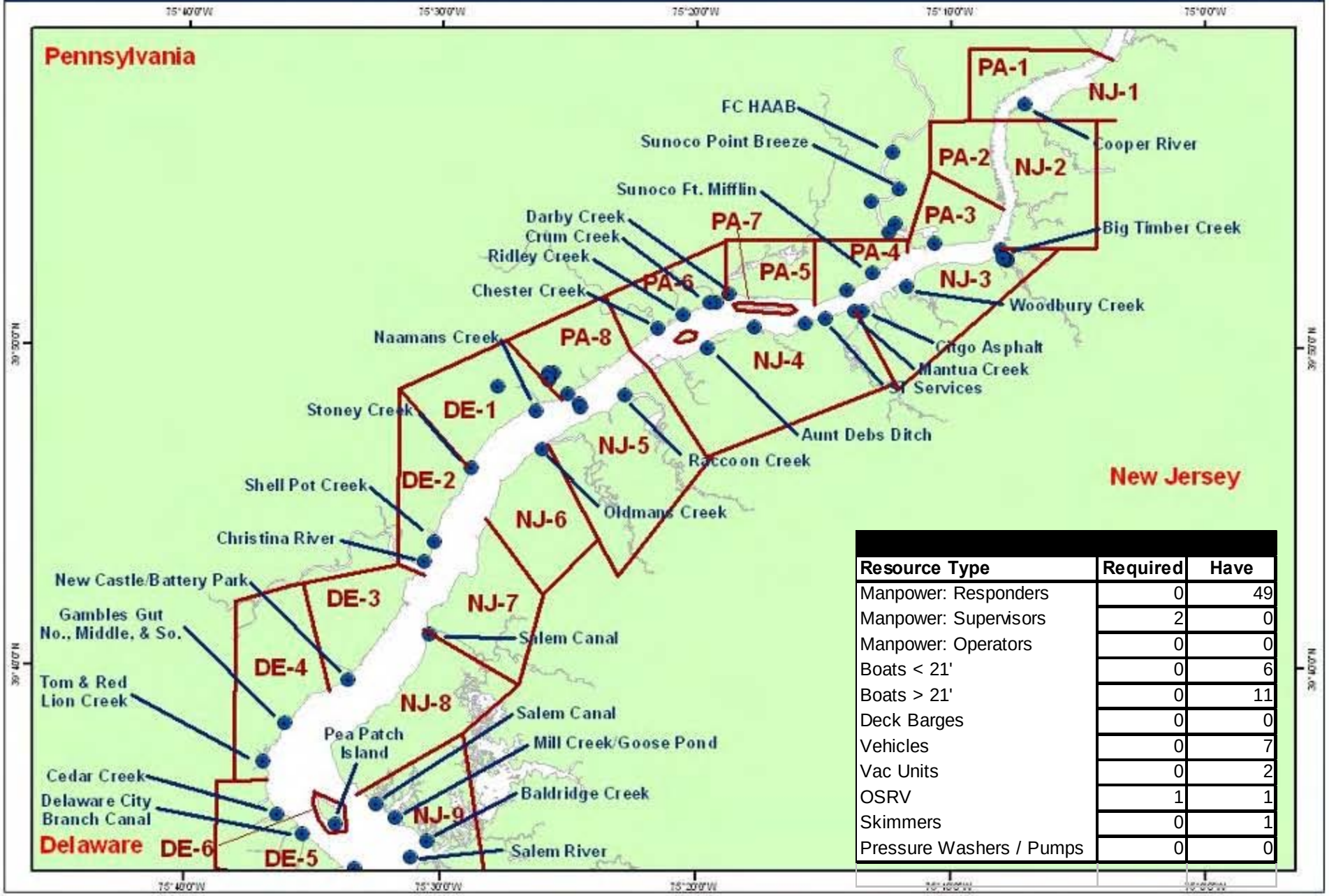
On Water Recovery Group Overview Map North

The Response Group



Resource Type	Required	Have
Manpower: Responders	0	49
Manpower: Supervisors	2	0
Manpower: Operators	0	0
Boats < 21'	0	6
Boats > 21'	0	11
Deck Barges	0	0
Vehicles	0	7
Vac Units	0	2
OSRV	1	1
Skimmers	0	1
Pressure Washers / Pumps	0	0

On Water Recovery Group
Overview Map South
The Response Group
N
75°40'0"W
75°30'0"W
75°20'0"W
New Jersey
Delaware
DE-4
DE-5
DE-6
DE-7
DE-8
DE-9
DE-10
NJ-8
NJ-9
NJ-10
NJ-11
Gambles Gut No., Middle, & So.
Tom & Red Lion Creeks
Cedar Creek
Delaware City Branch Canal
C&D Canal
St. Georges Creek & Opening So.
Port Penn
Augustine Creek
Silver Run
Upper & Lower Break
Appoquinimink River
Blackbird Creek
Rays & Peach House Ditches
Middle Drain
Cedar Swamp/ Collins Beach
Smyrna River
Bakeoven Point
Woodland Beach No.
Guts No. & So. Woodland Beach
Sluice Ditch
Hay Ditch
Leipsic River
Old Creek & Simons River
Mahon River
Little River
Pea Patch Island
Creeks So. of Ft. Mott
Mill Creek/Goose Pond
Baldridge Creek
Salem River
Mill Creek & Opening So.
Back & Straight Ditches
Alloway & Lower Alloway Creeks
Hope Creek & 3 Guts No.
Fishing Creek/Shore Ditch
Cat Gut
Unnamed Opening No. of Mad Horse Creek
Mad Horse Creek
Cherry Tree & Lower Deep Creek
Stow Creek
Gut So. of Stow Creek
Jacobs Creek & Opening No.
Openings No. of Cohansey River
Drumbo Creek
Middle Marsh Creek
Sea Breeze - Guts No. & So. Oyster Gut
Legend
Sites
Division Boundaries
0 1.5 3 6 9
Miles

ICS 204 - Assignment List

Incident: MV Athos I	**Branch:**
Period: Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:** On-Water Recovery Group
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Recovery	Nelson Fetgatter		610-521-2497	
Division/Group Supervisor	Bob Poole		302-462-0194	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	D. Schwartz/M. Doyle		302-293-8961	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Recovery Group					
Delaware Bay & River COOF	Boom	6" x 6"	3100 feet	6 inch(es)	Assigned
Delaware Bay & River COOF	Boom	9" x 18"	2000 feet	18 inch(es)	Assigned
NRC - National Response Cc	Boom	Boom	700 feet		Assigned
Delaware Bay & River COOF	OSRV	Delriver	1 each	110 feet	Assigned
Clean Harbors Environmenta	Skimmer	Skimmer	1 each		Assigned
Delaware Bay & River COOF	Skimmer	Skimming Unit	1 each		Assigned
Delaware Bay & River COOF	Vehicle	Vehicles	4 each		Assigned
JW Transport	Vehicle	Vehicles	3 each		Assigned
Clean Harbors Environmenta	Vessel	Boats < 21'	3 each		Assigned
Delaware Bay & River COOF	Vessel	Boats < 21'	2 each	18 feet	Assigned
Clean Venture, Inc.	Vessel	Boats < 21' - DBRC	1 each	22 feet	Assigned
Delaware Bay & River COOF	Vessel	Boats > 21'	4 each	24 feet	Assigned
Clean Venture, Inc.	Vessel	Boats > 21' - DBRC	4 each	22 feet	Assigned
Miller Environmental Group,	Vessel	Boats > 21' - NRC	3 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Recovery Group					
Clean Harbors Environmenta	Manpower: Responder	Responders	22 each		Assigned
JW Transport	Manpower: Responder	Responders	4 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Responders - DBRC	16 each		Assigned
Delaware Bay & River COOF	Manpower: Responder	Responders - DBRC	7 each		Assigned
Delaware Bay & River COOF	Manpower: Responder	Supervisor - DBRC	3 each		Assigned

Assignments

OSRV Assignments
OSRV to maintain lightering location

Skimming Unit 1 Assignment
Skimming Unit on standby in the vicinity if Tinicum Island.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	On-Water Recovery Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Salvage Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Port Ops	R. Laferriere		609-351-7142	
Salvage Group	Titan - Bob Umbdenstock/Ja		908-230-8075	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Salvage Group					
A.E. Titan	Barge: Inland	Lightering	1 each		Assigned
A.E. Titan	Barge: Inland	Work Barge	1 each		Assigned
A.E. Titan	Pumps	Power Packs	3 each		Assigned
A.E. Titan	Pumps	Submersible Pump H	3 each		Assigned
A.E. Titan	Skimmer	Skimming Unit	1 each		Assigned
A.E. Titan	Tug	Tugs for Barges	2 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Salvage Group					
A.E. Titan	Manpower: Responder	Monitors	4 each		Assigned
A.E. Titan	Manpower: Responder	Pumping Team	8 each		Assigned
A.E. Titan	Manpower: Responder	Supervisor	2 each		Assigned

Assignments

Lighter vessel , carry out Salvage Plan.

Report any deviations from Salvage Plan to Operations.

24x7 operations.

USN Supsalv: 703-602-7527.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Salvage Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

For questions or status reports at night contact
1)LT Rosas 302-494-7862,
2) 267-765-3446/3448,
3) MSO Philadelphia 215-271-4807

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Water Column Monitoring Team
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
TF#1	Jeff Bechtell		908-428-4459	
TF#2	Sean McGleskey		267-228-8536	
TF#3	Pat McNeilly		609-351-8516	

Assignments

TF#1 - Deploy 4 snare sampler transects of 3 Snare Samplers in accordance with attached maps

TF#2 - Pull deployed 12 snare samplers south of Pea Patch Island and document extent of oiling. Contact spervisor of results. Re-deploy samplers as directed by operations.

TF#3 - Deploy 12 crab pot samplers from Aldars Cove to Cedar Swamp, but not in channel.

Special Instructions for Division / Group

Do not deploy samplers inside the channel or in a position where floats may cause navigational hazard.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Wildlife Recovery Group
Period: Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	CMD Deal/Dan Sobieski		267-549-4849	
Environmental Unit Leader	Ed Levine		206-849-9941	
Division/Group Supervisor	Peter McGown		609-214-7895	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Wildlife Recovery Group					
Trade Winds	Vehicle	Box Truck	1 each		Assigned
Trade Winds	Vehicle	Trucks	9 each		Assigned
Trade Winds	Vessel	Boats < 21' - NRC	6 each	18 feet	Assigned
Fleet Environmental Services	Vessel	Boats > 21' - NRC	1 each	20 feet	Assigned
Trade Winds	Vessel	Boats > 21' - NRC	1 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Wildlife Recovery Group					
Trade Winds	Manpower: Responder	Responders	34 each		Assigned

Assignments

Identify, recover, and rehabilitate any impacted wildlife. Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact. Provide technical assistance on any wildlife related issues.

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Environmental Considerations

Report endangered species observations to the Group Supervisor.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Safety Zone Enforcement Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Operations Section Deputy	V. Huyck/Jamie Bethard		215-778-5453	
Branch Director	K. Sligh		215-778-4534	
Division/Group Supervisor	C. Honeycutt		215-778-3117	
Safety Officer	E. Doyle/A. Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Safety Zone Enforcement Group					
USCG	Vessel	USCG Philadelphia	1 each	41 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Safety Zone Enforcement Group					
CSERT	Manpower: Responder	Responders	12 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	5 each		Assigned
North Star	Manpower: Responder	Responders	4 each		Assigned

Assignments

Patrol area of safety zone during daylight hours. Continue to enforce safety zone restrictionc of minimum wake and no recreational boaters from the Tacony - Palmyra Bridge to the Marcus Hook/Bellevue Range Intersection

Special Instructions for Division / Group

- MINIMUM WAKE RESTRICTIONS ARE STILL IN EFFECT.
- No recreational boating is allowed

If a recreational vessel insists on entering safety zone, stop/board/cite CFR 33 CFR 165.209.
- The southern end of Mantua Creek anchorage is closed.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Survey Coordination Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Operations Section Deputy for Port Ops	R. Laferriere		609-351-7142	
Branch Director	K. Sligh		215-778-4534	
Group Supervisor	R. Fitzpatrick		267-765-3433	
Safety Officer	E. Doyle/A. Greshan		302-293-8959/8960	

Assignments

Coordinate all river survey efforts and dive operations within the safety zone.
Coordinate dive activities with Ops.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Waterborne Vessel/Pier Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Operations Section Deputy	R. Laferriere/R. Campbell		609-351-7142	
On-Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	
Vessel Decon Group	T. Scheel/Mike Kearney		215-778-4076	
Waterways Management Branch	K. Sligh/ Gamache		215-778-4534	
Safety Officer	E. Doyle/A. Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Waterborne Vessel/Pier Decon Group					
Fleet Environmental Services	Barge: Inland	Portable Barge Sets	2 each	20 feet	Assigned
Miller Environmental Group,	Barge: Inland	Portable Barge Sets	4 each	20 feet	Assigned
NRC - National Response Cc	Barge: Inland	Portable Barge Sets	5 each	20 feet	Assigned
North Star	Pumps	Hotsys	3 each		Assigned
North Star	Trailer	Trailer	1 each		Assigned
Optech	Trailer	Trailer	1 each		Assigned
North Star	Vehicle	Truck	4 each		Assigned
Optech	Vehicle	Truck	7 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21' - NRC	1 each	20 feet	Assigned
Fleet Environmental Services	Vessel	Boat < 21' - NRC	1 each	20 ft	Assigned
Miller Environmental Group,	Vessel	Boat < 21' - NRC	8 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat > 21' - NRC	3 each	22 feet	Assigned
Fleet Environmental Services	Vessel	Boat > 21' - NRC	3 each	22 feet	Assigned
Miller Environmental Group,	Vessel	Boat > 21' - NRC	4 each	22 feet	Assigned
North Star	Vessel	Boat > 21' - NRC	4 each	22 feet	Assigned
SWS Environmental First Re	Vessel	Boat > 21' - NRC	1 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Waterborne Vessel/Pier Decon Group					
USCG	Manpower: Responder	NSF Team	2 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders	8 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	15 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders	29 each		Assigned
Moran	Manpower: Responder	Responders	6 each		Assigned
North Star	Manpower: Responder	Responders	9 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	4 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders	8 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Responders - DBRC	17 each		Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Waterways Management Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Waterborne Vessel/Pier Decon Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Waterborne Vessel/Pier Decon Group					
Optech	Manpower: Responder	Responders (Nght O	25 each		Assigned

Assignments

- Conduct decontamination activities as directed. Vessels have first priority. Vessel decon to be conducted as required.
- As directed clean commercial vessels in accordance with vessel decon plan (steamcleaning).
- Note any heavily impacted facilities and report information to ops.
- NSF supervisors will actively monitor and critique the operation.
- Decon schedule must be communicated to the stakeholders.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with Waterborne Vessel/Pier Decon Group Supervisor.

10 Task Forces Total:

Decon Task Force 1
Decon Task Force 2
Decon Task Force 3
Decon Task Force 4
Decon Task Force 5
Decon Task Force 6
Decon Task Force 7
Decon Task Force 8
Decon Task Force 9
Decon Task Force 10

Each Task Force is comprised of equipment listed above.

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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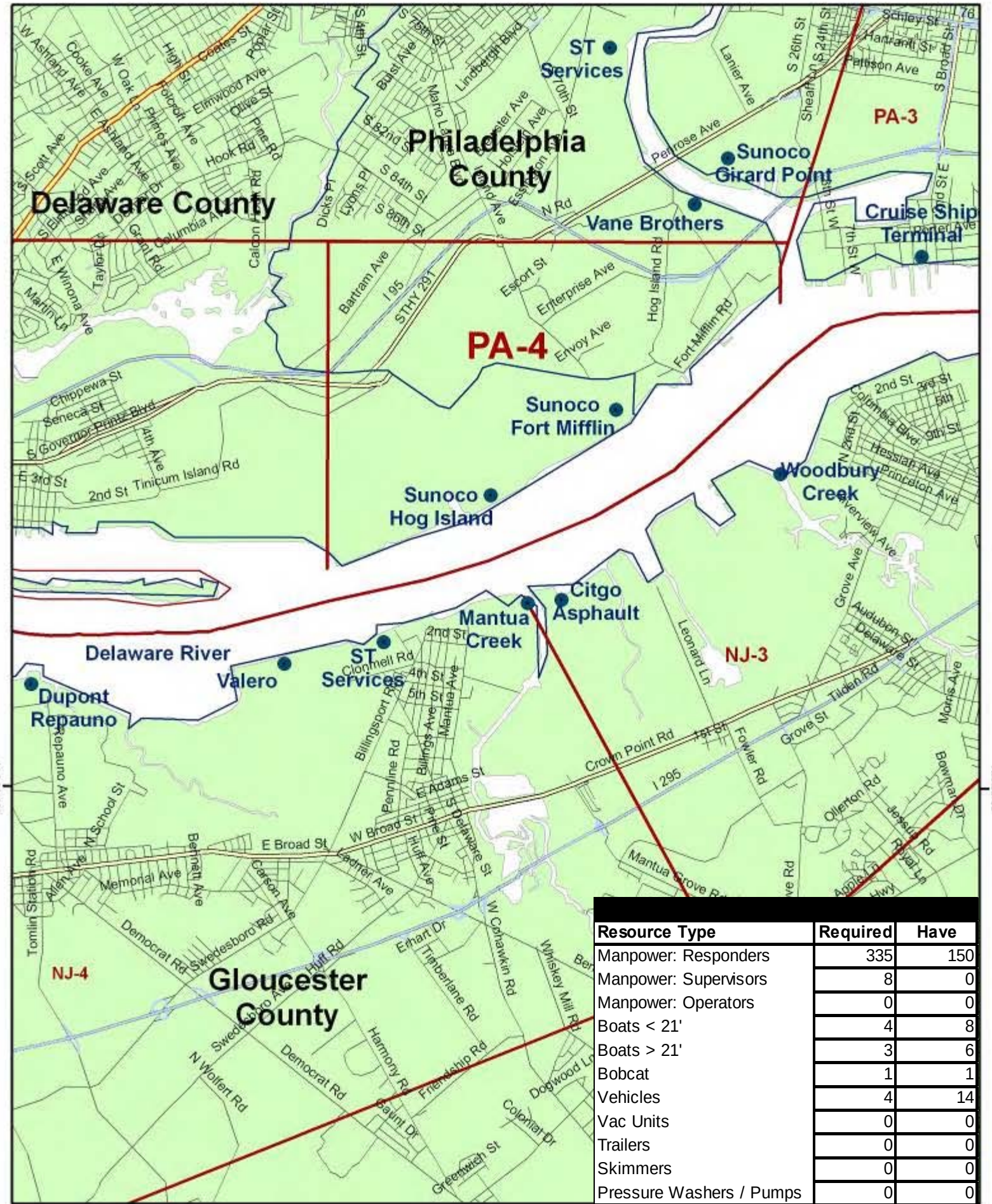
PA-4 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	335	150
Manpower: Supervisors	8	0
Manpower: Operators	0	0
Boats < 21'	4	8
Boats > 21'	3	6
Bobcat	1	1
Vehicles	4	14
Vac Units	0	0
Trailers	0	0
Skimmers	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy Recovery	Nelson Fetgatter		610-521-2497	
Division/Group Supervisor	Randy Anzalone		713-569-7237	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	N. Brignola/N. Fedoroff		4842394436/6094253	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
Clean Harbors Environmenta	Pressure Washers / Wa	Hotsey	1 each		Assigned
Clean Harbors Environmenta	Trailer	Trailer (CHI)	2 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks (CHI)	14 each		Assigned
Kens Marine Service	Vessel	Boat < 21'	7 each	20 feet	Assigned
SWS Environmental First Re	Vessel	Boat < 21'	1 each	20 feet	Assigned
Kens Marine Service	Vessel	Boat > 21'	3 each	22 feet	Assigned
SWS Environmental First Re	Vessel	Boat > 21'	3 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
Clean Harbors Environmenta	Manpower: Responder	Responders	10 each		Assigned
Kens Marine Service	Manpower: Responder	Responders	42 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders	39 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	2 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders	57 each		Assigned
Clean Harbors Environmenta	Vacuum Unit	Vac Truck - NRC	1 each		Assigned

Assignments

Airport shoreline cleanup

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.
Address ACOE slips.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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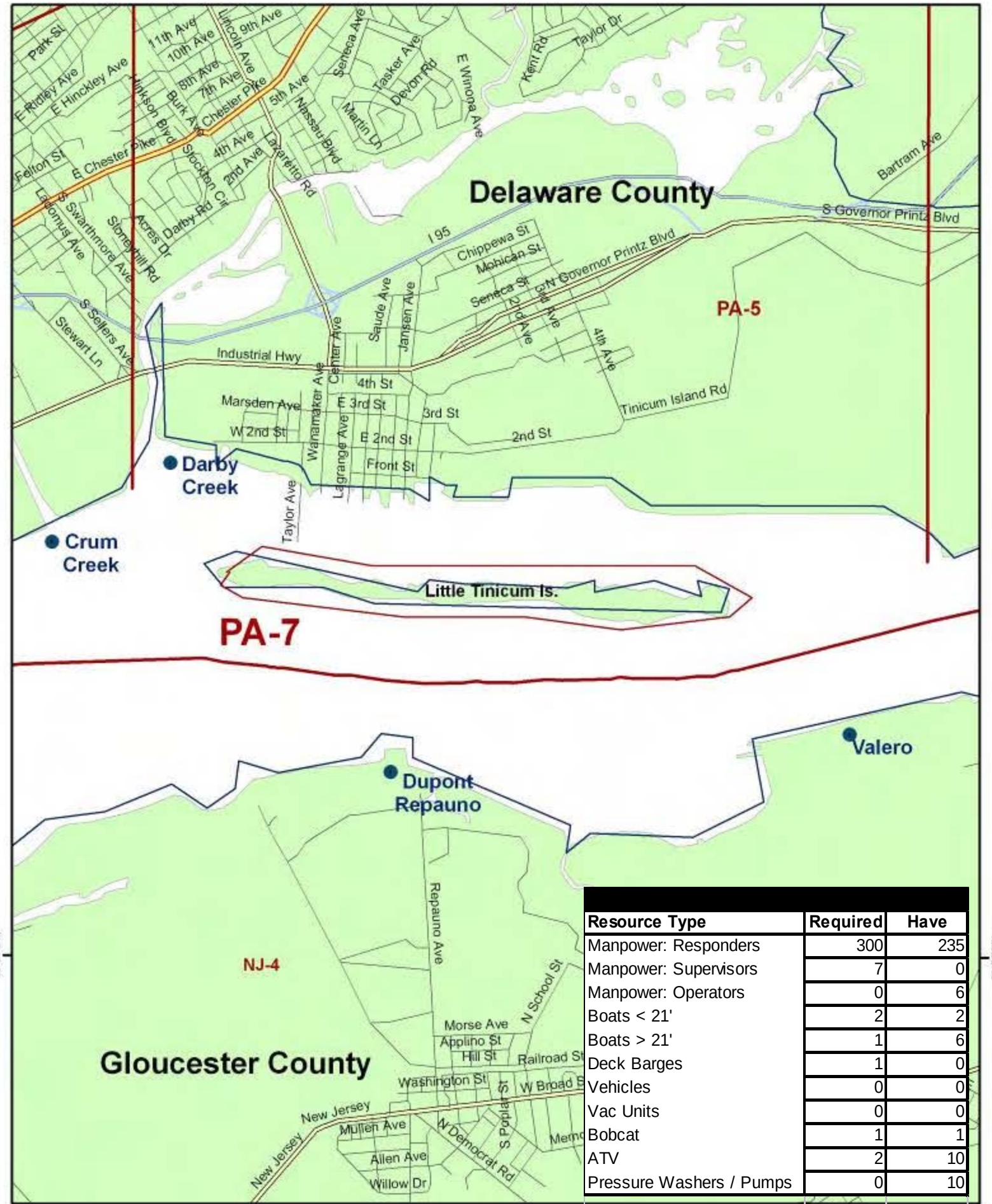
PA-7 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	300	235
Manpower: Supervisors	7	0
Manpower: Operators	0	6
Boats < 21'	2	2
Boats > 21'	1	6
Deck Barges	1	0
Vehicles	0	0
Vac Units	0	0
Bobcat	1	1
ATV	2	10
Pressure Washers / Pumps	0	10

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy Recovery	Nelson Fetgatter		610-521-2497	
Supervisor	Steve Smith		504-382-8351	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	D. Schwartz/M. Doyle		302-293-8961	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-7 Division					
Miller Environmental Group,	Equipment: Heavy	Bob Cat	1 each		Assigned
Miller Environmental Group,	Vehicle	ATV - NRC	10 each		Assigned
Miller Environmental Group,	Vessel	Boat < 21' - NRC	2 each	20 feet	Assigned
Miller Environmental Group,	Vessel	Boat > 21' - NRC	1 each	20 feet	Assigned
USES	Vessel	Boat > 21' - NRC	4 each	20 feet	Assigned
NRC - National Response Cc	Vessel	Boats >21' (Call in)	1 each	110 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-7 Division					
Miller Environmental Group,	Manpower: Responder	Responders	96 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	2 each		Assigned
Oilmop, Inc.	Manpower: Responder	Responders	48 each		Assigned
United States Environmental	Manpower: Responder	Responders	96 each		Assigned

Assignments

-Manually recover oil and oil covered debris
-Employ and assess effectiveness of various techniques:
  -Squiggees
  -Snares
  -Low pressure flushing
  -Vacuum transfer

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review site safety plan. Be aware of slips, trips and falls. Always wear proper PPE. Follow decon procedures in Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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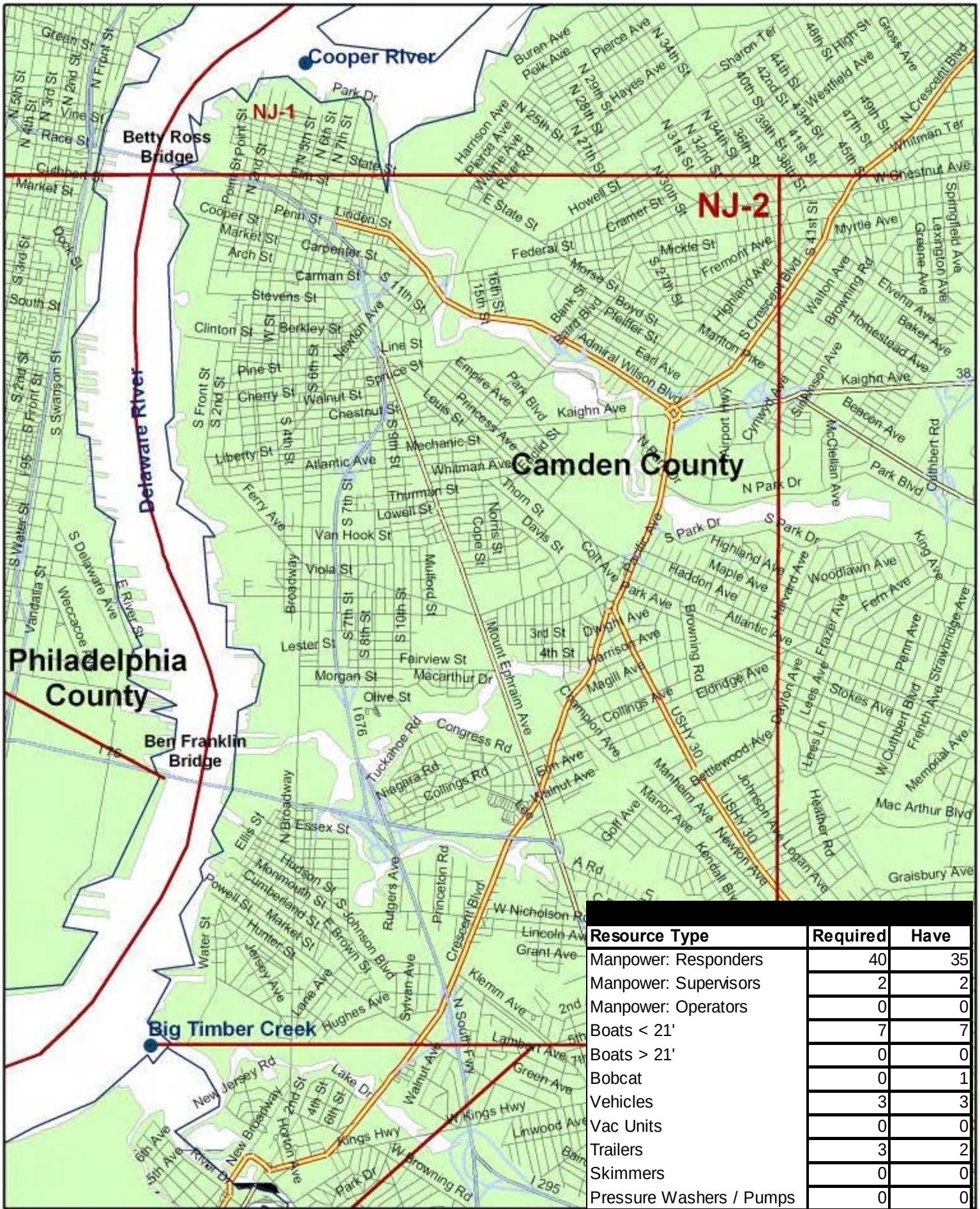
NJ-2 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	40	35
Manpower: Supervisors	2	2
Manpower: Operators	0	0
Boats < 21'	7	7
Boats > 21'	0	0
Bobcat	0	1
Vehicles	3	3
Vac Units	0	0
Trailers	3	2
Skimmers	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy For Recovery	Nelson Fetgatter		610-521-2497	
NJ2 Division Supervisor	Dave Marsh		713-569-2060	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safet Officer	L. Sherrow		484-645-4512	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-2 Division					
Clean Venture, Inc.	Equipment: Heavy	Backhoe	1 each		Assigned
Clean Harbors Environmenta	Pumps	Hotsey	1 each	feet	Assigned
Clean Harbors Environmenta	Trailer	Trailer	2 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	3 each		Assigned
Clean Harbors Environmenta	Vessel	Small Boats <21'	7 each	16 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-2 Division					
Clean Harbors Environmenta	Manpower: Responder	Responders	13 each		Assigned
Moran	Manpower: Responder	Responders	23 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned

Assignments

Beach cleanup at Eagle Point

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending.
Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.
Monitor sorbant placement protecting Newton Creek.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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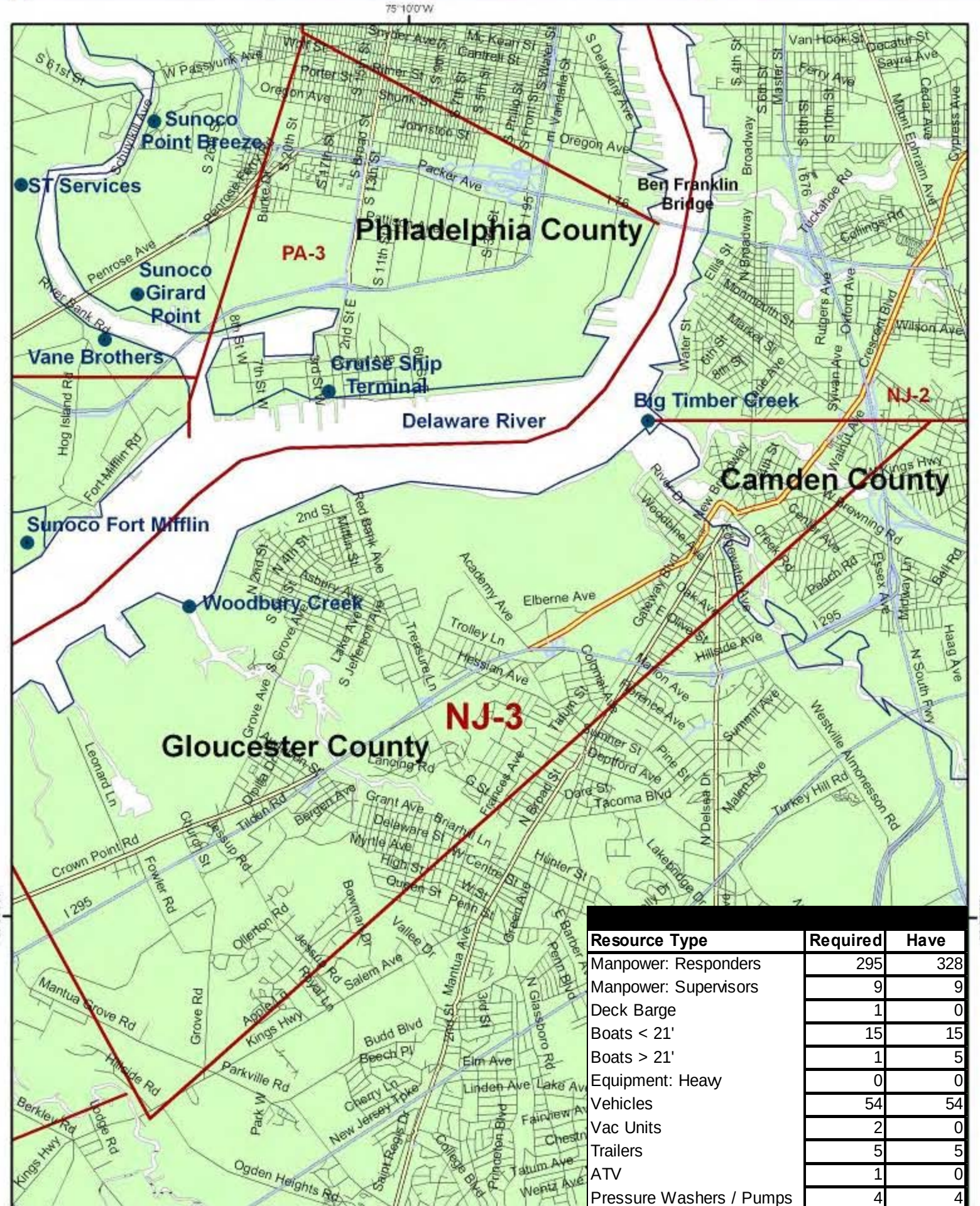
NJ-3 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	295	328
Manpower: Supervisors	9	9
Deck Barge	1	0
Boats < 21'	15	15
Boats > 21'	1	5
Equipment: Heavy	0	0
Vehicles	54	54
Vac Units	2	0
Trailers	5	5
ATV	1	0
Pressure Washers / Pumps	4	4

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy Recovery	Nelson Fetgatter		610-521-2497	
NJ-3 Division Supervisor	Pete Parker		270-559-2735	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Sherrow		484-645-4512	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Miller Environmental Group,	Equipment: Heavy	Tractor	2 each		Assigned
Miller Environmental Group,	Pumps	2" Pumps	2 each		Assigned
Miller Environmental Group,	Pumps	Hotsey	2 each		Assigned
Industrial Cleanup, Inc. - ICI	Trailer	Oil Response Trailer	1 each	24 feet	Assigned
Optech	Trailer	Trailer (OTECH)	1 each		Assigned
Miller Environmental Group,	Trailer	Trailers	2 each		Assigned
Fleet Environmental Services	Trailer	Trailers (Fleet)	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1 Ton stake truck	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	15 passenger van	2 each		Assigned
Atlantic Response, Inc.	Vehicle	4x4 (AR 4)	1 each		Assigned
Fleet Environmental Services	Vehicle	Box Truck (Fleet)	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Cars (CHI)	8 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	Pickup	1 each		Assigned
Miller Environmental Group,	Vehicle	Rack Truck	1 each		Assigned
NRC - National Response Cc	Vehicle	Rack Truck	3 each		Assigned
Atlantic Response, Inc.	Vehicle	Supply Truck (AR 10	1 each		Assigned
A & A Environmental Service	Vehicle	Truck	5 each		Assigned
Moran	Vehicle	Truck	4 each		Assigned
Clean Harbors Environmenta	Vehicle	Truck (CHI)	14 each		Assigned
Optech	Vehicle	Utilty Truck (OTECH)	8 each		Assigned
Miller Environmental Group,	Vehicle	Van	2 each		Assigned
Atlantic Response, Inc.	Vehicle	Van (AR 3)	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Van (CHI)	1 each		Assigned
Moran	Vessel	Boat > 21'	2 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	Boats <21'	4 each	18 feet	Assigned
Kens Marine Service	Vessel	Boats <21'	5 each	22 feet	Assigned
Miller Environmental Group,	Vessel	Boats <21'	6 each	18 feet	Assigned
Clean Harbors Environmenta	Vessel	Boats >21'	2 each	24 feet	Assigned
Miller Environmental Group,	Vessel	Boats >21'	1 each	24 feet	Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Atlantic Response, Inc.	Manpower: Responder	Responders	18 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders	109 each		Assigned
ES&H Environmental Service	Manpower: Responder	Responders	63 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	100 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Responders	31 each		Assigned
Kens Marine Service	Manpower: Responder	Responders	15 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned

Assignments

Recovery Operations at Woodbury Creek

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending. Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.
Protect the water intake at the Citgo Terminal

Location of Work

Eagle Point

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips & falls. All Personnel are required to follow Decon procedures in Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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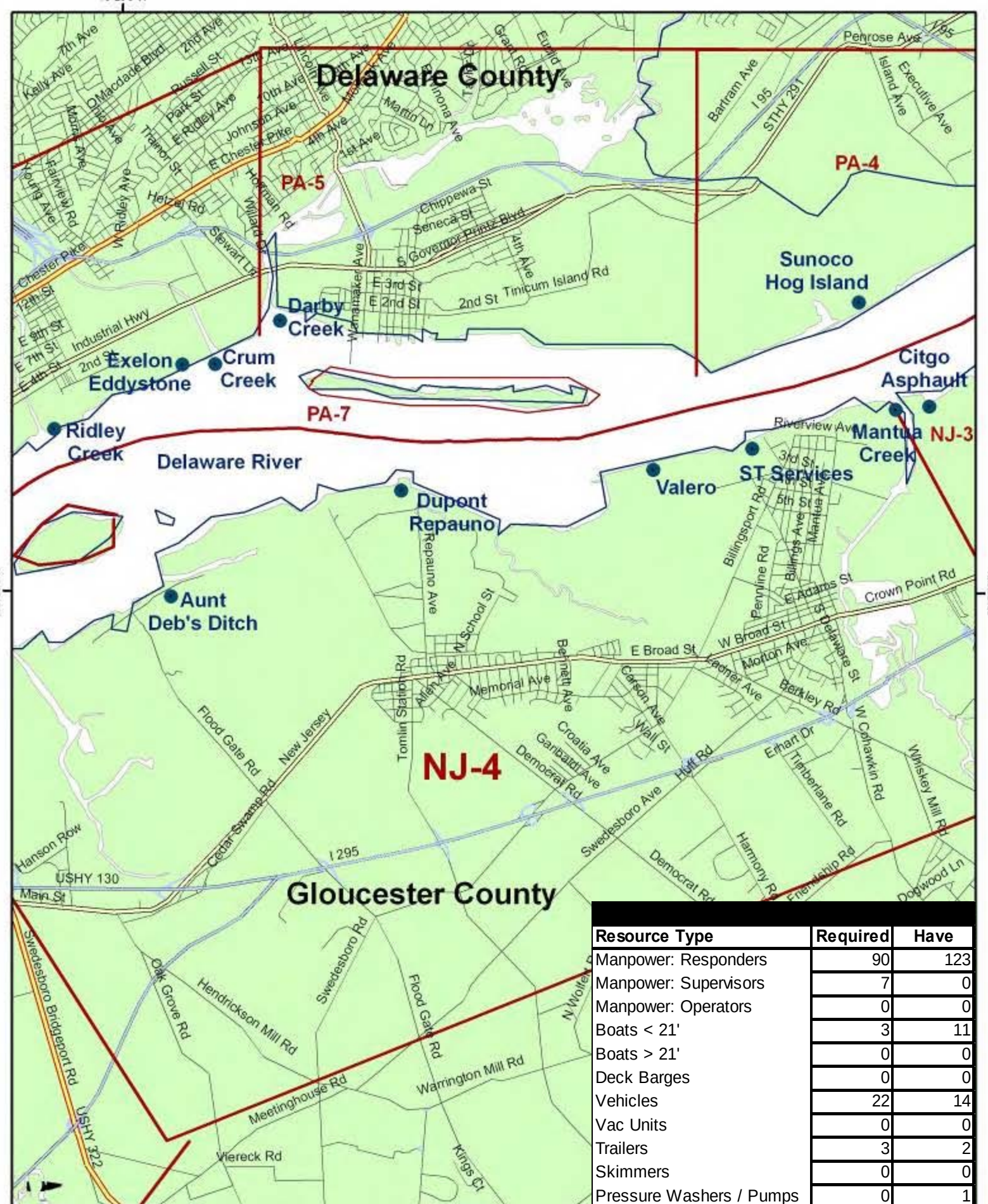
NJ-4 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	90	123
Manpower: Supervisors	7	0
Manpower: Operators	0	0
Boats < 21'	3	11
Boats > 21'	0	0
Deck Barges	0	0
Vehicles	22	14
Vac Units	0	0
Trailers	3	2
Skimmers	0	0
Pressure Washers / Pumps	0	1

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy For Recovery	Nelson Fetgatter		610-521-2497	
Near/On Shore Recovery Branch Director	Issac Will		952-250-3161	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	G. Sherk		610-742-3202	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
NRC - National Response Cc	Pumps	Pressure Washer (N	1 each		Assigned
Clean Harbors Environmenta	Trailer	Trailer (CHI)	1 each		Assigned
A & A Environmental Service	Trailer	Trailers (AA)	1 each		Assigned
A & A Environmental Service	Vehicle	Trucks (AA)	6 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks (CHI)	4 each		Assigned
Clean Harbors Environmenta	Vehicle	Utility Truck (CHI)	4 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21'	3 each	18 feet	Assigned
Trade Winds	Vessel	Boat < 21'	8 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
ES&H Environmental Service	Manpower: Responder	Resonders	72 each		Assigned
A & A Environmental Service	Manpower: Responder	Responders	10 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders	34 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	3 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned
Trade Winds	Manpower: Responder	Responders	10 each		Assigned

Assignments

Recovery Operations between Mantua Creek and Commodore Perry Bridge

Special Instructions for Division / Group

Tend boom as directed. Morning overflights will be conducted to determine whether deployed boom requires tending.
Overflight information will be supplemented by on water observations.
Conduct beach pre-clean up by moving debris above high water mark in potential impact areas.

Location of Work

Mantua Creek and Commodore Berry Bridge.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redployment.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No wetland vegetation should be cut without State approval. Report oiled wildlife to Situation Unit. Do not walk through or work in Mud Flats.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	MEG Paulsboro Staging #1
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy For Recovery	Nelson Fetgatter		610-521-2497	
Staging Area Manager	Brian Murphy		713-503-6389	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Glenn Sherk		610-742-3202	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
MEG Paulsboro Staging #1					
NRC - National Response Cc	Pumps	NRC Fire Pump	1 each		At Staging
Miller Environmental Group,	Trailer	MEG Trailer #140	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #337	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #348	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #349	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #356	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #375	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #379	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #711	1 each		At Staging
NRC - National Response Cc	Trailer	NRC Trailer #712	1 each		At Staging
Miller Environmental Group,	Trailer	NRC Trailer #713	1 each		At Staging
Clean Harbors Environmenta	Vehicle	Clean Harbor Truck #	1 each		At Staging
NRC - National Response Cc	Vehicle	Fleet Truck #403	1 each		At Staging
NRC - National Response Cc	Vehicle	NRC Truck #469	1 each		At Staging
Clean Harbors Environmenta	Vessel	Boat < 21'	3 each	20 feet	Assigned

Assignments

Stage and deploy additional skimmers, barges, steam units, super sucker, water taxi, and wash pumps. Launch Site.

Location of Work

Paulsboro, NJ

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Citgo Paulsboro Staging #2
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Deputy for Recovery	Nelson Fetgatter		610-521-2497	
Staging Area Manager	Paul Rutherford		631-926-4700	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	D. Kennedy/Val Garner		850-258-9116	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Citgo Paulsboro Staging #2					
Clean Harbors Environmenta	Boom	Boom (CHI)	1800 feet		At Staging
Kens Marine Service	Equipment: Heavy	Tractors	2 each		At Staging
Kens Marine Service	Trailer	Trailers (KENS)	6 each		At Staging
NRC - National Response Cc	Vehicle	Box Truck (TW)	1 each		At Staging
Clean Harbors Environmenta	Vehicle	Utility Truck (CHI)	4 each		At Staging
NRC - National Response Cc	Vehicle	Utility Truck (TW)	3 each		At Staging
Kens Marine Service	Vehicle	Vehicles (KENS)	18 each		At Staging

Assignments

Be prepared to deploy resources to combat oil pooled nearshore or stranded on sensitive shoreline.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Staging Areas
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Lagoon #3
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Area Manager	Rusty Johnson		504-416-0191	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	
On Scene Safety Officer	Larry Bak		484-431-7763	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon #3					
North Star	Vessel	Boat > 21'	4 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon #3					
Clean Harbors Environmenta	Manpower: Responder	Responders	15 each		At Staging
Miller Environmental Group,	Manpower: Responder	Responders	15 each		At Staging
Moran	Manpower: Responder	Responders	2 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	2 each		At Staging

Assignments

Rapidly deploy Shoreline Cleanup Teams to priority areas based on spill impacts and SCAT analysis

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Air Ops Branch
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Air Ops Branch Director	Brad Barker		985-381-0697	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Air Ops Branch					
Horizon Helicopters	Aircraft: Helo	Bell 206 L	1 each		Assigned
Analar	Aircraft: Helo	Bell Jet Ranger	1 each		Assigned

Assignments

Surveillance - Overflights and coordinating vessel movement

- First overflight shall ensure boom is in place I/A/W protection strategies.
- First light overflight, estimated departure time: 0830 from heloport to support Ops as needed.
- Ops overflight, estimated departure time: 0830 from heloport.
- Overflights need to be prescriptive in determining extent of free floating oil to facilitate commercial vessel transit.
- All overflight personnel report oiled wildlife to Situation Unit Leader at 267-765-3446.
-Ensure helo is available to support on water skimming operations.
- All other overflights conducted as needed
- Flight ops will terminate at 1630, no departures after 1600.

One Helo will be used for operations and scientific support, the other will be used at the discretion of the UC.

New Jersey and Delaware State helicoptors are being used for State oversight.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment & Recovery Br
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Diver Assessment & Recovery Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Submerge	M. Ploen/J. Elliot		8439913962/251680	
Subsurface Oil Response	T. Eason		843-991-3962	
Diver Cleanup Group	T. Eason		843-991-3962	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Assignments

1. Issue broadcast notice to mariners for Diving Ops.
2. Conduct submerged oil assessment in vicinity of obtruction trench, bottom depressions north of Tinicum Island, and at Eddystone Power Plant. Coordinate trench dive with Randive, Inc. Diving supervisor (732) 991-2274.
3. Collect oil sample in trench and return to Mr. Ed Levine, NOAA SSC.
4. On-Site Diving Safety Observer: Mr. Allen Humphry.
5. Conduct diving and decon operations in accordance with approved diving plan.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment & Recovery Br
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Water Intake Defense Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Submerge	M. Ploen/J. Elliot		8439913962/251680	
Subsurface Oil Response	T. Eason		843-991-3962	
Intake Defense Group	C. Hall		408-968-8132	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Assignments

Complete construction of passive filtration system. Place snare samples at Eddystone power plant.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

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Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

NOTE: Anticipate Tug/Barge from Staton Island will be delayed due to weather.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment & Recovery Br
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Vessel Recovery Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Operations Section Deputy for Submerge	M. Ploen/J. Elliot		8439913962/251680	
Vessel Removal Group	M. Ploen		843-991-3962	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Vessel Recovery Group					
NRC - National Response Co	Vessel	Boats > 21' - LF	1	110 feet	Assigned
North Star	Vessel	Boats > 21' - NRC	4	35 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vessel Recovery Group					
Fleet Environmental Services	Manpower: Responder	Responders	4 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	4 each		Assigned

Assignments

Conduct subsurface oil recovery using Vessel Subsurface Oil Recovery System (VSORS) around and above Tinicum Island and above Salem Power Plant.

1.) M/V tow VSORS in vicinity of Tinicum Island
2.) M/V tow VSORS in vicinity of Tinicum Island
3.) M/V Cape Hatterus tow VSORS in vicinity above Salem Nuclear Facility and in channel.
4.) M/V tow VSORS in vicinity of Salem Nuclear Facilty and in channel.
5.) M/V Lynn Frank tow VSORS in vicinity north of Tinicum Island and in channel.

All personnel meet at Command Post at 0600. Conduct continuous oil recovery operations from 0700 to 1700. Map oiled areas using GPS and provide data to NOAA and Genwest following daily operations

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment & Recovery Br
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Mobile Oil Assessment Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Submerged Oil Recovery Deputy	M. Ploen/J. Elliot		8439913962/2516809	
Mobile Oil Assessment Group	B. Jones/J. Michel		856-297-8648	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Mobile Oil Assessment Group					
Unknown	Vessel	DE launch	1 each		Assigned
Unknown	Vessel	Emily Christine	1 each		Assigned
EPA	Vessel	MA - EPA RII	1 each		Assigned
EPA	Vessel	MA - EPA RII	1 each		Assigned
Unknown	Vessel	MC - Wilmington FB	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Mobile Oil Assessment Group					
EPA	Manpower: Responder	MA - Responders	3 each		Assigned
DE F&W	Manpower: Responder	MC - DE F&W Rep	3 each		Assigned
EPA	Manpower: Responder	MC - EPA Rep	1 each		Assigned

Assignments

Assess mobile oil above Delaware Memorial Bridge (M-A), from Delaware Memorial Bridge South to Salem Power Plant (M-B), , Salem Power Plant South (M-C)

Conduct monitoring to determine location of mobile oil and assess movement of this oil. Determine strategies to recover.

1. Task Force 1, EPA Boat: From Tacomy-Palmyra Dridge to Delaware Memorial Bridge assess and maintain the 18 established sites.

2. Task Force 2, Wilmington Fire Boat: Check and maintain Snare Samplers (12) in vicinity of Salem Nuclear Power Plant, deploy (21) additional stations.

3. Task Force 3, Emily Christine Fishing Boat: Check and maintain crab pots, set (24) snare samples in designated areas.

4. Task Force 4, DE Launch, set (24) snare samples in designated areas.

All sites will be revisited daily (weather permitting). The snares will be inspected and the data reported on a standard form. unoiled snare will be returned to the water. Oiled snare will be replaced. Samples will not be collected unless requested.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment & Recovery Br
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Mobile Oil Assessment Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment & Recovery Br
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Division/Group:**	Pooled Oil Assessment Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	Chris Gregory		714-273-8036	
Submerged Oil Recovery Deputy	M. Ploen/J. Elliot		8439913962/251680	
Pooled Oil Assessment Group	B. Jones/J. Michel		856-297-8648/803-51	
Safety Officer	Ed Doyle/Archie Greshan		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Pooled Oil Assessment Group					
Unknown	Vessel	MA - Contractor boat	1 each		Assigned
EPA	Vessel	MA - EPA Boat	1 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Pooled Oil Assessment Group					
Entrix	Manpower: Responder	MA - Entrix Personne	2 each		Assigned
EPA	Manpower: Responder	MA - EPA Personnel	3 each		Assigned

Assignments

TF1
Assess pooled oil from the Tacony-Palmyra Bridge to Delaware Memorial Bridge.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

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Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Unified Command Staff	267-765-3431		-	-	○ Yes ● No
Unified Command Staff	267-765-3460		-	-	○ Yes ● No
Unified Command Staff	267-765-3459		-	-	○ Yes ● No
Unified Command Staff UC Conference Phone	267-765-3457		-	-	○ Yes ● No
Operations	267-765-3439		-	-	○ Yes ● No
Operations	267-765-3449		-	-	○ Yes ● No
Operations	267-765-3450		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3445		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3434		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3450		-	-	○ Yes ● No
Operations Wake Incident Notification	267-765-3344		-	-	○ Yes ● No
Operations Vessel Movement	215-271-4889		-	-	○ Yes ● No
Operations Vessel Movement	215-778-5841		-	-	○ Yes ● No
Planning	267-765-3440		-	-	○ Yes ● No
Planning	267-765-3437		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Planning	267-765-3443		-	-	○ Yes ● No
Planning	267-765-3444		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3446		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3447		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3448		-	-	○ Yes ● No
Planning Oiled Wildlife	215-365-1558		-	-	○ Yes ● No
Logistics	267-765-3464		-	-	○ Yes ● No
Logistics	267-765-3432		-	-	○ Yes ● No
Logistics	267-765-3453		-	-	○ Yes ● No
Logistics	267-765-3454		-	-	○ Yes ● No
Logistics	267-765-3471		-	-	○ Yes ● No
Logistics	267-765-3472		-	-	○ Yes ● No
Logistics NRC Logistics	267-765-3455		-	-	○ Yes ● No
Logistics Claims	866-401-0353		-	-	○ Yes ● No
Finance/Admin	267-765-3435		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Finance/Admin	267-765-3451		-	-	○ Yes ● No
Finance/Admin	267-765-3452		-	-	○ Yes ● No
Public Information Room	267-765-3436		-	-	○ Yes ● No
Public Information Room	267-765-3441		-	-	○ Yes ● No
Public Information Room	267-765-3442		-	-	○ Yes ● No
Safety	267-765-3433		-	-	○ Yes ● No
NOAA	267-765-3465		-	-	○ Yes ● No
NOAA	267-765-3467		-	-	○ Yes ● No
Fax Receive	215-923-4476		-	-	○ Yes ● No
Fax Receive	267-765-3463		-	-	○ Yes ● No
Fax Transmit	267-765-3456		-	-	○ Yes ● No
Break-out Room	267-765-3461		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2479		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-3086		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2851		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0453		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0483		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0871		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-2183		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2) Fax	610-521-1407		-	-	○ Yes ● No
Safety Office (Lagoon) Nick Brignola	484-239-4436		-	-	○ Yes ● No
Staging Area 1, MEG Brian Murphy	713-503-6389		-	-	○ Yes ● No
Staging Area 2, CITGO Paul Rutherford	631-926-4500		-	-	○ Yes ● No
Staging Area 3, Lagoon Nelson Fetgatter	610-521-2497		-	-	○ Yes ● No
Base of Operations Sunoco Hog Island -			-	-	○ Yes ● No
Base of Operations Premcor Refinery - BM2 Kautzman	251-680-8352		-	-	○ Yes ● No
Base of Operations Premcor Refinery - MK1 Potts	415-798-4604		-	-	○ Yes ● No
Base of Operations Salem Marine Terminal - Jim Sanial	856-266-3810		-	-	○ Yes ● No
NJ PGEC William Bunch	856-491-5308		-	-	○ Yes ● No
John Heinz Wildlife Center Triage	215-365-1558		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Communication Plan		

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency
VHF-FM	18A	Tactical Secondary	156.900 MHZ	Near/On shore recovery	All Near/On shore secondary freq.
VHF-FM	13	Navigation Safety	156.650 MHZ	Bridge to Bridge	Ship to Ship navigation safety
NRC	1	Tactical Primary	Channel 1	Near/On shore recovery	North of Hog Island
NRC	2	Tactical Primary	Channel 2	Near/On shore recovery	South of Hog Island
Nextel/Cell		Tactical	Cell/Nextel	Protection Branch Tactical	POC: Mr. Bob Poole 302-462-0194
Nextel/Cell		Tactical	Cell/Nextel	Salvage Group	POC: Bob Umbdenstock
Nextel/Cell		Tactical	Cell/Nextel	Safety Team Coordination	POC: Mr. Archie Gresham 302-293-8960
Nextel/Cell		Tactical	Cell/Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center
Nextel/Cell		Command	Cell/Nextel	Wildlife Recovery Command	POC: Pete McGowan 609-214-7895 Cell 267-765-3466 Desk

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Communication Plan	

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
Nextel/Cell		Tactical	Cell/Nextel	Near shore recovery Branch	POC: Mr. Chris Gregory 714-273-8036
Nextel/Cell		Tactical	Cell/Nextel	Waterborne Vessel/Pier Decon Group Command Net	POC: LCDR J. Scheel 267-228-7240
Nextel/Cell		Tactical	Cell/Nextel	Shoreline cleanup assessment	POC: Mr. Jacqui Michelle: 803-513-5650
Nextel/Cell		Tactical	Cell/Nextel	Monitoring Group	Operations: PO McNeilly 267-765-3439 SCAT info: Situations 267-765-3446/3448

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ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 12/6/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Medical Plan

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911 (See below)	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856) 342-2345	
Christians Care Hospital	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	
Memorial Hospital of Salem County	Salem, NJ - United States	Yes	No	(856) 425-3288	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
Paramedics & mobile unit are stationed on PA side at Staging Area #3 - Lagoon.
To contact EMS at Staging Area #3 - Lagoon, call Nick Federoff - 609-425-3288.
For EMS services on the NJ side, we have established direct contact numbers to EMS dispatchers in each county.
Camden County (NJ 1&2) - 856-757-7502
Gloucester County (NJ 3&4) - 856-589-0911
Salem County (NJ 5,6,7,8,9,10&11) - 856-769-2959
Hyperbaric Chamber is located at University of Pennsylvania Hospital.

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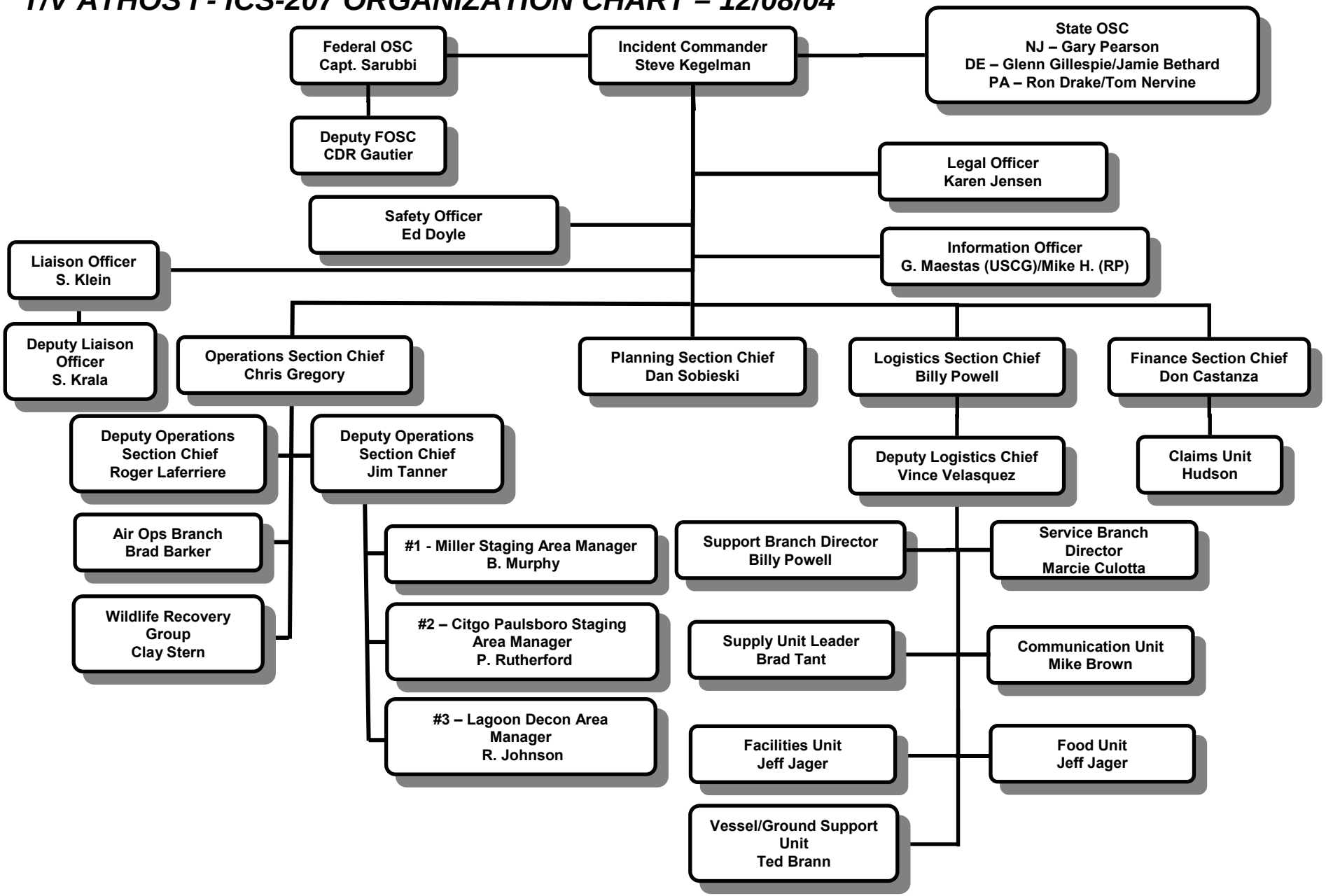
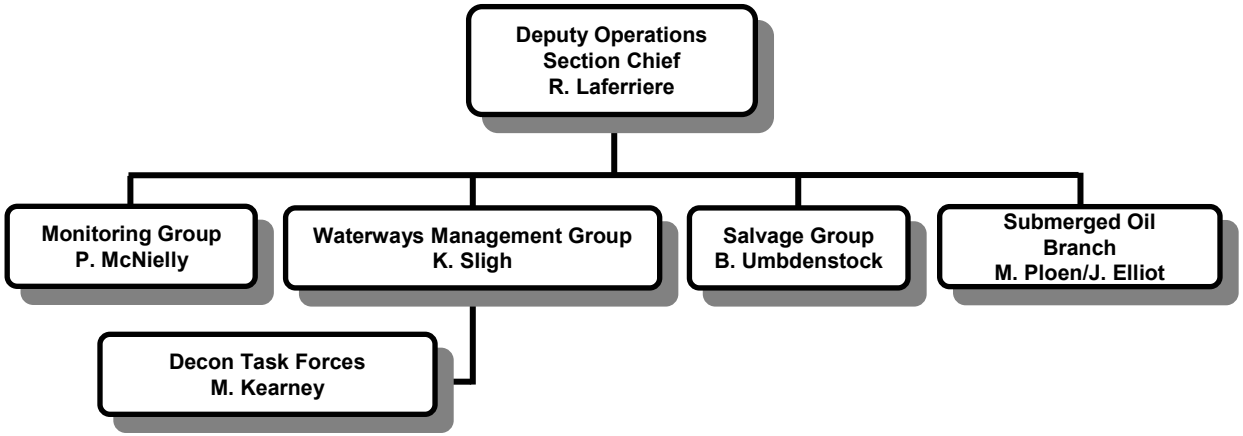
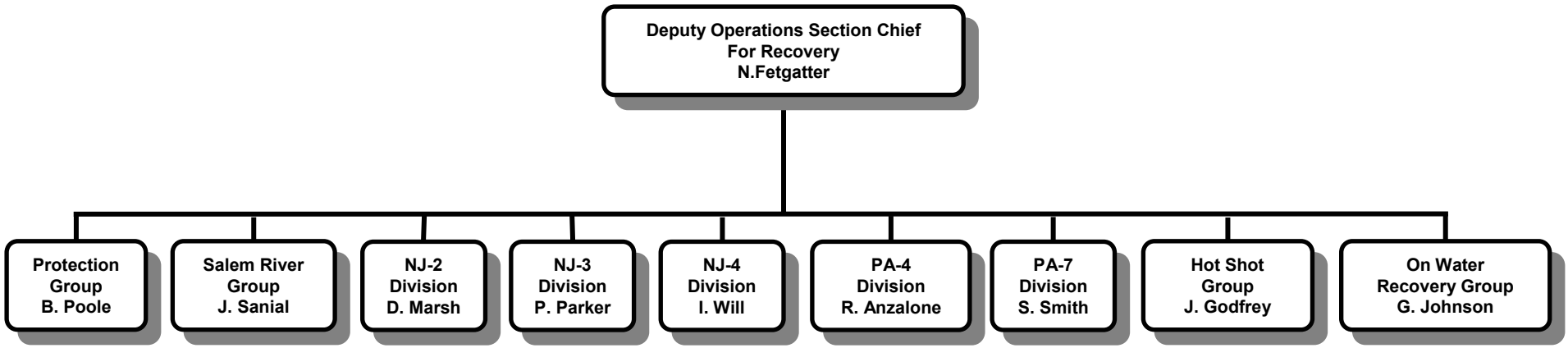
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 12/08/04



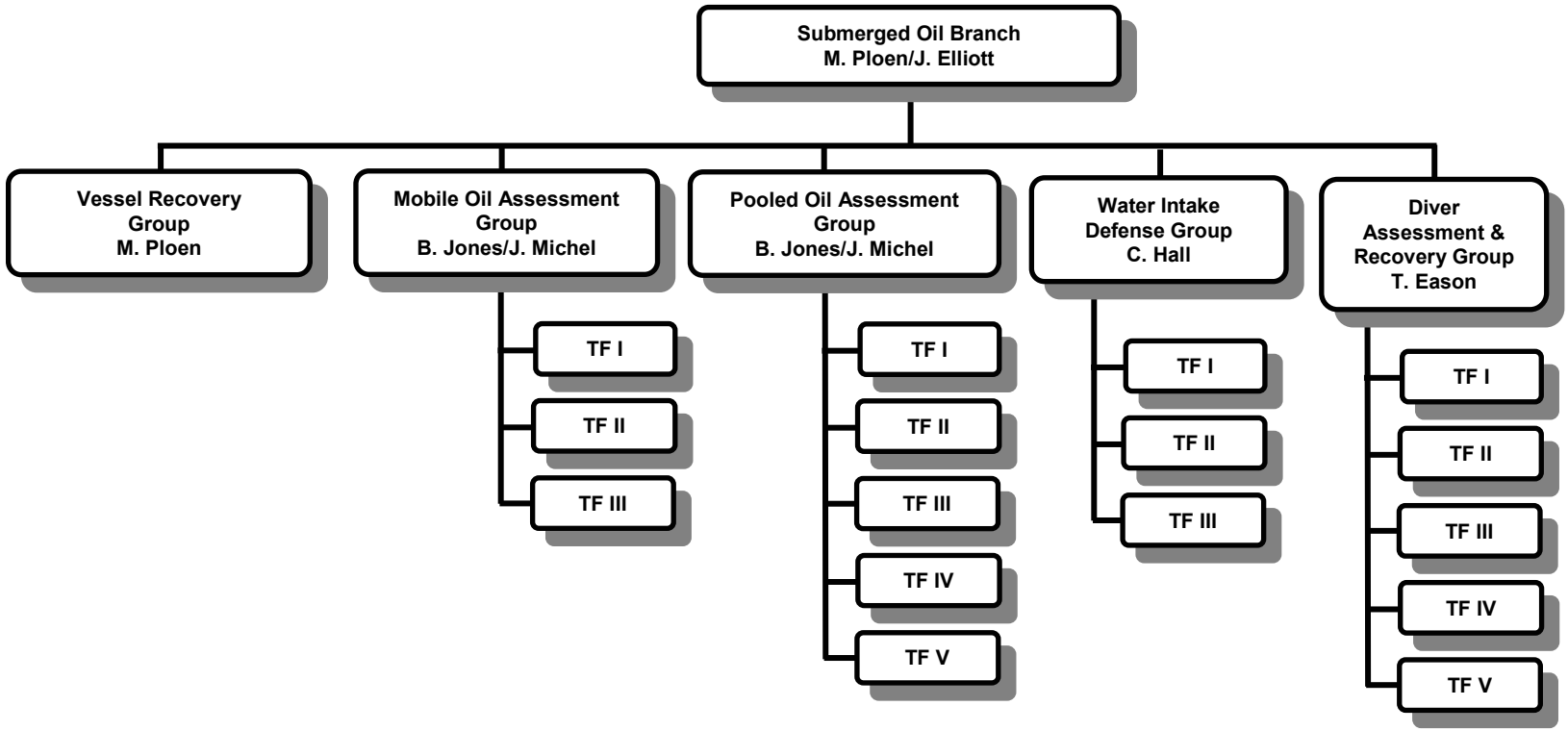
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR PORT OPERATIONS ORGANIZATION CHART – 12/08/04



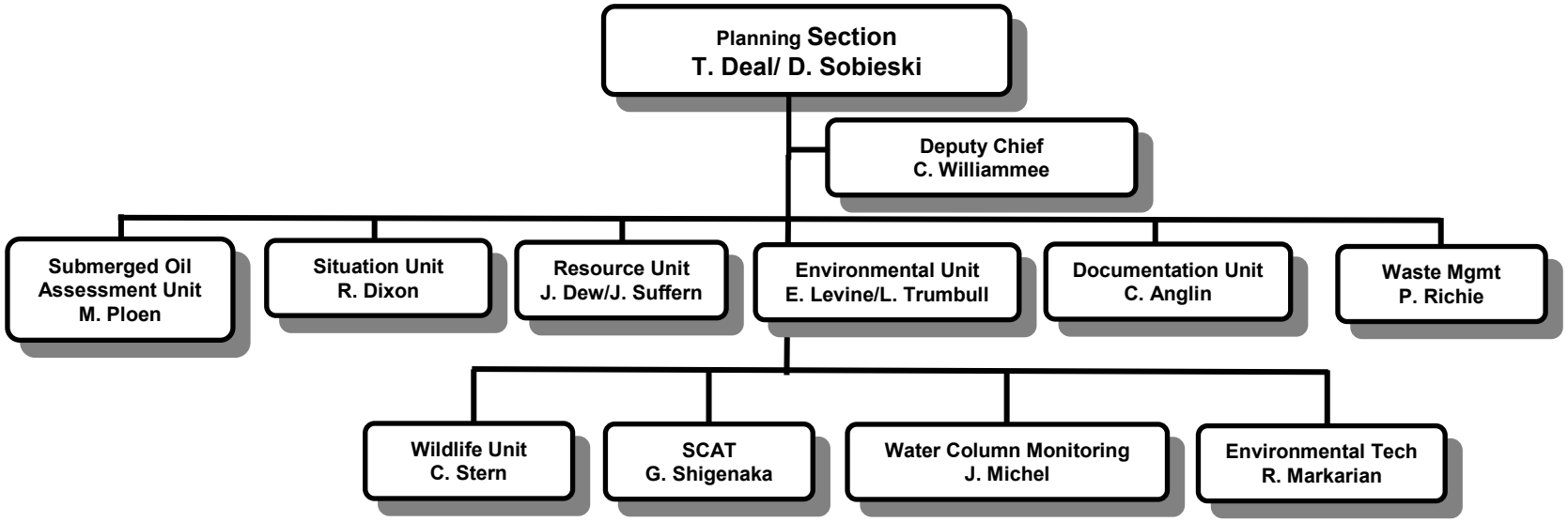
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR RECOVERY ORGANIZATION CHART – 12/08/04



T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR SUBMERGED OIL RECOVERY ORGANIZATION CHART – 12/08/04



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 12/08/04



ICS 220 - Air Operations

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/6/2004 07:23
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	Air Ops	

Personnel and Communications

Title/Position	Name	Air/Air Frequency	Air/Ground Frequency	Phone
Air Ops Branch Director	Brad Barker	VHF 123.05		985-381-0697

Planned Flight Information

Type Of Aircraft	Operating Base	Aircraft Company	Passenger Capacity	Purpose	Scheduled Flights
Bell 206 L	Pier 36	Horizon	5	Surveillance N98KR	As Needed, Available 08:30
Bell Jet Ranger	Pier 36	Analar	3	N50178	08:30

Notes (Special Instructions, Safety Notes, Hazards, Priorities)

Refrain from air ops in the following areas: (Known Eagle Nesting Areas)
Petty Island
Mantua Creek
Monds Island

Operational Requirements:
1/4 mi. radius
>= 500' AGL

If single engine without floats, no open water operations. All operations <300 AGL MUST be conducted within 1/8 miles of shore

All air operation to terminate NLT 1430

First overflight (ops) shall verify boom is in place around sensitive sites in accordance with protection strategies. Inflatable vest required to be worn on all open water flights.

If injured/contaminated wildlife is sighted, contact the Situation Unit at 267-765-3440/3437/3443/3444

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Incident Name:	MV ATHOS I	Location:	Philadelphia, PA

Three Day Weather Forecast

Dec 8 Wednesday

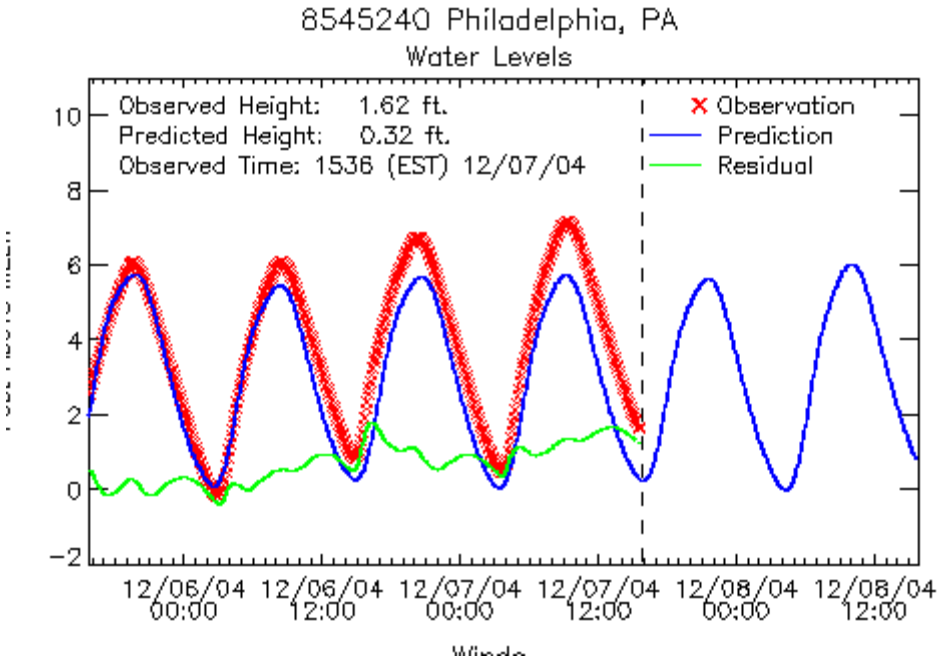
Partly cloudy skies, dry. Winds from the west 15-20 knots; gusts to 25, shifting from the NW at 10-15 knots by afternoon. At night, winds at 5-10 from the NW. Seas 1-2 ft. High 59F, Low 36F.

Dec 9 Thursday

Partly cloudy skies; dry weather diminishing to a chance of evening rain. Variable winds at 5 knots or less forecast to shift and be from the south at 5 knots or less by afternoon hours. At night, SE winds at 5 knots. Seas 1 ft. or less. High 52F, Low 47F.

Dec 10 Friday

Mostly cloudy skies; chance of rain. Winds from the SE at 5-10 knots shifting from the south at 10-15 knots with gusts to 25 knots by the afternoon hours. High 57F, Low 45F.



TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations.

General Safety Concerns:

SPECIAL CAUTION:
STAY CLEAR OF DIVING OPERATIONS BY AT LEAST 200 YDS. THIS WILL BE STRICTLY ENFORCED!

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.
Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decon-tamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

Commercial Diving Operations

The following are Health and Safety requirements for all commercial diving operations.

Qualifications of dive team:

- Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.
- Each dive team member shall have experience or training in the following:
  - The use of tools, equipment and systems relevant to assigned tasks;
  - Techniques of the assigned diving mode: and
  - Diving operations and emergency procedures.
- All dive team members shall be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent).
- Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.
- Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.
- The employer shall not require a dive team member to be exposed to hyperbaric conditions against the employee's will, except when necessary to complete decompression or treatment procedures.
- The employer shall not permit a dive team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a dive team member.
- The employer or an employee designated by the employer shall be at the dive location in charge of all aspects of the diving operation affecting the safety and health of dive team members.
- The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

Safe Practices Manual

- The employer shall develop and maintain a safe practices manual which shall be made available at the dive location to each dive team member.
- The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard.
- For each diving mode engaged in, the safe practices manual shall include:
  - Safety procedures and checklists for diving operations;
  - Assignments and responsibilities of the dive team members;
  - Equipment procedures and checklists; and

- Emergency procedures for fire, equipment failure, adverse environmental conditions, and medical illness and injury.

Pre-dive procedures

- The employer shall comply with the following requirements prior to each diving operation, unless otherwise specified.
- *Emergency aid.* A list shall be kept at the dive location of the telephone or call numbers of the following:
- An operational decompression chamber (if not at the dive location);
  - As per medical plan, a hyperbaric chamber is located at UPENN Hospital (215) 662-3920
  - Accessible hospitals (Listed on ICS form 206 – Medical plan);
  - Available physicians (Listed on ICS form 206 – Medical plan);
  - Available means of transportation; and
  - A first aid kit appropriate for the diving operation
- When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions.
- In addition to any other first aid supplies, an American Red Cross standard first aid handbook or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.
- *Planning and assessment.* Planning of a diving operation shall include an assessment of the safety and health aspects of the following:
  - Diving mode;
  - Surface and underwater conditions and hazards;
  - Breathing gas supply (including reserves);
  - Thermal protection;
  - Diving equipment and systems;
  - Dive team assignments and physical fitness of dive team members (including any impairment known to the employer);
  - Repetitive dive designation or residual inert gas status of dive team members;
  - Decompression and treatment procedures (including altitude corrections); and
  - Emergency procedures.
- *Hazardous activities.* To minimize hazards to the dive team, diving operations shall be coordinated with other activities in the vicinity which are likely to interfere with the diving operation.
- Dive team members shall be briefed on:
  - The tasks to be undertaken;
  - Safety procedures for the diving mode;
  - Any unusual hazards or environmental conditions likely to affect the safety of the diving operation; and

- Any modifications to operating procedures necessitated by the specific diving operation.

- Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.
- *Equipment inspection.* The breathing gas supply system including reserve breathing gas supplies, masks, helmets, thermal protection, and bell handling mechanism (when appropriate) shall be inspected prior to each dive.
- *Warning signal.* When diving from surfaces other than vessels in areas capable of supporting marine traffic, a rigid replica of the international code flag "A" at least one meter in height shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.

Record keeping

The employer shall record the occurrence of any diving-related injury or illness which requires any dive team member to be hospitalized for 24 hours or more, specifying the circumstances of the incident and the extent of any injuries or illnesses.

Danger: Medical Waste and Needles

Protect yourself from needle sticks and contact with medical waste while picking up debris from the shoreline area. All types of debris wash up on the shoreline including medical waste such as used hypodermic needles.

Be Cautious while picking up debris.

If you see medical waste such as hypodermic needles notify your supervisor immediately. Use grabbing tools to pick up debris—**do not pick up with your hands**.

If you are stuck by a needle immediately notify your supervisor who will arrange for medical attention.

Why do you need medical attention?

Because needle stick injuries can expose workers to a number of bloodborne pathogens that can cause serious or fatal infections. The pathogens that pose the most serious health risks are:

- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human immunodeficiency virus (HIV) -- the virus that causes AIDS

To date only one hypodermic needle has been report along the shoreline. But there is always the possibility of more hypodermic needles and other medical waste.

Be very careful!

Sharps containers and medical waste will be provided in each work area. All sharps like hypodermic needles must be disposed of in sharps containers and medical waste such as used bandages must be disposed of in the appropriate medical waste bag.

DECONTAMINATION

Where personal protection equipment is an assist to keep spilled product off clothing and bare skin, decontamination is a process specifically designed to remove any contamination from equipment and personal protective equipment.

Personnel decon stations are available in all work Divisions. All personnel are required to decon prior to leaving active work areas or any area where they could be in contact with the spilled product.

The following requirement applies to all field personnel and those visiting field operations:

Everyone is required to wear Personal Protective Equipment (PPE) and to decontaminate when leaving the work area.

SAFE USE OF PRESSURE WASHERS & STEAM CLEANERS

Work to Be Done: Removal of contaminants from equipment, shoreline, piers, and similar structures.

Equipment: Steam cleaners, and pressure washers powered by internal combustion engines.

Site Description: Various types of work surfaces, rocks, sand, oily surfaces.

Potential Hazards: Slips, trips, falls, steam burns, injuries from excess pressure, injuries from hot surfaces on the hotsy or pressure washers, insect and animal bites, and potential drowning.

Special notes: All personnel while working will adhere to the following precautions with steam cleaners and pressure washers:

- All personnel will wear proper personal protective equipment when working operating the steam or pressure wands or assisting personnel using this equipment. This will include Tyvek coveralls, rubber boots, nitrile or neoprene gloves, **face shield with clear or tinted safety glasses with side shields under the shield**.
- All personnel working with or around the pressure washers or steam cleaners must wear regular safety glasses at a minimum.
- **Equipment operators should never direct the power spray of the wand to themselves or other personnel.** Steam washers are for decontamination of equipment only. Personal Protective Equipment should not be washed or decontaminated by using steam or power washers.

- Prior to starting the equipment caution should be exercised when filling the tank with gasoline. No smoking will be allowed in the area while equipment is being refueled. Prior to startup all hoses and wand should be connected and rechecked to ensure the connections are secure.
- All supply and wand hoses should be free of kinks and where possible secured to not present a tripping hazard to other personnel.
- Operators should be cautious when using the rope pull to start the engine. Wet hands, slippery hands, pulls or frayed pull rope can lead to injury.
- Operators should ensure that personnel in the area are a safe distance from the wand and equipment operations.
- Noise surveys should be taken to check noise exposure to workers. Generally personnel working on or within 5 feet of a steam, or pressure should wear hearing protection.
- When working within ten feet of water that is 3 feet or more in depth, Personal Flotation Devices (PFD's) must be worn. Non-swimmers working near the edge of the water must wear PFD's at all times.
- Contaminated areas, where personnel are working, should be marked and barricaded, and the surface covered to prevent spread of contamination. NOTE: If plastic is used for coverage of the surfaces, personnel must exercise care when walking on the plastic surfaces as they can become slick with a combination of contaminant and water. The wearing of rubber oil resistant non-skid boots or the use of cloth covering on the surface instead of plastic is preferable.

- Wand levers should always be held and triggered by the operator's hand. At no time should the lever be wired or taped in the open position.

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Planning Section	**at** 12/7/2004 16:00
Period:	Period 12 (12/8/2004 06:00 - 12/9/2004 06:00)	**Version Name:**	12/08/04 Meeting Schedule

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 12/8/2004 06:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Holiday Inn
UC Objectives Meeting 12/8/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
ICS 209 12/8/2004 09:00	Resource Summary	Planning Section	Cmd Post
Command & General Staff Meeting 12/8/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
RRT 12/8/2004 10:00	Informational brief	Atlantic Strike Team	Holiday Inn
Field Reports 12/8/2004 10:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
Tactics Meeting 12/8/2004 12:00	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Sherman Room
Field Reports 12/8/2004 14:30	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
Scientific Support Meeting 12/8/2004 15:00	Review Scientific Support Issues	Scientific Support Personnel	Hancock Room
Planning Meeting 12/8/2004 16:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Sherman Room
IAP Approval 12/8/2004 18:30			
Sit Rep 12/8/2004 20:00			

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IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 21 (12/24/2004 06:00 to 12/28/2004 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) – Jamie Bethard: _____

SOSC (PA) – Bob Bauer: _____

SOSC (NJ) – Bruce Comfort: _____

RPIC – Chris Gregory: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. Cleanup Priorities
4. Memorandum on Wildlife Handling
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8. ICS 205 - Communications Plan
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11. ICS 223 - Health and Safety Message
12. ICS 230 - Daily Meeting Schedule
13. Website: www.incidentinfo.com

T/V ATHOS I SPILL, DELAWARE RIVER, NEW JERSEY
1400 EST, Thursday December 23, 2004

NOTE: This is a site-specific forecast from the National Weather Service generated specifically for the incident site.

Sunset (12/23): 1640

Sunrise (12/24): 0720
Sunset (12/24): 1641

36 Hour Forecast:

Winds:
This evening, the winds are expected to be from the SW at 15 to 25 knots, with gusts around 40 kt possible, then becoming NW 15 to 25 knots after midnight. Friday, NW 10 to 20 knots, Friday night, NW 5 to 10 knots.

Waves:
Tonight, the seas are expected to be 1 to 2 feet. Friday and Friday night, 1 foot or less.

Precipitation:
Tonight, a chance of showers early (till about 8pm)…then dry through the weekend.

Ceiling/Visibility:
Tonight, cloudy early, then partly cloudy. Friday and Friday night, partly cloudy.

Temperatures:
Tonight, the low is expected to be in the low 30s, with wind chill in the mid to upper 20s. Friday, temperatures are expected to be in the upper 30s. Friday night, the low is predicted to be in the lower 20s.

Extended Forecast:

Saturday, NW winds 10 to 15 knots. Seas 1 to 2 feet. Partly Cloudy skies are expected. Highs in the upper 20s. Dry.

Sunday, NW winds 5 to 10 knots becoming W. Seas 1 foot. Clear Skies. Dry.

Monday, W winds 5 to 10 knots becoming SW. Seas 1 foot. Clear Skies. Dry.

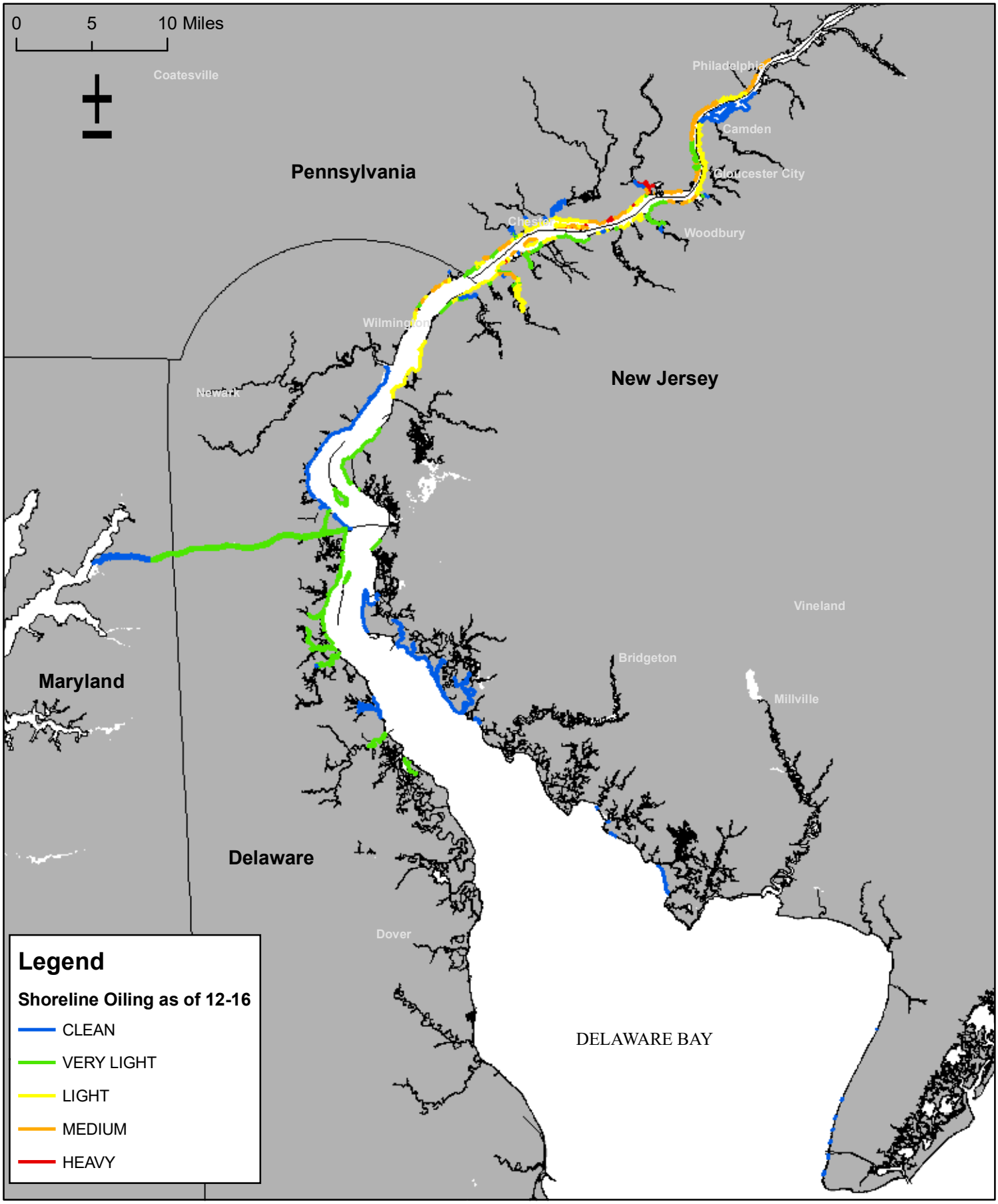
Tuesday, SW winds 5 to 10 knots. Seas 1 foot. Partly Cloudy Skies. Dry.

M/V Athos I, Delaware River, NJ/PA

Shoreline Oiling as of 12/16/2004

Graphic does not represent precise amounts or locations of oil.

USE ONLY AS A GENERAL REFERENCE



Objective:

Removal of gross oil before the focus is shifted to final cleanup activities

Gross (i.e., bulk) oil removal is proposed as a means to maximize the environmental benefit and effectiveness of shoreline cleanup operations. Shoreline segments have been prioritized (attached) based on the amount of oil, and the presence of sensitive resources or high public access.

As cleanup activities complete gross oil removal, response resources will be redeployed by the Operations Section according to the listed priorities. The decision to move the resources within a division will be the responsibility of the Division Supervisors. The Environmental Unit and SCAT Teams will be available to provide suggestions and/or guidance.

Operations Priorities for Cleanup

Priority 1 Heavy Oil With Special Issues	Priority 2 Heavy Oil No Special Issues	Priority 3 Moderate Oil With Special Issues	Priority 4 Moderate Oil No Special Issues	Priority 5 Light Oil With Special Issues	Priority 6 Very Light Oil With Special Issues	Priority 7 Light Oil No Special Issues	Priority 8 Very Light Oil No Special Issues
NJ-5-A	NJ-3-F	NJ-3-A	DE-1-B	NJ-2-A	DE-1-A	NJ-3-I	DE-7-B
PA-4-F		NJ-3-H	DE-1-C	NJ-2-C	DE-1-E	PA-5-D	NJ-4-B
PA-4-J		NJ-4-D	DE-1-D	NJ-3-G	DE-1-I		NJ-6-A
PA-5-B		NJ-5-B	DE-1-F	NJ-3-J	DE-2-D		NJ-6-D
PA-7-A		NJ-5-D	DE-1-G	NJ-3-L	NJ-1-A		NJ-6-E
PA-7-C		PA-1-C	DE-1-H	NJ-5-A	NJ-2-B		NJ-6-F
PA-7-D		PA-2-A	DE-1-J	NJ-5-C	NJ-4-A		NJ-6-G
PA-7-F		PA-3-A	DE-2-A	PA-1-C	NJ-6-C		NJ-6-H
		PA-3-F	DE-2-B	PA-4-C	NJ-7-A		NJ-7-C
		PA-4-A	DE-2-C	PA-5-B	NJ-7-B		NJ-9-A
		PA-4-B	NJ-3-B		PA-1-B		PA-2-C
		PA-4-D	NJ-3-C		PA-2-D		PA-2-E
		PA-4-E	NJ-3-D		PA-6-CRUM CR		PA-2-G
		PA-4-G	NJ-3-F				PA-6-A
		PA-4-H	NJ-4-E				PA-6-B
		PA-4-I	PA-2-B				
		PA-5-A	PA-2-F				
		PA-5-C	PA-2-H				
		PA-7-B	PA-2-I				
		PA-7-D	PA-3-B				
		PA-7-E	PA-3-C				
		PA-7-G	PA-3-D				

Memorandum

To: **Operations Section Chief**

From: **Group Supervisor, Wildlife Recovery**

Subject: **Protocol for handling dead wildlife carcasses found during shoreline cleanup.**

As workcrews are cleaning oiled-shorelines and structures or removing oiled-debris they are likely to encounter dead oiled wildlife. Please handle wildlife carcasses as follows.

A. Dead Oiled Wildlife

All dead oiled wildlife (birds, fish, mammals, turtles) shall be bagged and held for the Wildlife Recovery Unit, and not disposed with other oiled material.

1. **Carefully approach the carcass and confirm that it is dead. If the animal is not dead do not attempt to capture it – contact the Wildlife Recovery Unit immediately for instructions.**

2. **If the animal is confirmed to be dead, place the carcass into a plastic bag – DO NOT mix carcasses together in the same bag – ONE carcass per bag.**

3. **Tie the bag closed and give it to the crew leader.**

4. **The crew leader shall immediately notify the Wildlife Recovery Triage Center at 215-365-1558 to have the carcasses picked up – do not leave bagged oiled carcasses unattended in the field.**

B. Live Oiled Wildlife

Clean up crews shall not attempt to capture live wildlife.

1. **Live oiled wildlife seen during clean up efforts should be reported by the crew leader to the Wildlife Recovery Triage Center at 215-365-1558 and relay the location, time, number and types of oiled wildlife seen.**

If you have any questions, please contact me at 609-214-7895.

Emailed to: **theo.camlin@theobriensgroup.com**
Ed.levine@noaa.gov
Dorthy_Manera@fws.gov
John_Meehan@fws.gov

cc: Documents Unit Leader

Conduct cleanup with minimal damage to environmental resources. i.e. Do not drive spilled oils into sediments by foot / mechanical traffic

A SCAT Special Issue Team (SIT) will evaluate historic, special environmental, or high-public access areas to provide more detailed and additional cleanup requirements.

Shoreline Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Flats (hard surface e.g. Tinicum I. NJ side)	General: No recoverable surface oil, buried oil layers or tarballs larger than dimes; no more than stain on sand	Manual removal with shovels/rakes and squeegees; small equipment (bobcat) to remove oil and oiled surface and subsurface sand; minimize removal of clean sand on and under oiled layers; Minimize equipment (bobcat) travel over oiled surfaces.
	Special: TBD by SIT (Special Issue Team)	
Sand Beaches; Mixed Sand and Fine Gravel Beaches	General: No recoverable surface oil, buried asphalt pavements or tarballs larger than dimes; no more than stain on gravel	Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers; small equipment (bobcat)to remove oil and oiled surface/subsurface sand and gravel. Minimize small equipment (bobcat)travel over oiled surfaces. Mechanical relocation of fine gravels into piles for flushing, including use of high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval.
	Special: TBD by SIT	
Course Gravel Beaches/Fill (e.g. cobbles, and larger)	No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Manual removal of surface oil using low pressure flushing and high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval by the SIT.
	Special: TBD by SIT	
Riprap/Stone Seawalls **Solid Seawall, Bulkheads and Docks**	General: No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Flushing and high-pressure/hot-water washing (hotsie), as needed. Containment/recovery of released oil.
	Special: No more recoverable or potential mobile oil on surface; Stop cleanup efforts when all oil is removed other than a stain. Additional cleaning or replacement of riprap to be considered by SIT.	In high-public access or special environmental / historic areas (e.g., Ft. Mifflin, eagle nesting, others to be determined): may request use of SWAs (surface washing agents) or special cleanup efforts for use as need to meet endpoint.

Mud Flats (e.g. soft surface, steps will push oil in sediments)	General: No potentially mobile oil.	To be determined on a site-specific basis by SIT.
Marshes	General: Oil on vegetation no longer wipes off on contact. No remaining recoverable or potentially mobile oil in accessible areas. (Accessible areas will be identified by SIT.)	To be determined on a site-specific basis by SIT. Options (cutting, In-situ-Burn, flushing, manual pickup of pooled oil, monitoring) to be determined on site-specific basis.
	Special: Other removal options will be considered by Environmental Unit.	

Debris Recovery Guidelines[1]

- Report dead and live wildlife to triage center at 215-365-1558. Collect and bag all dead wildlife.
- Manual removal of oiled debris that can be easily picked up and bagged.
- For small unoiled debris that can be easily picked up, move to the supra tidal zone if it has the potential to become oiled in its current location.
- Leave unoiled debris in place if it does not have the potential to become oiled.
- Cut and remove oiled logs < 6 inches in diameter (cut in into lengths < 6 feet).
- Manual removal of oiled debris (other than logs) < 6 inches in diameter and < 6 feet in length.
- Clean large (> 6 inches in diameter and/or 6 feet in length) oiled debris in place. Recover oil using appropriate sorbents. Approved cleaning methods for large oiled debris are presented below:

Method	Handling	RRT Approval	Special Permits
Scraping	No	No	No
Wiping	No	No	No
Hotsie	No	No	No

The following options require special approval

Method	Handling	RRT Approval	Special Permits
SWAs	No	Yes	No
Burning	Yes	Yes	Yes

For questions regarding environmental issues, contact Lyle Trumbull at (610) 710-1919.

[1] Non-living oiled debris

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to clean waterfront facilities per facility priority list.		
Decon of vessels as needed, including recreational vessels.		
Continue to enforce safety zone.		
Continue aggressive gross shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact.		
Monitor areas of special interest for possible submerged oil threat (water column monitoring, water intake consortium)		
Effect temporary repairs to vessel and facilitate/support investigation.		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Unified Command Emphasis:		
• Make Safety a Top Priority. Adhere to SSP and watch out for your fellow responders.		

Approved By

: _____

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Shoreline Cleanup Assessment Team
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	C. Gregory/ T. Deal		714-273-8036	
Environmental Unit	L. Trumbull		610-710-1919	
SCAT Leader	A. Saunders		610-220-3957	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	V. Garner		850-258-9116	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Shoreline Cleanup Assessment Team					
North Star	Vessel	Boat < 21'	1 each	20 feet	Assigned

Assignments

SCAT to be deployed at Operations direction.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Special Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Salem Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Branch Director	M. Ploen		612-963-5222	
Protection Group Supervisor	B. Poole		302-462-0194	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Salem Protection Group					
North Star	Vehicle	Vehicle	2 each		Assigned
North Star/Sea Tow	Vessel	Boat > 21'	1 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Salem Protection Group					
North Star	Manpower: Responder	Responders - Boom	4 each		Assigned

Assignments

Maintain boom deployed at the following locations:

- Salem Power Plant

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Special Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Salem Protection Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Special Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Hot Shot Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy for Recovery	J. Tanner		251-454-6397	
Branch Director	M. Ploen		612-963-5222	
Division/Group Supervisor	J. Topic		952-201-1002	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	D. Schwartz/M. Doyle		302-293-8961	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
North Star	Vessel	Boat < 21' - Hot Shot	5 each	20 feet	Assigned
North Star	Vessel	Boat > 21' - Hot Shot	2 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
Clean Harbors Environmenta	Manpower: Responder	Responders	14 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders	3 each		Assigned

Assignments

Respond to urgent needs as directed.
Conduct clean-up operations following the guidance in the enclosure titled "Clean-up Recommendations"
Work must follow environmental sensitivity guidelines.

Special Instructions for Division / Group

Review Site Safety Plan (Contractors) with special attention to PPE, slips, and trips and falls. All personnel are required to follow decon prodecures in Site Safety Plan.

Priority: Check on Logan generating Plant, Salem Generating Plant, and Philadelphia Electric Company Plant first thing every morning.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Special Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Branch Director	M. Ploen		612-963-5222	
Beach Assessment / Hotshot Team Leade	R. Johnson		504-416-0191	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Respond to reports of tarballs on beach. Evaluate and remove small concentraions. SCAT and plan for expanded shoreline cleanup as appropriate.

SCAT component to be provided by states.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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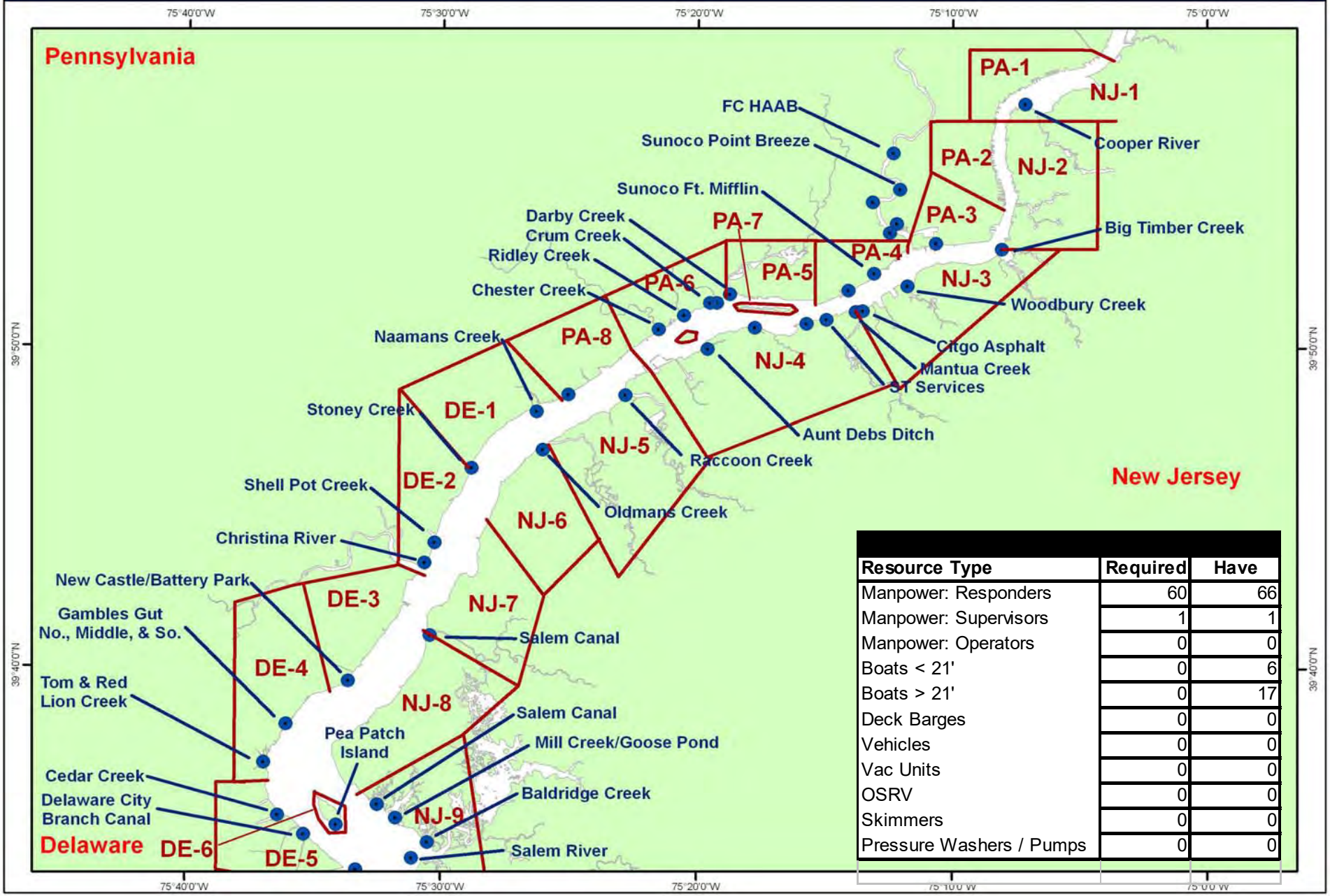
On Water Support Group Overview Map North



Resource Type	Required	Have
Manpower: Responders	60	66
Manpower: Supervisors	1	1
Manpower: Operators	0	0
Boats < 21'	0	6
Boats > 21'	0	17
Deck Barges	0	0
Vehicles	0	0
Vac Units	0	0
OSRV	0	0
Skimmers	0	0
Pressure Washers / Pumps	0	0

On Water Support Group
Overview Map South
The Response Group
Emergency Response | Pre-Planning & Support
N
75°40'0"W
75°30'0"W
75°20'0"W
39°30'0"N
39°20'0"N
39°10'0"N
New Jersey
Delaware
DE-4
DE-5
DE-6
DE-7
DE-8
DE-9
DE-10
NJ-8
NJ-9
NJ-10
NJ-11
Gambles Gut No., Middle, & So.
Tom & Red Lion Creeks
Cedar Creek
Delaware City Branch Canal
C&D Canal
St. Georges Creek & Opening So.
Port Penn
Augustine Creek
Silver Run
Upper & Lower Break
Appoquinimink River
Blackbird Creek
Rays & Peach House Ditches
Middle Drain
Cedar Swamp/ Collins Beach
Smyrna River
Bakeoven Point
Woodland Beach No.
Guts No. & So. Woodland Beach
Sluice Ditch
Hay Ditch
Leipsic River
Old Creek & Simons River
Mahon River
Little River
Pea Patch Island
Creeks So. of Ft. Mott
Mill Creek/Goose Pond
Baldridge Creek
Salem River
Mill Creek & Opening So.
Back & Straight Ditches
Alloway & Lower alloway Creeks
Hope Creek & 3 Guts No.
Fishing Creek/Shore Ditch
Cat Gut
Unnamed Opening No. of Mad Horse Creek
Mad Horse Creek
Cherry Tree & Lower Deep Creek
Stow Creek
Gut So. of Stow Creek
Jacobs Creek & Opening No.
Openings No. of Cohansey River
Drumbo Creek
Middle Marsh Creek
Sea Breeze - Guts No. & So.
Oyster Gut
Legend
Sites
Division Boundaries
0 1.5 3 6 9
Miles

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Special Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	On-Water Support Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Branch Director	M. Ploen		612-963-5222	
On-Water Support Group Supervisor	M. Ploen		612-963-5222	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Group					
Clean Harbors Environmenta	Vessel	Boat < 21'	4 each	20 feet	Assigned
Global Remedi	Vessel	Boat < 21'	2 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat > 21'	10 each	24 feet	Assigned
Global Remedi	Vessel	Boat > 21'	1 each	22 feet	Assigned
Miller Environmental Group, I	Vessel	Boat > 21'	1 each	22 feet	Assigned
North Star	Vessel	Boat > 21'	1 each	24 feet	Assigned
NRC - National Response Cc	Vessel	Boat > 21'	2 each	22 feet	Assigned
Delaware Bay & River COOF	Vessel	Boat > 21' - DBRC - I	1 each	40 feet	Assigned
NRC - National Response Cc	Vessel	Lynne Frink	1 each	110 feet	Stand By

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Group					
Clean Harbors Environmenta	Manpower: Responder	Responder	14 each		Assigned
Kens Marine Service	Manpower: Responder	Responder	2 each		Assigned
Miller Environmental Group, I	Manpower: Responder	Responder	12 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responder	2 each		Assigned
Oilmop, Inc.	Manpower: Responder	Responder	11 each		Assigned
Kens Marine Service	Manpower: Responder	Responder (Night)	2 each		Assigned
Global Remediation Services	Manpower: Responder	Responders	8 each		Assigned
North Star	Manpower: Responder	Responders	15 each		Assigned

Assignments

Provide logistical, transportation and hotshot support to all areas.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Special Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	On-Water Support Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Vessel / Pier Decon Task Force
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Vessel Decon Group Supervisor	J. Sanial		856-266-3810	
Vessel / Pier Decon Task Force Leader	D. Ryan		985-852-4907	
On-Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Vessel / Pier Decon Task Force					
Fleet Environmental Services	Barge: Inland	Portable Barge Sets	2 each	20 feet	Assigned
Miller Environmental Group, I	Barge: Inland	Portable Barge Sets	4 each	20 feet	Assigned
NRC - National Response Cc	Barge: Inland	Portable Barge Sets	4 each	20 feet	Assigned
Miller Environmental Group, I	Boom	Task Force 1	200 feet		At Staging
Miller Environmental Group, I	Boom	Task Force 10	300 feet		At Staging
Miller Environmental Group, I	Boom	Task Force 11	200 feet		At Staging
Miller Environmental Group, I	Boom	Task Force 2	100 feet		At Staging
Miller Environmental Group, I	Boom	Task Force 4	400 feet		At Staging
North Star	Pumps	Hotsys	3 each		Assigned
Delaware Bay & River COOF	Skimmer	Delbay Skimmer - Sk	1 each		Decontamination
NRC - National Response Cc	Skimmer	Skimming Unit	4 each		At Staging
North Star	Trailer	Trailer	1 each		Assigned
Optech	Trailer	Trailer	1 each		Assigned
North Star	Vehicle	Truck	4 each		Assigned
Optech	Vehicle	Truck	7 each		Assigned
Miller Environmental Group, I	Vessel	Boat < 21'	7 each	20 feet	Assigned
Moran	Vessel	Boat < 21' - NRC	1 each	20 feet	Assigned
Miller Environmental Group, I	Vessel	Boat > 21'	5 each	22 feet	Assigned
NRC - National Response Cc	Vessel	Boat > 21'	1 each	24 feet	Assigned
Moran	Vessel	Boat > 21' - NRC	2 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Vessel / Pier Decon Task Force					
Miller Environmental Group, I	Manpower: Responder	Responder	58 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders	8 each		Assigned
Moran	Manpower: Responder	Responders	14 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	4 each		Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Vessel / Pier Decon Task Force
Approved By Signature:			

Assignments

As directed clean piers and vessels.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Additional Information

- Conduct decon ops in accordance with the Cleanup Priority List as environmental conditions permit.

12 Task Forces Total (see attachment immediately following this 204):

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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Decon Group Assignments

24DEC 04

North Area

USS New Jersey	NJ	TF 8, 10
Broadway Terminal	NJ	TF 3, 4
Penn's Landing (Spirit of Phila, Dock Liberty Bell Dock)	PA	TF 5, 1
Pier 40	PA	TF 2
Not in operation	TF 9	

Central Area

USACOE	PA	TF 11, 12
Not in operation	TF	6, 7

Mobilization Location

TF 2	MSO
TF 3, 4, 8, 10	Broadway Terminal
TF 11, 12	Army Corps of Engineers Pier
TF 5, 9, 1	Penn's Landing
TF 6, 7	Navy Base

Information for 12/24/04

Sunrise 0720	**Tides North (Philadelphia)**	**Tides Central (Woodbury Creek)**	**Tides South (Marcus Hook)**
Sunset 1641	0635 L	0612 L	0519 L
	1213H	1154 H	1046 H
	1917 L	1854 L	1801 L
	H	H	2306 H

NO WAKE ZONE REMAINS IN EFFECT. REPORT NAME/NUMBER OF VESSELS CAUSING DANGEROUS WAKES.

Decon Group Assignments

25DEC 04

North Area

Tweeter Center	NJ	TF 8, 10
Broadway Terminal	NJ	TF 3, 4
Penn's Landing (Spirit of Phila, Dock Liberty Bell Dock)	PA	TF 5, 1
Pier 78, 80	PA	TF 2
Not in operation	TF 9	

Central Area

USACOE	PA	TF 11, 12
Not in operation	TF 6, 7	

Mobilization Location

TF 2	MSO
TF 3, 4, 8, 10	Broadway Terminal
TF 11, 12	Army Corps of Engineers Pier
TF 5, 9, 1	Penn's Landing
TF 6, 7	Navy Base

Information for 12/25/04

Sunrise 0721	**Tides North (Philadelphia)**	**Tides Central (Woodbury Creek)**	**Tides South (Marcus Hook)**
Sunset 1641	0035 H	0016 H	0604 L
	0720 L	0657 L	1128 H
	1257 H	1238 H	1848 L
	2004 L	1941 L	2351 H

NO WAKE ZONE REMAINS IN EFFECT. REPORT NAME/NUMBER OF VESSELS CAUSING DANGEROUS WAKES.

Decon Group Assignments

26DEC 04

North Area

Wiggins Park	NJ	TF 8, 10
Broadway Terminal	NJ	TF 3, 4
Penn's Landing (Olympia, Becuna)	PA	TF 5, 1
Pier 78, 80	PA	TF 2
Not in operation	TF 9	

Central Area

USACOE	PA	TF 11, 12
Navy Base/Ships (Humphries as much as Possible)	PA	TF 7
Not in operation	TF 6	

Mobilization Location

TF 2	MSO
TF 3, 4, 8, 10	Broadway Terminal
TF 11, 12	Army Corps of Engineers Pier
TF 5, 9, 1	Penn's Landing
TF 6, 7	Navy Base

Information for 12/26/04

Sunrise 0721	**Tides North (Philadelphia)**	**Tides Central (Woodbury Creek)**	**Tides South (Marcus Hook)**
Sunset 1641	0120 H	0101 H	
	0804 L	0741 L	0648 L
	1339 H	1320 H	1210 H
	2048 L	2025 L	1932 L

NO WAKE ZONE REMAINS IN EFFECT. REPORT NAME/NUMBER OF VESSELS CAUSING DANGEROUS WAKES.

Future Plans

27 December 2004

Gloucester Terminals/Koch

Wiggins Park

Penns Landing and Area

Pier 84 S

Navy Base/Ships

Valero/ST Services

28 December 2004

Koch

Penns Landing and Area

Navy Base/Ships

Pier 84S

Navy Base/Ships

29 December 2004

Penns Landing/Moshulu

Pier 84S

Navy Base/Ships

Name of Resource	State -	Zone	Total Weighted Value	Gross Decon
Salem Nuclear Power Generating Station	NJ -	10	6.36	
Sunco - Eagle Point Facility	NJ -	3	4.6	100%
Sunco Inc. - Marcus Hook Refinery	PA -	8	4.6	100%
Sunco Logistics Ft. Mifflin Complex	PA -	4	4.6	100%
Valero Refinery & Marine Terminal (Paulsborough, NJ)	NJ -	3	4.6	95%
Conoco Phillips - Trainer Refinery	PA -	8	4.6	N/A
Greenwich Terminals LLC	PA -	3	4.6	100%
Sunco Logistics Hog Island	PA -	4	4.6	80%
Crowley Liner Services	NJ -	1	4.6	100%
Chiquita Fresh North America	DE -	2	4.28	N/A
Diamond State Port Corp	DE -	3	4.28	N/A
Gloucester Terminals LLC	NJ -	2	4.2	95%
Penn Terminals Inc. - Eddystone (PA)	PA -	6	4.2	100%
Sunco Inc. (R&M), Philadelphia Refinery (Girad Pt. & Pt. Breeze)	PA -	3 S	4.04	100%
Del Monte Fresh Produce - Port of Camden	NJ -	2	4.04	100%
CITGO Asphalt Refining Company	NJ -	3	4.04	100% - 80%
Broadway Terminal (SJPC)	NJ -	2	4.04	40%
Premcor Refinery	DE -	5	3.96	N/A
Dole Fresh Fruit Company	DE -	2	3.72	N/A
Amerada Hess Pensauken	NJ -	1	3.64	N/A
Delaware River Stevedoring, Inc. (Tioga)	PA -	1	3.64	25%
Philadelphia Regional Port Authority, Pier 84S	PA -	2	3.64	
Westway Terminal Company - Philadelphia Terminal	PA -	1	3.64	
G-P Gypsum Corp. - Camden Mill	NJ -	2	3.48	50%
Beckett Street Terminal	NJ -	2	3.48	95%
CitrosSuco North America	DE -	2	3.32	N/A
Exelon - Eddystone Station	PA -	6	3.08	80%
ST Services Philadelpahia (PA)	PA -	3 S	3.08	N/A
Horizon Stevedoring Inc., Pier 82	PA -	2	3.08	100%
ACOE Facility	PA -	4	3.08	50%
Novolog	PA -	N of 1	2.84	N/A
Kinder Morgan Liquid Terminals	PA -	1	2.76	
Sunco Chemicals - Frankford Plant	PA -	N of 1	2.76	N/A
National Gypsum	NJ -	N of 1	2.76	N/A
Oceanport Industries	DE -	1	2.76	N/A
Excelon-Croyden Generating Station	PA -	N of 1	2.6	N/A
ST Services Paulsboro (NJ)	NJ -	4	2.52	
Amerada Hess Philadelphia	PA -	4	2.52	N/A
Philadelphia Naval Business Center, Port of Phil.and Camden Terminal (Cruise Terminal)	PA -	3	2.52	10%
Philadelphia Regional Port Authority, Pier 38-40	PA -	2	2.52	75%
Philadelphia Regional Port Authority, Pier 78-80	PA -	2	2.52	
Riverside Construction	PA -	N of 1	2.52	N/A
Trigen Energy - DESS (Philadelphia)	PA -	3 S	2.36	N/A
Interstate Piperline and Storage	NJ -	N of 1	2.36	N/A
River Associates, Inc.	PA -	3	2.2	10%
Delaware Terminal (port of Wilmington)	DE -	1	2.2	N/A
SPIRIT OF PHILADELPHIA	PA -	2	2.12	
LIBERTY BELL	PA -	2	2.12	
Connectiv Edgemoor	DE -	2	2.04	N/A
Kvaerner Philadelphia Shipyard	PA -	3	1.96	10%
PQ Corporation (PA)	PA -	6	1.96	N/A
F.C. Haab Oil (Schuykill Terminal)	PA -	3 S	1.96	N/A
KOCH Materials Co.	NJ -	2	1.96	N/A
Riverlink Camden Ferry Facility (DRPA)	NJ -	2	1.96	
Mid-Atlantic Shipping and Stevedoring	NJ -	9	1.64	N/A
MOSHULU	PA -	2	1.56	
USS NEW JERSEY	NJ -	2	1.56	
OLYMPIA	PA -	2	1.56	
Penns Landing	PA -	2	1.56	30%
Wiggins Park	NJ -	2	1.56	
Tweeter Center	NJ -	2	1.56	
The Lagoon	PA -	5	1.56	
Pier 122	PA -	3	1.56	
BECUNA	PA -	2	1.56	
Duck Island Terminal	NJ -	N of 1	1.32	N/A
Groes Waste Management	PA -	N of 1	1.32	N/A
Meenan Oil	PA -	N of 1	1.24	N/A
Dupont Edgewater	DE -	2	1.24	N/A
Dupont Deepwater	NJ -	7	0.92	N/A
MSO			0	100

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Recreational Boat Decon Task Force
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		714-273-8036	
Vessel Decon Group Leader	J. Sanial		856-266-3810	
Rec. Boat Decon Task Force Supervisor	M. Bales		985-960-1373	
On-Scene Safety Officer	C. Demas/M. Doyle		516-537-2635	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Recreational Boat Decon Task Force					
TBD	Manpower: Responder	Responders	10 each		Assigned

Assignments

Implement a recreational boat cleanup program.

Recreational boat decon task force will be reporting to Jim Sanial.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Salvage Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy for Port Ops	B. Jones		215-778-4533	
Salvage Group	Titan - B. Umbdenstock/J. M		908-230-8075	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Salvage Group					
A.E. Titan	Manpower: Responder	Salvor	1 each		Assigned

Assignments

Continue to mitigate oil threat from vessel and facilitate/support investigation.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

For questions or status reports at night contact
1) MSO Philadelphia 215-271-4807

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Wildlife Recovery Group
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	C. Gregory		425-501-5430	
Environmental Unit Leader	G. Ott/L. Trumbull		2068499937/6107101	
Division/Group Supervisor	P. McGowan		410-320-8791	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Wildlife Recovery Group					
Trade Winds	Vehicle	Trucks	5 each		Assigned
Trade Winds	Vessel	Boat < 21' - Wildlife	1 each	20 feet	Assigned
Fleet Environmental Services	Vessel	Boat > 21' - Wildlife	1 each	22 feet	Assigned
Trade Winds	Vessel	Boat > 21' - Wildlife	2 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Wildlife Recovery Group					
TBD	Manpower: Responder	Responders	31 each		Assigned
Trade Winds	Manpower: Responder	Responders	1 each		Assigned

Assignments

Identify, recover, and rehabilitate any impacted wildlife. Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact. Provide technical assistance on any wildlife related issues.

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Report endangered species observations to the Group Supervisor.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Call 267-765-3447 from 1000-1100 and validate if you have any resource numbers different than listed on this form. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow. Report situation status to the Situation Unit Leader each day at 0900, 1300, and 1600 hrs. 267-765-3446/3448.

Fax all equipment and personnel Check-in Sheets to 215-293-4476 with an attention line to "Resource Unit."

Please review attached protocol for handling dead wildlife carcasses.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Monitoring Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief for Port Ops	B. Jones		215-778-4533	
Division/Group Supervisor	R. Dickson/I. Woods (12/26)		6094393224/6093518	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Monitoring Group					
USCG	Vehicle	Vehicle - G/V	1 each		Assigned
USCG	Vehicle	Vehicle - Rental	9 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Monitoring Group					
USCG	Manpower: Responder	NSF Team Member	11 each		Assigned
USCG	Manpower: Responder	Supervisors	1 each		Assigned

Assignments

Conduct clean-up monitoring at assigned division. Ensure safe and effective protection and recovery operations. Document detailed work activity, resource use, availability, and measure work productivity via the 214. Evaluate response methods needed for potection and oil removal and make recommendations to Supervisor. Report findings to Ops. Correct gross safety violations immediately. Report to safety.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan. Wear Mustang Suits.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447

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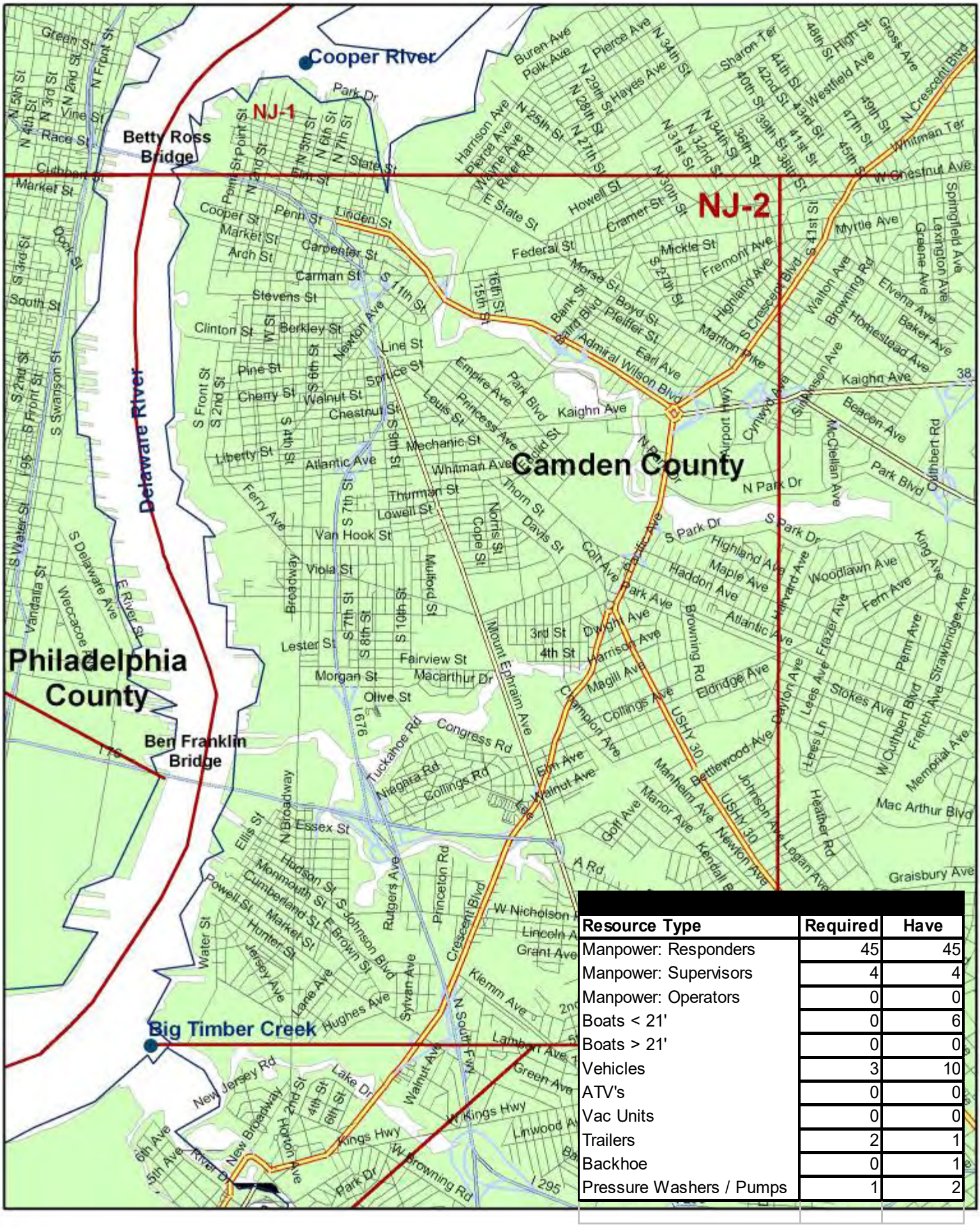
NJ-2 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	45	45
Manpower: Supervisors	4	4
Manpower: Operators	0	0
Boats < 21'	0	6
Boats > 21'	0	0
Vehicles	3	10
ATV's	0	0
Vac Units	0	0
Trailers	2	1
Backhoe	0	1
Pressure Washers / Pumps	1	2

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy For Recovery	J. Tanner		251-454-6397	
NJ2 Division Supervisor	C. Stadiem		206-510-0493	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safet Officer	L. Sherrow		484-645-4512	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-2 Division					
Clean Harbors Environmenta	Equipment: Heavy	Backhoe	1 each		Assigned
Clean Harbors Environmenta	Pumps	Hotsey	3 each	feet	Assigned
Optech	Trailer	Trailer	1 each		Assigned
NRC - National Response Cc	Vehicle	Rack Truck	1 each		Assigned
Moran	Vehicle	Truck	3 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	1 each		Assigned
Optech	Vehicle	Utilty Truck	5 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21'	7 each	20 feet	Assigned
Moran	Vessel	Boat < 21'	1 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-2 Division					
NRC - National Response Cc	Manpower: Responder	Responder - NRC	1 each		Assigned
Moran	Manpower: Responder	Responders	21 each		Assigned
Optech	Manpower: Responder	Responders	23 each		Assigned

Assignments

Shoreline cleanup

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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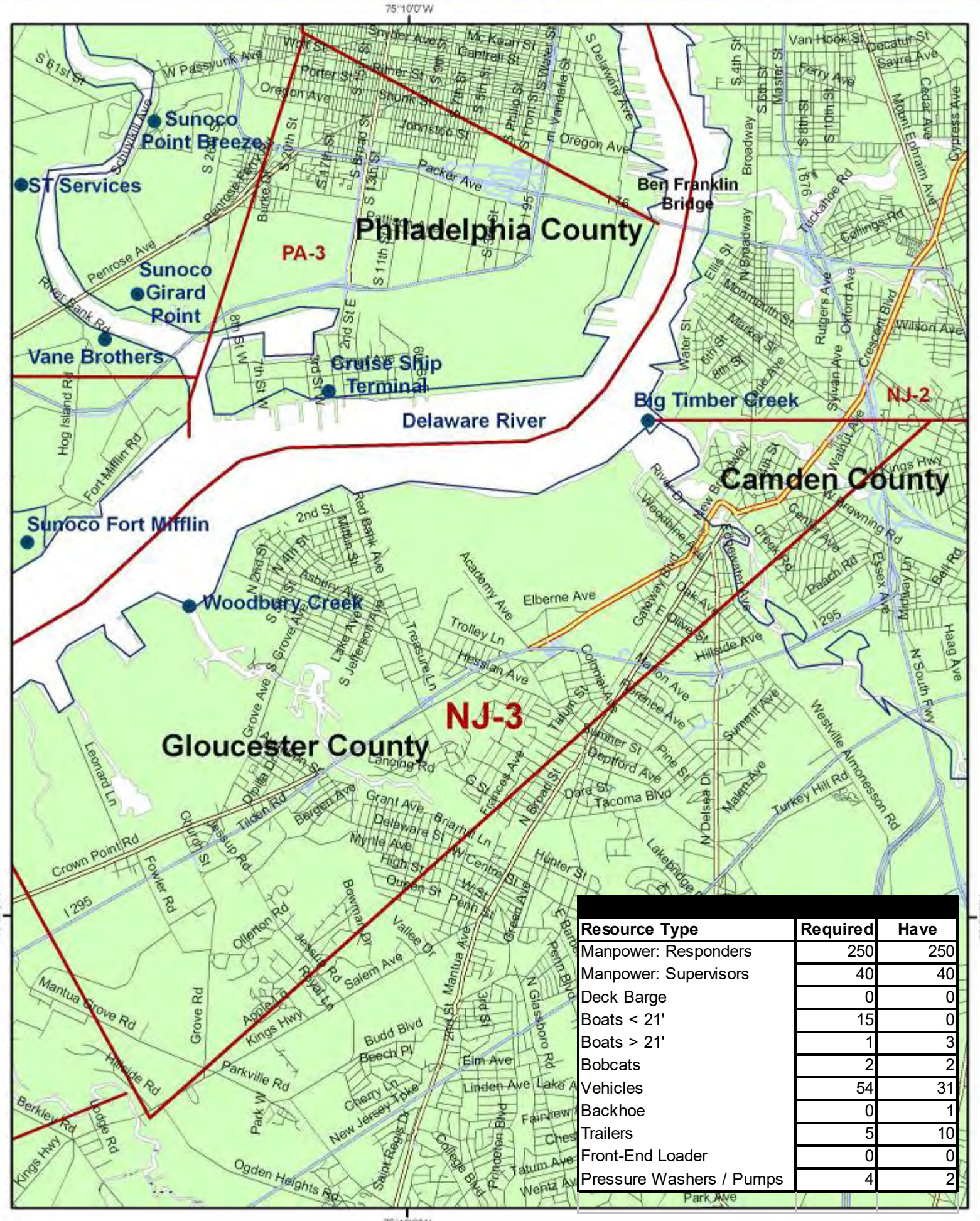
NJ-3 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	250	250
Manpower: Supervisors	40	40
Deck Barge	0	0
Boats < 21'	15	0
Boats > 21'	1	3
Bobcats	2	2
Vehicles	54	31
Backhoe	0	1
Trailers	5	10
Front-End Loader	0	0
Pressure Washers / Pumps	4	2

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
NJ-3 Division Supervisor	P. Parker		270-559-2735	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	L. Sherrow		484-645-4512	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Kens Marine Service	Equipment: Heavy	Backhoe	1 each		Assigned
Fleet Environmental Services	Equipment: Heavy	Bobcat	1 each		Assigned
ES&H Environmental Service	Equipment: Heavy	Front End Loader	1 each		Assigned
Miller Environmental Group,	Pumps	Hotsey	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Trailer	Oil Response Trailer	1 each	24 feet	Assigned
ES&H Environmental Service	Trailer	Trailer	2 each		Assigned
Fleet Environmental Services	Trailer	Trailers	3 each		Assigned
Kens Marine Service	Trailer	Trailers	5 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1 Ton stake truck	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	15 passenger van	2 each		Assigned
Atlantic Response, Inc.	Vehicle	4x4 (AR 4)	1 each		Assigned
Fleet Environmental Services	Vehicle	Box Truck	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Cars (CHI)	8 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	Pickup	1 each		Assigned
Atlantic Response, Inc.	Vehicle	Supply Truck (AR 10	1 each		Assigned
Atlantic Response, Inc.	Vehicle	Van (AR 3)	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Van (CHI)	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Vehicle	6 each		Demobilized
Fleet Environmental Services	Vehicle	Vehicle	9 each		Assigned
Accurate Marine Environmen	Vehicle	Vehicles	7 each		Assigned
ES&H Environmental Service	Vehicle	Vehicles	8 each		Assigned
Kens Marine Service	Vehicle	Vehicles	5 each		Assigned
Kens Marine Service	Vessel	Boat < 21'	2 each	22 feet	Assigned
Accurate Marine Environmen	Vessel	Boat > 21'	1 each	22 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat > 21'	1 each	22 feet	Assigned
Fleet Environmental Services	Vessel	Boat > 21'	2 each	22 feet	Assigned
Kens Marine Service	Vessel	Boat > 21'	1 each	22 feet	Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Accurate Marine Environmen	Manpower: Responder	Responders	40 each		Assigned
Atlantic Response, Inc.	Manpower: Responder	Responders	23 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders	22 each		Assigned
ES&H Environmental Service	Manpower: Responder	Responders	64 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	46 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Responders	30 each		Assigned
Kens Marine Service	Manpower: Responder	Responders	47 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned

Assignments

Shoreline cleanup

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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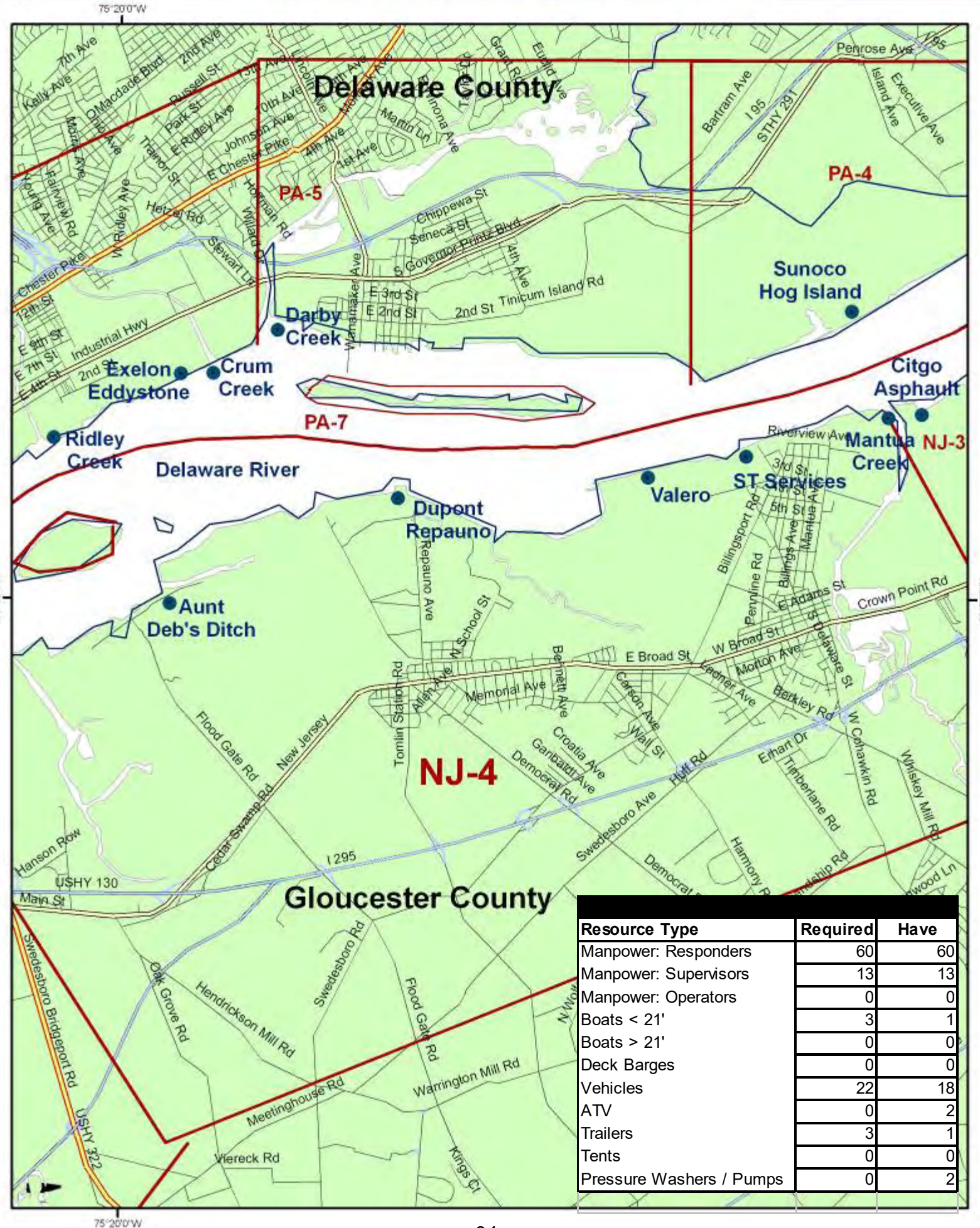
NJ-4 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	60	60
Manpower: Supervisors	13	13
Manpower: Operators	0	0
Boats < 21'	3	1
Boats > 21'	0	0
Deck Barges	0	0
Vehicles	22	18
ATV	0	2
Trailers	3	1
Tents	0	0
Pressure Washers / Pumps	0	2

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy For Recovery	J. Tanner		251-454-6397	
Near/On Shore Recovery Branch Director	I. Will		952-250-3161	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	G. Sherk		610-742-3202	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
A & A Environmental Service	Trailer	Trailers (AA)	1 each		Assigned
NRC - National Response Cc	Vehicle	ATV	2 each		Assigned
Miller Environmental Group, I	Vehicle	Rack Truck	1 each		Assigned
NRC - National Response Cc	Vehicle	Rack Truck	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	10 each		Assigned
A & A Environmental Service	Vehicle	Trucks (AA)	5 each		Assigned
Trade Winds	Vehicle	Vehicle	3 each		Assigned
ES&H Environmental Service	Vehicle	Vehicles	8 each		Assigned
A & A Environmental Service	Vessel	Boat < 21'	3 each	20 feet	Assigned
Trade Winds	Vessel	Boat < 21'	3 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
A & A Environmental Service	Manpower: Responder	Responders	10 each		Assigned
Clean Harbors COOP	Manpower: Responder	Responders	36 each		Assigned
Miller Environmental Service	Manpower: Responder	Responders	5 each		Assigned
Trade Winds	Manpower: Responder	Responders	9 each		Assigned

Assignments

Shoreline cleanup

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No wetland vegetation should be cut without State approval. Report oiled wildlife to Situation Unit. Do not walk through or work in Mud Flats.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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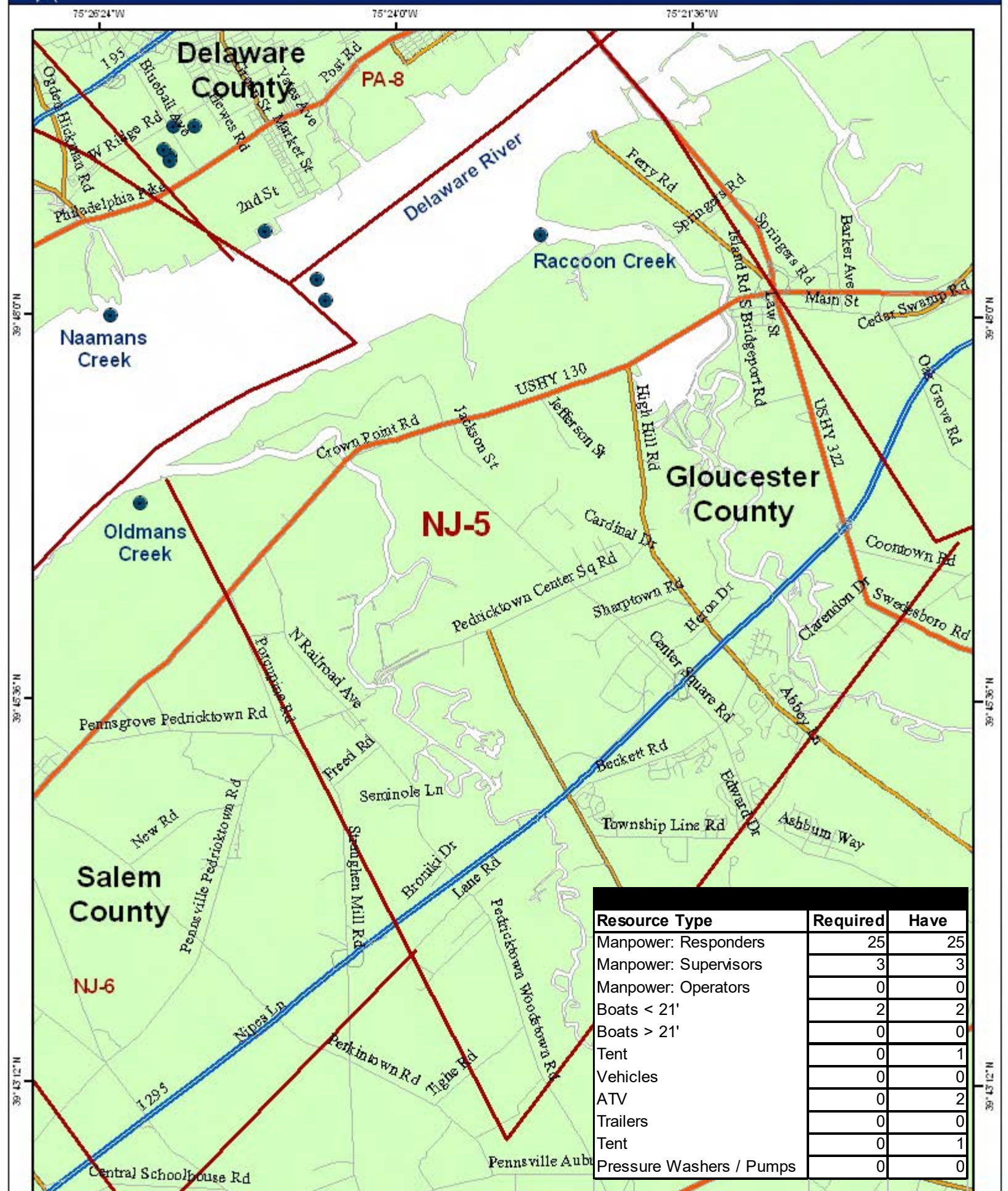
NJ-5 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	25	25
Manpower: Supervisors	3	3
Manpower: Operators	0	0
Boats < 21'	2	2
Boats > 21'	0	0
Tent	0	1
Vehicles	0	0
ATV	0	2
Trailers	0	0
Tent	0	1
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	NJ-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy	J. Tanner		251-454-6397	
Division/Group Supervisor	G. Geiger		267-228-8983	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	L. Bak		484-431-7763	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-5 Division					
Sunbelt	Vehicle	ATV	2 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21'	2 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-5 Division					
Clean Harbors Environmenta	Manpower: Responder	Responders	24 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned

Assignments

Shoreline cleanup

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

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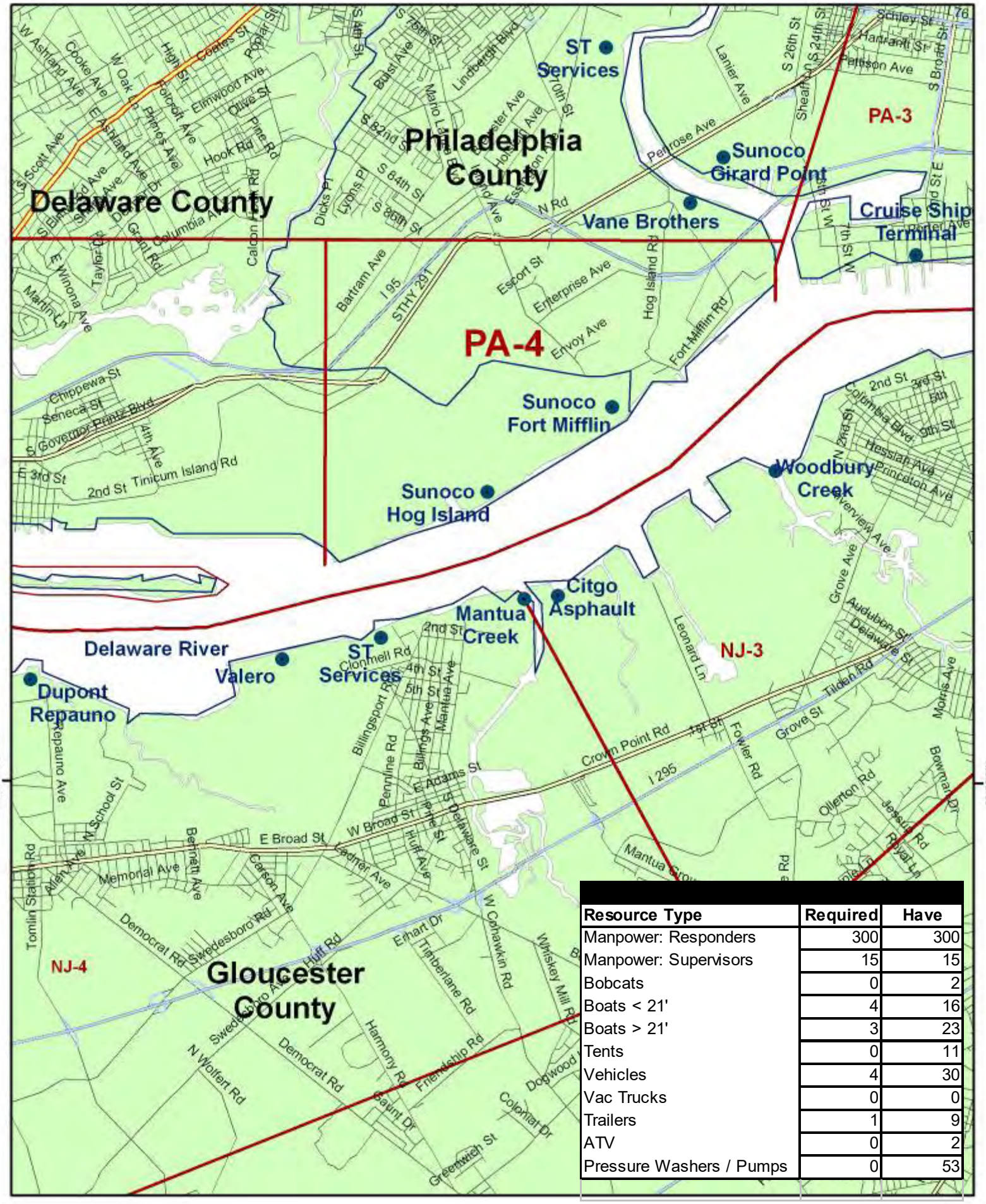
PA-4 Division Overview Map



Resource Type	Required	Have
Manpower: Responders	300	300
Manpower: Supervisors	15	15
Bobcats	0	2
Boats < 21'	4	16
Boats > 21'	3	23
Tents	0	11
Vehicles	4	30
Vac Trucks	0	0
Trailers	1	9
ATV	0	2
Pressure Washers / Pumps	0	53

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	R. Anzalone		713-569-7237	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	N. Brignola/N. Fedoroff		4842394436/6094253	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
Clean Harbors Environmenta	Pressure Washers / Wa	Hotsey	1 each		Assigned
TBD	Pressure Washers / Wa	Hotsy	25 each		Assigned
Clean Harbors Environmenta	Trailer	Trailer	3 each		Assigned
Miller Environmental Group,	Vehicle	ATV - NRC	2 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	18 each		Assigned
TBD	Vehicle	Trucks	9 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21'	1 each	20 feet	Assigned
Fleet Environmental Services	Vessel	Boat < 21'	1 each	20 feet	Assigned
Kens Marine Service	Vessel	Boat < 21'	9 each	20 feet	Assigned
SWS Environmental First Re	Vessel	Boat < 21'	1 each	20 feet	Assigned
USES	Vessel	Boat < 21' - NRC	1 each	20 feet	Assigned
Kens Marine Service	Vessel	Boat > 21'	6 each	22 feet	Assigned
SWS Environmental First Re	Vessel	Boat > 21'	1 each	22 feet	Assigned
Clean Venture, Inc.	Vessel	Boat > 21' - DBRC	1 each	26 feet	Assigned
Fleet Environmental Services	Vessel	Boat > 21' - NRC	2 each	22 feet	Assigned
USES	Vessel	Boat > 21' - NRC	1 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
ES&H Environmental Service	Manpower: Responder	Responders	65 each		Assigned
Kens Marine Service	Manpower: Responder	Responders	1 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	2 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders	105 each		Assigned
T&T Marine Salvage, Inc.	Manpower: Responder	Responders	27 each		Assigned
USES	Manpower: Responder	Responders	100 each		Assigned

Assignments

Shoreline cleanup

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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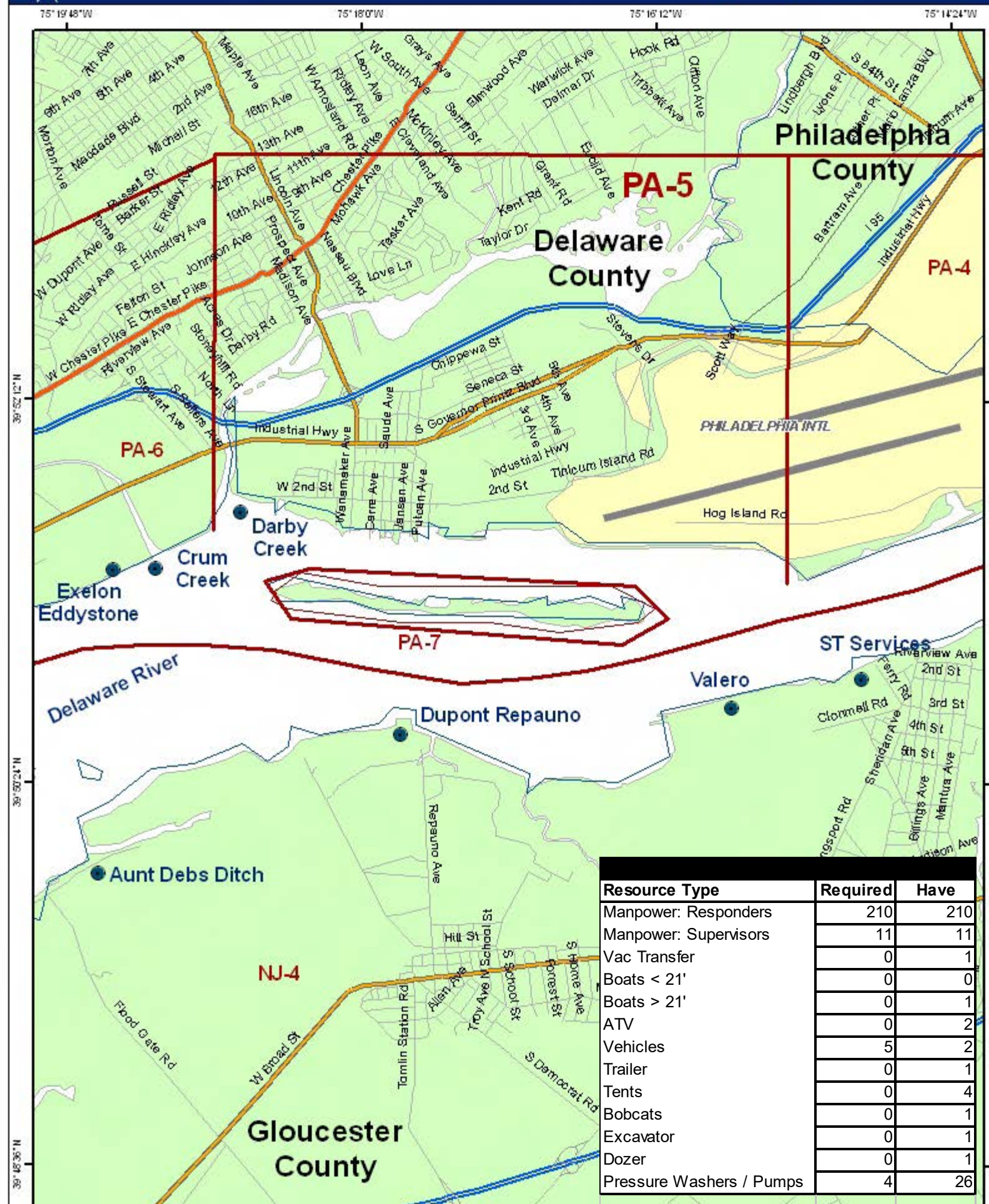
PA-5 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	210	210
Manpower: Supervisors	11	11
Vac Transfer	0	1
Boats < 21'	0	0
Boats > 21'	0	1
ATV	0	2
Vehicles	5	2
Trailer	0	1
Tents	0	4
Bobcats	0	1
Excavator	0	1
Dozer	0	1
Pressure Washers / Pumps	4	26

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
PA-5 Division Supervisor	M. Jenkins		985-768-2328	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	L. Sherrow		484-645-4512	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
TBD	Equipment: Heavy	Bobcat	1 each		Assigned
TBD	Equipment: Heavy	Dozer	1 each		Assigned
NRC - National Response Cc	Pressure Washers / Wa	Pressure Washers	2 each		Assigned
NRC - National Response Cc	Pressure Washers / Wa	Pump	1 each		Assigned
NRC - National Response Cc	Trailer	Trailers	1 each		Assigned
Miller Environmental Group,	Vehicle	ATV - NRC	2 each		Assigned
Moran	Vehicle	Vehicle	5 each		Assigned
Oilmop, Inc.	Vehicle	Vehicle	8 each		Assigned
TBD	Vehicle	Vehicles	12 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
Fleet Environmental Services	Manpower: Responder	Responders	1 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders	81 each		Assigned
Moran	Manpower: Responder	Responders	109 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned
Oilmop, Inc.	Manpower: Responder	Responders	39 each		Assigned

Assignments

Shoreline cleanup

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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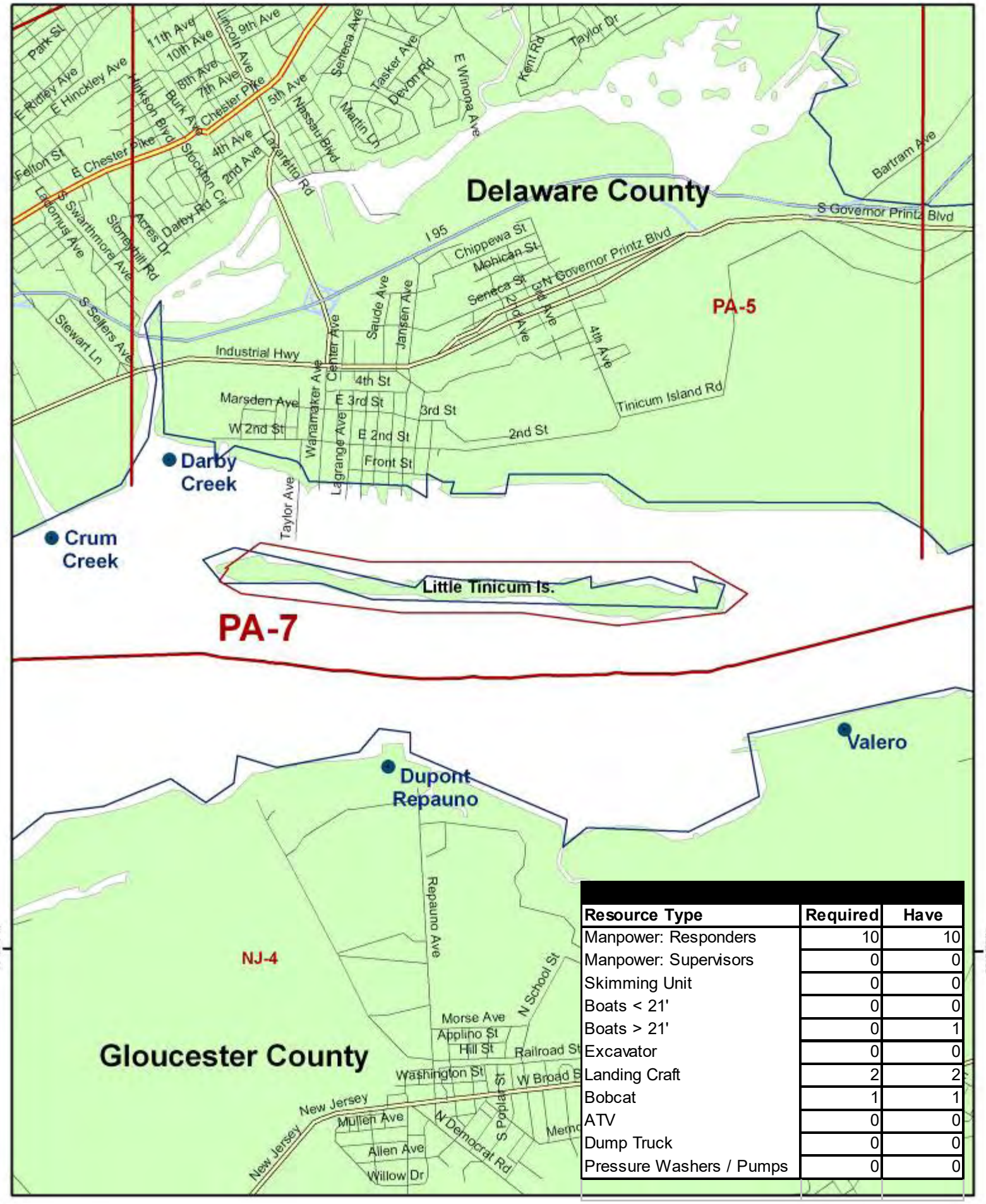
PA-7 Division Overview Map



Resource Type	Required	Have
Manpower: Responders	10	10
Manpower: Supervisors	0	0
Skimming Unit	0	0
Boats < 21'	0	0
Boats > 21'	0	1
Excavator	0	0
Landing Craft	2	2
Bobcat	1	1
ATV	0	0
Dump Truck	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Supervisor	T. Davis		206-730-7071	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
On Scene Safety Officer	D. Schwartz/M. Doyle		302-293-8961	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-7 Division					
Miller Environmental Group, I	Equipment: Heavy	Backhoe	1 each		Assigned
Miller Environmental Group, I	Vessel	Boat > 21' - LCM	2 each	22 feet	Assigned
Oilmop, Inc.	Vessel	Boat > 21' - NRC - P/	1 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-7 Division					
Miller Environmental Group, I	Manpower: Responder	Responder	9 each		Assigned
NRC - National Response Cc	Manpower: Responder	Responders	1 each		Assigned

Assignments

Shoreline cleanup.

Demobilize from PA-7 with all due speed. Reassign resources as available in PA-4 and PA-5. Will remobilize to site when operations can be sustained.

Special Instructions for Division / Group

Overflight information will be supplemented by on water observations.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Near/On Shore Recovery Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment Branch
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:0(	**Division/Group:**	Submerged Oil Assessment Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	C. Gregory		425-501-5430	
Deputy for Submerged Oil Recovery	M. Ploen		612-963-5222	
Mobile Oil Assessment Group	B. Jones		215-778-4533	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Submerged Oil Assessment Group					
North Star/Sea Tow	Vessel	Cape Hatteras	1 each	50 feet	Assigned

Assignments

Recover and deploy snares as directed.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the USCG at 267-549-4848. Must work outside Safety Zone established by Waterways Management.

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Unified Command Staff	267-765-3431		-	-	○ Yes ● No
Unified Command Staff	267-765-3460		-	-	○ Yes ● No
Unified Command Staff	267-765-3459		-	-	○ Yes ● No
Unified Command Staff UC Conference Phone	267-765-3457		-	-	○ Yes ● No
Operations	267-765-3439		-	-	○ Yes ● No
Operations	267-765-3449		-	-	○ Yes ● No
Operations	267-765-3450		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3445		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3434		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3450		-	-	○ Yes ● No
Operations Wake Incident Notification	267-765-3344		-	-	○ Yes ● No
Operations Vessel Movement	215-271-4889		-	-	○ Yes ● No
Operations Vessel Movement	215-778-5841		-	-	○ Yes ● No
Planning	267-765-3440		-	-	○ Yes ● No
Planning	267-765-3437		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Planning	267-765-3443		-	-	○ Yes ● No
Planning	267-765-3444		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3446		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3447		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3448		-	-	○ Yes ● No
Planning Oiled Wildlife	215-365-1558		-	-	○ Yes ● No
Logistics	267-765-3464		-	-	○ Yes ● No
Logistics	267-765-3432		-	-	○ Yes ● No
Logistics	267-765-3453		-	-	○ Yes ● No
Logistics	267-765-3454		-	-	○ Yes ● No
Logistics	267-765-3471		-	-	○ Yes ● No
Logistics	267-765-3472		-	-	○ Yes ● No
Logistics NRC Logistics	267-765-3455		-	-	○ Yes ● No
Logistics Claims	866-401-0353		-	-	○ Yes ● No
Finance/Admin	267-765-3435		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Finance/Admin	267-765-3451		-	-	○ Yes ● No
Finance/Admin	267-765-3452		-	-	○ Yes ● No
Public Information Room	267-765-3436		-	-	○ Yes ● No
Public Information Room	267-765-3441		-	-	○ Yes ● No
Public Information Room	267-765-3442		-	-	○ Yes ● No
Safety	267-765-3433		-	-	○ Yes ● No
NOAA	267-765-3465		-	-	○ Yes ● No
NOAA	267-765-3467		-	-	○ Yes ● No
Fax Receive	215-923-4476		-	-	○ Yes ● No
Fax Receive	267-765-3463		-	-	○ Yes ● No
Fax Transmit	267-765-3456		-	-	○ Yes ● No
Break-out Room	267-765-3461		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2479		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-3086		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2851		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0453		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0483		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0871		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-2183		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2) Fax	610-521-1407		-	-	○ Yes ● No
Safety Office (Lagoon) Nick Brignola	484-239-4436		-	-	○ Yes ● No
Staging Area 1, MEG Rusty Johnson	504-458-2690		-	-	○ Yes ● No
Staging Area 2, CITGO Mario Rico	609-868-3160		-	-	○ Yes ● No
Staging Area 3, Lagoon Jim Tanner	856-266-3810		-	-	○ Yes ● No
Base of Operations Sunoco Hog Island -			-	-	○ Yes ● No
Base of Operations Premcor Refinery - BM2 Kautzman	251-680-8352		-	-	○ Yes ● No
Base of Operations Premcor Refinery - MK1 Potts	415-798-4604		-	-	○ Yes ● No
Base of Operations Salem Marine Terminal - Jim Sanial	856-266-3810		-	-	○ Yes ● No
John Heinz Wildlife Center Triage	215-365-1558		-	-	○ Yes ● No
John Heinz Wildlife Center U.S. Fish and Wildlife	215-365-5341		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning **at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
John Heinz Wildlife Center U.S. Fish and Wildlife	215-365-5342		-	-	○ Yes ● No
Forward Command Post	610-521-8913		-	-	○ Yes ● No
Forward Command Post	610-521-8914		-	-	○ Yes ● No
Forward Command Post	610-521-8915		-	-	○ Yes ● No
Forward Command Post	610-521-8916		-	-	○ Yes ● No
Forward Command Post On Scene Safety	610-521-8917		-	-	○ Yes ● No
PSEG Primary Liaison Brenden Daly	856-339-1169		-	-	○ Yes ● No
PSEG Secondary Liaison Greg Yaroch	856-339-1188		-	571-283-2580 - 24 Hr. Line	○ Yes ● No
PSEG Tertiary Liaison William Buirch	856-491-5308		-	-	○ Yes ● No
PSEG Communications Mg Skip Sindoni			877-722-7510 - Pager	-	○ Yes ● No
PSEG Spill Protection Command Post	856-339-1188		-	-	○ Yes ● No
PSEG Water Security Zone Security Supervisor	856-339-2223		-	-	○ Yes ● No
PSEG Fire Department Duty Supervisor	856-339-2803		-	856-339-2800 - Non-Emerg	○ Yes ● No
PSEG Deputy Chief John B. Carlin	856-339-2814		-	-	○ Yes ● No
PSEG Engineering Jim Melchionna	856-371-0480		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
PSEG Emergency Line	856-339-3333		-	-	○ Yes ● No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency
VHF-FM	18A	Tactical Secondary	156.900 MHZ	Near/On shore recovery	All Near/On shore secondary freq.
VHF-FM	13	Navigation Safety	156.650 MHZ	Bridge to Bridge	Ship to Ship navigation safety
NRC	1	Tactical Primary	Channel 1	Near/On shore recovery	North of Hog Island
NRC	2	Tactical Primary	Channel 2	Near/On shore recovery	South of Hog Island
Nextel/Cell		Tactical	Cell/Nextel	Protection Branch Tactical	POC: Mr. Bob Poole 302-462-0194
Nextel/Cell		Tactical	Cell/Nextel	Salvage Group	POC: Bob Umbdenstock
Nextel/Cell		Tactical	Cell/Nextel	Safety Team Coordination	POC: Mr. Archie Gresham 302-293-8960
Nextel/Cell		Tactical	Cell/Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	Communication Plan		

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
Nextel/Cell		Command	Cell/Nextel	Wildlife Recovery Command	POC: Pete McGowan 609-214-7895 Cell 267-765-3466 Desk
Nextel/Cell		Tactical	Cell/Nextel	Near shore recovery Branch	POC: Mr. Chris Gregory 714-273-8036
Nextel/Cell		Tactical	Cell/Nextel	Waterborne Vessel/Pier Decon Group Command Net	POC: LCDR J. Scheel 267-228-7240
Nextel/Cell		Tactical	Cell/Nextel	Shoreline cleanup assessment	POC: Mr. Jacqui Michelle: 803-513-5650
Nextel/Cell		Tactical	Cell/Nextel	Monitoring Group	Operations: PO McNeilly 267-765-3439 SCAT info: Situations 267-765-3446/3448

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ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00	**Version Name:**	Medical Plan

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911 (See below)	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
St. Agnes Burn Treatment Center	Philadelphia, PA - United	No	Yes	(215) 339-4100	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856) 342-2345	
Christians Care Hospital	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	
Memorial Hospital of Salem County	Salem, NJ - United States	Yes	No	(856) 425-3288	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
Paramedics & mobile unit are stationed on PA side at Staging Area #3 - Lagoon.
To contact EMS at Staging Area #3 - Lagoon, call Nick Federoff - 609-425-3288.
For EMS services on the NJ side, we have established direct contact numbers to EMS dispatchers in each county.
Camden County (NJ 1&2) - 856-757-7502
Gloucester County (NJ 3&4) - 856-589-0911
Salem County (NJ 5,6,7,8,9,10&11) - 856-769-2959
Hyperbaric Chamber is located at University of Pennsylvania Hospital.

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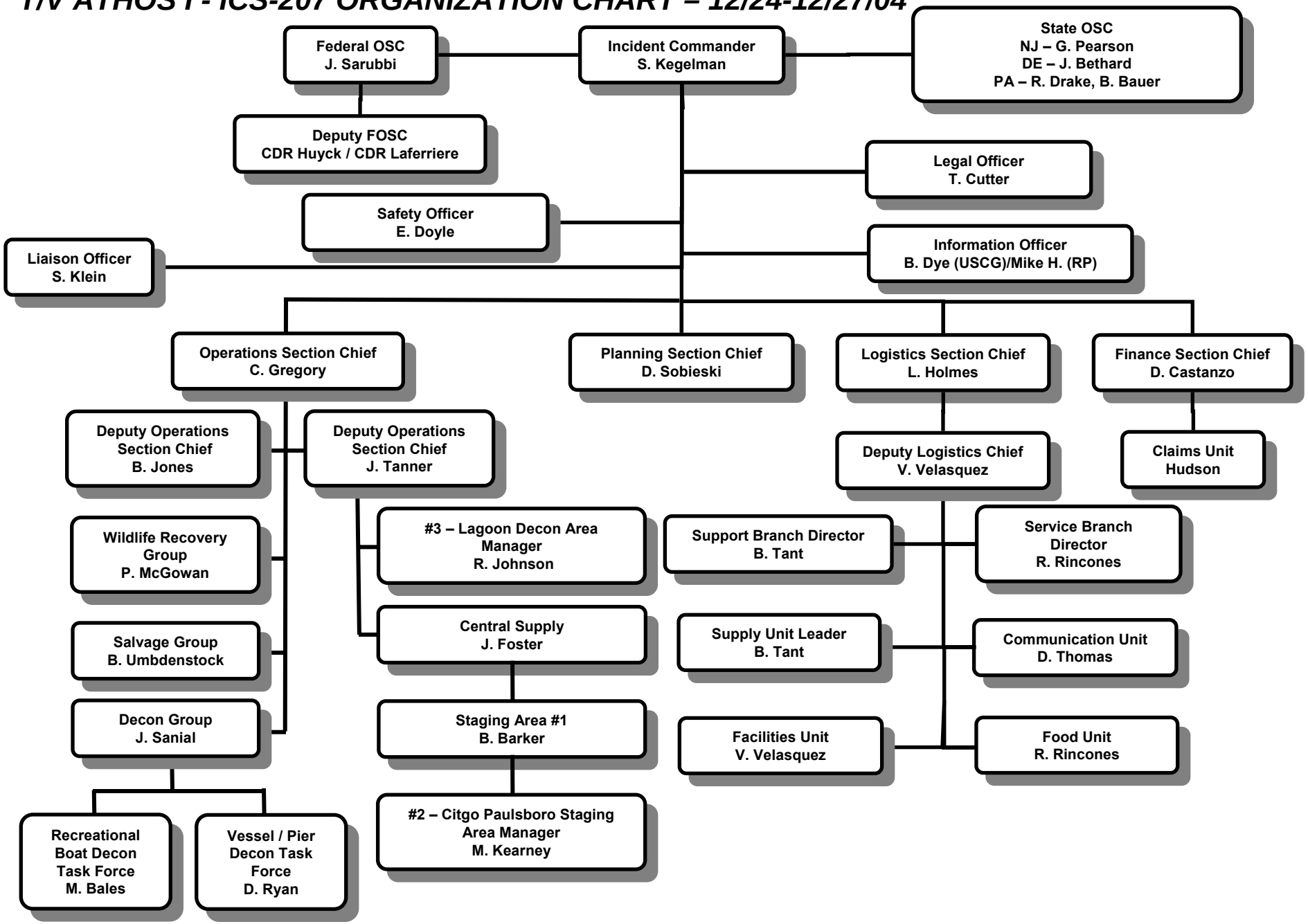
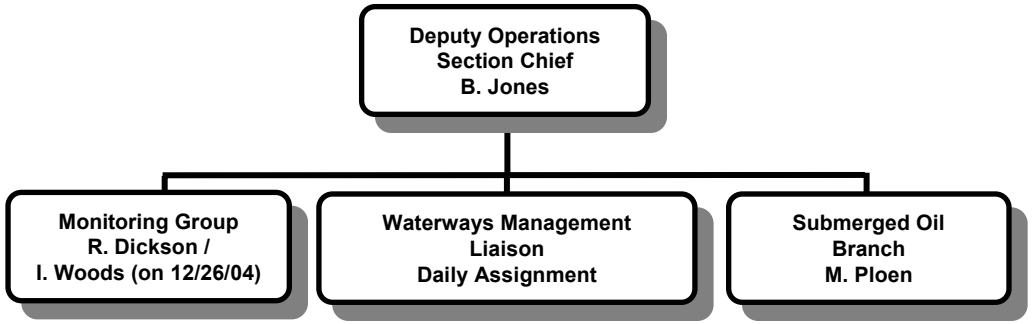
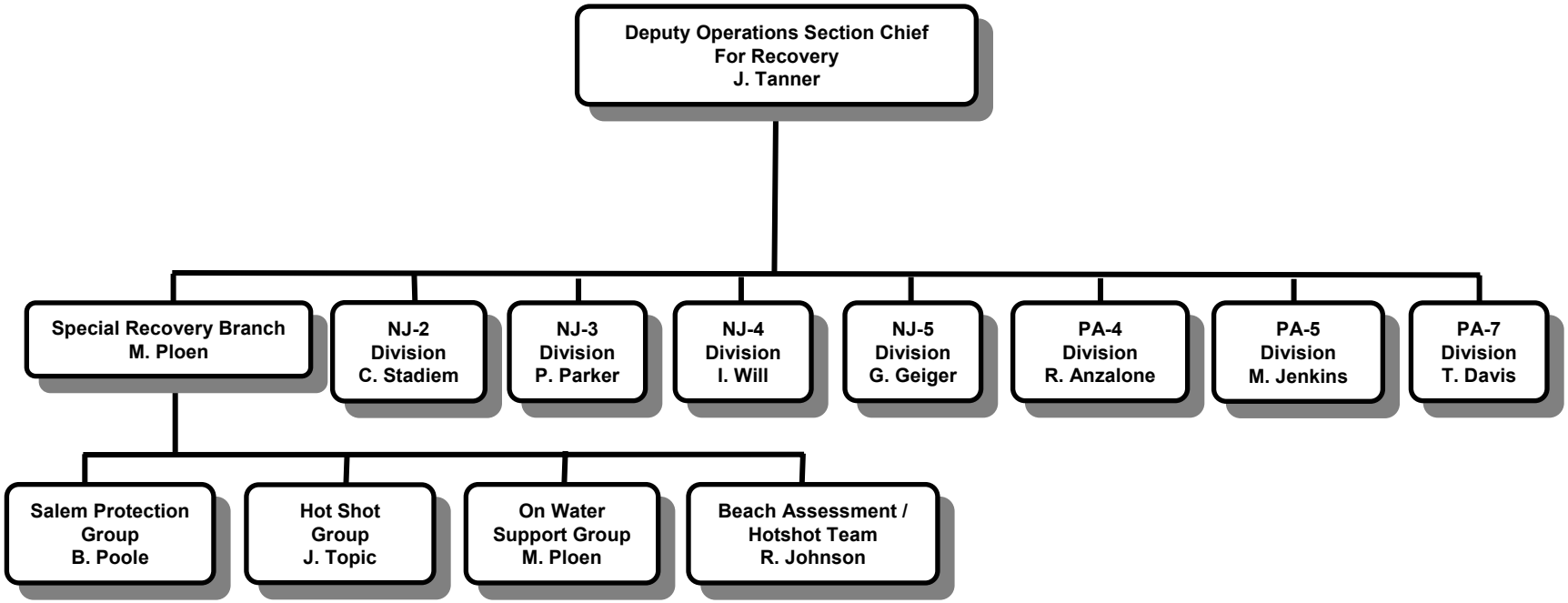
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 12/24-12/27/04



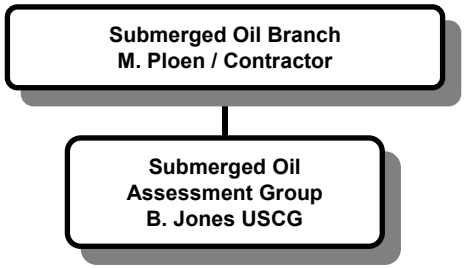
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR PORT OPERATIONS ORGANIZATION CHART – 12/24-12/27/04



T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR RECOVERY ORGANIZATION CHART – 12/24-12/27/04

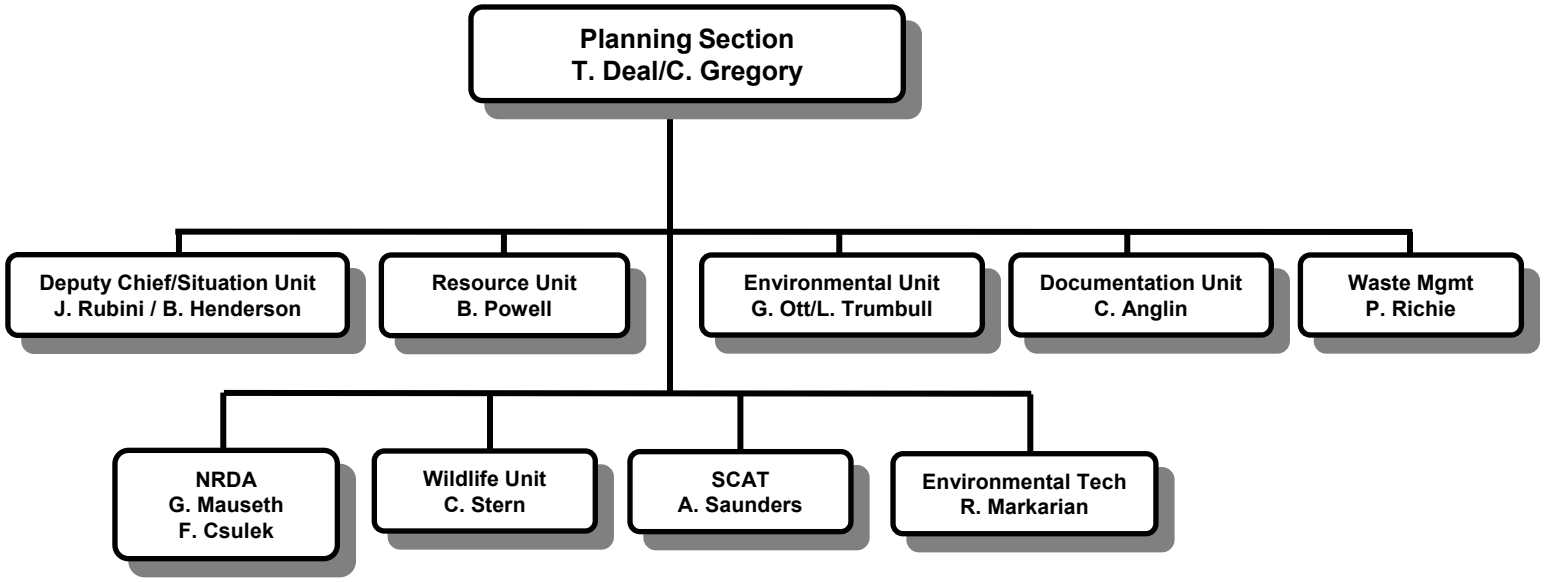


T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR SUBMERGED OIL BRANCH ORGANIZATION CHART – 12/24-12/27/04



* BOLD indicates names of vessels

T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 12/24-12/27/04



Incident Name: MV ATHOS I	Location: Philadelphia, PA

Three Day Weather Forecast

Dec 23 Thursday

Thursday, SE winds at 15 knots, becoming W at 10-15 knots overnight. Overcast skies are expected, with a chance of rain or showers in the afternoon.
High 52F, Low 32F.

Dec 24 Friday

Friday, W winds at 10-15 knots. Mostly sunny skies. Dry.
High 38F, Low 23F.

Dec 25 Saturday

Partly cloudy. Highs in the lower 30s.
High 30F, Low 20F.

Tide Table

Bridgeport, Raccoon Creek, New Jersey,
Delaware River, New Jersey
39.8067° N, 75.3550° W

Date	Day	High	Low	High	Low	High	Sunrise	Sunset
12/23/2004	Thu		4:52 AM	10:14 AM	5:32 PM	10:34 PM	7:20 AM	4:41 PM
12/24/2004	Fri		5:39 AM	10:59 AM	6:22 PM	11:22 PM	7:20 AM	4:41 PM
12/25/2004	Sat		6:25 AM	11:43 AM	7:08 PM		7:21 AM	4:42 PM
12/26/2004	Sun	12:07 AM	7:09 AM	12:25 PM	7:52 PM		7:21 AM	4:43 PM
12/27/2004	Mon	12:51 AM	7:50 AM	1:06 PM	8:34 PM		7:21 AM	4:43 PM

TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations.

General Safety Concerns:

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.
Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decontamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

Cold-Weather Injuries

You are responsible for preventing individual cold injuries such as:

- Chilblain
- Immersion foot (trench foot)
- Frostbite
- Hypothermia
- Dehydration
- Carbon Monoxide Poisoning

Supervisors are responsible for workers health and safety :

⇒ Remembering the acronym **C-O-L-D** when wearing clothing in cold weather
- **C**: Keep it **Clean**;
- **O**: avoid **Overheating**;
- **L**: wear clothing **Loose** and in **Layers**;
- **D**: keep clothing **Dry**.

⇒ Maintaining adequate hydration and ensuring nutritional requirements are met.

General Guidance for all Cold-Weather Work

List of recommended preventive measures to decrease frostbite risk

⇒ **Skin:** Cover exposed skin because it is more likely to develop frostbite. Avoid wet skin (common around the nose and mouth). Inspect hands, feet, face and ears frequently for signs of frostbite.

⇒ **Clothing:** Change into dry clothing whenever clothing becomes wet. Change socks during day.

⇒ **Nutrition:** Consume 4500 calories/day/individual.

⇒ **Hydration:** Consume 3 to 6 Liters of liquid/day/individual. Warm liquids are useful for re-warming.

Cold-Weather Injuries

	Chilblain – Inflammation caused by moist cold
Cause	• Repeated exposure of exposed skin for prolonged periods from 20° – 60° F with high humidity (for those not acclimated to cold weather)
Symptoms	• Swollen, red skin (or darkening of the skin in dark-skinned individuals) • Tender, hot skin, usually accompanied by itching
First-Aid	• Warm affected area with direct body heat • Do not massage or rub affected areas • Do not wet the area or rub it with snow or ice • Do not expose affected area to open fire, stove, or any other intense heat source
Prevention	• Use contact gloves to handle all equipment; never use bare hands • Use approved gloves to handle all fuel products • In extreme cold environments, do not remove clothing immediately after heavy exertion; wait until you are in a warmer location • Do not wear cotton clothing in cold-weather environments

	Hypothermia
Cause	• **Prolonged cold exposure and body-heat loss. May occur at temperatures above freezing, especially when a person's skin or clothing is wet**
Symptoms	• Shivering may or may not be present • Drowsiness, mental slowness, lack of coordination that could progress to unconsciousness, irregular heartbeat, and death
First-Aid	• Get the individual to a medical facility as soon as possible, because hypothermia is the most serious cold exposure medical emergency and can lead to death • Remove wet clothing and wrap victim in blankets or warm clothing • Minimize handling of the unconscious victim with a very low heartbeat so as to not induce a heart attack
Prevention	• Do not wear cotton clothing in cold weather environments • Anticipate the need for warming areas for individuals exposed to cold, wet conditions

	Frostbite
Cause	• **Freezing of exposed skin, such as ngers, toes, ears, and other facial parts** • **Exposure of skin to metal, extremely cool fuel, wind chill, and tight clothing, particularly boots**
Symptoms	• Numbness in affected area • Tingling, blistered, swollen, or tender areas • Pale, yellowish, waxy-looking skin (grayish in dark-skinned soldiers) • Frozen tissue that feels wooden to the touch
First-Aid	• Evacuate immediately, because frostbite can lead to amputation • Start first-aid immediately. Warm affected area with direct body heat • Do not thaw frozen areas if treatment will be delayed • Do not massage or rub affected areas • Do not wet the area or rub it with snow or ice • Do not expose affected area to open fire, stove, or any other intense heat source • Use contact gloves to handle all equipment; never use bare hands
Prevention	• Use approved gloves to handle all fuel products • Do not wear cotton clothing in cold-weather environments • Keep face and ears covered and dry • Keep socks clean and dry • Avoid tight socks and boots

	Immersion foot (trench foot)
Cause	• **Prolonged exposure of feet to wet conditions at 32°– 60°F. Inactivity and damp socks and boots (or tightly laced boots that impair circulation) speed onset and severity**
Symptoms	• Cold, numb feet may progress to hot w/shooting pains • Swelling, redness, and bleeding
First-Aid	• Get medical help immediately • Rewarm feet by exposing them to warm air • Do not allow victim to walk on injury • Evacuate victim to a medical facility • Do not massage, rub, moisten, or expose affected area to extreme heat
Prevention	• Keep feet clean and dry; change wet or damp socks as soon as possible • Wipe the inside of boots dry at least once per day, or more often as feet sweat • Dry leather boots by stuffing with paper towels

	Dehydration
Cause	• Depletion of body fluids
Symptoms	• Dizziness • Weakness • Blurred vision
First-Aid	• Replace lost water. Water should be sipped, not gulped • Get medical treatment
Prevention	• Consume 3-6 quarts of water per day at a minimum

	Carbon Monoxide Poisoning
Cause	• Replacement of oxygen with carbon monoxide in the blood stream from burning fuels without proper ventilation
Symptoms	• Headache, confusion, dizziness, excessive yawning • Cherry red lips and mouth (in light skinned individuals); grayish tint to lips and mouth (in dark skinned individuals) • Unconsciousness
First-Aid	• Move to fresh air • CPR if needed • Administer oxygen if available • Evacuate
Prevention	• Use only project supplied heaters in sheltered areas and ensure that only the vendor operates the heaters • Never sleep in running vehicles

ON-WATER EMERGENCY PROCEDURES

THE SIGNAL FOR

MAN OVERBOARD or **ASSISTANCE IS NEEDED** is:

4 BLASTS FROM AN AIR HORN

The response to the signal is:

- The boat captain/operator will radio to NRC base for assistance.
- All boats in the vicinity will respond to assist.
- All barge operations will cease and assist with rescue operations.
- Boat operators in the vicinity of the incident will assist the rescue operations by pointing or waving to attract attention of responding vessels.

Trimmer Safety Precautions and Working Techniques

Trimmers are high-speed and fast-cutting power tools. The following special safety precautions must be observed to reduce the risk of personal injury:

- A trimmer can be hazardous if not properly used or if it comes in contact with solid objects. If the cutting tool comes in contact with your body, it will cut you.
- Striking solid foreign objects such as stones, fence wire or metal could damage the cutting attachment and may cause blades to crack, chip or break.
- Nearby workers should not be allowed within 15 yards of where a trimmer is in use.
- Never let a trimmer run unattended.
- Prolonged use of a trimmer (or other machines) can expose the operator to vibrations that could reduce the hand's ability to properly sense feel or temperature changes.
  - Many power tools are available with an anti-vibration ("AV") system designed to reduce the transmission of vibrations created by the engine to the operator's hands.
  - Wear gloves and keep your hands warm.
  - Maintain a firm grip at all times, but do not squeeze the handles with constant, excessive pressures, take frequent breaks.

Proper Safety Gear

Trimmer operation can cause serious injury to eyes, ears and person. To reduce the risk of injury the operator will wear safety glasses or goggles with a face shield or face screen over your goggles or safety glasses.

Trimmers produce excessive noise. Wear ear plugs to protect your hearing.

Wear the appropriate clothing.

- Avoid loose-fitting jackets, scarves, neckties, jewelry, flared or cuffed pants, unconfined long hair or anything that could become caught on branches, brush or moving parts of the unit.
- Wear long pants made of heavy material to protect your legs.
- Protect your hands with gloves. Heavy-duty, nonslip gloves improve your grip and help to protect your hands.
- Good footing is most important while trimming. Wear sturdy boots with nonslip soles. Steel-toed safety boots are recommended. Watch your footing.
- Wear an approved safety hard hat to reduce the risk of injury to your head when there is a danger of head injuries.
- If available, use the shoulder/waist harness to reduce operator fatigue.

Refueling Operations

Gasoline is an extremely flammable fuel. If spilled or ignited by a spark or other ignition source, it can cause fire and serious burn injury or property damage. Use extreme caution when handling gasoline or fuel mix, and following the following guidelines:

- Do not smoke or bring any fire or flame near the fuel!

- Gasoline vapor pressure may build up inside the gas tank of a two cycle engine depending on the fuel used, the weather conditions, and the venting system of the tank.
- In order to reduce the risk of burns or other personal injury from escaping gas vapor and fumes, remove the fuel filler cap on your hedge trimmer carefully so as to allow any pressure build-up in the tank to release slowly.
- Never remove fuel filler cap while engine is running.
- Select bare ground for fueling and move at least 10 feet (3m) from the fueling spot before starting the engine.
- Wipe off any spilled fuel before starting your hedge trimmer and check for leakage.
- Check for fuel leakage while refueling and during operation.
  - If fuel-leakage is found, do not start or run the engine until leak is fixed and spilled fuel has been wiped away.
  - Take care not to get fuel on your clothing. If this happens, change your clothing immediately.
  - Never attempt to fuel a running or hot engine.

HEAVY WEATHER ADVISORY #3

Issued 1500, 21 December 2004

Caution State: **ALERT**

Weather for Friday, 12/24 and Saturday, 12/25, Christmas Eve and Christmas Day, has the potential to adversely impact operational activities. Temperatures are predicted to be in the low 30's on Christmas Eve and in the low 20's on Christmas Day. Wind speeds are predicted to be 15-17 mph. However, NOAA and the Weather Channel are predicting higher temperatures on both days between 35 and 40°. We will continue to track the weather for these days.

HEAVY WEATHER ADVISORY HOTLINE: 267-765-3465

HOGG ISLAND SAFETY PLAN

These requirements are to be observed by all personnel participating in operations located along Hogg Island Road. All activities prescribed here will be enforced by safety representatives in the field. The Plan was developed and approved by both the Safety Officer and the Operations Section Chief.

Prohibited Parking

Parking is not permitted on Hogg Island Road from the UPS employee exit north to the UPS truck entrance.

Vehicle Parking

All vehicles should park with the flow of traffic.

No vehicles shall be parked within 15 ft. of the railroad tracks that run adjacent to Hogg Island Road.

All vehicles should be cautious when pulling onto the roadway.

Worksite Provisions

All jobsite staging point must have the following:

- **Designated Smoking Areas.**
- **Flammable Liquid Storage Areas.**
- **Personnel Decontamination Areas.**

ATV Operations

Operators and passengers of all terrain vehicles must wear hard hats.

Passengers are limited to the number of seats available.

At no time shall ATV’s exceed 5mph.

Rail Road Precautions

All individuals who are working within 15 ft. of the railroad tracks must wear a traffic vest and a hard hat.

A trained watchman/lookout must be present any time technicians are required to cross tracks.

Walking along railway is not permitted.

No one is allowed to stand or sit on or near railroad tracks.

Supply traffic should be routed onto access roadway on the East side of the rail road tracks as much as possible.

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	All for the Period First Day	

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 12/24/2004 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Sherman Room
UC Objectives Meeting 12/24/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
Command & General Staff Meeting 12/24/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
ICS 209 12/24/2004 09:00	Resource Summary	Planning Section	Cmd Post
Operations Debriefing 12/24/2004 18:00	Review day's operations	O'Brien's Group	Sherman Room
Sit Rep 12/24/2004 20:00			

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	All for the Period Second Day	

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 12/25/2004 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Sherman Room
UC Objectives Meeting 12/25/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
ICS 209 12/25/2004 09:00	Resource Summary	Planning Section	Cmd Post
Command & General Staff Meeting 12/25/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
Operations Debriefing 12/25/2004 18:00	Review day's operations	O'Brien's Group	Sherman Room
Sit Rep 12/25/2004 20:00			

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	All for the Period Third Day

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 12/26/2004 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Sherman Room
UC Objectives Meeting 12/26/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
Command & General Staff Meeting 12/26/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
ICS 209 12/26/2004 09:00	Resource Summary	Planning Section	Cmd Post
Operations Debriefing 12/26/2004 18:00	Review day's operations	O'Brien's Group	Sherman Room
Sit Rep 12/26/2004 20:00			

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 12/23/2004 10:36
Period:	Period 21 (12/24/2004 06:00 - 12/28/2004 06:00)	**Version Name:**	All for the Period Fourth Day	

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 12/27/2004 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Sherman Room
UC Objectives Meeting 12/27/2004 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
ICS 209 12/27/2004 09:00	Resource Summary	Planning Section	Cmd Post
Command & General Staff Meeting 12/27/2004 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Sherman Room
Field Reports 12/27/2004 10:00	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
RRT 12/27/2004 10:00	Informational brief Monday, Wednesday & Friday Only	Atlantic Strike Team	Holiday Inn
Tactics Meeting 12/27/2004 11:30	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	Sherman Room
Scientific Support Meeting 12/27/2004 14:00	Review Scientific Support Issues	Scientific Support Personnel	Hancock Room
Field Reports 12/27/2004 14:30	Field reports to Situation Unit Leader at 267-765-3448/3446	Phone Call	
Planning Meeting 12/27/2004 15:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Sherman Room
IAP Approval 12/27/2004 17:00			
Operations Debriefing 12/27/2004 18:00	Review day's operations	O'Brien's Group	Sherman Room
Sit Rep 12/27/2004 20:00			

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IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 25 (01/18/2005 06:00 to 01/25/2005 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) – Jamie Bethard: _____

SOSC (PA) – Bob Bauer: _____

SOSC (NJ) – Dave Sweeney: _____

RPIC – Steve Kegelman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. Cleanup Priorities
4. Cleanup Endpoints & Methods
5. Memorandum on Wildlife Handling
6. ICS 202 - General Response Objectives
7. ICS 204 - Assignment List
8. ICS 205 - Communications Plan
9. ICS 206 - Medical Plan
10. ICS 207 - Organization Chart
11. ICS 223 - Health and Safety Message
12. ICS 230 - Daily Meeting Schedule
13. Website: www.incidentinfo.com

T/V ATHOS I SPILL, DELAWARE RIVER, NEW JERSEY
1545 EST, Sunday January 16, 2005

Contacts: Ed.Levine@noaa.gov, Gary.Ott@noaa.gov, Marc.Hodges@noaa.gov, Jeff.Lanford@noaa.gov, David.Wesley@noaa.gov, alittle@responsegroupinc.com, blakbell@earthlink.net

NOTE: This is a site-specific forecast from the National Weather Service generated specifically for the incident site. For intermediate request please call the Marine Desk at 800-521-4129 (24 Hours). Temperatures through The period to remain below freezing for the most part with very cold wind chills at night. Our web site www.nws.noaa.gov/er/phi

Sunset (1/16): 1701
Sunrise (1/17: 0720
Sunset (1/17: 1702

36-Hour Forecast:

Winds:
Tonight, northwest winds 10 to 15 knots. Monday northwest winds 15 to 25 knots with gusts to 30 in the afternoon In the middle Delaware Bay. Monday night, North winds 15 to 20 knots. Tuesday, north to northwest 10 to 15 kt. Tuesday Night. West winds 5 to 10 knots.

Waves:
Tonight through Tuesday Night, Seas will be 2 ft in the upper reaches of the Delaware River in the vicinity Of the Spill Site. Farther down the bay, waves will be from 2 to 3 ft tonight, 3 to 4 ft Monday with 5 foot waves below Ship John and Brandywine Lights. Seas will be diminishing late Monday night to 2 to 4 ft and 2 to 3 ft on Tuesday and Tuesday night..

Precipitation:
Tonight, a chance of light snow with accumulation an inch or less. Monday, chance of snow showers in the afternoon with accumulations less than an inch. Monday night, None. Tuesday , None. Tuesday night None.

Ceiling/Visibility:
Partly to mostly cloudy skies are anticipated tonight through Monday night. Tuesday will be sunny. Tuesday night into Wednesday partly to mostly cloudy. The visibility will be reduced to less than 1 nautical mile in heavier snow showers.

Temperatures:
Tonight, in the lower 20s. Mondays high around 30. Monday nights low 15 to 20 degrees. Tuesday highs in the upper 20s. Tuesday night around 15 and the high on Wednesday in the mid 30s. These cold temperatures are harsh conditions for those involved with the cleanup, especially combined with the very cold winch chills which will be below zero at times at night.

Due to the extended cold, there will be light icing on the river banks of the low volume tributaries.
.

Extended Forecast:

Thursday,Partly cloudy with highs in the mid 30s. Northwest winds 10 to 15 knots and seas 2 to 3 ft.

Friday, Partly cloudy with highs in the lower 30s. Northwest winds 10 to 15 knots and seas 2 to 3 ft.

Saturday, Mostly cloudy with a chance of snow. Highs in the lower 30s Winds variable less than 10 knots. Seas 1 ft.

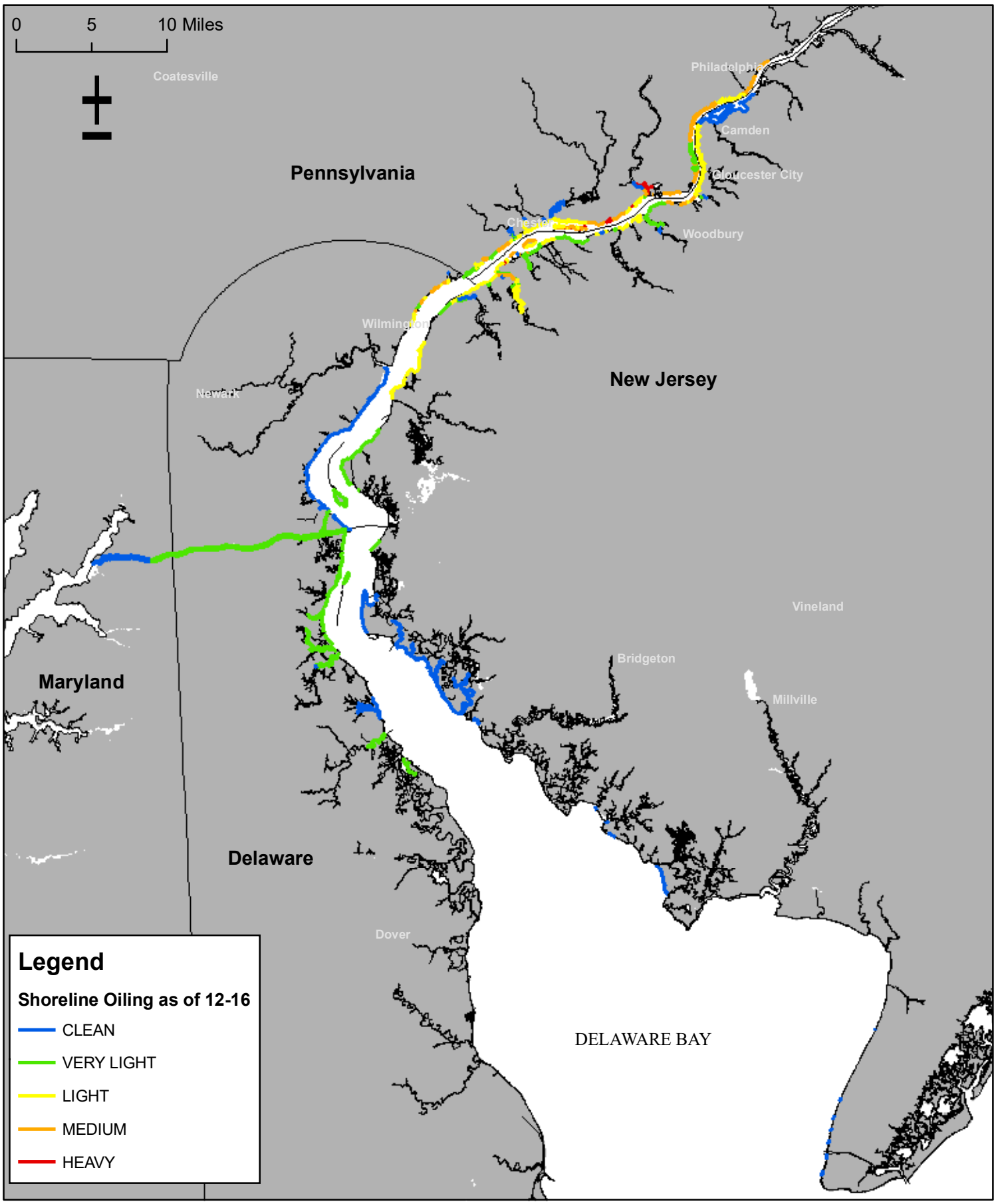
Jim Eberwine
01-16-05

M/V Athos I, Delaware River, NJ/PA

Shoreline Oiling as of 12/16/2004

Graphic does not represent precise amounts or locations of oil.

USE ONLY AS A GENERAL REFERENCE



Objective:

Removal of gross oil before the focus is shifted to final cleanup activities

Gross (i.e., bulk) oil removal is proposed as a means to maximize the environmental benefit and effectiveness of shoreline cleanup operations. Shoreline segments have been prioritized (attached) based on the amount of oil, and the presence of sensitive resources or high public access.

As cleanup activities complete gross oil removal, response resources will be redeployed by the Operations Section according to the listed priorities. The decision to move the resources within a division will be the responsibility of the Division Supervisors. The Environmental Unit and SCAT Teams will be available to provide suggestions and/or guidance.

Operations Priorities for Cleanup

Priority 1 Heavy Oil With Special Issues	Priority 2 Heavy Oil No Special Issues	Priority 3 Moderate Oil With Special Issues	Priority 4 Moderate Oil No Special Issues	Priority 5 Light Oil With Special Issues	Priority 6 Very Light Oil With Special Issues	Priority 7 Light Oil No Special Issues	Priority 8 Very Light Oil No Special Issues
NJ-5-A	NJ-3-F	NJ-3-A	DE-1-B	NJ-2-A	DE-1-A	NJ-3-I	DE-7-B
PA-4-F		NJ-3-H	DE-1-C	NJ-2-C	DE-1-E	PA-5-D	NJ-4-B
PA-4-J		NJ-4-D	DE-1-D	NJ-3-G	DE-1-I		NJ-6-A
PA-5-B		NJ-5-B	DE-1-F	NJ-3-J	DE-2-D		NJ-6-D
PA-7-A		NJ-5-D	DE-1-G	NJ-3-L	NJ-1-A		NJ-6-E
PA-7-C		PA-1-C	DE-1-H	NJ-5-A	NJ-2-B		NJ-6-F
PA-7-D		PA-2-A	DE-1-J	NJ-5-C	NJ-4-A		NJ-6-G
PA-7-F		PA-3-A	DE-2-A	PA-1-C	NJ-6-C		NJ-6-H
		PA-3-F	DE-2-B	PA-4-C	NJ-7-A		NJ-7-C
		PA-4-A	DE-2-C	PA-5-B	NJ-7-B		NJ-9-A
		PA-4-B	NJ-3-B		PA-1-B		PA-2-C
		PA-4-D	NJ-3-C		PA-2-D		PA-2-E
		PA-4-E	NJ-3-D		PA-6-CRUM CR		PA-2-G
		PA-4-G	NJ-3-F				PA-6-A
		PA-4-H	NJ-4-E				PA-6-B
		PA-4-I	PA-2-B				
		PA-5-A	PA-2-F				
		PA-5-C	PA-2-H				
		PA-7-B	PA-2-I				
		PA-7-D	PA-3-B				
		PA-7-E	PA-3-C				
		PA-7-G	PA-3-D				

Conduct cleanup with minimal damage to environmental resources. i.e. Do not drive spilled oils into sediments by foot / mechanical traffic

A SCAT Special Issue Team (SIT) will evaluate historic, special environmental, or high-public access areas to provide more detailed and additional cleanup requirements.

Shoreline Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Flats (hard surface e.g. Tinicum I. NJ side)	General: No recoverable surface oil, buried oil layers or tarballs larger than dimes; no more than stain on sand	Manual removal with shovels/rakes and squeegees; small equipment (bobcat) to remove oil and oiled surface and subsurface sand; minimize removal of clean sand on and under oiled layers; Minimize equipment (bobcat) travel over oiled surfaces.
	Special: TBD by SIT (Special Issue Team)	
Sand Beaches; Mixed Sand and Fine Gravel Beaches	General: No recoverable surface oil, buried asphalt pavements or tarballs larger than dimes; no more than stain on gravel	Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers; small equipment (bobcat)to remove oil and oiled surface/subsurface sand and gravel. Minimize small equipment (bobcat)travel over oiled surfaces. Mechanical relocation of fine gravels into piles for flushing, including use of high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval.
	Special: TBD by SIT	
Course Gravel Beaches/Fill (e.g. cobbles, and larger)	No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Manual removal of surface oil using low pressure flushing and high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval by the SIT.
	Special: TBD by SIT	
Riprap/Stone Seawalls **Solid Seawall, Bulkheads and Docks**	General: No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Flushing and high-pressure/hot-water washing (hotsie), as needed. Containment/recovery of released oil.
	Special: No more recoverable or potential mobile oil on surface; Stop cleanup efforts when all oil is removed other than a stain. Additional cleaning or replacement of riprap to be considered by SIT.	In high-public access or special environmental / historic areas (e.g., Ft. Mifflin, eagle nesting, others to be determined): may request use of SWAs (surface washing agents) or special cleanup efforts for use as need to meet endpoint.

Mud Flats (e.g. soft surface, steps will push oil in sediments)	General: No potentially mobile oil.	To be determined on a site-specific basis by SIT.
Marshes	General: Oil on vegetation no longer wipes off on contact. No remaining recoverable or potentially mobile oil in accessible areas. (Accessible areas will be identified by SIT.)	To be determined on a site-specific basis by SIT. Options (cutting, In-situ-Burn, flushing, manual pickup of pooled oil, monitoring) to be determined on site-specific basis.
	Special: Other removal options will be considered by Environmental Unit.	

Debris Recovery Guidelines[1]

- Report dead and live wildlife to triage center at 215-365-1558. Collect and bag all dead wildlife.
- Manual removal of oiled debris that can be easily picked up and bagged.
- For small unoiled debris that can be easily picked up, move to the supra tidal zone if it has the potential to become oiled in its current location.
- Leave unoiled debris in place if it does not have the potential to become oiled.
- Cut and remove oiled logs < 6 inches in diameter (cut in into lengths < 6 feet).
- Manual removal of oiled debris (other than logs) < 6 inches in diameter and < 6 feet in length.
- Clean large (> 6 inches in diameter and/or 6 feet in length) oiled debris in place. Recover oil using appropriate sorbents. Approved cleaning methods for large oiled debris are presented below:

Method	Handling	RRT Approval	Special Permits
Scraping	No	No	No
Wiping	No	No	No
Hotsie	No	No	No

The following options require special approval

Method	Handling	RRT Approval	Special Permits
SWAs	No	Yes	No
Burning	Yes	Yes	Yes

For questions regarding environmental issues, contact Lyle Trumbull at (610) 710-1919.

[1] Non-living oiled debris

Memorandum

To: **Operations Section Chief**

From: **Group Supervisor, Wildlife Recovery**

Subject: **Protocol for handling dead wildlife carcasses found during shoreline cleanup.**

As workcrews are cleaning oiled-shorelines and structures or removing oiled-debris they are likely to encounter dead oiled wildlife. Please handle wildlife carcasses as follows.

A. Dead Oiled Wildlife

All dead oiled wildlife (birds, fish, mammals, turtles) shall be bagged and held for the Wildlife Recovery Unit, and not disposed with other oiled material.

1. **Carefully approach the carcass and confirm that it is dead. If the animal is not dead do not attempt to capture it – contact the Wildlife Recovery Unit immediately for instructions.**

2. **If the animal is confirmed to be dead, place the carcass into a plastic bag – DO NOT mix carcasses together in the same bag – ONE carcass per bag.**

3. **Tie the bag closed and give it to the crew leader.**

4. **The crew leader shall immediately notify the Wildlife Recovery Triage Center at 215-365-1558 to have the carcasses picked up – do not leave bagged oiled carcasses unattended in the field.**

B. Live Oiled Wildlife

Clean up crews shall not attempt to capture live wildlife.

1. **Live oiled wildlife seen during clean up efforts should be reported by the crew leader to the Wildlife Recovery Triage Center at 215-365-1558 and relay the location, time, number and types of oiled wildlife seen.**

If you have any questions, please contact me at 609-214-7895.

Emailed to: **theo.camlin@theobriensgroup.com**
Ed.levine@noaa.gov
Dorthy_Manera@fws.gov
John_Meehan@fws.gov

cc: Documents Unit Leader

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to clean waterfront facilities per facility priority list.		
Decon of vessels as needed, including recreational vessels.		
Continue to enforce safety zone.		
Continue aggressive gross shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact.		
Monitor areas of special interest for possible submerged oil threat (water column monitoring, water intake consortium)		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Unified Command Emphasis:		
• Make Safety a Top Priority. Adhere to SSP and watch out for your fellow responders.		

Approved By

: _____

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Shoreline Cleanup Assessment Team
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	D. Sobieski		714-342-6358	
Environmental Unit	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

SCAT on an as-needed basis. Coordinate with Lyle Trumbull.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	Hot Shot Group
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy for Recovery	J. Tanner		251-454-6397	
Special Recovery Branch Director	M. Ploen		612-963-5222	
Division/Group Supervisor	J. Reidel		610-521-0453	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Hot Shot Group	Manpower: Responder	Responders	6 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
Clean Harbors Environmenta	Vessel	Boat > 21' - Hot Shot	3 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
Clean Harbors Environmenta	Manpower: Responder	Responders - Hot Sh	3 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders - Hot Sh	3 each		Assigned

Assignments

Respond to urgent needs as directed.
Conduct clean-up operations following the guidance in the enclosed titled "Clean-up Recommendations."
Work must follow environmental sensitivity guidelines.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	Hot Shot Group
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Special Recovery Branch Director	M. Ploen		612-963-5222	
Beach Assessment / Hotshot Team Leade	R. Johnson		504-458-2690	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Beach Assessment / Hotshot T	Manpower: Responder	Responders - As Needed	9 each	
Hot Shot Group	Manpower: Responder	Responders	6 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
Clean Harbors Environmenta	Vessel	Boat > 21' - Hot Shot	3 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Hot Shot Group					
Clean Harbors Environmenta	Manpower: Responder	Responders - Hot Sh	3 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders - Hot Sh	3 each		Assigned

Assignments

Respond to reports of tarballs on beach. Evaluate & remove small concentrations. SCAT & plan for expanded shoreline clean-up. SCAT component provided by states.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

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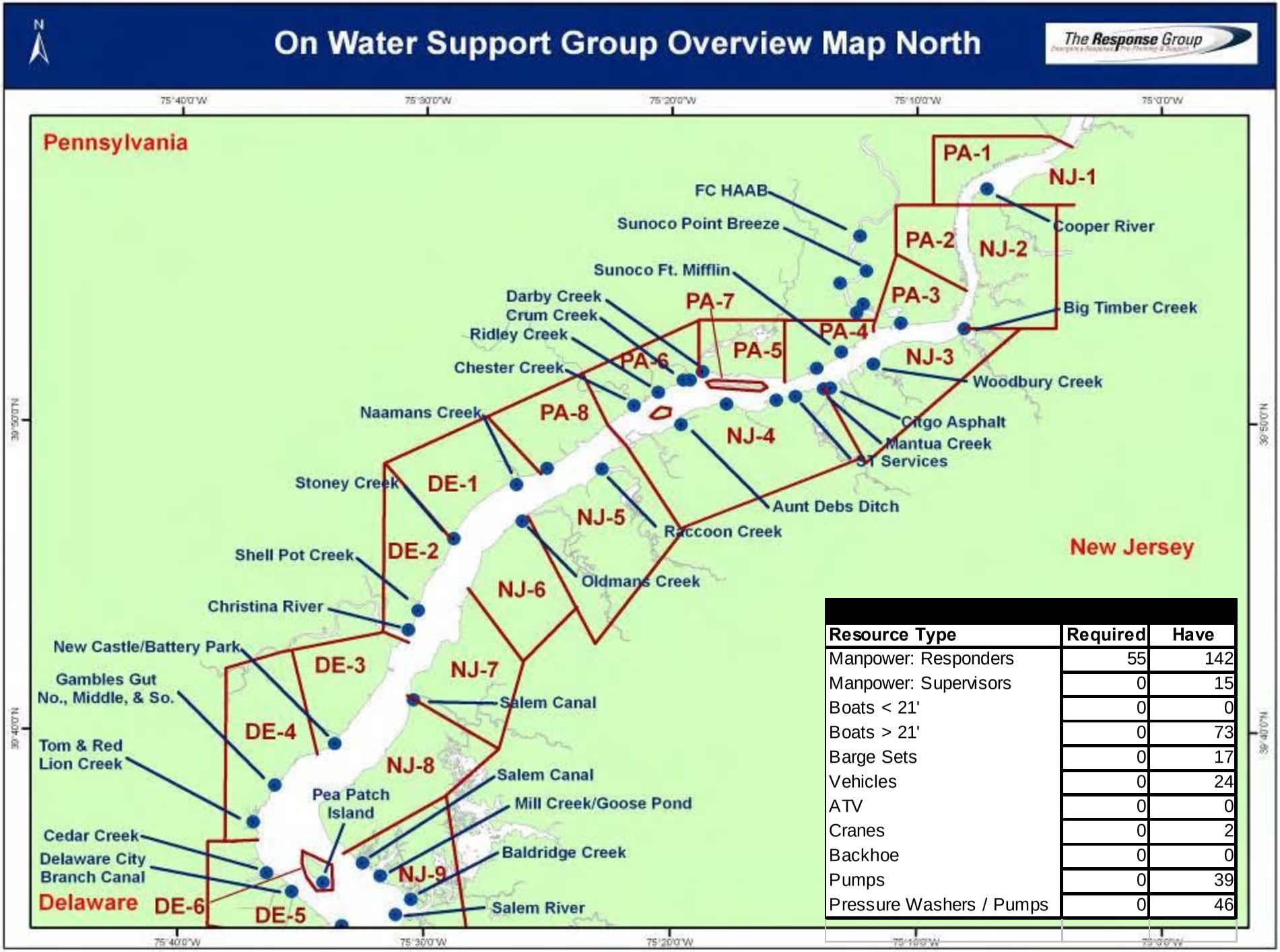
On Water Support Group Overview Map North



Resource Type	Required	Have
Manpower: Responders	55	142
Manpower: Supervisors	0	15
Boats < 21'	0	0
Boats > 21'	0	73
Barge Sets	0	17
Vehicles	0	24
ATV	0	0
Cranes	0	2
Backhoe	0	0
Pumps	0	39
Pressure Washers / Pumps	0	46

On Water Support Group
Overview Map South
The Response Group
N
75°40'0"W
75°30'0"W
75°20'0"W
New Jersey
Delaware
Gambles Gut No., Middle, & So.
Tom & Red Lion Creeks
Cedar Creek
Delaware City Branch Canal
C&D Canal
St. Georges Creek & Opening So.
Port Penn
Augustine Creek
Silver Run
Upper & Lower Break
Appoquinimink River
Blackbird Creek
Rays & Peach House Ditches
Middle Drain
Cedar Swamp/ Collins Beach
Smyrna River
Bakeoven Point
Woodland Beach No.
Guts No. & So. Woodland Beach
Sluice Ditch
Hay Ditch
Leipsic River
Old Creek & Simons River
Mahon River
Little River
Pea Patch Island
Creeks So. of Ft. Mott
Mill Creek/Goose Pond
Baldridge Creek
Salem River
Mill Creek & Opening So.
Back & Straight Ditches
Alloway & Lower alloway Creeks
Hope Creek & 3 Guts No.
Fishing Creek/Shore Ditch
Cat Gut
Unnamed Opening No. of Mad Horse Creek
Mad Horse Creek
Cherry Tree & Lower Deep Creek
Stow Creek
Gut So. of Stow Creek
Jacobs Creek & Opening No.
Openings No. of Cohansey River
Drumbo Creek
Middle Marsh Creek
Sea Breeze - Guts No. & So.
Oyster Gut
DE-4
DE-5
DE-6
DE-7
DE-8
DE-9
DE-10
NJ-8
NJ-9
NJ-10
NJ-11
Legend
Sites
Division Boundaries
0 1.5 3 6 9
Miles

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	On-Water Support Branch
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
On-Water Support Branch Director	M. Bales		985-960-1373	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
On-Water Support Branch	Manpower: Responder	Responders	55 each	
On-Water Support Branch	Manpower: Supervisor	Supervisor	1 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Branch					
North Star/Sea Tow	Barge: Inland	Barge	1 each		Assigned
NRC - National Response Cc	Barge: Inland	Portable Barge Sets	16 each	20 feet	Assigned
Fleet Environmental Services	Boom	Boom	400 feet	18 inch(es)	Assigned
Miller Environmental Group,	Boom	Task Force 1	300 feet		Assigned
Miller Environmental Group,	Boom	Task Force 10	300 feet		Assigned
Miller Environmental Group,	Boom	Task Force 11	200 feet		Assigned
Miller Environmental Group,	Boom	Task Force 2	300 feet		Assigned
Miller Environmental Group,	Boom	Task Force 4 - V/P D	400 feet		Assigned
North Star/Sea Tow	Equipment: Heavy	Crane / Tractor for B	2 each		Assigned
Miller Environmental Group,	Pressure Washers / Wa	Pressure Washer - V	31 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	Pressure Washers	5 each		Assigned
North Star/Sea Tow	Pressure Washers / Wa	Pressure Washers	4 each		Assigned
Oilmop, Inc.	Pressure Washers / Wa	Pressure Washers	2 each		Assigned
Kens Marine Service	Pressure Washers / Wa	Pressure Washers-O	4 each		Assigned
Fleet Environmental Services	Pumps	Pumps	5 each		Assigned
Kens Marine Service	Pumps	Pumps	3 each		Assigned
Miller Environmental Group,	Pumps	Pumps	29 each		Assigned
Oilmop, Inc.	Pumps	Pumps	2 each		Assigned
North Star/Sea Tow	Vehicle	Truck	9 each		Assigned
Miller Environmental Group,	Vehicle	Utility Truck	11 each		Assigned
Fleet Environmental Services	Vehicle	Vehicles	4 each		Assigned
Fleet Environmental Services	Vessel	> 21' Vessel	7 each	22 feet	Assigned
Moran	Vessel	> 21' Vessel	3 each	22 feet	Assigned
SWS Environmental First Re	Vessel	> 21' Vessel	3 each	22 feet	Assigned
USES	Vessel	> 21' Vessel	3 each	22 feet	Assigned
Boomtech	Vessel	Boat > 21'	3 each	22 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat > 21'	12 each	24 feet	Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	On-Water Support Branch
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Branch					
Clean Venture, Inc.	Vessel	Boat > 21'	1 each	22 feet	Assigned
Miller Environmental Group,	Vessel	Boat > 21'	14 each	22 feet	Assigned
North Star/Sea Tow	Vessel	Boat > 21'	13 each	20 feet	Assigned
NRC - National Response Cc	Vessel	Boat > 21'	1 each	24 feet	Assigned
Oilmop, Inc.	Vessel	Boat > 21'	5 each	24 feet	Assigned
Kens Marine Service	Vessel	Boat > 21' - On Wate	5 each	22 feet	Assigned
Accurate Marine Environmen	Vessel	Boat >21'	1 each	22 feet	Assigned
Industrial Cleanup, Inc. - ICI	Vessel	Boat >21'	2 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Branch					
Accurate Marine Environmen	Manpower: Responder	Responder	1 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responder	49 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responder - OWS	30 each		Assigned
Kens Marine Service	Manpower: Responder	Responder (Night)	4 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders	16 each		Assigned
Moran	Manpower: Responder	Responders	7 each		Assigned
North Star/Sea Tow	Manpower: Responder	Responders	24 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Responders - OWS	1 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders - OWS	6 each		Assigned
USES	Manpower: Responder	Responders - OWS	3 each		Assigned
Clean Harbors Environmenta	Manpower: Supervisor	Supervisor	3 each		Assigned
Miller Environmental Group,	Manpower: Supervisor	Supervisor	6 each		Assigned
Fleet Environmental Services	Manpower: Supervisor	Supervisors	1 each		Assigned
Moran	Manpower: Supervisor	Supervisors	1 each		Assigned
North Star/Sea Tow	Manpower: Supervisor	Supervisors	3 each		Assigned
NRC - National Response Cc	Manpower: Supervisor	Supervisors	1 each		Assigned

Assignments

Provide logistical, transportation, hot shot support to all areas as directed.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	On-Water Support Branch
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Vessel / Pier Decon Task Force
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Vessel Decon Group Supervisor	J. Sanial		856-266-3810	
Vessel / Pier Decon Task Force Leader	M. Bales		985-960-1373	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel / Pier Decon Task Force	Manpower: Responder	Responders	115 each	
Vessel / Pier Decon Task Force	Manpower: Supervisor	Task Force Supervisors	14 each	

Assignments

Clean piers and vessels as directed. Vessels have priority.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

- Conduct decon ops in accordance with the Cleanup Priority List as environmental conditions permit.

14 Task Forces Total (see attachment immediately following this 204):

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

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Decon Group Assignments

18JAN05

North Area

Pier 12; Pier 3-5	PA	TF 4
Penn's Landing	PA	TF 7
Pier 78	PA	TF 11
Packer Avenue; Pier 12	PA	TF 10

Central Area

Navy Base; Commissary Sea Wall	PA	TF 5, 6
Navy Base; America (Debris)	PA	TF 3
Moran Tugs and Piers (Contact Maurice Furlong (215) 755-4700)	PA	TF 1
Support NJ 3	NJ	TF 8
Cruise Ship Pier	PA	TF 9, 14
Valero Docks	NJ	TF 13
Dupont Docks	NJ	TF 2
Marcus Hook (working with PA8)	PA	TF 12

Decon Vane Brothers Tugs and Barges at Pier 124 (Clean Venture)

Mobilization Location

TF 4, 7, 10, 11	Penn's Landing
TF 2, 8, 12, 13	Lagoon
TF 1, 3, 5, 6, 9, 14	Navy Base

Information for 01/18/05

Sunrise 0719	**Tides North (Philadelphia)**	**Tides Central (Woodbury Creek)**	**Tides South (Marcus Hook)**
Sunset 1703	0235L	0212 L	0119 L
	0818 H	0759 H	0649 H
	1510L	1447 L	1354 L
	2038 H	2019 H	1909 H

Future Plans

18 to 25 January 2005

Naval Business Center

Navy Base

Support PA 8, NJ 3

Port Tugs and facilities

Pier 3, 5 Marina

Penn’s Landing

Name of Resource	State -	Zone	Scored Ranking	Gross Decon
Salem Nuclear Power Generating Station	NJ -	10	6.36	None Required
Sunco - Eagle Point Facility	NJ -	3	4.6	100%
Sunco Inc. - Marcus Hook Refinery	PA -	8	4.6	100%
Sunco Logistics Ft. Mifflin Complex	PA -	4	4.6	100%
Valero Refinery & Marine Terminal (Paulsborough, NJ)	NJ -	3	4.6	100%
Conoco Phillips - Trainer Refinery	PA -	8	4.6	None Required
Greenwich Terminals LLC	PA -	3	4.6	100%
Sunco Logistics Hog Island	PA -	4	4.6	85%
Crowley Liner Services	NJ -	1	4.6	100%
Chiquita Fresh North America	DE -	2	4.28	None Required
Diamond State Port Corp	DE -	3	4.28	None Required
Gloucester Terminals LLC	NJ -	2	4.2	100%
Penn Terminals Inc. - Eddystone (PA)	PA -	6	4.2	100%
Sunco Inc. (R&M), Philadelphia Refinery (Girad Pt. & Pt. Breeze)	PA -	3 S	4.04	100%
Del Monte Fresh Produce - Port of Camden	NJ -	2	4.04	100%
CITGO Asphalt Refining Company	NJ -	3	4.04	100% - 100%
Broadway Terminal (SJPC)	NJ -	2	4.04	100%
Premcor Refinery	DE -	5	3.96	None Required
Dole Fresh Fruit Company	DE -	2	3.72	None Required
Amerada Hess Pensauken	NJ -	1	3.64	None Required
Delaware River Stevedoring, Inc. (Tioga)	PA -	1	3.64	100%
Philadelphia Regional Port Authority, Pier 84S; SS United States	PA -	2	3.64	65%
Westway Terminal Company - Philadelphia Terminal	PA -	1	3.64	100%
G-P Gypsum Corp. - Camden Mill	NJ -	2	3.48	100%
Beckett Street Terminal	NJ -	2	3.48	100%
CitrosSuco North America	DE -	2	3.32	None Required
Exelon - Eddystone Station	PA -	6	3.08	100%
ST Services Philadelpahia (PA)	PA -	3 S	3.08	None Required
Horizon Stevedoring Inc., Pier 82	PA -	2	3.08	100%
ACOE Facility	PA -	4	3.08	100%
Novolog	PA -	N of 1	2.84	None Required
Kinder Morgan Liquid Terminals	PA -	1	2.76	100%
Sunco Chemicals - Frankford Plant	PA -	N of 1	2.76	None Required
National Gypsum	NJ -	N of 1	2.76	None Required
Oceanport Industries	DE -	1	2.76	None Required
Excelon-Croyden Generating Station	PA -	N of 1	2.6	None Required
ST Services Paulsboro (NJ)	NJ -	4	2.52	100%
Amerada Hess Philadelphia	PA -	4	2.52	None Required
Philadelphia Naval Business Center, Port of Phil.and Camden Terminal (Cruise Terminal)	PA -	3	2.52	60%
Philadelphia Regional Port Authority, Pier 38-40	PA -	2	2.52	100%
Philadelphia Regional Port Authority, Pier 78-80	PA -	2	2.52	100%
Riverside Construction	PA -	N of 1	2.52	None Required
Trigen Energy - DESS (Philadelphia)	PA -	3 S	2.36	None Required
Interstate Piperline and Storage	NJ -	N of 1	2.36	None Required
River Associates, Inc.	PA -	3	2.2	100%
Delaware Terminal (port of Wilmington)	DE -	1	2.2	None Required
SPIRIT OF PHILADELPHIA	PA -	2	2.12	40%
LIBERTY BELL	PA -	2	2.12	100%
Connectiv Edgemoor	DE -	2	2.04	None Required
Kvaerner Philadelphia Shipyard	PA -	3	1.96	100%
PQ Corporation (PA)	PA -	6	1.96	None Required
F.C. Haab Oil (Schuykill Terminal)	PA -	3 S	1.96	None Required
KOCH Materials Co.	NJ -	2	1.96	100%
Riverlink Camden Ferry Facility (DRPA)	NJ -	2	1.96	65%
Mid-Atlantic Shipping and Stevedoring	NJ -	9	1.64	None Required
MOSHULU	PA -	2	1.56	100%
USS NEW JERSEY	NJ -	2	1.56	100%
OLYMPIA	PA -	2	1.56	100%
Penns Landing	PA -	2	1.56	100%
Wiggins Park	NJ -	2	1.56	100%
Tweeter Center	NJ -	2	1.56	100%
The Lagoon	PA -	5	1.56	5%
Pier 122	PA -	3	1.56	100%
BECUNA	PA -	2	1.56	100%
Duck Island Terminal	NJ -	N of 1	1.32	None Required
Groes Waste Management	PA -	N of 1	1.32	None Required
Meenan Oil	PA -	N of 1	1.24	None Required
Dupont Edgewater	DE -	2	1.24	None Required
Dupont Deepwater	NJ -	7	0.92	None Required
MSO (Including vessels)	PA -	2	0	100%
Pier 124	PA -	3	0	60%
Navy Base Ships	PA -	3	0	55%
Gazella	PA -	2	0	50%
Tugs and Barges at Navy Business Center	PA -	3	0	60%

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Recreational Boat Task Force
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Vessel Decon Group Leader	J. Sanial		856-266-3810	
Rec. Boat Decon Task Force Supervisor	R. Johnson		504-458-2690	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Recreational Boat Task Force	Manpower: Responder	Responders	15 each	
Recreational Boat Task Force	Manpower: Supervisor	Supervisor	1 each	

Assignments

Recreational vessel cleaning program at Lagoon and local marina.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Wildlife Recovery Group
Period: Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	D. Sobieski		714-342-6358	
Environmental Unit Leader	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Continue to recover & rehabilitate any impacted wildlife. Provide technical assistance on any wildlife-related issues.

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Report endangered species observations to the Group Supervisor.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Monitoring Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Chief for Port Ops	B. Jones		215-778-4533	
Division/Group Supervisor	J. Kapsimalis		609-351-7145	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Monitoring Group	Federal Monitor	NSF / MSO Monitors	8 each	
Monitoring Group	Manpower: Supervisor	USCG Supervisor	1 each	
Monitoring Group	State Monitor	State Monitors	3 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Monitoring Group					
USCG	Vehicle	Vehicle - G/V	1 each		Assigned
USCG	Vehicle	Vehicle - Rental	5 each		Assigned
New Jersey	Vehicle	Vehicle - State Vehic	3 each		Assigned
Pennsylvania	Vehicle	Vehicle - State Vehic	4 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Monitoring Group					
USCG	Manpower: Supervisor	MSO Personnel	4 each		Assigned
USCG	Manpower: Supervisor	NSF Team Member	6 each		Assigned
New Jersey	Manpower: Supervisor	State DEP - New Jer	3 each		Assigned
Pennsylvania	Manpower: Supervisor	State DEP - Pennsyl	4 each		Assigned
USCG	Manpower: Supervisor	Supervisors	1 each		Assigned

Assignments

Conduct clean-up monitoring at assigned divisions. Ensure safe and effective recovery operations. Document resource use and availability, ensure adequacy of clean-up efforts and identify and correct safety issues. Evaluate response methods needed for oil removal and make recommendations to Supervisor. Report findings to Ops Representative (609-351-8525). Correct gross safety violations immediately. Report violations to Safety Officer (see numbers above).

Special Environmental Considerations

Ensure no wetland vegetation is cut without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit (267-765-3446/3448/3447).

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Monitoring Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan. Near water operations, appropriate PPE / Mustang Suits must be worn.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs (267-765-3446/3448/3447).

State Representatives should report resource status to Situation Unit according to the above schedule and/or as the situation warrants.

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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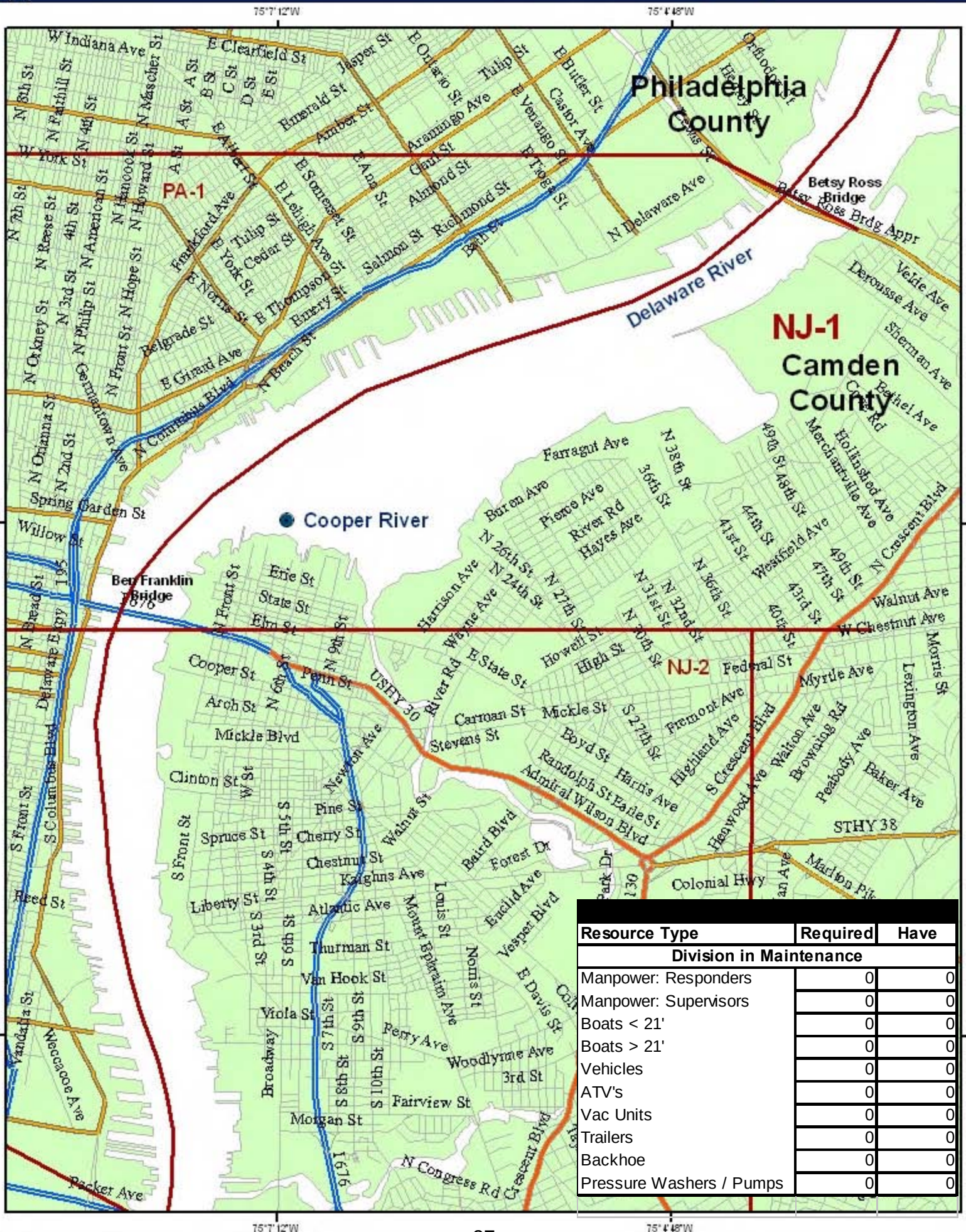
NJ-1 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Maintenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Vehicles	0	0
ATV's	0	0
Vac Units	0	0
Trailers	0	0
Backhoe	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-1 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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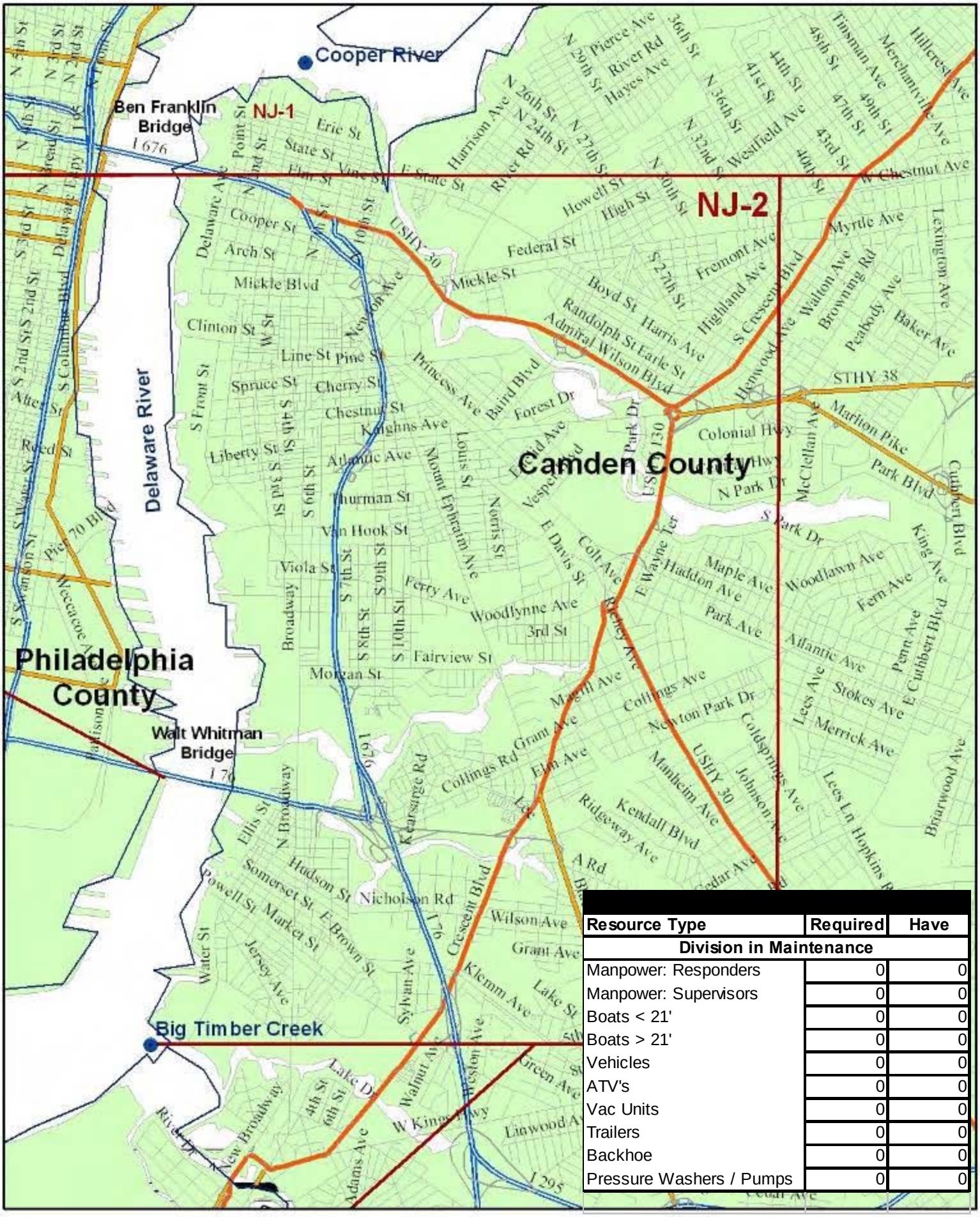
NJ-2 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Maintenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Vehicles	0	0
ATV's	0	0
Vac Units	0	0
Trailers	0	0
Backhoe	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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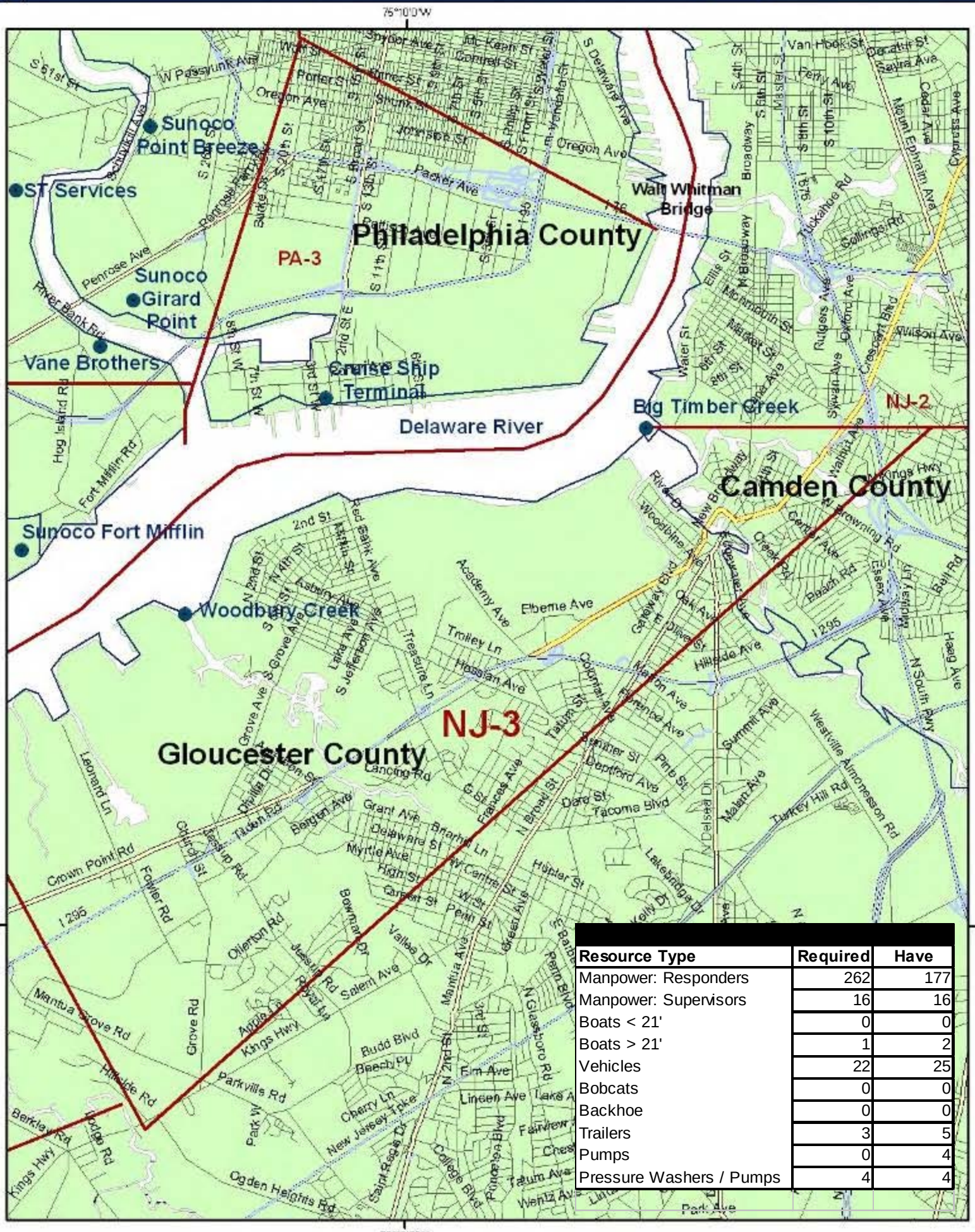
NJ-3 Division Overview Map

The Response Group


75°10'0"W
Sunoco Point Breeze
ST Services
Sunoco Girard Point
Vane Brothers
Cruise Ship Terminal
Sunoco Fort Mifflin
Woodbury Creek
Walt Whitman Bridge
Philadelphia County
PA-3
Delaware River
Big Timber Creek
NJ-2
Camden County
NJ-3
Gloucester County
Penrose Ave
Oregon Ave
Packer Ave
Broadway
Crown Point Rd
Kings Hwy
Delsea Dr
Tacoma Blvd
Lancing Rd
Academy Ave
Elberne Ave
Trolley Ln
Hessian Ave
Mantua Grove Rd
Grove Rd
Parkvilles Rd
Hillside Rd
Berkley Rd
Ogden Heights Rd
New Jersey Turke
Budd Blvd
Beechy Pl
Cherry Ln
Elm Ave
Linden Ave
Salem Ave
Olivetun Rd
Tatum Ave
Wentz Ave
Park Ave
Turkey Hill Rd
Westville Almonesson Rd
Summit Ave
Malan Ave
Hillside Ave
Gateway Blvd
Oak Ave
Essex Ave
Beach Rd
Bell Rd
Haag Ave
N South Hwy
Browning Rd
Collings Rd
Mount Ephraim Ave
Cedar Ave
Van Hook St
Ferry Ave
Walnut Ave
Rutgers Ave
Oxford Ave
Crescent Blvd
Wilson Ave
Mechanic St
Monmouth St
Ellis St
Water St
Chestnut St
Market St
Cooper St
Federal St
Broadway
Delaware Ave
Front St
Columbus Blvd
Packer Ave
Oregon Ave
Porter St
Snyder Ave
Morris St
Shunk St
Johnson St
Penrose Ave
Girard Ave
Passyunk Ave
Schuylkill Ave
Penrose Ferry Rd
Bridge St
Fort Mifflin Rd
Hog Island Rd
River Bank Rd
Lenard Ln
Crown Point Rd
Tower Rd
Olivetun Rd
Grove Rd
Mantua Grove Rd
Hillside Rd
Berkley Rd
Kings Hwy
Ogden Heights Rd
Parkvilles Rd
Park W
Cherry Ln
New Jersey Turke
Budd Blvd
Beechy Pl

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	P. Parker		270-559-2735	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Manpower: Responder	Responders	262 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Fleet Environmental Services	Pressure Washers / Wa	Pressure Washers	4 each		Assigned
Fleet Environmental Services	Pumps	Pumps - NJ-3	4 each		Assigned
Accurate Marine Environmen	Trailer	Oil Response Trailer	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Trailer	Oil Spill Response Tı	1 each	24 feet	Assigned
Fleet Environmental Services	Trailer	Trailers - NJ-3	3 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1 Ton stake truck - N	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	15 passenger van - N	2 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	Pickup - NJ-3	1 each		Assigned
Fleet Environmental Services	Vehicle	Vehicle - NJ-3	14 each		Assigned
Accurate Marine Environmen	Vehicle	Vehicles - NJ-3	7 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Accurate Marine Environmen	Manpower: Responder	Responders - NJ-3	40 each		Assigned
Fleet Environmental Services	Manpower: Responder	Responders - NJ-3	121 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Responders - NJ-3	27 each		Assigned
Accurate Marine Environmen	Manpower: Supervisor	Supervisors	4 each		Assigned
Fleet Environmental Services	Manpower: Supervisor	Supervisors	9 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Supervisor	Supervisors	3 each		Assigned
USCG	Manpower: Supervisor	USCG Monitors - NJ·	3 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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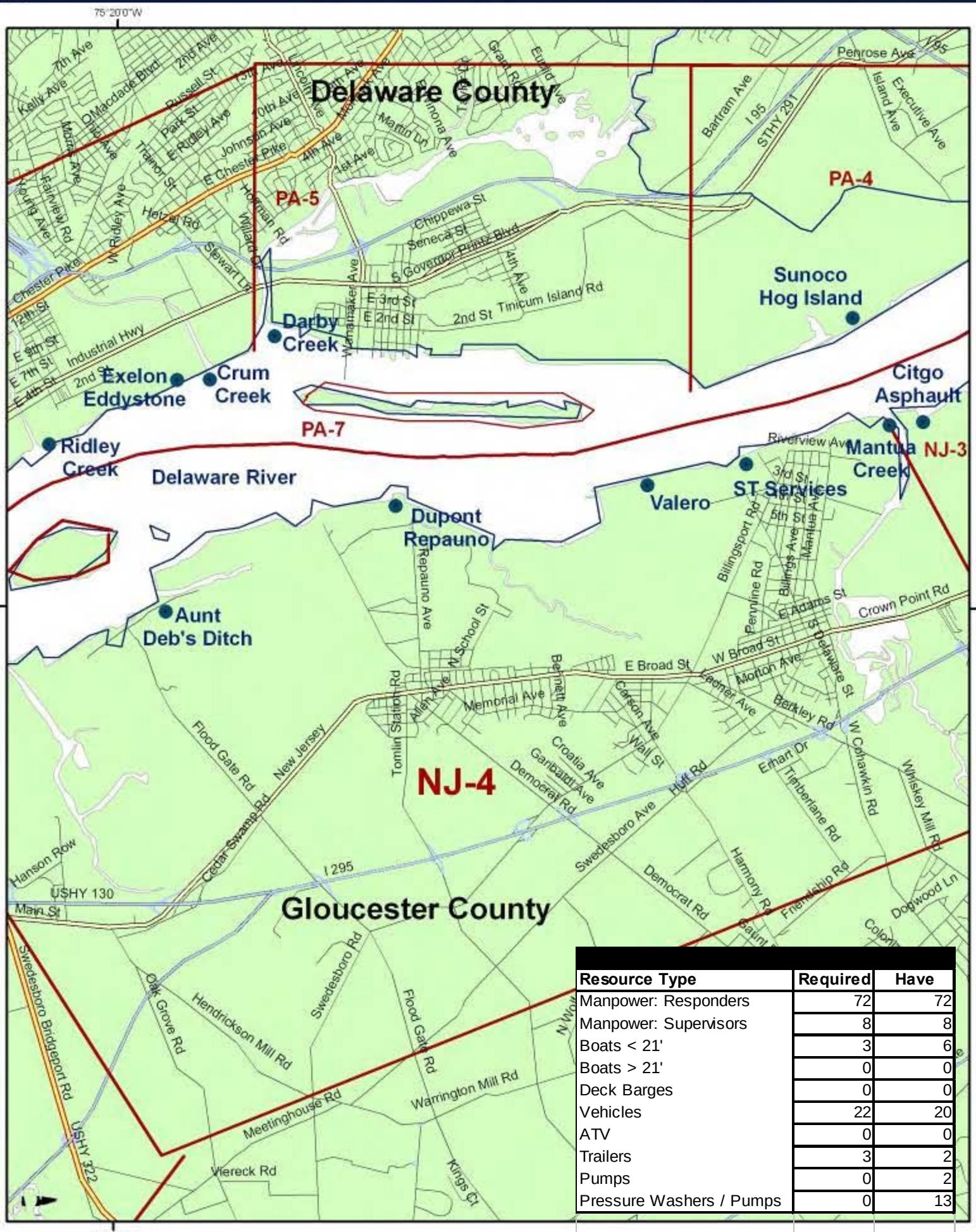
NJ-4 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	72	72
Manpower: Supervisors	8	8
Boats < 21'	3	6
Boats > 21'	0	0
Deck Barges	0	0
Vehicles	22	20
ATV	0	0
Trailers	3	2
Pumps	0	2
Pressure Washers / Pumps	0	13

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	J. Johnson		267-228-8978	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-4 Division	Manpower: Responder	Responders	72 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
Clean Harbors Environmenta	Pressure Washers / Wa	Pressure Washers	8 each		Assigned
Trade Winds	Pressure Washers / Wa	Pressure Washers	4 each		Assigned
Environmental Restoration	Pressure Washers / Wa	Pressure Washers - I	1 each		Assigned
Trade Winds	Pumps	Pumps	2 each		Assigned
Environmental Restoration	Trailer	Trailer	1		(Unknown)
Trade Winds	Trailer	Trailer- NJ-4	1 each		Assigned
Miller Environmental Group,	Vehicle	Pick Up Truck - NJ-4	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	11 each		Assigned
Trade Winds	Vehicle	Vehicle	3 each		Assigned
Environmental Restoration	Vehicle	Vehicles- NJ-4	5 each		Assigned
Environmental Restoration	Vessel	<21 Ft	2 each	20 feet	Assigned
Trade Winds	Vessel	Boat < 21'	4 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
Trade Winds	Manpower: Responder	Responders	11 each		Assigned
Environmental Restoration	Manpower: Responder	Responders - NJ-4	10 each		Assigned
Miller Environmental Service	Manpower: Responder	Responders - NJ-4	4 each		Assigned
Clean Harbors COOP	Manpower: Responder	Responders- NJ-4	47 each		Assigned
Environmental Restoration	Manpower: Supervisor	Supervisor	1 each		Assigned
Miller Environmental Group,	Manpower: Supervisor	Supervisor	1 each		Assigned
Trade Winds	Manpower: Supervisor	Supervisor	1 each		Assigned
Clean Harbors COOP	Manpower: Supervisor	Supervisors	5 each		Assigned

Assignments

Shoreline cleanup.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No wetland vegetation should be cut without State approval. Report oiled wildlife to Situation Unit. Do not walk through or work in Mud Flats.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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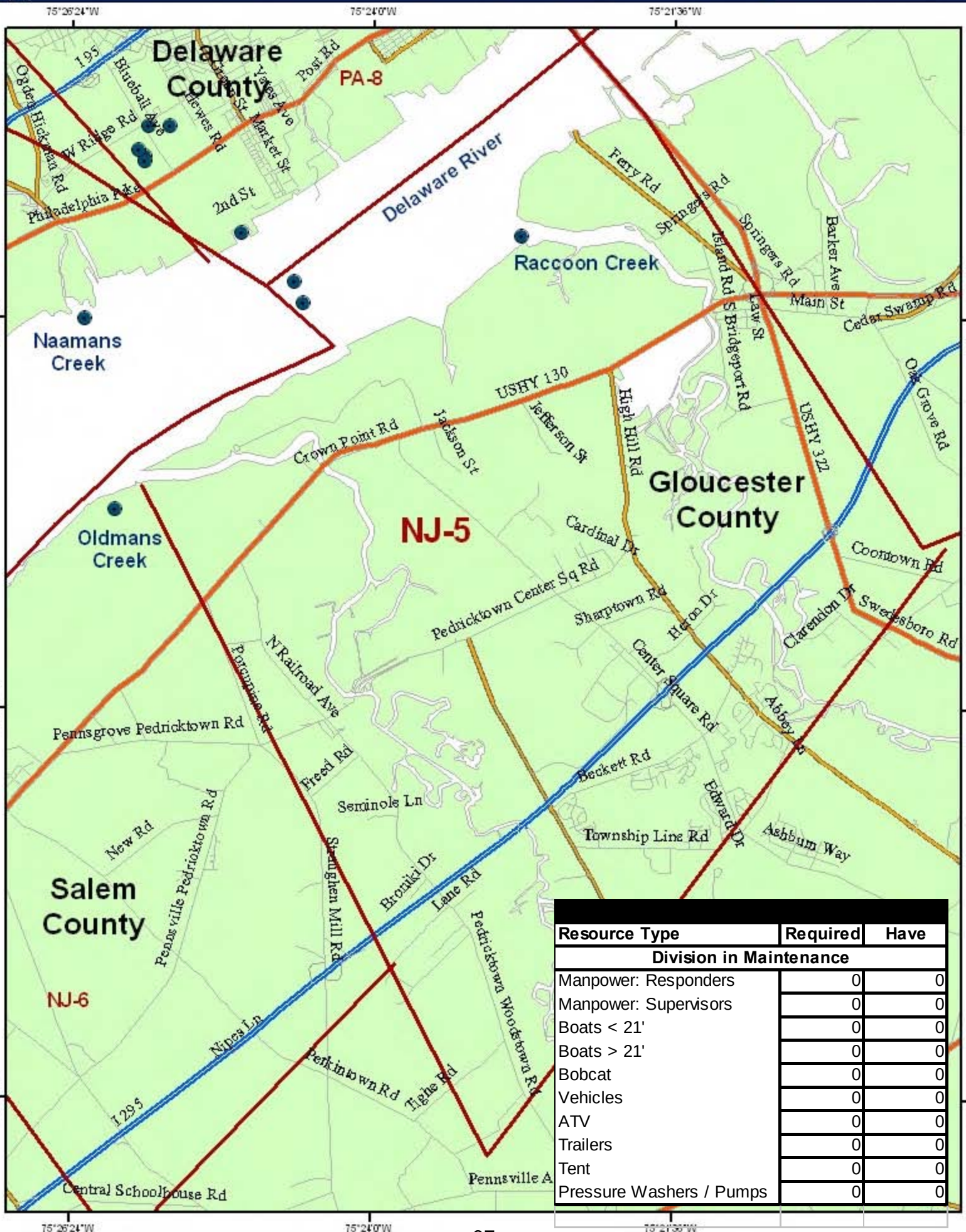
NJ-5 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Maintenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Bobcat	0	0
Vehicles	0	0
ATV	0	0
Trailers	0	0
Tent	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	NJ-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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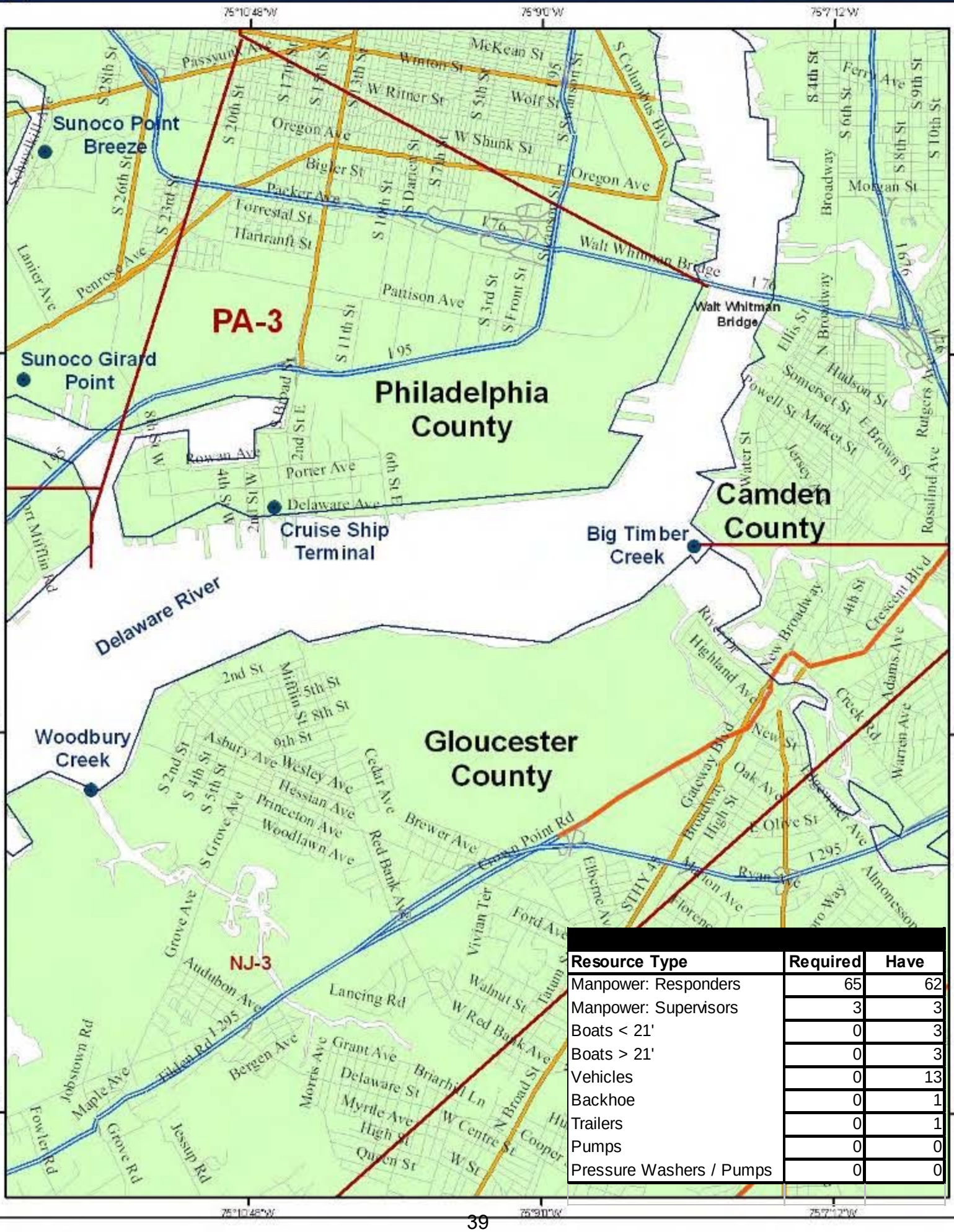
PA-3 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	65	62
Manpower: Supervisors	3	3
Boats < 21'	0	3
Boats > 21'	0	3
Vehicles	0	13
Backhoe	0	1
Trailers	0	1
Pumps	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	D. Marsh		713-569-2060	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-3 Division	Manpower: Responder	Responders	65 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-3 Division					
Clean Harbors Environmenta	Equipment: Heavy	Backhoe	1 each		Assigned
Optech	Trailer	Trailer	1 each		Assigned
Moran	Vehicle	Truck	3 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	5 each		Assigned
Optech	Vehicle	Utilty Truck	5 each		Assigned
Moran	Vessel	Boat < 21'	1 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat < 21' - PA-3	2 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-3 Division					
Moran	Manpower: Responder	Responders	20 each		Assigned
Optech	Manpower: Responder	Responders	19 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders - PA-3	24 each		Assigned
Clean Harbors Environmenta	Manpower: Supervisor	Supervisor	1 each		Assigned
Moran	Manpower: Supervisor	Supervisor	1 each		Assigned
Optech	Manpower: Supervisor	Supervisor	1 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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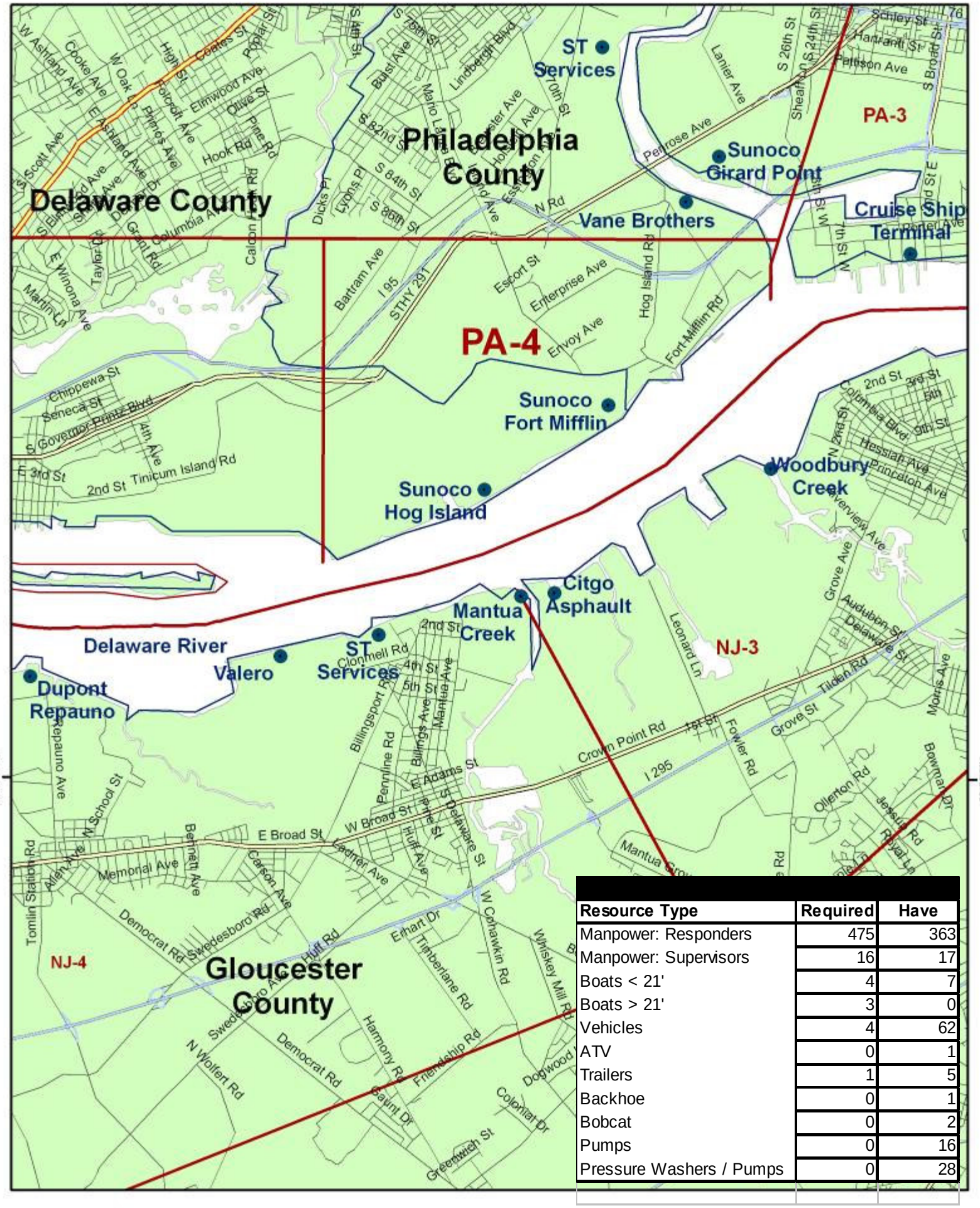
PA-4 Division Overview Map



Resource Type	Required	Have
Manpower: Responders	475	363
Manpower: Supervisors	16	17
Boats < 21'	4	7
Boats > 21'	3	0
Vehicles	4	62
ATV	0	1
Trailers	1	5
Backhoe	0	1
Bobcat	0	2
Pumps	0	16
Pressure Washers / Pumps	0	28

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	J. Copeland		TBD	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-4 Division	Manpower: Responder	Responders	475 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
USES	Equipment: Heavy	Backhoe - PA-4	1 each		Assigned
USES	Equipment: Heavy	Bobcat - PA-4	1 each		Assigned
Clean Harbors Environmenta	Pressure Washers / Wa	Hotsey	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	Pressure Washer	6 each		Assigned
Boomtech	Pressure Washers / Wa	Pressure Washers	7 each		Assigned
Kens Marine Service	Pressure Washers / Wa	Pressure Washers	10 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	Pressure Washers	6 each		Assigned
Boomtech	Pumps	Pumps	4 each		Assigned
Clean Venture, Inc.	Pumps	Pumps	3 each		Assigned
Kens Marine Service	Pumps	Pumps	4 each		Assigned
SWS Environmental First Re	Pumps	Pumps	5 each		Assigned
Clean Venture, Inc.	Trailer	Trailer - PA-4	2 each		Assigned
SWS Environmental First Re	Trailer	Trailer - PA-4	1 each		Assigned
Clean Venture, Inc.	Vehicle	ATV	1 each		Assigned
USES	Vehicle	ATV - PA-4	4 each		Assigned
T&T Marine Salvage, Inc.	Vehicle	Vehicle - Bus	1 each		Assigned
T&T Marine Salvage, Inc.	Vehicle	Vehicle-PA-4	1 each		Assigned
Boomtech	Vehicle	Vehicles	4 each		Assigned
Clean Venture, Inc.	Vehicle	Vehicles	3 each		Assigned
Environmental Restoration	Vehicle	Vehicles	9 each		Assigned
USES	Vehicle	Vehicles	22 each		Assigned
Boomtech	Vehicle	Vehicles - Box Truck	1 each		Assigned
Kens Marine Service	Vehicle	Vehicles - PA-4	8 each		Assigned
SWS Environmental First Re	Vehicle	Vehicles - PA-4	14 each		Assigned
Boomtech	Vessel	Boat < 21'	2 each	20 feet	Assigned
Clean Venture, Inc.	Vessel	Boat < 21'	1 each	20 feet	Assigned
Kens Marine Service	Vessel	Boat < 21' - PA-4	5 each	20 feet	Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
Boomtech	Manpower: Responder	Responders	14 each		Assigned
T&T Marine Salvage, Inc.	Manpower: Responder	Responders	23 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Responders - PA-4	43 each		Assigned
Kens Marine Service	Manpower: Responder	Responders - PA-4	22 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders - PA-4	101 each		Assigned
USES	Manpower: Responder	Responders - PA-4	131 each		Assigned
Environmental Restoration	Manpower: Responder	Responders-PA-4	32 each		Assigned
Boomtech	Manpower: Supervisor	Supervisor	1 each		Assigned
Clean Venture, Inc.	Manpower: Supervisor	Supervisor	2 each		Assigned
Environmental Restoration	Manpower: Supervisor	Supervisor	2 each		Assigned
Kens Marine Service	Manpower: Supervisor	Supervisors	3 each		Assigned
SWS Environmental First Re	Manpower: Supervisor	Supervisors	3 each		Assigned
T&T Marine Salvage, Inc.	Manpower: Supervisor	Supervisors	2 each		Assigned
USES	Manpower: Supervisor	Supervisors	4 each		Assigned
USCG	Manpower: Supervisor	USCG Monitors - PA	2 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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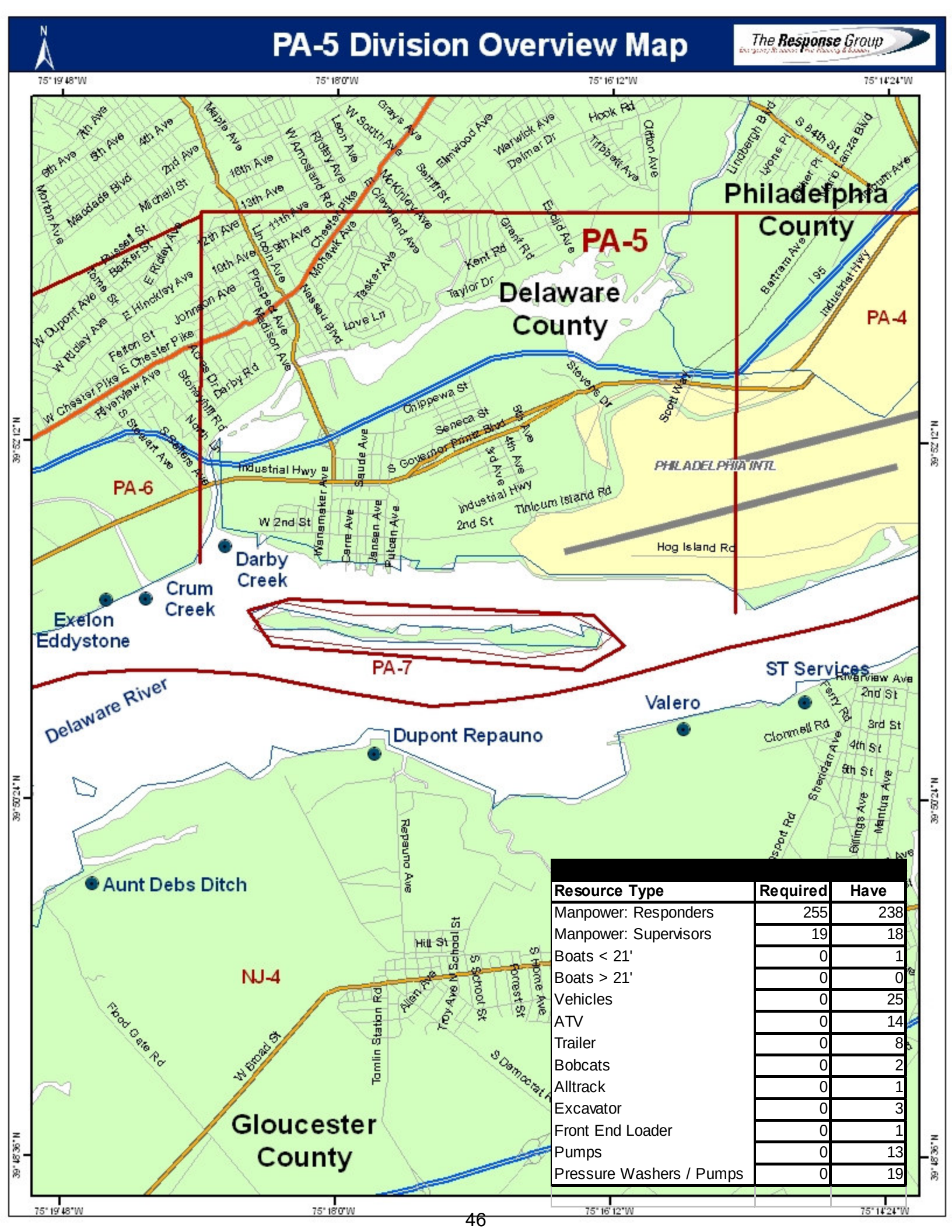
PA-5 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	255	238
Manpower: Supervisors	19	18
Boats < 21'	0	1
Boats > 21'	0	0
Vehicles	0	25
ATV	0	14
Trailer	0	8
Bobcats	0	2
Alltrack	0	1
Excavator	0	3
Front End Loader	0	1
Pumps	0	13
Pressure Washers / Pumps	0	19

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	M. Jenkins		985-768-2328	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-5 Division	Manpower: Responder	Responders	255 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
Miller Environmental Group, I	Equipment: Heavy	AllTrack - PA-5	1 each		Assigned
Miller Environmental Group, I	Equipment: Heavy	Bobcat - PA-5	2 each		Assigned
Miller Environmental Group, I	Equipment: Heavy	Excavator	2 each		Assigned
TBD	Equipment: Heavy	Excavator	1 each		Assigned
TBD	Equipment: Heavy	Front End Loader	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	Pressure Washers	3 each		Assigned
Miller Environmental Group,	Pressure Washers / Wa	Pressure Washers	6 each		Assigned
Global Remediation Services	Pressure Washers / Wa	Pressure Washers - I	5 each		Assigned
Moran	Pressure Washers / Wa	Pressure Washers - I	10 each		Assigned
Miller Environmental Group,	Pumps	Pumps	6 each		Assigned
Global Remediation Services	Pumps	Pumps - PA-5	2 each		Assigned
Moran	Pumps	Pumps - PA-5	5 each		Assigned
Clean Harbors Environmenta	Pumps	Pumps- PA-5	3 each		Assigned
Global Remediation Services	Trailer	Trailer	1 each		Assigned
Moran	Trailer	Trailer	2 each		Assigned
Clean Harbors Environmenta	Trailer	Trailer - PA-5	1 each		Assigned
Miller Environmental Group, I	Trailer	Trailers - PA-5	4 each		Assigned
Miller Environmental Group, I	Vehicle	ATV	11 each		Assigned
Moran	Vehicle	ATV	2 each		Assigned
NRC - National Response Cc	Vehicle	ATV - PA-5	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks - PA-5	9 each		Assigned
Miller Environmental Group, I	Vehicle	Utility Truck - PA-5	7 each		Assigned
TBD	Vehicle	Vehicle	1 each		Assigned
Global Remediation Services	Vehicle	Vehicle - PA-5	3 each		Assigned
Moran	Vehicle	Vehicle - PA-5	7 each		Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
TBD	Manpower: Responder	Responders	3 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders - PA-5	36 each		Assigned
Global Remediation Services	Manpower: Responder	Responders - PA-5	5 each		Assigned
Miller Environmental Group, I	Manpower: Responder	Responders - PA-5	98 each		Assigned
Moran	Manpower: Responder	Responders - PA-5	98 each		Assigned
Clean Harbors Environmenta	Manpower: Supervisor	Supervisors	2 each		Assigned
Global Remediation Services	Manpower: Supervisor	Supervisors	1 each		Assigned
Miller Environmental Group, I	Manpower: Supervisor	Supervisors	4 each		Assigned
Moran	Manpower: Supervisor	Supervisors - PA-5	11 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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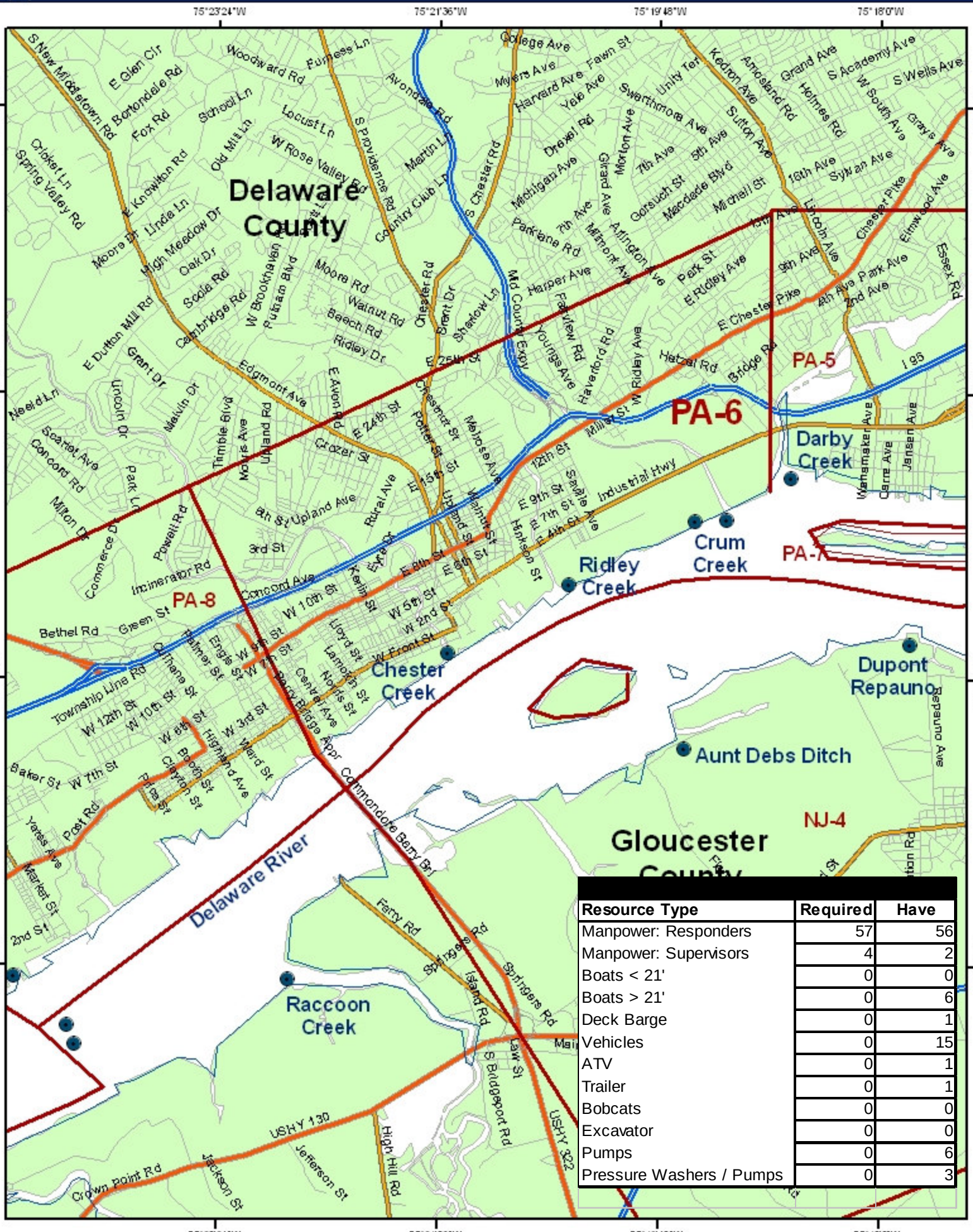
PA-6 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	57	56
Manpower: Supervisors	4	2
Boats < 21'	0	0
Boats > 21'	0	6
Deck Barge	0	1
Vehicles	0	15
ATV	0	1
Trailer	0	1
Bobcats	0	0
Excavator	0	0
Pumps	0	6
Pressure Washers / Pumps	0	3

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-6 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	J. Topic		952-201-1002	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-6 Division	Manpower: Responder	Responders	57 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-6 Division					
North Star/Sea Tow	Barge: Inland	Deck Barge	1 each		Assigned
North Star/Sea Tow	Pressure Washers / Wa	Pressure Washers - '	3 each		Assigned
North Star/Sea Tow	Pumps	Pumps - PA-6	2 each		Assigned
Oilmop, Inc.	Pumps	Pumps - PA-6	4 each		Assigned
Oilmop, Inc.	Trailer	Trailer - PA-6	1 each		Assigned
Oilmop, Inc.	Vehicle	ATV	1 each		Assigned
Oilmop, Inc.	Vehicle	Vehicles - PA-6	15 each		Assigned
Oilmop, Inc.	Vessel	Boat > 21'	4 each	24 feet	Assigned
North Star/Sea Tow	Vessel	Boat > 21' - PA-6	2 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-6 Division					
Oilmop, Inc.	Manpower: Responder	Responders	50 each		Assigned
North Star/Sea Tow	Manpower: Responder	Responders - PA-6	6 each		Assigned
Oilmop, Inc.	Manpower: Supervisor	Supervisors	2 each		Assigned
USCG	Manpower: Supervisor	USCG Monitors - PA	2 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-6 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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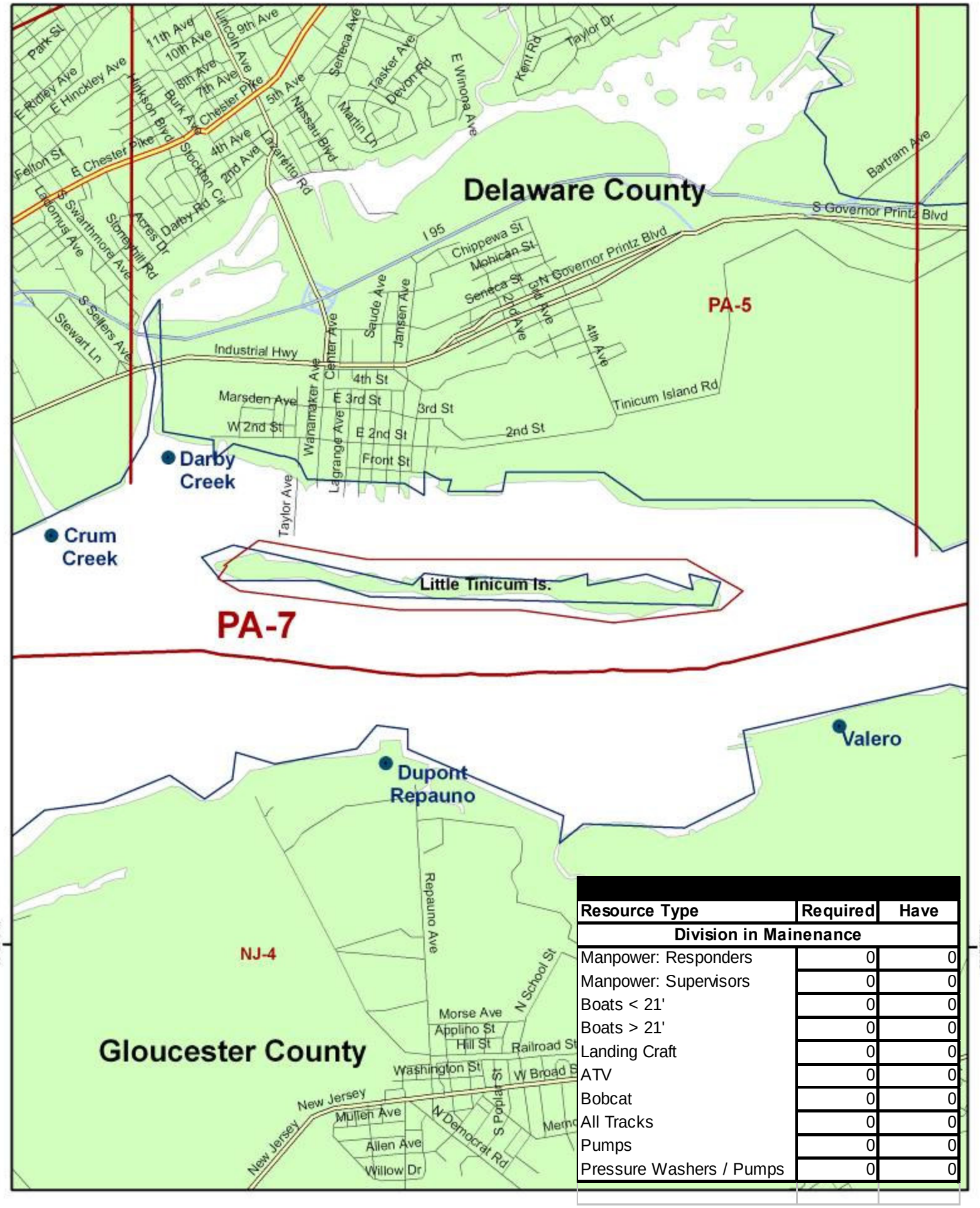
PA-7 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Mainenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Landing Craft	0	0
ATV	0	0
Bobcat	0	0
All Tracks	0	0
Pumps	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	S. Smith		504-382-8351	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-7 Division	Manpower: Responder	Responders	7 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-7 Division					
Miller Environmental Group, I	Equipment: Heavy	AllTrack - PA-7	2 each		Assigned
Miller Environmental Group, I	Equipment: Heavy	Bobcat - PA-7	2 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-7 Division					
Miller Environmental Group, I	Manpower: Responder	Responders - PA-7	6 each		Assigned
NRC - National Response Cc	Manpower: Supervisor	Supervisor - PA-7	1 each		Assigned

Assignments

Provide maintenance. Develop response alternatives for the un-named Island at the mouth of Schuykhill River.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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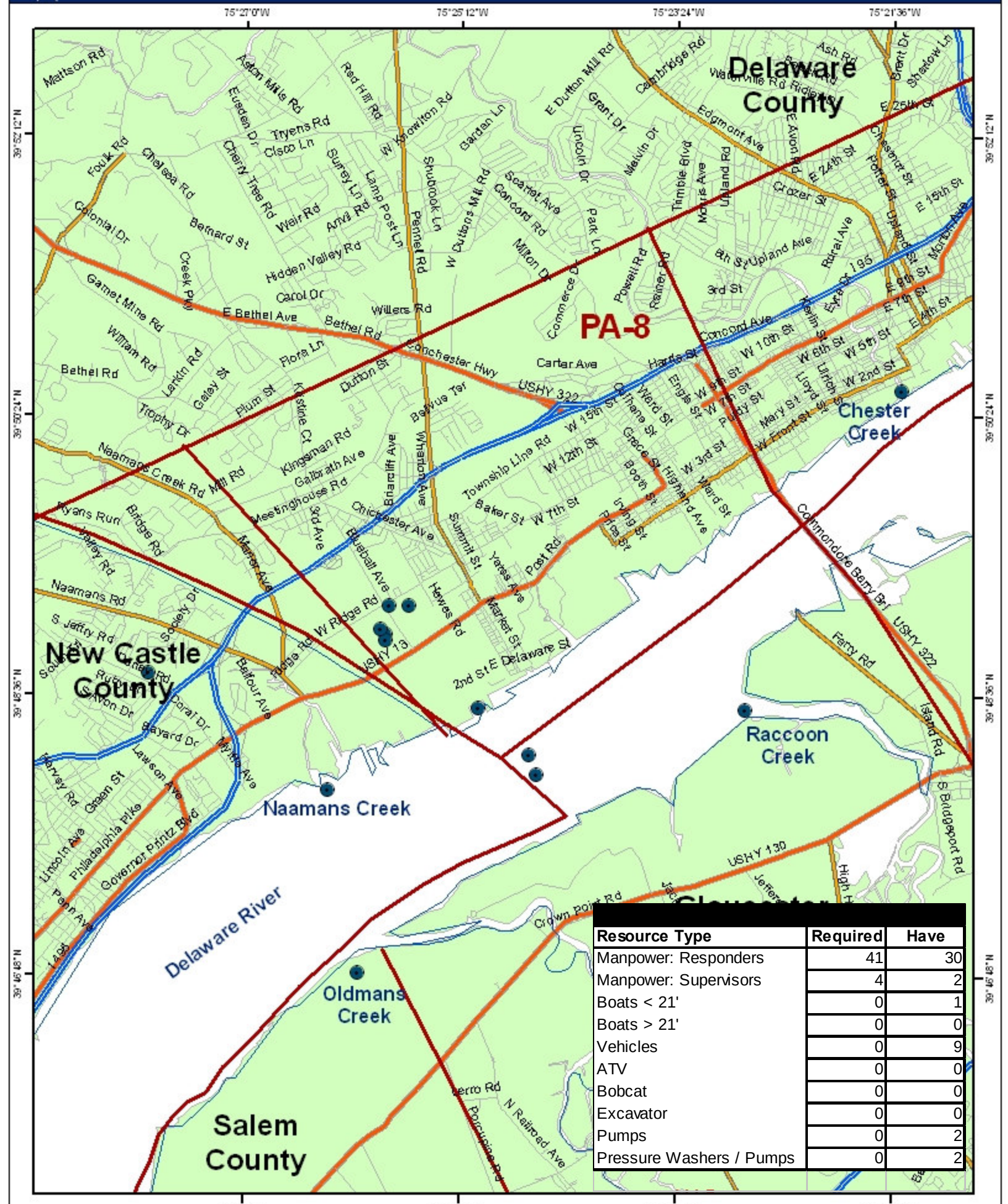
PA-8 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	41	30
Manpower: Supervisors	4	2
Boats < 21'	0	1
Boats > 21'	0	0
Vehicles	0	9
ATV	0	0
Bobcat	0	0
Excavator	0	0
Pumps	0	2
Pressure Washers / Pumps	0	2

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	G. Geiger		267-228-8983	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-8 Division	Manpower: Responder	Responders	41 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-8 Division					
Environmental Restoration	Pressure Washers / Wa	Pressure Washer	2 each		Assigned
Environmental Restoration	Pumps	Pump	2 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks - PA-8	1 each		Assigned
Environmental Restoration	Vehicle	Vehicle	3 each		Assigned
TBD	Vehicle	Vehicles - PA-5	5 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21' - PA-8	1 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-8 Division					
Clean Harbors Environmenta	Manpower: Responder	Responders - PA-8	1 each		Assigned
TBD	Manpower: Responder	Responders - PA-8	23 each		Assigned
Environmental Restoration	Manpower: Responder	Responders-PA-8	7 each		Assigned
Environmental Restoration	Manpower: Supervisor	Supervisor	1 each		Assigned
TBD	Manpower: Supervisor	Supervisors - PA-8	1 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	PA-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment Branch
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Division/Group:**	Submerged Oil Assessment Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Submerged Oil Assessment Branch Direc	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Submerged Oil Assessment Gr	Vessel	Boats > 21' with crews	2 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Submerged Oil Assessment Group					
North Star/Sea Tow	Vessel	North Star V	1 each	22 feet	Assigned

Assignments

Deploy, assess, maintain and recover snare samplers as directed.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Unified Command Staff	267-765-3431		-	-	○ Yes ● No
Unified Command Staff	267-765-3460		-	-	○ Yes ● No
Unified Command Staff	267-765-3459		-	-	○ Yes ● No
Unified Command Staff UC Conference Phone	267-765-3457		-	-	○ Yes ● No
Operations	267-765-3439		-	-	○ Yes ● No
Operations	267-765-3449		-	-	○ Yes ● No
Operations	267-765-3450		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3445		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3434		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-3450		-	-	○ Yes ● No
Operations Wake Incident Notification	267-765-3344		-	-	○ Yes ● No
Operations Vessel Movement	215-271-4889		-	-	○ Yes ● No
Operations Vessel Movement	215-778-5841		-	-	○ Yes ● No
Planning	267-765-3440		-	-	○ Yes ● No
Planning	267-765-3437		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Planning	267-765-3443		-	-	○ Yes ● No
Planning	267-765-3444		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3446		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3447		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3448		-	-	○ Yes ● No
Planning Oiled Wildlife	215-365-1558		-	-	○ Yes ● No
Logistics	267-765-3464		-	-	○ Yes ● No
Logistics	267-765-3432		-	-	○ Yes ● No
Logistics	267-765-3453		-	-	○ Yes ● No
Logistics	267-765-3454		-	-	○ Yes ● No
Logistics	267-765-3471		-	-	○ Yes ● No
Logistics	267-765-3472		-	-	○ Yes ● No
Logistics NRC Logistics	267-765-3455		-	-	○ Yes ● No
Logistics Claims	866-401-0353		-	-	○ Yes ● No
Finance/Admin	267-765-3435		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Finance/Admin	267-765-3451		-	-	○ Yes ● No
Finance/Admin	267-765-3452		-	-	○ Yes ● No
Public Information Room	267-765-3436		-	-	○ Yes ● No
Public Information Room	267-765-3441		-	-	○ Yes ● No
Public Information Room	267-765-3442		-	-	○ Yes ● No
Safety	267-765-3433		-	-	○ Yes ● No
NOAA	267-765-3465		-	-	○ Yes ● No
NOAA	267-765-3467		-	-	○ Yes ● No
Fax Receive	215-923-4476		-	-	○ Yes ● No
Fax Receive	267-765-3463		-	-	○ Yes ● No
Fax Transmit	267-765-3456		-	-	○ Yes ● No
Break-out Room	267-765-3461		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2479		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-3086		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2851		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0453		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0483		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0871		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-2183		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2) Fax	610-521-1407		-	-	○ Yes ● No
Safety Office (Lagoon) Nick Brignola	484-239-4436		-	-	○ Yes ● No
Staging Area #1 Brad Barker	985-381-0697		-	-	○ Yes ● No
Lagoon Decon Jim Tanner	856-266-3810		-	-	○ Yes ● No
John Heinz Wildlife Center Triage	215-365-1558		-	-	○ Yes ● No
John Heinz Wildlife Center U.S. Fish and Wildlife	215-365-5341		-	-	○ Yes ● No
John Heinz Wildlife Center U.S. Fish and Wildlife	215-365-5342		-	-	○ Yes ● No
Forward Command Post	610-521-8913		-	-	○ Yes ● No
Forward Command Post	610-521-8914		-	-	○ Yes ● No
Forward Command Post	610-521-8915		-	-	○ Yes ● No
Forward Command Post	610-521-8916		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post On Scene Safety	610-521-8917		-	-	○ Yes ● No
PSEG Primary Liaison Brenden Daly	856-339-1169		-	-	○ Yes ● No
PSEG Secondary Liaison Greg Yaroch	856-339-1188		-	571-283-2580 - 24 Hr. Line	○ Yes ● No
PSEG Tertiary Liaison William Buirch	856-491-5308		-	-	○ Yes ● No
PSEG Communications Mg Skip Sindoni			877-722-7510 - Pager	-	○ Yes ● No
PSEG Spill Protection Command Post	856-339-1188		-	-	○ Yes ● No
PSEG Water Security Zone Security Supervisor	856-339-2223		-	-	○ Yes ● No
PSEG Fire Department Duty Supervisor	856-339-2803		-	856-339-2800 - Non-Emerg	○ Yes ● No
PSEG Deputy Chief John B. Carlin	856-339-2814		-	-	○ Yes ● No
PSEG Engineering Jim Melchionna	856-371-0480		-	-	○ Yes ● No
PSEG Emergency Line	856-339-3333		-	-	○ Yes ● No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Communication Plan		

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	18A	Tactical Secondary	156.900 MHZ	Near/On shore recovery	All Near/On shore secondary freq.
VHF-FM	13	Navigation Safety	156.650 MHZ	Bridge to Bridge	Ship to Ship navigation safety
NRC	1	Tactical Primary	Channel 1	Near/On shore recovery	North of Hog Island
NRC	2	Tactical Primary	Channel 2	Near/On shore recovery	South of Hog Island
Nextel/Cell		Tactical	Cell/Nextel	Protection Branch Tactical	POC: Mr. Bob Poole 302-462-0194
Nextel/Cell		Tactical	Cell/Nextel	Salvage Group	POC: Bob Umbdenstock
Nextel/Cell		Tactical	Cell/Nextel	Safety Team Coordination	POC: Mr. Archie Gresham 302-293-8960
Nextel/Cell		Tactical	Cell/Nextel	SCAT Wildlife Recovery Field Comms net	POC: Ms. DeDe Manera: 215-365-1558 John Heinz wildlife recovery center
Nextel/Cell		Command	Cell/Nextel	Wildlife Recovery Command	POC: Lyle Trumbull 610-710-1919
Nextel/Cell		Tactical	Cell/Nextel	Operations Section	POC: Bill Gereighty 985-960-3829
Nextel/Cell		Tactical	Cell/Nextel	Waterborne Vessel/Pier Decon Group Command Net	POC: Jim Sanial 856-266-3810
Nextel/Cell		Tactical	Cell/Nextel	Monitoring Group	Operations: USCG 267-765-3439 SCAT info: Situations 267-765-3446/3448

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ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	Medical Plan

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911 (See below)	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffer	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856) 342-2345	
Christiana Medical Center	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	
Memorial Hospital of Salem County	Salem, NJ - United States	Yes	No	(856) 425-3288	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
Paramedics & mobile unit are stationed on PA side at Staging Area #3 - Lagoon.
To contact EMS at Staging Area #3 - Lagoon - 610-636-8324, or call Nick Federoff - 609-425-3288.
For EMS services on the NJ side, we have established direct contact numbers to EMS dispatchers in each county.
Camden County (NJ 1&2) - 856-757-7502
Gloucester County (NJ 3&4) - 856-589-0911
Salem County (NJ 5,6,7,8,9,10&11) - 856-769-2959
Hyperbaric Chamber is located at University of Pennsylvania Hospital.

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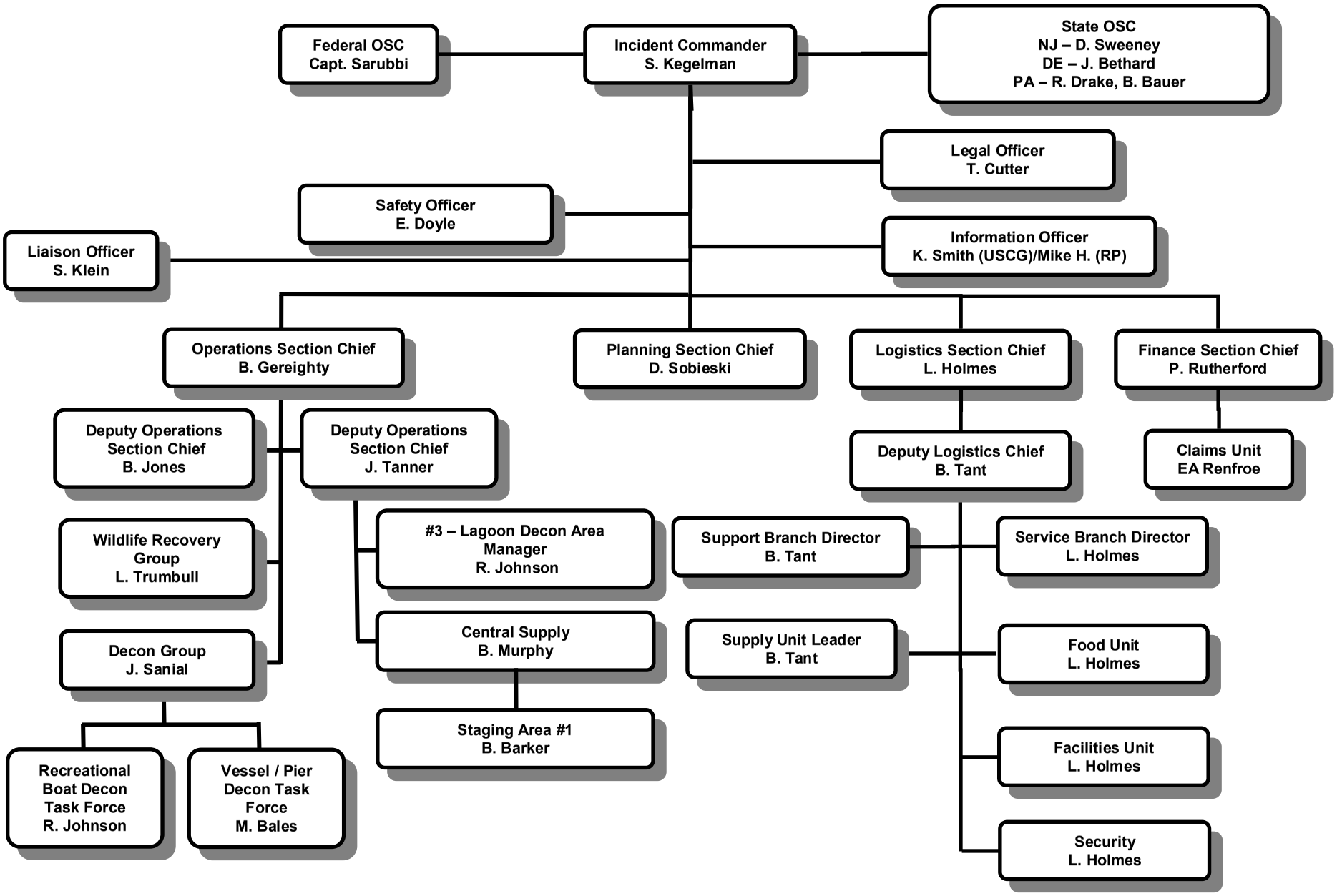
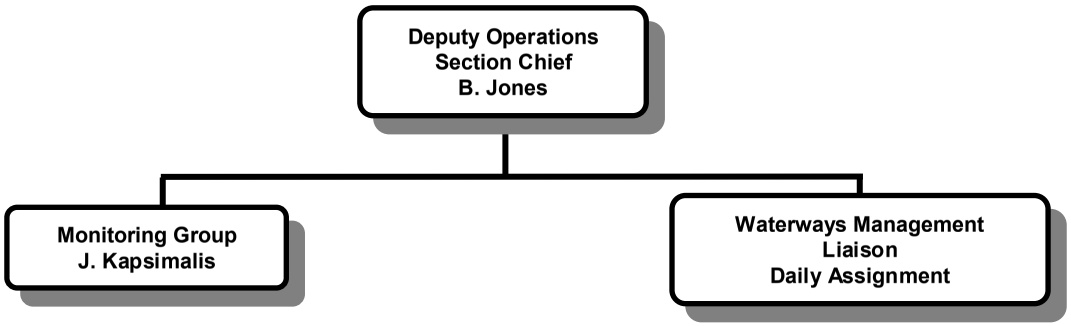
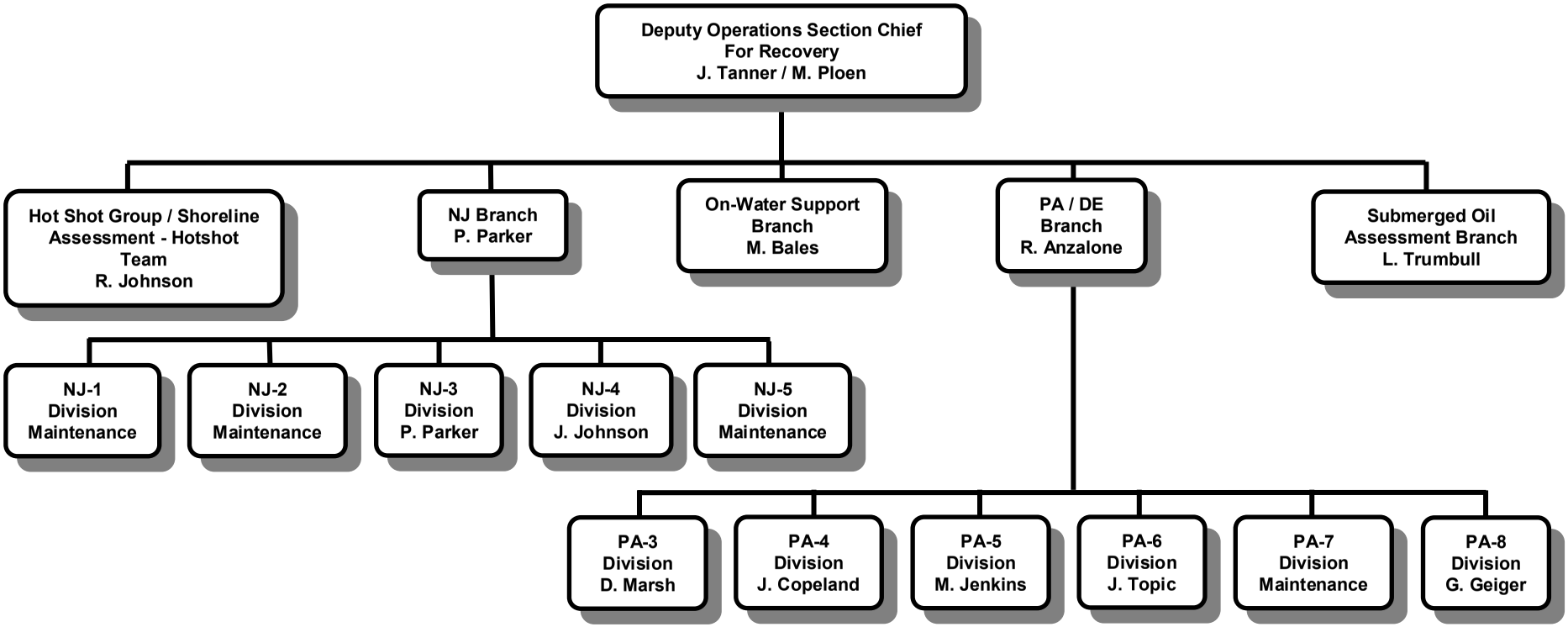
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 1/18/05-1/25/05



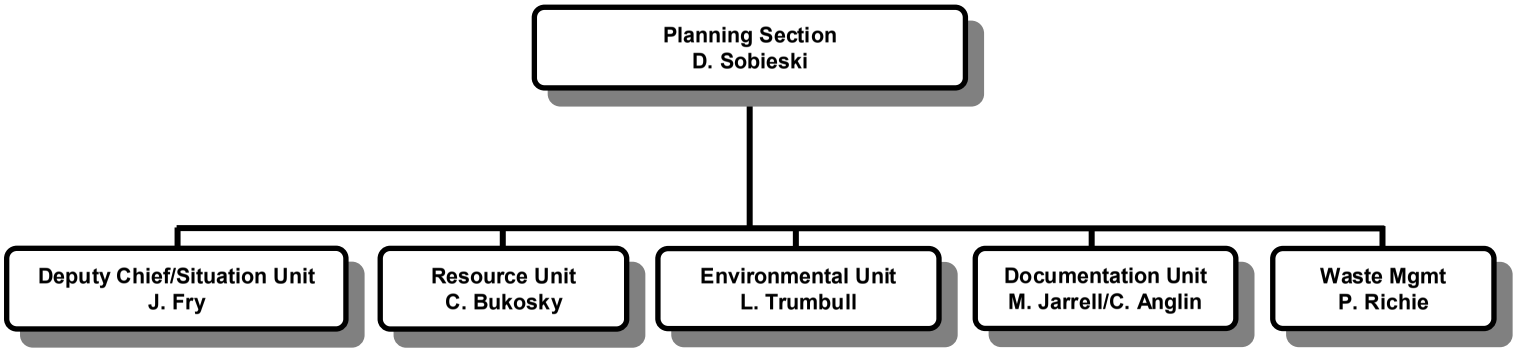
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR PORT OPERATIONS ORGANIZATION CHART – 1/18/05-1/25/05



T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR RECOVERY ORGANIZATION CHART – 1/18/05-1/25/05



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 1/18/05-1/25/05



Seven Day Weather Forecast

Jan 18 Tuesday
Wind: NNW 9-14 mph. Mostly sunny in the morning. Then becoming partly cloudy. High 23F, Low 17F.

Jan 19 Wednesday
Wind: SSW 9 mph. Partly cloudy with a 30 percent chance of rain and snow showers. Highs around 40.

Jan 20 Thursday
Wind: NNW 17 mph. Cold with sun and clouds. High 32F, Low 18F.

Jan 21 Friday
Wind: NW 18 mph. Mostly cloudy and cold. High 23F, Low 17F.

Jan 22 Saturday
Wind: N 8 mph. Mostly cloudy. High 34F, Low 18F.

Jan 23 Sunday
Wind: 14 mph. Snow, cloudy and windy in p.m. 20 percent chance of snow. High 33F, Low 23F.

Jan 24 Monday
Very windy and cold with snow. High 35F, Low 22F.

Jan 25 Tuesday
Clouds and Sun. High 41F, Low 31F

Tide Table

Billingsport, New Jersey
39.8500° N, 75.2500°

Date	Day	High	Low	High	Low	High	Sunrise	Sunset
01/17/2005	Mon		1:08 AM	6:42 AM	1:37 PM	7:01 PM	7:19 AM	5:03 PM
01/18/2005	Tue		1:57 AM	7:37 AM	2:33 PM	7:57 PM	7:19 AM	5:04 PM
01/19/2005	Wed		2:48 AM	8:31 AM	3:29 PM	8:53 PM	7:18 AM	5:05 PM
01/20/2005	Thu		3:40 AM	9:23 AM	4:25 PM	9:46 PM	7:18 AM	5:06 PM
01/21/2005	Fri		4:31 AM	10:14 AM	5:18 PM	10:37 PM	7:17 AM	5:07 PM
01/22/2005	Sat		5.22 AM	11:02 AM	6:05 PM	11:27 PM	7:17 AM	5:08 PM
1/23/2005	Sun		6:10 AM	11:49 AM	6:57 PM		7:16 AM	5:09 PM
1/24/2005	Mon	12:14 AM	6:56 AM	12:33 PM	7:42 PM		7:15 AM	5:10 PM
1/25/2005	Tue	12:58 AM	7:41 AM	1:14 PM	8:24 PM		7:15 AM	5:11 Pm

TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations

General Safety Concerns:

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decontamination.

Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

Cold Weather Alert

Starting Saturday, January 15th and lasting through Monday, January 24th, the weather forecast is calling for temperatures mostly in the 30's, ranging from a high of 37° to a low of 23° during the period.

In addition, wind speed is predicted to increase throughout the period.

Wednesday, January 11th and Sunday, January 23rd are presently calling for 20-30 percent chance of precipitation in the form of snow.

Adjust accordingly. Dress appropriately and use caution if snow arrives in the area. Drive and walk cautiously.

Major Factors that Can Lead to Cold Weather Injuries:

- Wearing inadequate or wet clothing increases the effects of cold on the body.
- Taking certain drugs or medications such as alcohol, nicotine, caffeine, and medication that inhibit the body's response to the cold or impairs judgment.
- Having a cold or certain diseases, such as diabetes, heart, vascular, and thyroid problems, may make a person more susceptible to the winter elements.
- Becoming exhausted or immobilized, especially due to injury or entrapment (may speed up the effects of cold weather.
- Men have far greater death rates from cold exposure than women, perhaps due to inherent risk-taking activities, body-fat composition or other physiological differences.

Wind Chill Temperature Table
Temperature it "feels like" when wind is blowing

Wind Speed (mph) ⬇

Air Temperature (°F)

	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
0	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95

DANGER **INCREASED DANGER** **GREAT DANGER**

RISK OF FROSTBITE (see times on chart below)

WHITE	CAUTION (potential cold weather injuries possible)
GREEN	DANGER (frostbite occurs in >2 hours in dry, exposed skin)
YELLOW	INCREASED DANGER (frostbite could occur in 45 minutes or less in dry, exposed skin)
RED	GREAT DANGER (frostbite could occur in 5 minutes or less in dry, exposed skin)

Wind Chill Category				
Work Activity	**Caution**	**Danger**	**Increased Danger**	**Great Danger**
All on water activities Hotsy operations	Layered clothing, insulated gloves; Exposed skin covered and kept dry; Rest in warm, sheltered area; Insulated boots recommended. Provide warming facilities	Cancel non essential work	Cancel Work Activities	Cancel Work Activities
Exposed beach clean-up	Restrict Non-essential work; 30-40 minute work cycles with frequent supervisory surveillance for essential tasks.	Consider canceling non essential work	Restrict Non-essential work	Cancel Work Activities
Shoreline clean-up	Consider postponing non-essential work;	Postpone non-essential work; 15-20 minute work cycles for essential tasks; Work groups of no less than 2 personnel; No exposed skin.	Restrict Non-essential work	Cancel Work Activities

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	All for the Period Day 1 through 6	

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 1/18/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/19/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/20/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Unified Command Conference Call 1/21/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	General Staff Members	Command Post
Operations Briefing 1/22/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/23/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 1/10/2005 07:49
Period:	Period 25 (1/18/2005 06:00 - 1/25/2005 06:00)	**Version Name:**	All for the Period Day 7	

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 1/24/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
UC Objectives Meeting 1/24/2005 08:00	Review/Identify and prioritize objectives for the next operational period.	UC members	Penn Room
Command & General Staff Meeting 1/24/2005 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	General Staff members	Penn Room
Tactics Meeting 1/24/2005 11:30	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	To Be Determined
Planning Meeting 1/24/2005 15:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Penn Room

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Conference Call Procedure
MV Athos I

From time to time, the Unified Command will have a need to convene via conference call. Their needs could range from situational updates to critical information requiring Unified Command decisions.

The Unified Command will initiate conference calls by contacting the Planning Section Chief. The Planning Section Chief will require a list of persons that should be invited to participate in the Conference Call, the preferred time of the call, ask whether or not a scribe is required and a suggested agenda.

The Planning Section Chief will call ConferencePlus and schedule the call. The Planning Section Chief will then send an email to all invited conference call participants, which gives the call-in particulars and the agenda.

The Situation Unit and Operations and Planning must have a representative on the call to present information according to agenda.

WEEKLY UNIFIED COMMAND CONFERENCE CALL IN NUMBER:
Dial-In Number: 1 (888) 287-5343 (to join the audio conference call)
Alternate Dial-In: 1 (847) 619-6483
Pass code: 9285423# - If you call in before the moderator, you will be placed on hold with music background until the moderator

MODERATOR CALL IN ADDITIONAL NUMBER: 5233443

Agenda - Unified Command Meetings
Thursdays -- 0900hrs

1.	Introductions – UC reps self-introductions	All participants
2.	Situation Brief	Situation Unit Leader
3.	Planned Actions	Planning/Ops Chief
4.	Critical Issues/Needs	Operations Chief
5.	Review of Open Action Items	Situation Unit Leader
6.	Long Range Plan	Steve Kegelman
7.	New Jersey comments	NJ UC Rep
8.	Pennsylvania comments	PA UC Rep
9.	Delaware comments	DE UC Rep
10.	FOSC comments	FOSC
11.	Announce any necessary additional UC Meetings (other than Mondays)	RP
12.	Final remarks	RP
13.	***This concludes the Command and General Staff Meeting. Unified Command Members only from this point on.***	

1/5/05

D.M. Sobieski
The O'Brien's Group
January 10, 2005

Unified Command Long Term Incident Action Plan Conference Call Notifications Sheet

Name	Title	Agency	Phone	Cell	Fax	Email
Capt Jonathan Sarubbi	COTP	USCG	215-271-4803	215-778-4072	215-271-4903	jsarubbi@msogruphila.uscg.mil
Steve Kegelman		TOG	732-774-7895	732-245-4703	732-774-7896	steve.kegelman@theobriensgroup.com
Bob VanFossen	Asst. Director	NJ DEP	609-633-2168	609-780-6899	609-777-0985	robert.vanfossen@dep.state.nj.us
David Sweeney	Bureau Chief	NJDEP ER	609-292-1075	609-309-1748	609-777-0985	David.sweeney@dep.state.nj.us
Gary Pearson		NJDEP	973-609-3997	201-697-6794		gpearson@dep.state.nj.us
Glenn Gillespie	Deputy Director	DEMA	302-659-2234	382-222-8400	302-659-6855	glenn.gillespie@state.de.us
James Turner, III	Director	DEMA	302-659-2240	302-222-8402	302-659-6855	jamie.turner@state.de.us
Jamie Bethard	Envtl Scientist III	DNREC	302-739-3694	302-632-0264	302-739-5060	jamie.bethard@state.de.us
Ronald Drake	Emergency Response Mgr.	PADEP	484-250-5100	484-645-5981	484-250-5943	rdrake@state.pa.us
Bennett Anderson	Envtl Sci/SSC	DNREC	302-739-4590	302-382-0341	302-739-6140	bennett.anderson@state.de.us
Cdr Vickie Huyck	Ops -MSO Group Philadelphia	USCG	215-271-4952	215-778-5483	215-271-4967	vhuyck@msogruphila.uscg.mil
Cdr Roger Laferriere	CO- AST	USCG	609-724-008	609-351-7142	609-724-0232	rlaferriere@ast.uscg.mil
Robert Bauer (Bob)	Water Qual Spec Spvsr	PADEP	484-250-5132	484-645-5984		rbauer@state.pa.us
Daniel M. Sobieski		TOG	714-577-2113	714-342-6358	714-577-2118	dan.sobieski@theobriensgroup.com
Chris Gregory		TOG	714-577-2111	714-273-8036	714-577-2118	chris.gregory@theobriensgroup.com
Melanie Jarrell			337-984-7808	904-537-3507	337-984-4776	Melanie.Jarrell@att.net
Dave Hake		DEMA		302-222-6566		Dave.hake@state.de.us
Jim Strickland		DEMA		302-222-6578		Jim.Strickland@state.de.us
Mark Claveloux		DEMA		302-222-6656		Mark.Claveloux@state.de.us
Kurt Reuther	Enf Chief	DNREC	302-739-5072	302-270-9369	302-739-5060	Kurt.reuther@state.de.us

D.M. Sobieski
The O'Brien's Group
December 21, 2004

IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 26 (01/26/2005 06:00 to 02/08/2005 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) – James Turner: _____

SOSC (PA) – Bob Bauer: _____

SOSC (NJ) – Bob VanFossen: _____

RPIC – Steve Kegelman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. Cleanup Priorities
4. Cleanup Endpoints & Methods
5. Memorandum on Wildlife Handling
6. ICS 202 - General Response Objectives
7. ICS 204 - Assignment List
8. ICS 205 - Communications Plan
9. ICS 206 - Medical Plan
10. ICS 207 - Organization Chart
11. ICS 223 - Health and Safety Message
12. ICS 230 - Daily Meeting Schedule
13. Website: www.incidentinfo.com

Zone Forecast for Philadelphia, PA

Top of page Table of contents for Philadelphia, PA

FPUS51 KPHI 261536
ZFPPHI

ZONE FORECAST PRODUCT...UPDATED
NATIONAL WEATHER SERVICE MOUNT HOLLY NJ
1035 AM EST WED JAN 26 2005

PAZ070-071-270600-
DELAWARE PA-PHILADELPHIA PA-
1035 AM EST WED JAN 26 2005

UPDATED

THIS AFTERNOON
MOSTLY CLOUDY. EARLY HIGHS IN THE UPPER 30S.
SOUTHWEST WINDS 5 TO 10 MPH...BECOMING NORTHWEST.

TONIGHT
PARTLY CLOUDY. LOWS 15 TO 20. NORTH WINDS 10 TO 15 MPH.

THURSDAY
PARTLY CLOUDY IN THE MORNING...THEN CLEARING. HIGHS
IN THE LOWER 20S. NORTH WINDS AROUND 15 MPH.

THURSDAY NIGHT
MOSTLY CLEAR. LOWS AROUND 10 ABOVE. NORTH WINDS
10 TO 15 MPH. WIND CHILL VALUES ZERO TO 10 ABOVE ZERO.

FRIDAY
MOSTLY SUNNY. HIGHS IN THE UPPER 20S. NORTH WINDS
AROUND 5 MPH. LOWEST WIND CHILL READINGS ZERO TO 10 ABOVE ZERO IN
THE MORNING.

FRIDAY NIGHT
MOSTLY CLEAR. LOWS 10 TO 15.

SATURDAY
PARTLY CLOUDY. HIGHS IN THE UPPER 30S.

SATURDAY NIGHT
PARTLY CLOUDY IN THE EVENING...THEN BECOMING
MOSTLY CLOUDY. LOWS IN THE MID 20S.

SUNDAY
MOSTLY CLOUDY WITH A 30 PERCENT CHANCE OF RAIN AND
SNOW. HIGHS AROUND 40.

SUNDAY NIGHT

MOSTLY CLOUDY WITH A 30 PERCENT CHANCE OF RAIN
AND SNOW. LOWS AROUND 30.

MONDAY

MOSTLY CLOUDY WITH A 30 PERCENT CHANCE OF RAIN AND
SNOW. HIGHS AROUND 40.

MONDAY NIGHT

MOSTLY CLOUDY WITH A 30 PERCENT CHANCE OF RAIN
AND SNOW. LOWS IN THE LOWER 30S.

TUESDAY

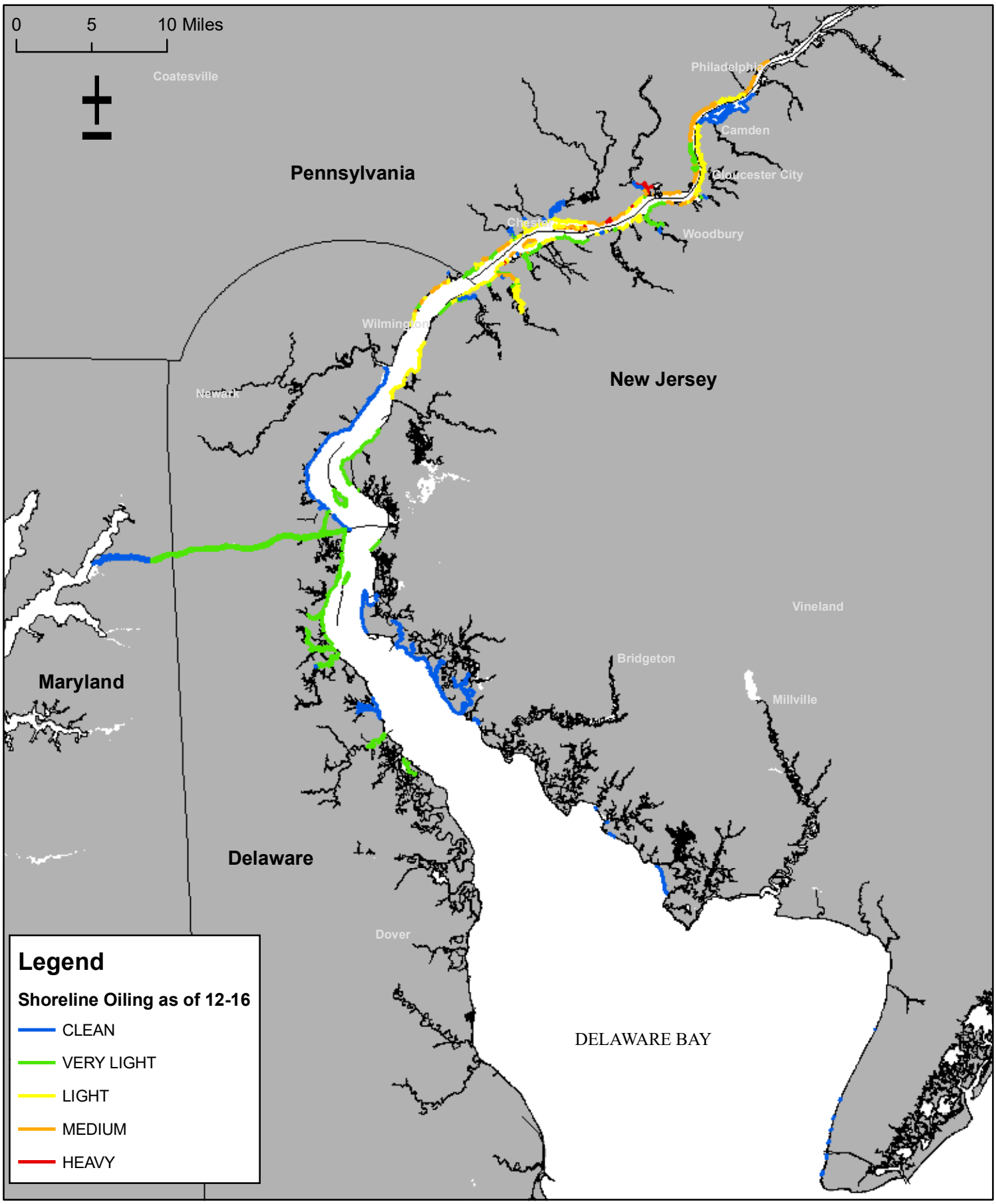
MOSTLY CLOUDY IN THE MORNING...THEN BECOMING PARTLY
CLOUDY. A 30 PERCENT CHANCE OF RAIN AND SNOW. HIGHS AROUND 40.

M/V Athos I, Delaware River, NJ/PA

Shoreline Oiling as of 12/16/2004

Graphic does not represent precise amounts or locations of oil.

USE ONLY AS A GENERAL REFERENCE



Objective:

Removal of gross oil before the focus is shifted to final cleanup activities

Gross (i.e., bulk) oil removal is proposed as a means to maximize the environmental benefit and effectiveness of shoreline cleanup operations. Shoreline segments have been prioritized (attached) based on the amount of oil, and the presence of sensitive resources or high public access.

As cleanup activities complete gross oil removal, response resources will be redeployed by the Operations Section according to the listed priorities. The decision to move the resources within a division will be the responsibility of the Division Supervisors. The Environmental Unit and SCAT Teams will be available to provide suggestions and/or guidance.

Operations Priorities for Cleanup

Priority 1 Heavy Oil With Special Issues	Priority 2 Heavy Oil No Special Issues	Priority 3 Moderate Oil With Special Issues	Priority 4 Moderate Oil No Special Issues	Priority 5 Light Oil With Special Issues	Priority 6 Very Light Oil With Special Issues	Priority 7 Light Oil No Special Issues	Priority 8 Very Light Oil No Special Issues
NJ-5-A	NJ-3-F	NJ-3-A	DE-1-B	NJ-2-A	DE-1-A	NJ-3-I	DE-7-B
PA-4-F		NJ-3-H	DE-1-C	NJ-2-C	DE-1-E	PA-5-D	NJ-4-B
PA-4-J		NJ-4-D	DE-1-D	NJ-3-G	DE-1-I		NJ-6-A
PA-5-B		NJ-5-B	DE-1-F	NJ-3-J	DE-2-D		NJ-6-D
PA-7-A		NJ-5-D	DE-1-G	NJ-3-L	NJ-1-A		NJ-6-E
PA-7-C		PA-1-C	DE-1-H	NJ-5-A	NJ-2-B		NJ-6-F
PA-7-D		PA-2-A	DE-1-J	NJ-5-C	NJ-4-A		NJ-6-G
PA-7-F		PA-3-A	DE-2-A	PA-1-C	NJ-6-C		NJ-6-H
		PA-3-F	DE-2-B	PA-4-C	NJ-7-A		NJ-7-C
		PA-4-A	DE-2-C	PA-5-B	NJ-7-B		NJ-9-A
		PA-4-B	NJ-3-B		PA-1-B		PA-2-C
		PA-4-D	NJ-3-C		PA-2-D		PA-2-E
		PA-4-E	NJ-3-D		PA-6-CRUM CR		PA-2-G
		PA-4-G	NJ-3-F				PA-6-A
		PA-4-H	NJ-4-E				PA-6-B
		PA-4-I	PA-2-B				
		PA-5-A	PA-2-F				
		PA-5-C	PA-2-H				
		PA-7-B	PA-2-I				
		PA-7-D	PA-3-B				
		PA-7-E	PA-3-C				
		PA-7-G	PA-3-D				

Conduct cleanup with minimal damage to environmental resources. i.e. Do not drive spilled oils into sediments by foot / mechanical traffic

A SCAT Special Issue Team (SIT) will evaluate historic, special environmental, or high-public access areas to provide more detailed and additional cleanup requirements.

Shoreline Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Flats (hard surface e.g. Tinicum I. NJ side)	General: No recoverable surface oil, buried oil layers or tarballs larger than dimes; no more than stain on sand	Manual removal with shovels/rakes and squeegees; small equipment (bobcat) to remove oil and oiled surface and subsurface sand; minimize removal of clean sand on and under oiled layers; Minimize equipment (bobcat) travel over oiled surfaces.
	Special: TBD by SIT (Special Issue Team)	
Sand Beaches; Mixed Sand and Fine Gravel Beaches	General: No recoverable surface oil, buried asphalt pavements or tarballs larger than dimes; no more than stain on gravel	Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers; small equipment (bobcat)to remove oil and oiled surface/subsurface sand and gravel. Minimize small equipment (bobcat)travel over oiled surfaces. Mechanical relocation of fine gravels into piles for flushing, including use of high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval.
	Special: TBD by SIT	
Course Gravel Beaches/Fill (e.g. cobbles, and larger)	No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Manual removal of surface oil using low pressure flushing and high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval by the SIT.
	Special: TBD by SIT	
Riprap/Stone Seawalls **Solid Seawall, Bulkheads and Docks**	General: No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Flushing and high-pressure/hot-water washing (hotsie), as needed. Containment/recovery of released oil.
	Special: No more recoverable or potential mobile oil on surface; Stop cleanup efforts when all oil is removed other than a stain. Additional cleaning or replacement of riprap to be considered by SIT.	In high-public access or special environmental / historic areas (e.g., Ft. Mifflin, eagle nesting, others to be determined): may request use of SWAs (surface washing agents) or special cleanup efforts for use as need to meet endpoint.

Mud Flats (e.g. soft surface, steps will push oil in sediments)	General: No potentially mobile oil.	To be determined on a site-specific basis by SIT.
Marshes	General: Oil on vegetation no longer wipes off on contact. No remaining recoverable or potentially mobile oil in accessible areas. (Accessible areas will be identified by SIT.)	To be determined on a site-specific basis by SIT. Options (cutting, In-situ-Burn, flushing, manual pickup of pooled oil, monitoring) to be determined on site-specific basis.
	Special: Other removal options will be considered by Environmental Unit.	

Debris Recovery Guidelines[1]

- Report dead and live wildlife to triage center at 215-365-1558. Collect and bag all dead wildlife.
- Manual removal of oiled debris that can be easily picked up and bagged.
- For small unoiled debris that can be easily picked up, move to the supra tidal zone if it has the potential to become oiled in its current location.
- Leave unoiled debris in place if it does not have the potential to become oiled.
- Cut and remove oiled logs < 6 inches in diameter (cut in into lengths < 6 feet).
- Manual removal of oiled debris (other than logs) < 6 inches in diameter and < 6 feet in length.
- Clean large (> 6 inches in diameter and/or 6 feet in length) oiled debris in place. Recover oil using appropriate sorbents. Approved cleaning methods for large oiled debris are presented below:

Method	Handling	RRT Approval	Special Permits
Scraping	No	No	No
Wiping	No	No	No
Hotsie	No	No	No

The following options require special approval

Method	Handling	RRT Approval	Special Permits
SWAs	No	Yes	No
Burning	Yes	Yes	Yes

For questions regarding environmental issues, contact Lyle Trumbull at (610) 710-1919.

[1] Non-living oiled debris

Memorandum

To: **Operations Section Chief**

From: **Group Supervisor, Wildlife Recovery**

Subject: **Protocol for handling dead wildlife carcasses found during shoreline cleanup.**

As workcrews are cleaning oiled-shorelines and structures or removing oiled-debris they are likely to encounter dead oiled wildlife. Please handle wildlife carcasses as follows.

A. Dead Oiled Wildlife

All dead oiled wildlife (birds, fish, mammals, turtles) shall be bagged and held for the Wildlife Recovery Unit, and not disposed with other oiled material.

1. **Carefully approach the carcass and confirm that it is dead. If the animal is not dead do not attempt to capture it – contact the Wildlife Recovery Unit immediately for instructions.**

2. **If the animal is confirmed to be dead, place the carcass into a plastic bag – DO NOT mix carcasses together in the same bag – ONE carcass per bag.**

3. **Tie the bag closed and give it to the crew leader.**

4. **The crew leader shall immediately notify the Wildlife Recovery Triage Center at 215-365-1558 to have the carcasses picked up – do not leave bagged oiled carcasses unattended in the field.**

B. Live Oiled Wildlife

Clean up crews shall not attempt to capture live wildlife.

1. **Live oiled wildlife seen during clean up efforts should be reported by the crew leader to the Wildlife Recovery Triage Center at 215-365-1558 and relay the location, time, number and types of oiled wildlife seen.**

If you have any questions, please contact me at 609-214-7895.

Emailed to: **theo.camlin@theobriensgroup.com**
Ed.levine@noaa.gov
Dorthy_Manera@fws.gov
John_Meehan@fws.gov

cc: Documents Unit Leader

ICS 202 - General Response Objectives

Incident:	MV Athos I	**Prepared By:**	Planning Section **at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to clean waterfront facilities per facility priority list.		
Decon of vessels as needed, including recreational vessels.		
Continue to enforce safety zone.		
Continue aggressive gross shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact.		
Monitor areas of special interest for possible submerged oil threat (water column monitoring, water intake consortium)		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Unified Command Emphasis:		
• Make Safety a Top Priority. Adhere to SSP and watch out for your fellow responders.		

Approved By

: _____

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Shoreline Cleanup Assessment Team
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	D. Sobieski		714-342-6358	
Environmental Unit	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

SCAT on an as-needed basis. Coordinate with Lyle Trumbull.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	Hot Shot Group
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy for Recovery	J. Tanner		251-454-6397	
Special Recovery Branch Director	M. Ploen		612-963-5222	
Division/Group Supervisor	J. Reidel		610-521-0453	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Hot Shot Group	Manpower: Responder	Responders	6 each	

Assignments

Respond to urgent needs as directed.
Conduct clean-up operations following the guidance in the enclosed titled "Clean-up Recommendations."
Work must follow environmental sensitivity guidelines.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

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Continue preparation for severe weather operation.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Beach Assessment / Hotshot Team
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Special Recovery Branch Director	M. Ploen		612-963-5222	
Beach Assessment / Hotshot Team Lead	R. Johnson		504-458-2690	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Beach Assessment / Hotshot T	Manpower: Responder	Responders - As Needed	9 each	
Hot Shot Group	Manpower: Responder	Responders	6 each	

Assignments

Respond to reports of tarballs on beach. Evaluate & remove small concentrations. SCAT & plan for expanded shoreline clean-up. SCAT component provided by states.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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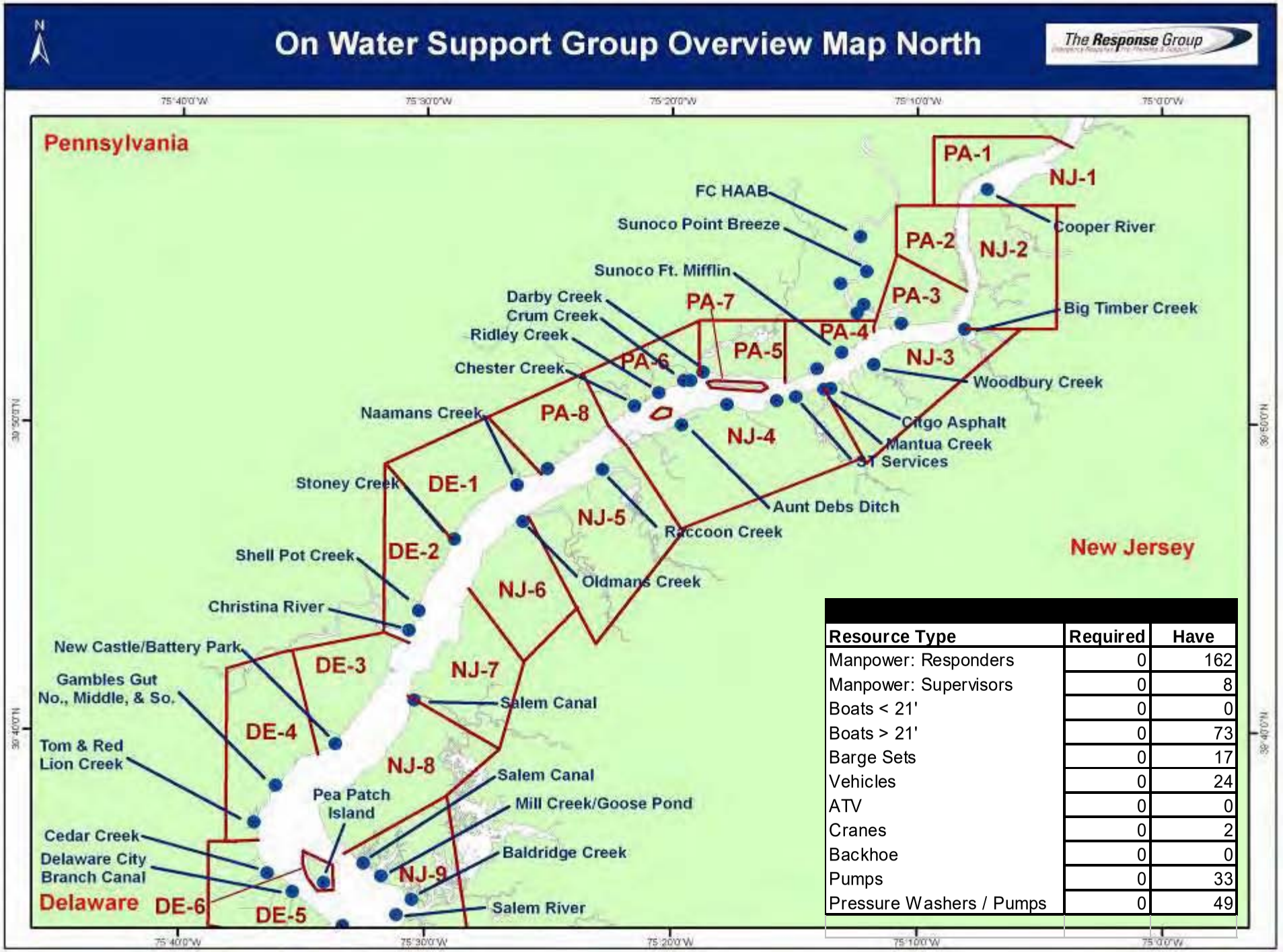
On Water Support Group Overview Map North



Resource Type	Required	Have
Manpower: Responders	0	162
Manpower: Supervisors	0	8
Boats < 21'	0	0
Boats > 21'	0	73
Barge Sets	0	17
Vehicles	0	24
ATV	0	0
Cranes	0	2
Backhoe	0	0
Pumps	0	33
Pressure Washers / Pumps	0	49

On Water Support Group
Overview Map South
The Response Group
N
75°40'0"W
75°30'0"W
75°20'0"W
39°30'0"N
39°20'0"N
39°10'0"N
New Jersey
Delaware
DE-4
DE-5
DE-6
DE-7
DE-8
DE-9
DE-10
NJ-8
NJ-9
NJ-10
NJ-11
Gambles Gut No., Middle, & So.
Tom & Red Lion Creeks
Cedar Creek
Delaware City Branch Canal
C&D Canal
St. Georges Creek & Opening So.
Port Penn
Augustine Creek
Silver Run
Upper & Lower Break
Appoquinimink River
Blackbird Creek
Rays & Peach House Ditches
Middle Drain
Cedar Swamp/ Collins Beach
Smyrna River
Bakeoven Point
Woodland Beach No.
Guts No. & So. Woodland Beach
Sluice Ditch
Hay Ditch
Leipsic River
Old Creek & Simons River
Mahon River
Little River
Pea Patch Island
Creeks So. of Ft. Mott
Mill Creek/Goose Pond
Baldridge Creek
Salem River
Mill Creek & Opening So.
Back & Straight Ditches
Alloway & Lower alloway Creeks
Hope Creek & 3 Guts No.
Fishing Creek/Shore Ditch
Cat Gut
Unnamed Opening No. of Mad Horse Creek
Mad Horse Creek
Cherry Tree & Lower Deep Creek
Stow Creek
Gut So. of Stow Creek
Jacobs Creek & Opening No.
Openings No. of Cohansey River
Drumbo Creek
Middle Marsh Creek
Sea Breeze - Guts No. & So.
Oyster Gut
Legend
Sites
Division Boundaries
0 1.5 3 6 9
Miles

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	On-Water Support Branch
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
On-Water Support Branch Director	M. Bales		985-960-1373	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Branch					
North Star/Sea Tow	Barge: Inland	Barge	1 each		Assigned
Delaware Bay & River COOF	Barge: Inland	DBRC - Dracone	3 each	40 feet	Assigned
NRC - National Response C	Barge: Inland	Portable Barge Sets	13 each	20 feet	Assigned
Fleet Environmental Service	Boom	Boom	400 feet	18 inch(es)	Assigned
Miller Environmental Group,	Boom	Task Force 1	300 feet		Assigned
Miller Environmental Group,	Boom	Task Force 10	300 feet		Assigned
Miller Environmental Group,	Boom	Task Force 11	200 feet		Assigned
Miller Environmental Group,	Boom	Task Force 2	300 feet		Assigned
Miller Environmental Group,	Boom	Task Force 4 - V/P D	400 feet		Assigned
North Star/Sea Tow	Equipment: Heavy	Crane / Tractor for B	2 each		Assigned
Miller Environmental Group,	Pressure Washers / Wa	Pressure Washer - V	31 each		Assigned
Clean Harbors Environmenta	Pressure Washers / Wa	Pressure Washers	5 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	Pressure Washers	3 each		Assigned
North Star/Sea Tow	Pressure Washers / Wa	Pressure Washers	4 each		Assigned
Oilmop, Inc.	Pressure Washers / Wa	Pressure Washers	2 each		Assigned
Kens Marine Service	Pressure Washers / Wa	Pressure Washers-C	4 each		Assigned
Fleet Environmental Service	Pumps	Pumps	3 each		Assigned
Kens Marine Service	Pumps	Pumps	3 each		Assigned
Miller Environmental Group,	Pumps	Pumps	25 each		Assigned
Oilmop, Inc.	Pumps	Pumps	2 each		Assigned
North Star/Sea Tow	Vehicle	Truck	11 each		Assigned
Miller Environmental Group,	Vehicle	Utility Truck	11 each		Assigned
Moran	Vehicle	Vehicle	2 each		Assigned
Fleet Environmental Service	Vessel	> 21' Vessel	6 each	22 feet	Assigned
Moran	Vessel	> 21' Vessel	2 each	22 feet	Assigned
SWS Environmental First Re	Vessel	> 21' Vessel	4 each	22 feet	Assigned
Boomtech	Vessel	Boat > 21'	3 each	22 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat > 21'	13 each	24 feet	Assigned
Global Remediation Service	Vessel	Boat > 21'	1 each	22 feet	Assigned
Miller Environmental Group,	Vessel	Boat > 21'	15 each	22 feet	Assigned
North Star/Sea Tow	Vessel	Boat > 21'	13 each	20 feet	Assigned
NRC - National Response C	Vessel	Boat > 21'	1 each	24 feet	Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	On-Water Support Branch
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Branch					
Oilmop, Inc.	Vessel	Boat > 21'	5 each	24 feet	Assigned
USES	Vessel	Boat > 21'	3 each	22 feet	Assigned
Kens Marine Service	Vessel	Boat > 21' - OWS	4 each	22 feet	Assigned
Accurate Marine Environmer	Vessel	Boat >21'	1 each	22 feet	Assigned
Industrial Cleanup, Inc. - ICI	Vessel	Boat >21'	2 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
On-Water Support Branch					
Accurate Marine Environmer	Manpower: Responder	Responder	1 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responder	59 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responder - OWS	30 each		Assigned
Kens Marine Service	Manpower: Responder	Responder (Night)	6 each		Assigned
Fleet Environmental Service	Manpower: Responder	Responders	16 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Responders	2 each		Assigned
Moran	Manpower: Responder	Responders	3 each		Assigned
North Star/Sea Tow	Manpower: Responder	Responders	25 each		Assigned
NRC Environmental Service	Manpower: Responder	Responders	9 each		Assigned
USES	Manpower: Responder	Responders	3 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders - OWS	8 each		Assigned
Clean Harbors Environmenta	Manpower: Supervisor	Supervisor	3 each		Assigned
Fleet Environmental Service	Manpower: Supervisor	Supervisors	1 each		Assigned
Moran	Manpower: Supervisor	Supervisors	1 each		Assigned
North Star/Sea Tow	Manpower: Supervisor	Supervisors	2 each		Assigned
NRC - National Response C	Manpower: Supervisor	Supervisors	1 each		Assigned

Assignments

Provide logistical, transportation, hot shot support to all areas as directed.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	On-Water Support Branch
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Vessel / Pier Decon Task Force
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Vessel Decon Group Supervisor	J. Sanial		856-266-3810	
Vessel / Pier Decon Task Force Leader	M. Bales		985-960-1373	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Vessel / Pier Decon Task Force	Manpower: Responder	Responders	115 each	
Vessel / Pier Decon Task Force	Manpower: Supervisor	Task Force Supervisors	14 each	

Assignments

Clean piers and vessels as directed. Vessels have priority.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

- Conduct decon ops in accordance with the Cleanup Priority List as environmental conditions permit.

14 Task Forces Total (see attachment immediately following this 204):

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Continue preparation for severe weather operation.

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Decon Group Assignments

- There are no current assignments due to ice conditions on the river.

- Currently all portable barge sets are being demobilized with the exception of three.

- These three portable barge sets will be staged at the Lagoon until weather permits them to be deployed.

Future Plans

27 January to 08 February 2005

Naval Business Center

Navy Base

Support PA 8, NJ 3

Port Tugs and facilities

Marina's will be addressed by the Marina's Tasking Plan

Name of Resource	State - Zone	Scored Ranking	Gross Decon
Salem Nuclear Power Generating Station	NJ - 10	6.36	None Required
Sunco - Eagle Point Facility	NJ - 3	4.6	100%
Sunco Inc. - Marcus Hook Refinery	PA - 8	4.6	100%
Sunco Logistics Ft. Mifflin Complex	PA - 4	4.6	100%
Valero Refinery & Marine Terminal (Paulsborough, NJ)	NJ - 3	4.6	100%
Conoco Phillips - Trainer Refinery	PA - 8	4.6	None Required
Greenwich Terminals LLC	PA - 3	4.6	100%
Sunco Logistics Hog Island	PA - 4	4.6	90%
Crowley Liner Services	NJ - 1	4.6	100%
Chiquita Fresh North America	DE - 2	4.28	None Required
Diamond State Port Corp	DE - 3	4.28	None Required
Gloucester Terminals LLC	NJ - 2	4.2	100%
Penn Terminals Inc. - Eddystone (PA)	PA - 6	4.2	100%
Sunco Inc. (R&M), Philadelphia Refinery (Girad Pt. & Pt. Breeze)	PA - 3 S	4.04	100%
Del Monte Fresh Produce - Port of Camden	NJ - 2	4.04	100%
CITGO Asphalt Refining Company	NJ - 3	4.04	100% - 100%
Broadway Terminal (SJPC)	NJ - 2	4.04	100%
Premcor Refinery	DE - 5	3.96	None Required
Dole Fresh Fruit Company	DE - 2	3.72	None Required
Amerada Hess Pensauken	NJ - 1	3.64	None Required
Delaware River Stevedoring, Inc. (Tioga)	PA - 1	3.64	100%
Philadelphia Regional Port Authority, Pier 84S; SS United States	PA - 2	3.64	65%
Westway Terminal Company - Philadelphia Terminal	PA - 1	3.64	100%
G-P Gypsum Corp. - Camden Mill	NJ - 2	3.48	100%
Beckett Street Terminal	NJ - 2	3.48	100%
CitrosSuco North America	DE - 2	3.32	None Required
Exelon - Eddystone Station	PA - 6	3.08	100%
ST Services Philadelpahia (PA)	PA - 3 S	3.08	None Required
Horizon Stevedoring Inc., Pier 82	PA - 2	3.08	100%
ACOE Facility	PA - 4	3.08	100%
Novolog	PA - N of 1	2.84	None Required
Kinder Morgan Liquid Terminals	PA - 1	2.76	100%
Sunco Chemicals - Frankford Plant	PA - N of 1	2.76	None Required
National Gypsum	NJ - N of 1	2.76	None Required
Oceanport Industries	DE - 1	2.76	None Required
Excelon-Croyden Generating Station	PA - N of 1	2.6	None Required
ST Services Paulsboro (NJ)	NJ - 4	2.52	100%
Amerada Hess Philadelphia	PA - 4	2.52	None Required
Philadelphia Naval Business Center, Port of Phil.and Camden Terminal (Cruise Terminal)	PA - 3	2.52	70%
Philadelphia Regional Port Authority, Pier 38-40	PA - 2	2.52	100%
Philadelphia Regional Port Authority, Pier 78-80	PA - 2	2.52	100%
Riverside Construction	PA - N of 1	2.52	None Required
Trigen Energy - DESS (Philadelphia)	PA - 3 S	2.36	None Required
Interstate Piperline and Storage	NJ - N of 1	2.36	None Required
River Associates, Inc.	PA - 3	2.2	100%
Delaware Terminal (port of Wilmington)	DE - 1	2.2	None Required
SPIRIT OF PHILADELPHIA	PA - 2	2.12	40%
LIBERTY BELL	PA - 2	2.12	100%
Connectiv Edgemoor	DE - 2	2.04	None Required
Kvaerner Philadelphia Shipyard	PA - 3	1.96	100%
PQ Corporation (PA)	PA - 6	1.96	None Required
F.C. Haab Oil (Schuykill Terminal)	PA - 3 S	1.96	None Required
KOCH Materials Co.	NJ - 2	1.96	100%
Riverlink Camden Ferry Facility (DRPA)	NJ - 2	1.96	65%
Mid-Atlantic Shipping and Stevedoring	NJ - 9	1.64	None Required
MOSHULU	PA - 2	1.56	100%
USS NEW JERSEY	NJ - 2	1.56	100%
OLYMPIA	PA - 2	1.56	100%
Penns Landing	PA - 2	1.56	100%
Wiggins Park	NJ - 2	1.56	100%
Tweeter Center	NJ - 2	1.56	100%
The Lagoon	PA - 5	1.56	5%
Pier 122	PA - 3	1.56	100%
BECUNA	PA - 2	1.56	100%
Duck Island Terminal	NJ - N of 1	1.32	None Required
Groes Waste Management	PA - N of 1	1.32	None Required
Meenan Oil	PA - N of 1	1.24	None Required
Dupont Edgewater	DE - 2	1.24	None Required
Dupont Deepwater	NJ - 7	0.92	None Required
MSO (Including vessels)	PA - 2	0	100%
Pier 124	PA - 3	0	90%
Navy Base Ships	PA - 3	0	55%
Gazella	PA - 2	0	50%
Tugs and Barges at Navy Business Center	PA - 3	0	60%

1/25/2005
11:59 AM

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Operations Section
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Decon Group
Prepared By Signature:		**Task Force:**	Recreational Boat Task Force
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Vessel Decon Group Leader	J. Sanial		856-266-3810	
Rec. Boat Decon Task Force Supervisor	R. Johnson		504-458-2690	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Recreational Boat Task Force	Manpower: Responder	Responders	15 each	
Recreational Boat Task Force	Manpower: Supervisor	Supervisor	1 each	

Assignments

Recreational vessel cleaning program at Lagoon and local marina.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Site-Specific Safety Considerations

- Safety: Ensure proper PPE such as face shields are used during pressure washing operations.

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Continue preparation for severe weather operation.

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ICS 204 - Assignment List

Incident: MV Athos I	**Branch:** Wildlife Recovery Group
Period: Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**
Prepared By Signature:	**Task Force:**
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	D. Sobieski		714-342-6358	
Environmental Unit Leader	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Continue to recover & rehabilitate any impacted wildlife. Provide technical assistance on any wildlife-related issues.

Special Instructions for Division / Group

Wildlife recovery teams will advise Situation Unit and group supervisor of any observed shoreline oil impact.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Report endangered species observations to the Group Supervisor.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Monitoring Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Chief for Port Ops	B. Jones		215-778-4533	
Division/Group Supervisor	J. Kapsimalis		609-351-7145	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Monitoring Group	Federal Monitor	NSF / MSO Monitors	8 each	
Monitoring Group	Manpower: Supervisor	USCG Supervisor	1 each	
Monitoring Group	State Monitor	State Monitors	3 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Monitoring Group					
USCG	Vehicle	Vehicle - G/V	1 each		Assigned
USCG	Vehicle	Vehicle - Rental	5 each		Assigned
New Jersey	Vehicle	Vehicle - State Vehic	3 each		Assigned
Pennsylvania	Vehicle	Vehicle - State Vehic	4 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Monitoring Group					
USCG	Manpower: Supervisor	MSO Personnel	4 each		Assigned
USCG	Manpower: Supervisor	NSF Team Member	6 each		Assigned
New Jersey	Manpower: Supervisor	State DEP - New Jer	3 each		Assigned
Pennsylvania	Manpower: Supervisor	State DEP - Pennsyl	4 each		Assigned
USCG	Manpower: Supervisor	Supervisors	1 each		Assigned

Assignments

Conduct clean-up monitoring at assigned divisions. Ensure safe and effective recovery operations. Document resource use and availability, ensure adequacy of clean-up efforts and identify and correct safety issues. Evaluate response methods needed for oil removal and make recommendations to Supervisor. Report findings to Ops Representative (609-351-8525). Correct gross safety violations immediately. Report violations to Safety Officer (see numbers above).

Special Environmental Considerations

Ensure no wetland vegetation is cut without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit (267-765-3446/3448/3447).

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Deputy Operations Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Monitoring Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan. Near water operations, appropriate PPE / Mustang Suits must be worn.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs (267-765-3446/3448/3447).

State Representatives should report resource status to Situation Unit according to the above schedule and/or as the situation warrants.

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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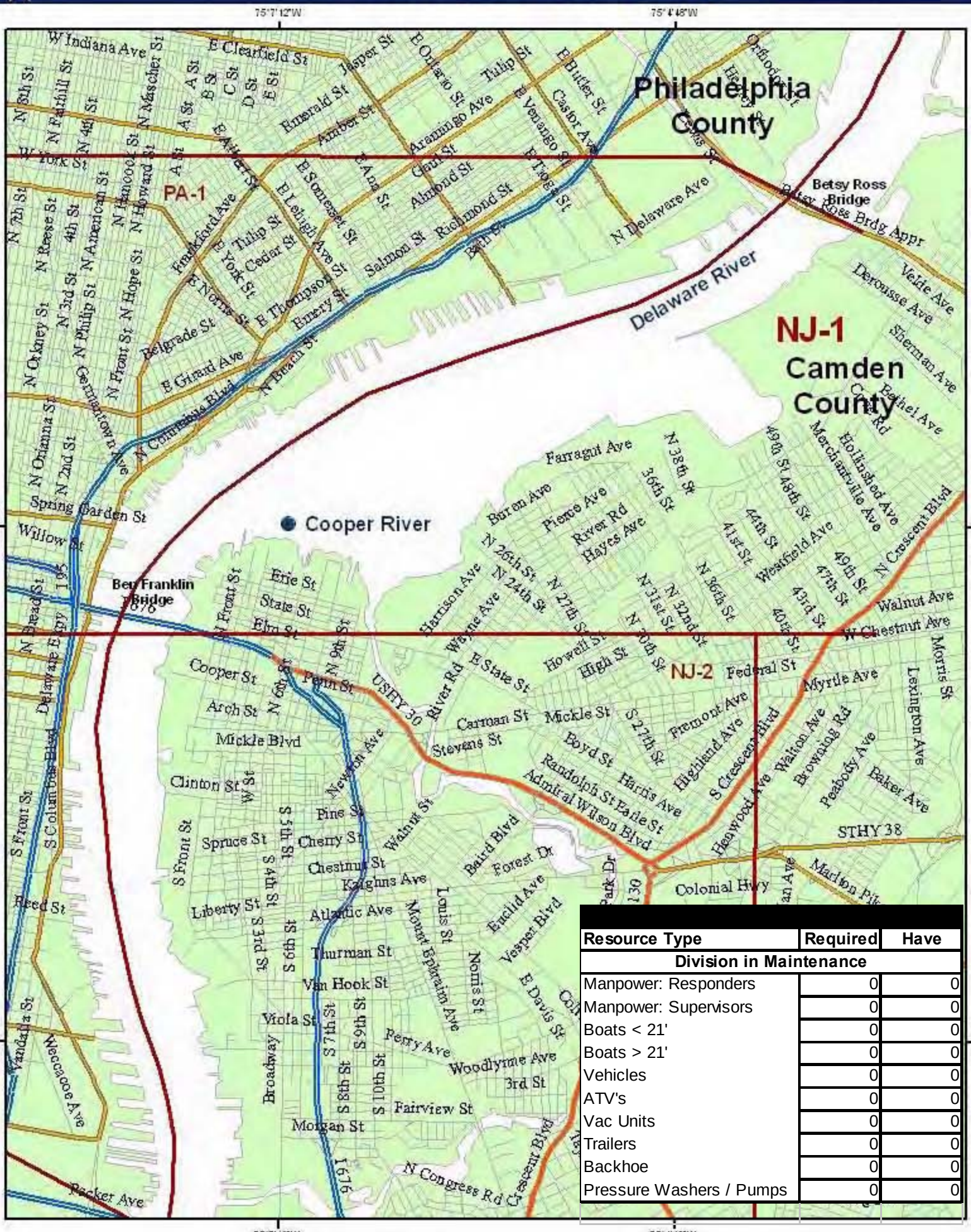
NJ-1 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Maintenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Vehicles	0	0
ATV's	0	0
Vac Units	0	0
Trailers	0	0
Backhoe	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-1 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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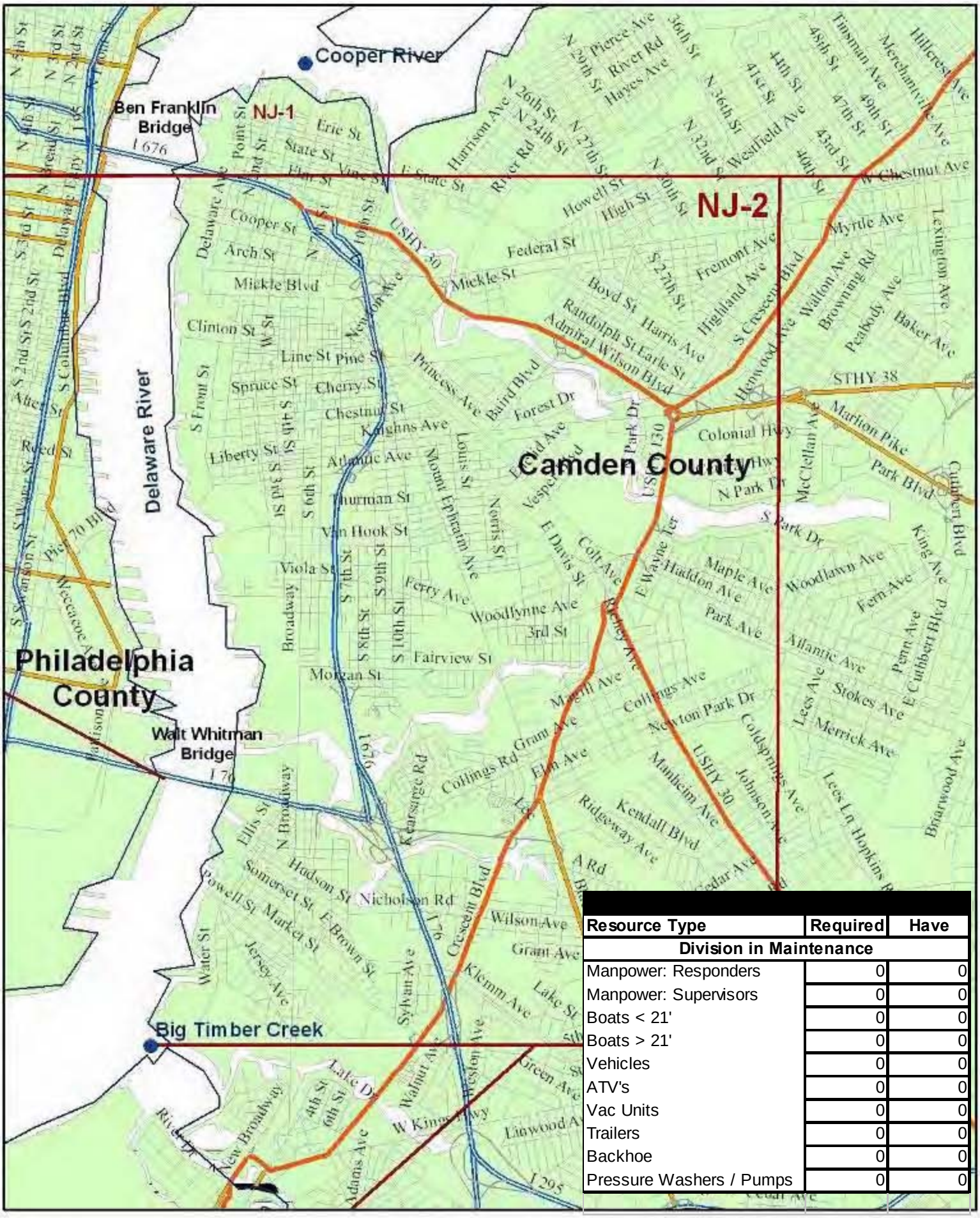
NJ-2 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Maintenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Vehicles	0	0
ATV's	0	0
Vac Units	0	0
Trailers	0	0
Backhoe	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-2 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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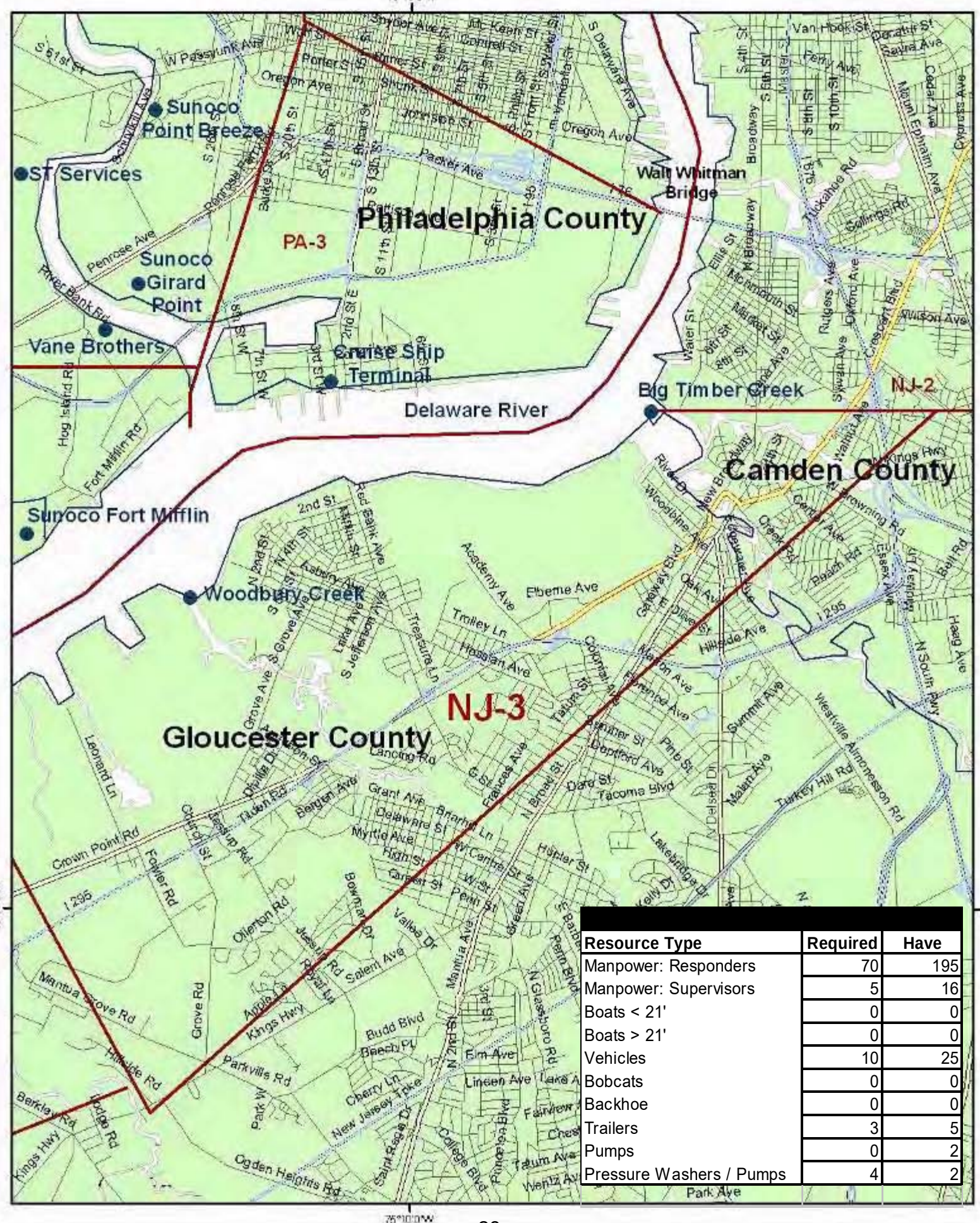
NJ-3 Division Overview Map

The Response Group


75°10'0"W
Sunoco Point Breeze
ST Services
Sunoco Girard Point
Vane Brothers
Cruise Ship Terminal
Walt Whitman Bridge
Philadelphia County
PA-3
Delaware River
Big Timber Creek
NJ-2
Camden County
Sunoco Fort Mifflin
Woodbury Creek
NJ-3
Gloucester County
Penrose Ave
River Bank Rd
Hog Island Rd
Fort Mifflin Rd
Oregon Ave
Packer Ave
Broadway
Delaware Ave
Academy Ave
Elberne Ave
Trolley Ln
Hessian Ave
Lancing Rd
Crown Point Rd
Tatem Rd
Leonard Ln
Fowler Rd
Olivette Rd
Oldmans Twp
Bergen Ave
Grant Ave
Delaware St
Myrtle Ave
High St
Carpet St
Penn St
Hunter St
Tacoma Blvd
Dard St
Summit Ave
Turkey Hill Rd
Westville Almonesson Rd
Lakeshore Dr
Kelly Dr
Olivette Rd
Vallee Dr
Mantua Grove Rd
Grove Rd
Kings Hwy
Budd Blvd
Beech Pl
Elm Ave
Linden Ave
Parkville Rd
Hillside Rd
Berkley Rd
Cherry Ln
New Jersey Turnpike
Ogden Heights Rd
Park Ave
Haag Ave
N South Ave
Ball Rd
Essex Ave
Beach Rd
Browning Rd
Cedar Ave
Rutgers Ave
Oxford Ave
Crescent Blvd
Wilson Ave
Mechanic St
Market St
Water St
Ellis St
Van Hook St
Mount Ephraim Ave
Haddon Rd
Collings Rd
Kings Hwy
Riverside Dr
New Broadway
Woodbine Ave
Edgewater Ave
Gateway Blvd
E Dixie St
Oak Ave
Hillside Ave
Clayton Ave
Summit Ave
Delsea Dr
Malaga Ave
Tacoma Blvd
Dard St
Broadway
Broad St
Frances Ave
Clayton Ave
Lancaster Ave
Glendale Ave
Glenwood Ave
Sunset Ave
Lake Ave
S Jefferson Ave
S Grove Ave
N Grove Ave
Red Bank Ave
N 2nd St
S 2nd St
N 4th St
S 4th St
Kaighn Ave
Treasure Ln
Trolley Ln
Hessian Ave
Academy Ave
Elberne Ave
Lancing Rd
Tatem Rd
Leonard Ln
Fowler Rd
Olivette Rd
Bergen Ave
Grant Ave
Delaware St
Myrtle Ave
High St
Carpet St
Penn St
Hunter St
Tacoma Blvd
Dard St
Summit Ave
Turkey Hill Rd
Westville Almonesson Rd
Lakeshore Dr
Kelly Dr

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	P. Parker		270-559-2735	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
NJ-3 Division	Manpower: Responder	Responders	70 each	
NJ-3 Division	Manpower: Supervisor	Supervisors	5 each	
NJ-3 Division	Pressure Washers / Wash	Pressure Washers/Pump	4 each	
NJ-3 Division	Trailer	Trailers	3 each	
NJ-3 Division	Vehicle	Vehicles	10 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Fleet Environmental Service	Pressure Washers / Wa	Pressure Washers	2 each		Assigned
Fleet Environmental Service	Pumps	Pumps - NJ-3	2 each		Assigned
Accurate Marine Environmer	Trailer	Oil Response Trailer	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Trailer	Oil Spill Response Tı	1 each	24 feet	Assigned
Fleet Environmental Service	Trailer	Trailers - NJ-3	3 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1 Ton stake truck - N	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	15 passenger van - N	2 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	Pickup - NJ-3	1 each		Assigned
Fleet Environmental Service	Vehicle	Vehicle - NJ-3	14 each		Assigned
Accurate Marine Environmer	Vehicle	Vehicles - NJ-3	7 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-3 Division					
Accurate Marine Environmer	Manpower: Responder	Responders - NJ-3	40 each		Assigned
Fleet Environmental Service	Manpower: Responder	Responders - NJ-3	134 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Responders - NJ-3	27 each		Assigned
Accurate Marine Environmer	Manpower: Supervisor	Supervisors	4 each		Assigned
Fleet Environmental Service	Manpower: Supervisor	Supervisors	9 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Supervisor	Supervisors	3 each		Assigned
USCG	Manpower: Supervisor	USCG Monitors - NJ	3 each		Assigned

Assignments

Shoreline cleanup.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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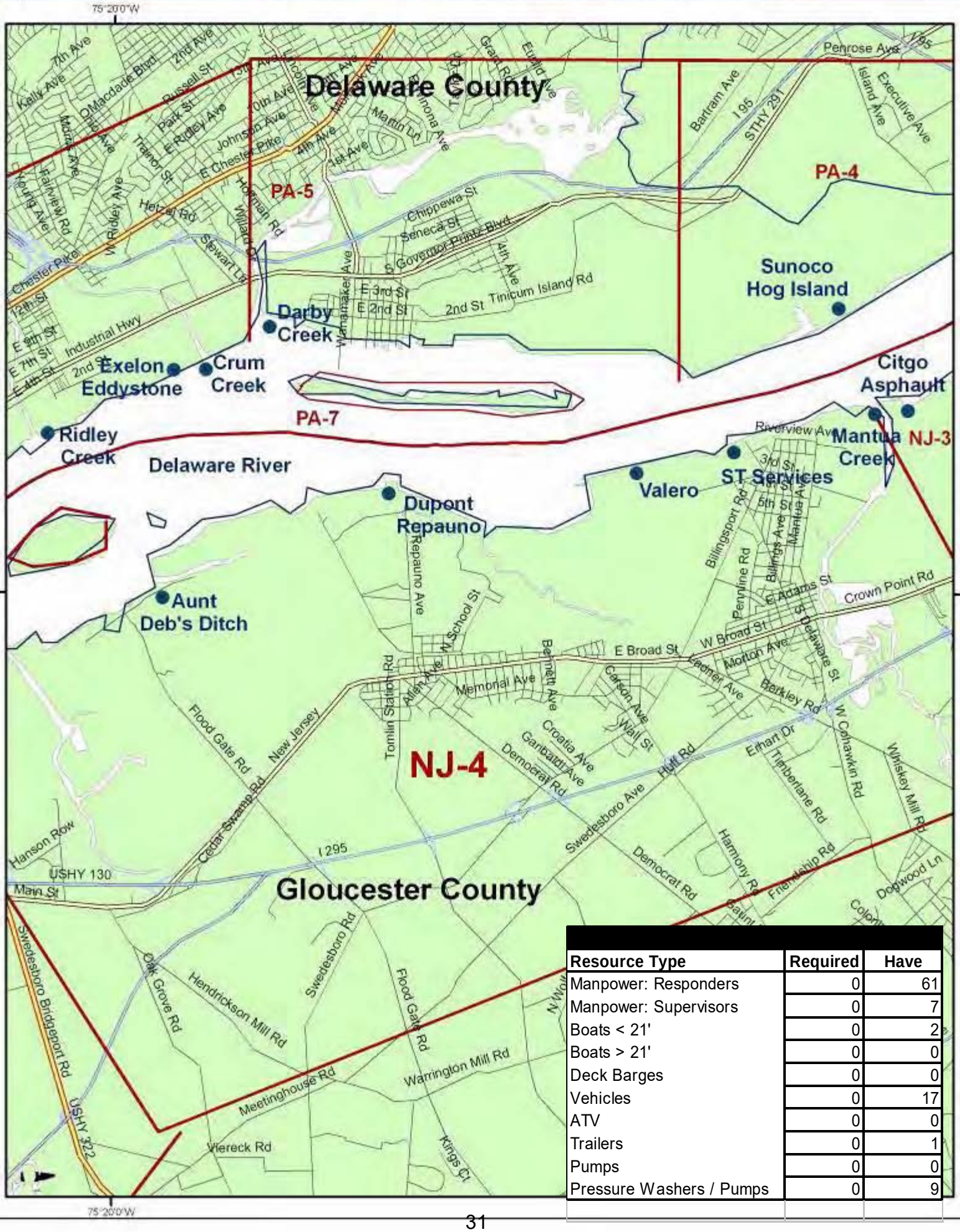
NJ-4 Division Overview Map



Resource Type	Required	Have
Manpower: Responders	0	61
Manpower: Supervisors	0	7
Boats < 21'	0	2
Boats > 21'	0	0
Deck Barges	0	0
Vehicles	0	17
ATV	0	0
Trailers	0	1
Pumps	0	0
Pressure Washers / Pumps	0	9

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	J. Johnson		267-228-8978	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
Clean Harbors Environmenta	Pressure Washers / Wa	Pressure Washers	8 each		Assigned
Miller Environmental Group,	Vehicle	Pick Up Truck - NJ-4	1 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	11 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
NJ-4 Division					
Environmental Restoration	Manpower: Responder	Responders - NJ-4	10 each		Assigned
Miller Environmental Service	Manpower: Responder	Responders - NJ-4	4 each		Assigned
Clean Harbors COOP	Manpower: Responder	Responders- NJ-4	39 each		Assigned
Miller Environmental Group,	Manpower: Supervisor	Supervisor	1 each		Assigned
Clean Harbors COOP	Manpower: Supervisor	Supervisors	5 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Long, narrow creek with spotty oil throughout sausage boom required. No wetland vegetation should be cut without State approval. Report oiled wildlife to Situation Unit. Do not walk through or work in Mud Flats.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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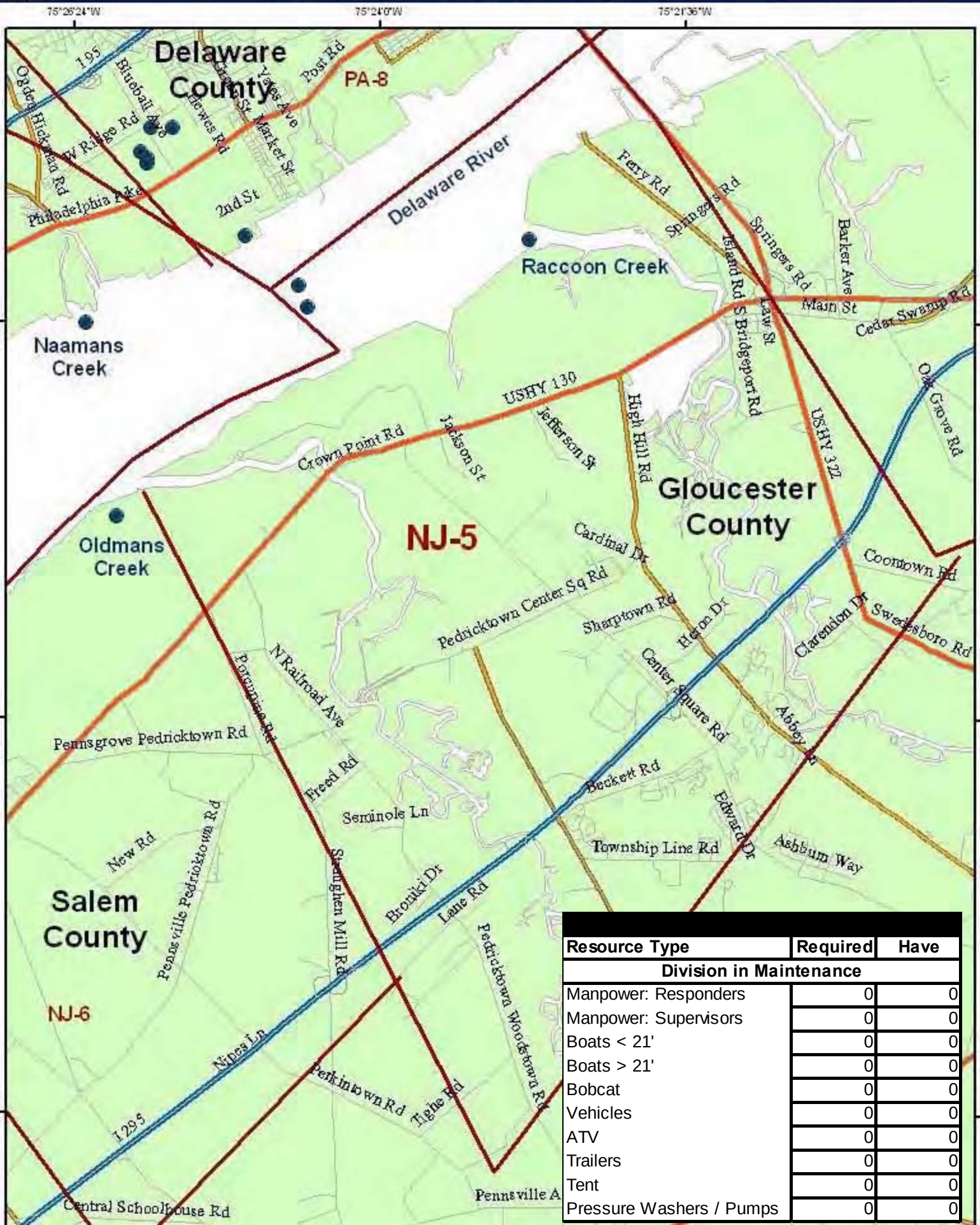
NJ-5 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Maintenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Bobcat	0	0
Vehicles	0	0
ATV	0	0
Trailers	0	0
Tent	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	New Jersey Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	NJ-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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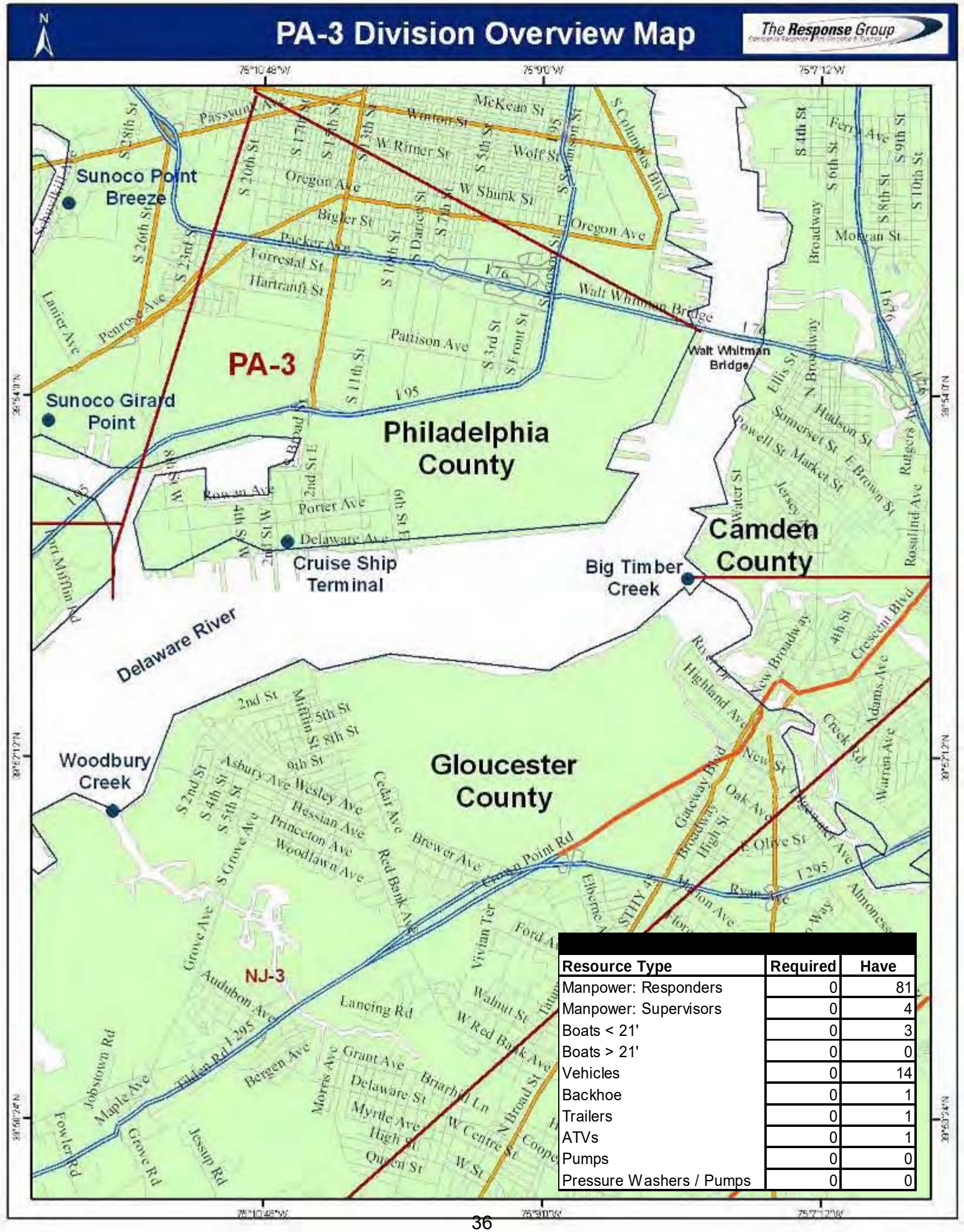
PA-3 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	0	81
Manpower: Supervisors	0	4
Boats < 21'	0	3
Boats > 21'	0	0
Vehicles	0	14
Backhoe	0	1
Trailers	0	1
ATVs	0	1
Pumps	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	D. Marsh		713-569-2060	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-3 Division					
Clean Harbors Environmenta	Equipment: Heavy	Backhoe	1 each		Assigned
Optech	Trailer	Trailer	1 each		Assigned
Optech	Vehicle	ATV	1 each		Assigned
Moran	Vehicle	Truck	4 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks	5 each		Assigned
Optech	Vehicle	Utilty Truck	5 each		Assigned
Moran	Vessel	Boat < 21'	1 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	Boat < 21' - PA-3	2 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-3 Division					
Moran	Manpower: Responder	Responders	40 each		Assigned
Optech	Manpower: Responder	Responders	19 each		Assigned
Clean Harbors Environmenta	Manpower: Responder	Responders - PA-3	22 each		Assigned
Clean Harbors Environmenta	Manpower: Supervisor	Supervisor	1 each		Assigned
Moran	Manpower: Supervisor	Supervisor	2 each		Assigned
Optech	Manpower: Supervisor	Supervisor	1 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-3 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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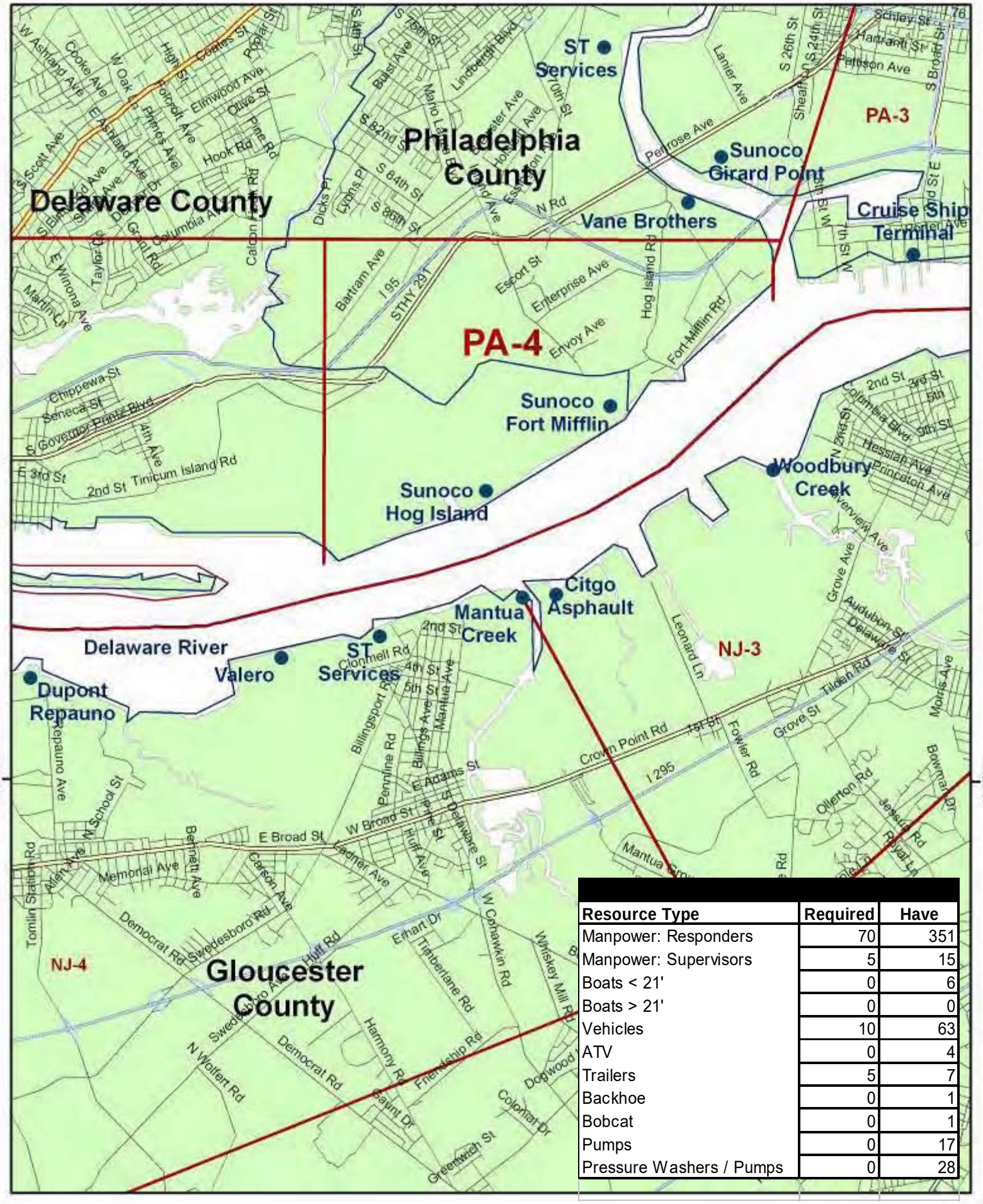
PA-4 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	70	351
Manpower: Supervisors	5	15
Boats < 21'	0	6
Boats > 21'	0	0
Vehicles	10	63
ATV	0	4
Trailers	5	7
Backhoe	0	1
Bobcat	0	1
Pumps	0	17
Pressure Washers / Pumps	0	28

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	J. Copeland		TBD	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
PA-4 Division	Manpower: Responder	Responders	70 each	
PA-4 Division	Manpower: Supervisor	Supervisors	5 each	
PA-4 Division	Trailer	Trailers	5 each	
PA-4 Division	Vehicle	Vehicles	10 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
SWS Environmental First Re	Boom	Boom	4500 feet	10 inch(es)	Assigned
USES	Equipment: Heavy	Backhoe - PA-4	1 each		Assigned
USES	Equipment: Heavy	Bobcat - PA-4	1 each		Assigned
Clean Harbors Environmenta	Pressure Washers / Wa	Hotsey	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	Pressure Washer	7 each		Assigned
Boomtech	Pressure Washers / Wa	Pressure Washers	6 each		Assigned
Kens Marine Service	Pressure Washers / Wa	Pressure Washers	11 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	Pressure Washers	6 each		Assigned
Boomtech	Pumps	Pumps	4 each		Assigned
Clean Venture, Inc.	Pumps	Pumps	4 each		Assigned
Kens Marine Service	Pumps	Pumps	4 each		Assigned
SWS Environmental First Re	Pumps	Pumps	4 each		Assigned
Environmental Restoration	Trailer	Trailer	1 each		Assigned
USES	Trailer	Trailer	1 each		Assigned
Clean Venture, Inc.	Trailer	Trailer - PA-4	2 each		Assigned
SWS Environmental First Re	Trailer	Trailer - PA-4	2 each		Assigned
Kens Marine Service	Trailer	Trailers - PA-4	3 each		Assigned
USES	Vehicle	ATV - PA-4	4 each		Assigned
Boomtech	Vehicle	Vehicles	3 each		Assigned
Clean Venture, Inc.	Vehicle	Vehicles	3 each		Assigned
Environmental Restoration	Vehicle	Vehicles	9 each		Assigned
USES	Vehicle	Vehicles	23 each		Assigned
Boomtech	Vehicle	Vehicles - Box Truck	1 each		Assigned
Kens Marine Service	Vehicle	Vehicles - PA-4	9 each		Assigned
SWS Environmental First Re	Vehicle	Vehicles - PA-4	13 each		Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
Boomtech	Vessel	Boat < 21'	2 each	20 feet	Assigned
Clean Venture, Inc.	Vessel	Boat < 21'	1 each	20 feet	Assigned
Kens Marine Service	Vessel	Boat < 21' - PA-4	4 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-4 Division					
Boomtech	Manpower: Responder	Responders	14 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Responders - PA-4	41 each		Assigned
Kens Marine Service	Manpower: Responder	Responders - PA-4	24 each		Assigned
SWS Environmental First Re	Manpower: Responder	Responders - PA-4	103 each		Assigned
USES	Manpower: Responder	Responders - PA-4	134 each		Assigned
Environmental Restoration	Manpower: Responder	Responders-PA-4	32 each		Assigned
Boomtech	Manpower: Supervisor	Supervisor	1 each		Assigned
Clean Venture, Inc.	Manpower: Supervisor	Supervisor	2 each		Assigned
Environmental Restoration	Manpower: Supervisor	Supervisor	2 each		Assigned
Kens Marine Service	Manpower: Supervisor	Supervisors	3 each		Assigned
SWS Environmental First Re	Manpower: Supervisor	Supervisors	3 each		Assigned
USES	Manpower: Supervisor	Supervisors	4 each		Assigned
USCG	Manpower: Supervisor	USCG Monitors - PA	2 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-4 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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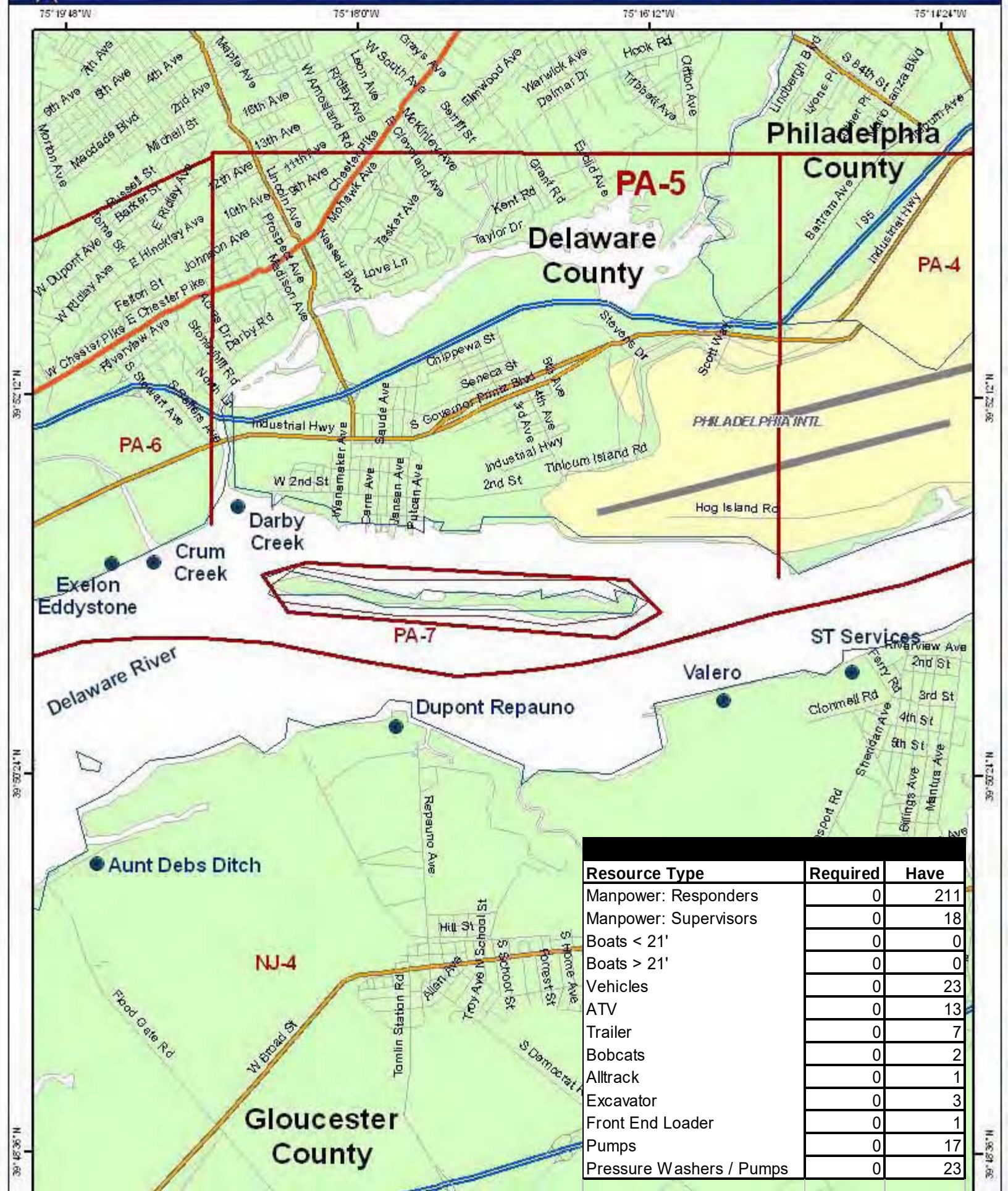
PA-5 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	0	211
Manpower: Supervisors	0	18
Boats < 21'	0	0
Boats > 21'	0	0
Vehicles	0	23
ATV	0	13
Trailer	0	7
Bobcats	0	2
Alltrack	0	1
Excavator	0	3
Front End Loader	0	1
Pumps	0	17
Pressure Washers / Pumps	0	23

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	M. Jenkins		985-768-2328	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
Miller Environmental Group,	Equipment: Heavy	AllTrack - PA-5	1 each		Assigned
Miller Environmental Group,	Equipment: Heavy	Bobcat - PA-5	2 each		Assigned
Baker Tanks	Equipment: Heavy	Excavator	1 each		Assigned
Miller Environmental Group,	Equipment: Heavy	Excavator	2 each		Assigned
Baker Tanks	Equipment: Heavy	Front End Loader	1 each		Assigned
Miller Environmental Group,	Pressure Washers / Wa	Pressure Washers	6 each		Assigned
Global Remediation Services	Pressure Washers / Wa	Pressure Washers -	5 each		Assigned
Moran	Pressure Washers / Wa	Pressure Washers -	12 each		Assigned
Miller Environmental Group,	Pumps	Pumps	6 each		Assigned
Global Remediation Services	Pumps	Pumps - PA-5	2 each		Assigned
Moran	Pumps	Pumps - PA-5	6 each		Assigned
Clean Harbors Environmenta	Pumps	Pumps- PA-5	3 each		Assigned
Global Remediation Services	Trailer	Trailer	2 each		Assigned
Moran	Trailer	Trailer	1 each		Assigned
Clean Harbors Environmenta	Trailer	Trailer - PA-5	1 each		Assigned
Miller Environmental Group,	Trailer	Trailers - PA-5	4 each		Assigned
Miller Environmental Group,	Vehicle	ATV	10 each		Assigned
Moran	Vehicle	ATV	2 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks - PA-5	9 each		Assigned
Miller Environmental Group,	Vehicle	Utility Truck - PA-5	7 each		Assigned
Global Remediation Services	Vehicle	Vehicle - PA-5	1 each		Assigned
Moran	Vehicle	Vehicle - PA-5	5 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
Clean Harbors Environmenta	Manpower: Responder	Responders - PA-5	33 each		Assigned
Global Remediation Services	Manpower: Responder	Responders - PA-5	5 each		Assigned
Miller Environmental Group,	Manpower: Responder	Responders - PA-5	91 each		Assigned
Moran	Manpower: Responder	Responders - PA-5	60 each		Assigned
Clean Harbors Environmenta	Manpower: Supervisor	Supervisors	2 each		Assigned
Miller Environmental Group,	Manpower: Supervisor	Supervisors	5 each		Assigned

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-5 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-5 Division					
Moran	Manpower: Supervisor	Supervisors - PA-5	8 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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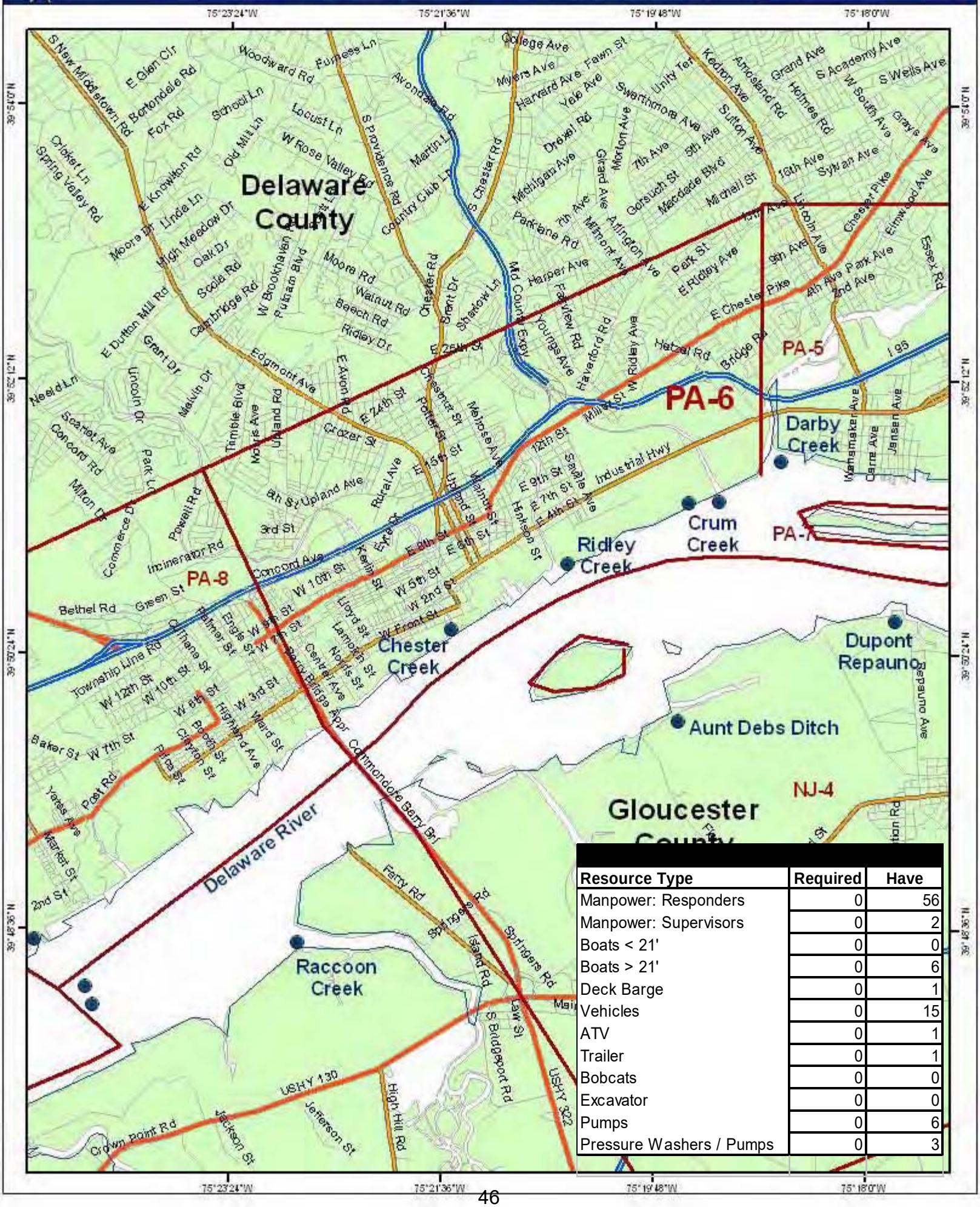
PA-6 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	0	56
Manpower: Supervisors	0	2
Boats < 21'	0	0
Boats > 21'	0	6
Deck Barge	0	1
Vehicles	0	15
ATV	0	1
Trailer	0	1
Bobcats	0	0
Excavator	0	0
Pumps	0	6
Pressure Washers / Pumps	0	3

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-6 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	J. Topic		952-201-1002	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-6 Division					
North Star/Sea Tow	Barge: Inland	Deck Barge	1 each		Assigned
North Star/Sea Tow	Pressure Washers / Wa	Pressure Washers - '	3 each		Assigned
North Star/Sea Tow	Pumps	Pumps - PA-6	2 each		Assigned
Oilmop, Inc.	Pumps	Pumps - PA-6	4 each		Assigned
Oilmop, Inc.	Trailer	Trailer - PA-6	1 each		Assigned
Oilmop, Inc.	Vehicle	ATV	1 each		Assigned
Oilmop, Inc.	Vehicle	Vehicles - PA-6	15 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-6 Division					
Oilmop, Inc.	Manpower: Responder	Responders	50 each		Assigned
North Star/Sea Tow	Manpower: Responder	Responders - PA-6	6 each		Assigned
Oilmop, Inc.	Manpower: Supervisor	Supervisors	2 each		Assigned
USCG	Manpower: Supervisor	USCG Monitors - PA	2 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-6 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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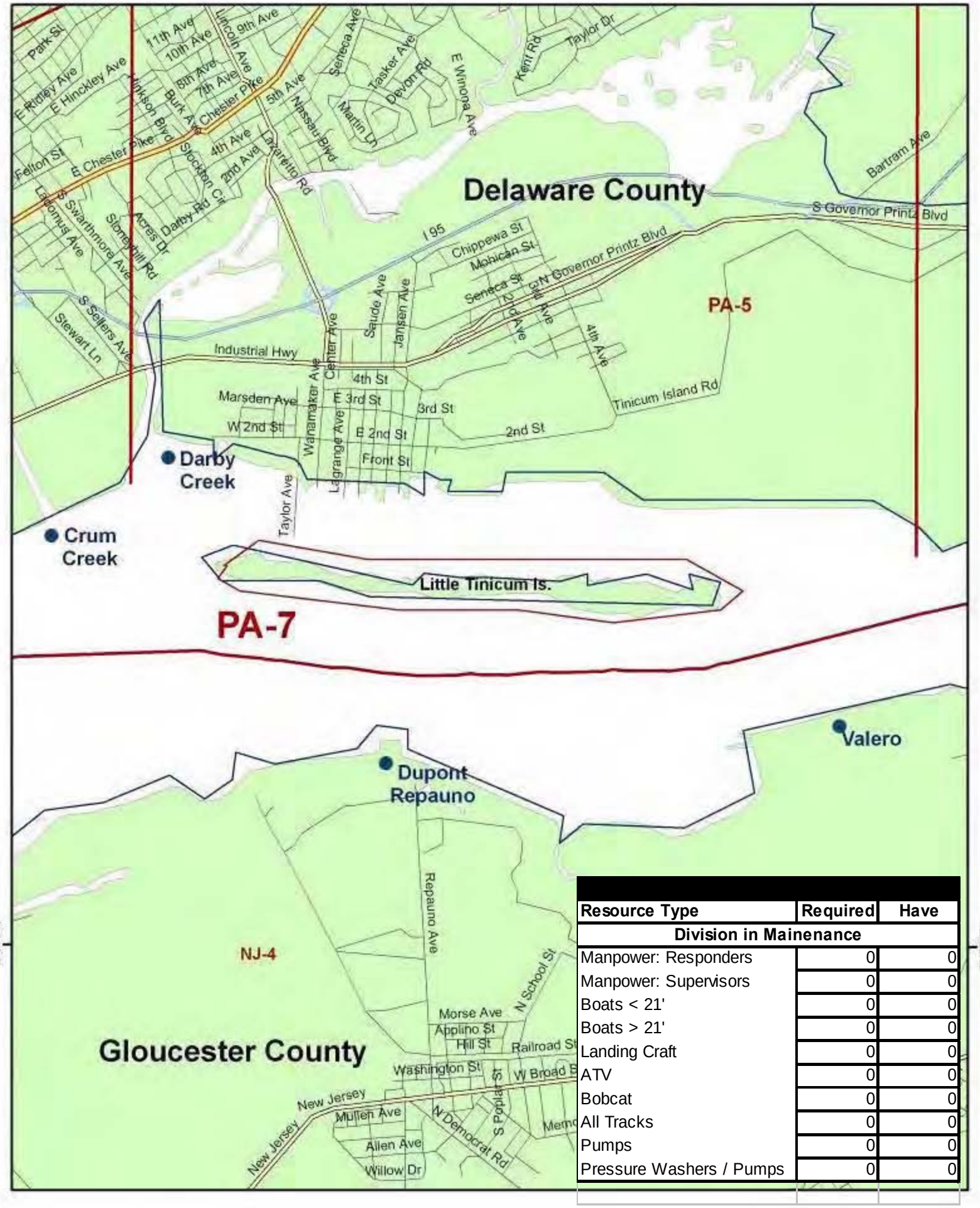
PA-7 Division Overview Map

The Response Group



Resource Type	Required	Have
Division in Mainenance		
Manpower: Responders	0	0
Manpower: Supervisors	0	0
Boats < 21'	0	0
Boats > 21'	0	0
Landing Craft	0	0
ATV	0	0
Bobcat	0	0
All Tracks	0	0
Pumps	0	0
Pressure Washers / Pumps	0	0

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-7 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	S. Smith		504-382-8351	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

Provide maintenance. Develop response alternatives for the un-named Island at the mouth of Schuykhill River.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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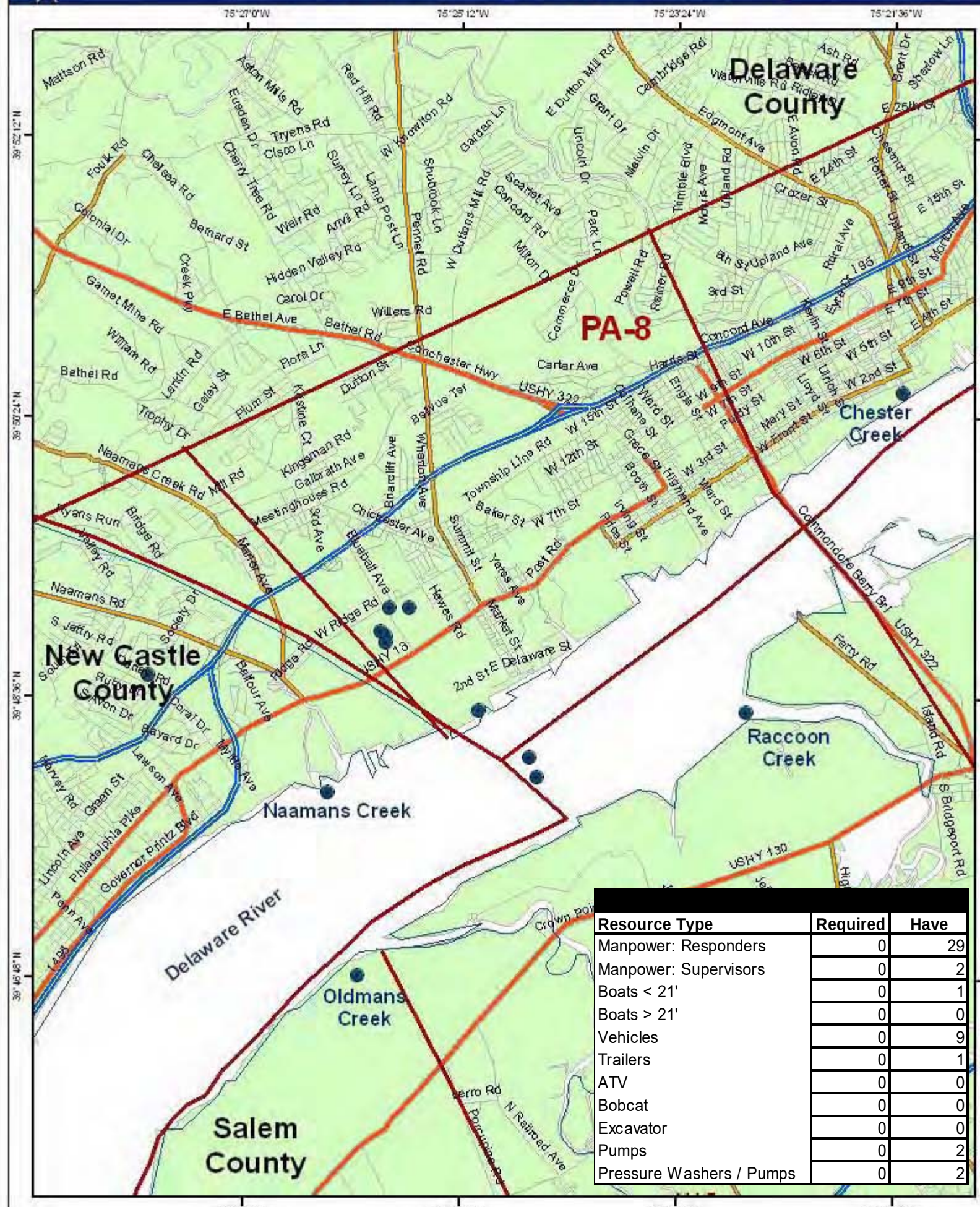
PA-8 Division Overview Map

The Response Group



Resource Type	Required	Have
Manpower: Responders	0	29
Manpower: Supervisors	0	2
Boats < 21'	0	1
Boats > 21'	0	0
Vehicles	0	9
Trailers	0	1
ATV	0	0
Bobcat	0	0
Excavator	0	0
Pumps	0	2
Pressure Washers / Pumps	0	2

ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Division/Group Supervisor	G. Geiger		267-228-8983	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
PA-8 Division					
Environmental Restoration	Pressure Washers / Wa	Pressure Washer	2 each		Assigned
Environmental Restoration	Pumps	Pump	2 each		Assigned
Clean Harbors Environmenta	Vehicle	Trucks - PA-8	1 each		Assigned
Environmental Restoration	Vehicle	Vehicle	3 each		Assigned
PMC	Vehicle	Vehicles	5 each		Assigned
Clean Harbors Environmenta	Vessel	Boat < 21' - PA-8	1 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
PA-8 Division					
Clean Harbors Environmenta	Manpower: Responder	Responders - PA-8	1 each		Assigned
PMC	Manpower: Responder	Responders - PA-8	22 each		Assigned
Environmental Restoration	Manpower: Responder	Responders-PA-8	6 each		Assigned
Environmental Restoration	Manpower: Supervisor	Supervisor	1 each		Assigned
PMC	Manpower: Supervisor	Supervisors - PA-8	1 each		Assigned

Assignments

Shoreline cleanup.

Location of Work

See Division Overview Map.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Cut no wetland vegetation without state approval. Do not walk through or work in Mud Flats. Report oiled wildlife to situation unit.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Pennsylvania / Delaware Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	PA-8 Division
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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ICS 204 - Assignment List

Incident:	MV Athos I	**Branch:**	Submerged Oil Assessment Branch
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Division/Group:**	Submerged Oil Assessment Group
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief	B. Gereighty		985-960-3829	
Operations Section Deputy Recovery	J. Tanner		251-454-6397	
Submerged Oil Assessment Branch Direc	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Submerged Oil Assessment Gr	Vessel	Boats > 21' with crews	2 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Submerged Oil Assessment Group					
North Star/Sea Tow	Vessel	North Star V	1 each	22 feet	Released

Assignments

Deploy, assess, maintain and recover snare samplers as directed.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

Special safety precautions for cold weather hazards require multi-layered clothing including head and ear covers, gloves, and heavy socks, as well as care when driving or walking on icy surfaces. Be aware of your fellow workers who may become lethargic or non-responsive when exposed to below freezing temperatures as this may indicate the onset of hypothermia. Seek cover and warmth when extremities become numb as this may indicate the onset of frostbite.

Additional Information

Report situation status and resource status each day at 1000 and 1430 hrs. 267-765-3446/3448/3447. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling dead wildlife carcasses.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm). Must work outside Safety Zone established by Waterways Management.

Continue preparation for severe weather operation.

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Unified Command Staff Meeting Room	267-765-3460		-	-	○ Yes ● No
Unified Command Staff	267-765-3469		-	-	○ Yes ● No
Unified Command Staff UC Conference Phone	888-287-5343		847-619-6483 - Alt. Numbe	-	○ Yes ● No
Operations	267-765-3439		-	-	○ Yes ● No
Operations	267-765-3445		-	-	○ Yes ● No
Operations	267-765-3456		-	-	○ Yes ● No
Operations Waterways Management Branch	267-765-4889		-	-	○ Yes ● No
Operations Wake Incident Notification	215-271-4889		215-271-4807 - After 4pm	-	○ Yes ● No
Operations Vessel Movement	215-271-4889		-	-	○ Yes ● No
Operations Vessel Movement	215-778-5841		-	-	○ Yes ● No
Planning	267-765-3440		-	-	○ Yes ● No
Planning	267-765-3437		-	-	○ Yes ● No
Planning	267-765-3443		-	-	○ Yes ● No
Planning	267-765-3444		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3447		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Planning Oiled Wildlife	302-737-9543		-	-	○ Yes ● No
Logistics	267-765-3432		-	-	○ Yes ● No
Logistics	267-765-3453		-	-	○ Yes ● No
Logistics	267-765-3454		-	-	○ Yes ● No
Logistics	267-765-3471		-	-	○ Yes ● No
Logistics Claims	866-401-0353		-	-	○ Yes ● No
Finance/Admin	215-923-8660		-	-	○ Yes ● No
Safety	267-765-3455		-	-	○ Yes ● No
Fax Incoming	215-923-4476		-	-	○ Yes ● No
Fax Outgoing	267-765-3456		-	-	○ Yes ● No
Fax Finance	267-765-3490		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2479		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-3004		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2851		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0453		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0483		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-0871		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2)	610-521-2183		-	-	○ Yes ● No
Forward Command Post (Lagoon) NRC (Trailer 2) Fax	610-521-1407		-	-	○ Yes ● No
Safety Office (Lagoon) Nick Brignola	484-239-4436		-	-	○ Yes ● No
Staging Area #1 Brad Barker	985-381-0697		-	-	○ Yes ● No
Lagoon Decon Jim Tanner	856-266-3810		-	-	○ Yes ● No
John Heinz Wildlife Center Triage	215-365-1558		-	-	○ Yes ● No
John Heinz Wildlife Center U.S. Fish and Wildlife	215-365-5341		-	-	○ Yes ● No
John Heinz Wildlife Center U.S. Fish and Wildlife	215-365-5342		-	-	○ Yes ● No
Forward Command Post	610-521-8913		-	-	○ Yes ● No
Forward Command Post	610-521-8914		-	-	○ Yes ● No
Forward Command Post	610-521-8915		-	-	○ Yes ● No
Forward Command Post	610-521-8916		-	-	○ Yes ● No
Forward Command Post On Scene Safety	610-521-8917		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at**	1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Communication Plan		

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
PSEG Primary Liaison Brenden Daly	856-339-1169		-	-	○ Yes ● No
PSEG Secondary Liaison Greg Yaroch	856-339-1188		-	571-283-2580 - 24 Hr. Line	○ Yes ● No
PSEG Tertiary Liaison William Buirch	856-491-5308		-	-	○ Yes ● No
PSEG Communications Mg Skip Sindoni			877-722-7510 - Pager	-	○ Yes ● No
PSEG Spill Protection Command Post	856-339-1188		-	-	○ Yes ● No
PSEG Water Security Zone Security Supervisor	856-339-2223		-	-	○ Yes ● No
PSEG Fire Department Duty Supervisor	856-339-2803		-	856-339-2800 - Non-Emerg	○ Yes ● No
PSEG Deputy Chief John B. Carlin	856-339-2814		-	-	○ Yes ● No
PSEG Engineering Jim Melchionna	856-371-0480		-	-	○ Yes ● No
PSEG Emergency Line	856-339-3333		-	-	○ Yes ● No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency

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ICS 205 - Communications Plan

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Communication Plan	

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	18A	Tactical Secondary	156.900 MHZ	Near/On shore recovery	All Near/On shore secondary freq.
VHF-FM	13	Navigation Safety	156.650 MHZ	Bridge to Bridge	Ship to Ship navigation safety
NRC	1	Tactical Primary	Channel 1	Near/On shore recovery	North of Hog Island
NRC	2	Tactical Primary	Channel 2	Near/On shore recovery	South of Hog Island
Nextel/Cell		Tactical	Cell/Nextel	Protection Branch Tactical	POC: Mr. Bob Poole 302-462-0194
Nextel/Cell		Tactical	Cell/Nextel	Salvage Group	POC: Bob Umbdenstock
Nextel/Cell		Tactical	Cell/Nextel	Safety Team Coordination	POC: Mr. Archie Gresham 302-293-8960
Nextel/Cell		Tactical	Cell/Nextel	SCAT Wildlife Recovery Field Comms net	POC: Heidi Stout: 302-737-9543
Nextel/Cell		Command	Cell/Nextel	Wildlife Recovery Command	POC: Lyle Trumbull 610-710-1919
Nextel/Cell		Tactical	Cell/Nextel	Operations Section	POC: Bill Gereighty 985-960-3829
Nextel/Cell		Tactical	Cell/Nextel	Waterborne Vessel/Pier Decon Group Command Net	POC: Jim Sanial 856-266-3810
Nextel/Cell		Tactical	Cell/Nextel	Monitoring Group	Operations: USCG 267-765-3439 SCAT info: Situations 267-765-3446/3448

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ICS 206 - Medical Plan

Incident:	MV Athos I	**Prepared By:**	Medical Unit Leader **at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	Medical Plan

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Sick Bay	MSO/GRP Philadelphia	No		

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United S	Yes	(215) 955-6000	
Public Ambulance Service	Philadelphia, PA - United S	Yes	911 (See below)	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffe	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Sta	Yes	No	(856) 342-2345	
Christiana Medical Center	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	
Memorial Hospital of Salem County	Salem, NJ - United State	Yes	No	(856) 425-3288	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Report to Medical Unit Leader and Safety
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
Paramedics & mobile unit are stationed on PA side at Staging Area #3 - Lagoon.
To contact EMS at Staging Area #3 - Lagoon - 610-636-8324, or call Nick Federoff - 609-425-3288.
For EMS services on the NJ side, we have established direct contact numbers to EMS dispatchers in each county.
Camden County (NJ 1&2) - 856-757-7502
Gloucester County (NJ 3&4) - 856-589-0911
Salem County (NJ 5,6,7,8,9,10&11) - 856-769-2959
Hyperbaric Chamber is located at University of Pennsylvania Hospital.

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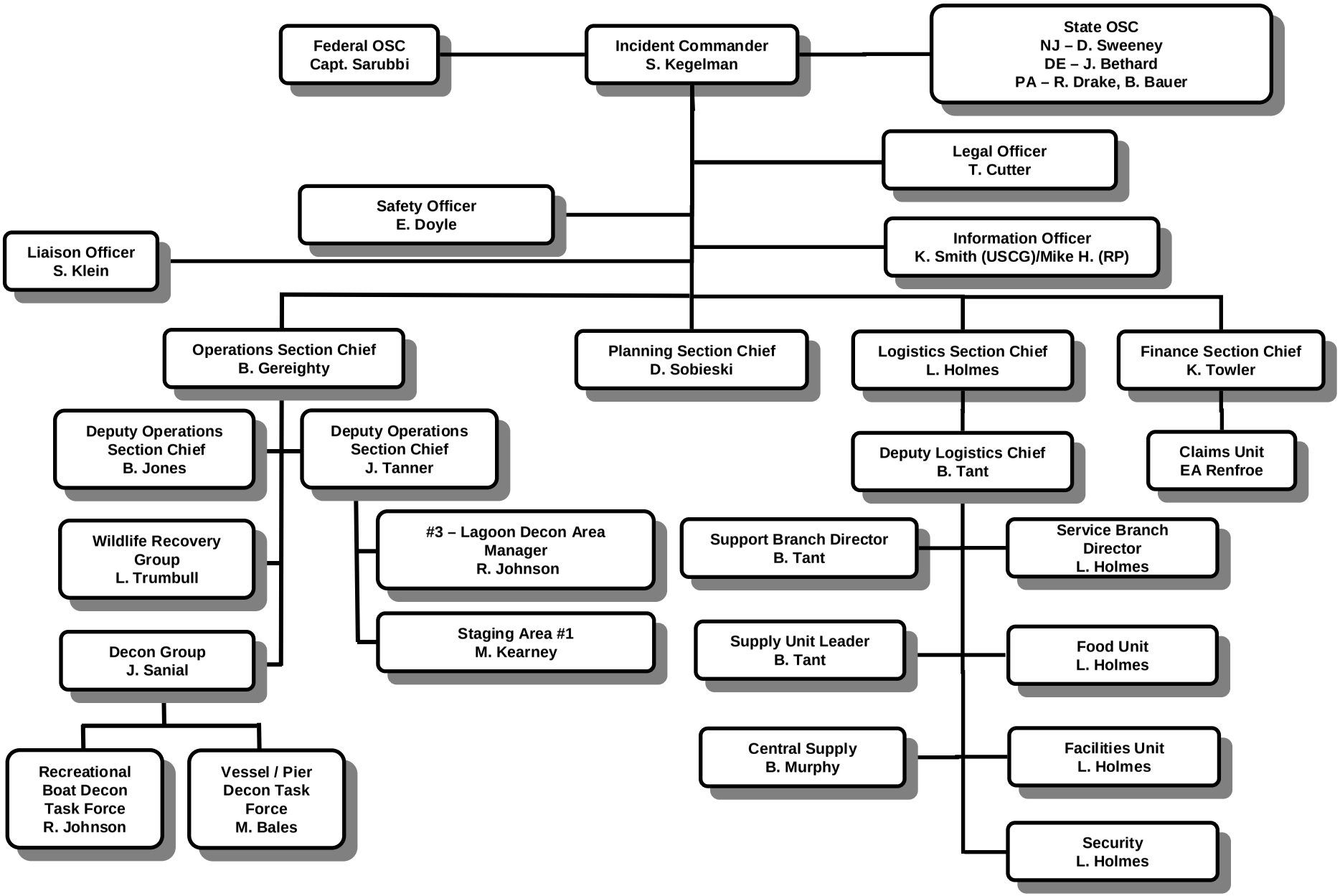
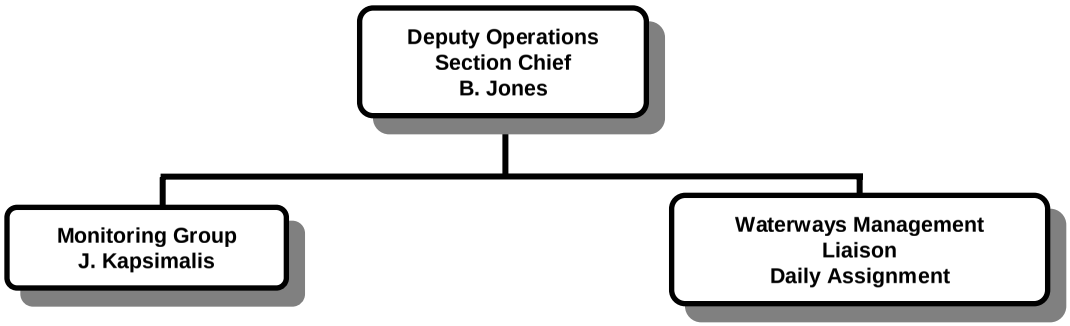
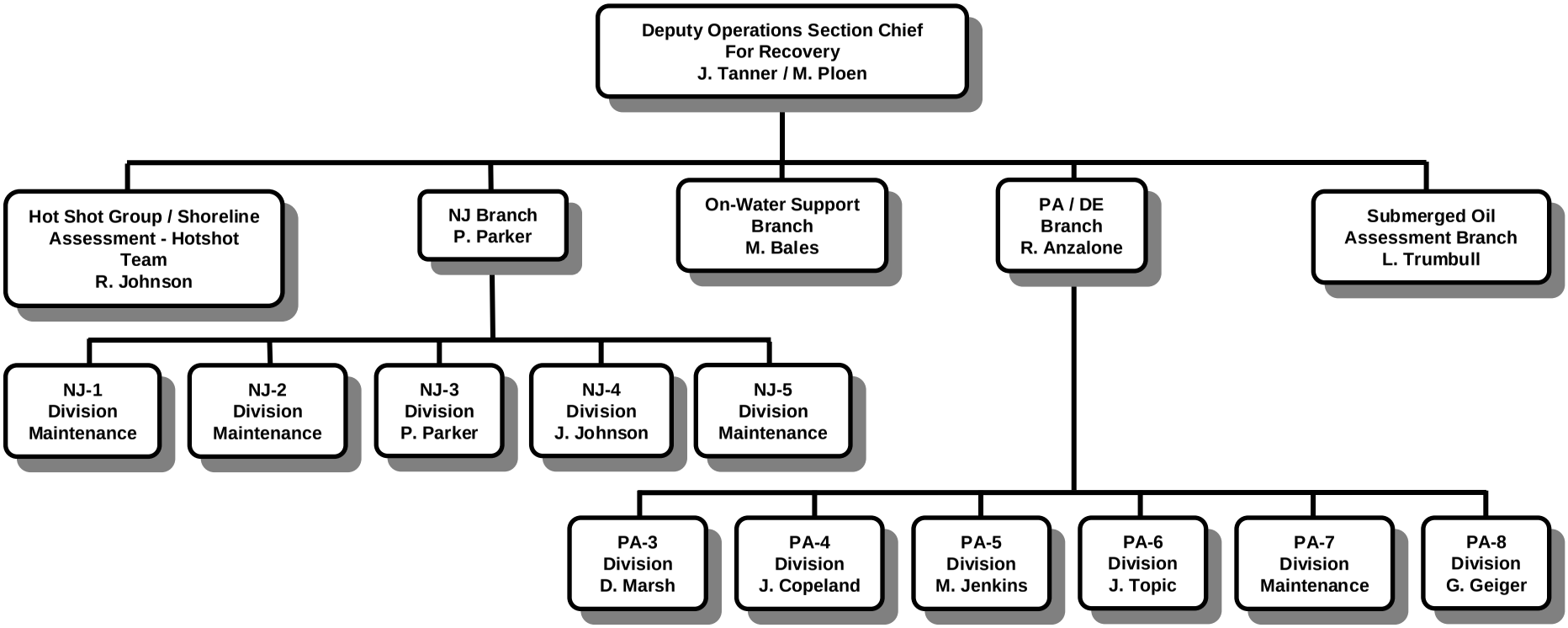
T/V ATHOS I - ICS-207 ORGANIZATION CHART – 1/27/05-2/8/05



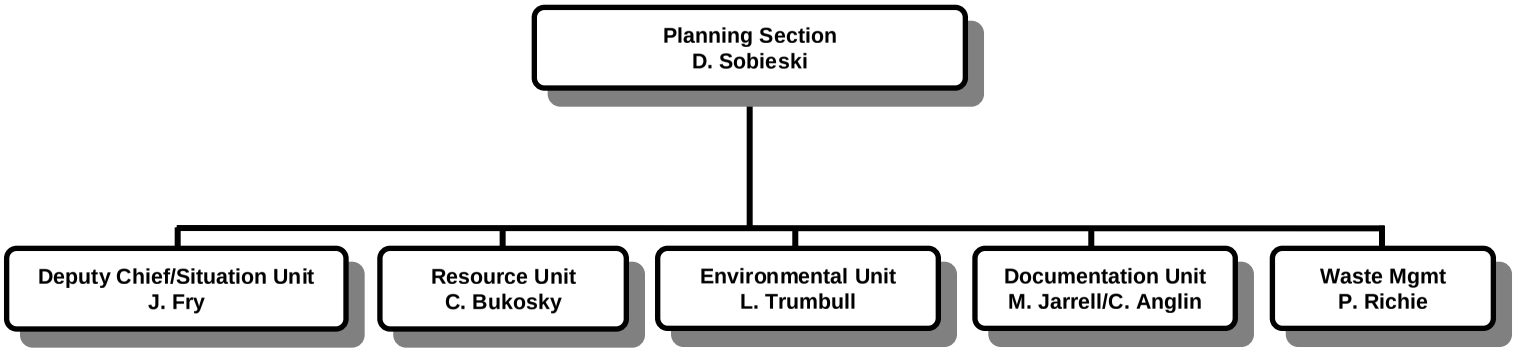
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR PORT OPERATIONS ORGANIZATION CHART – 1/27/05-2/8/05



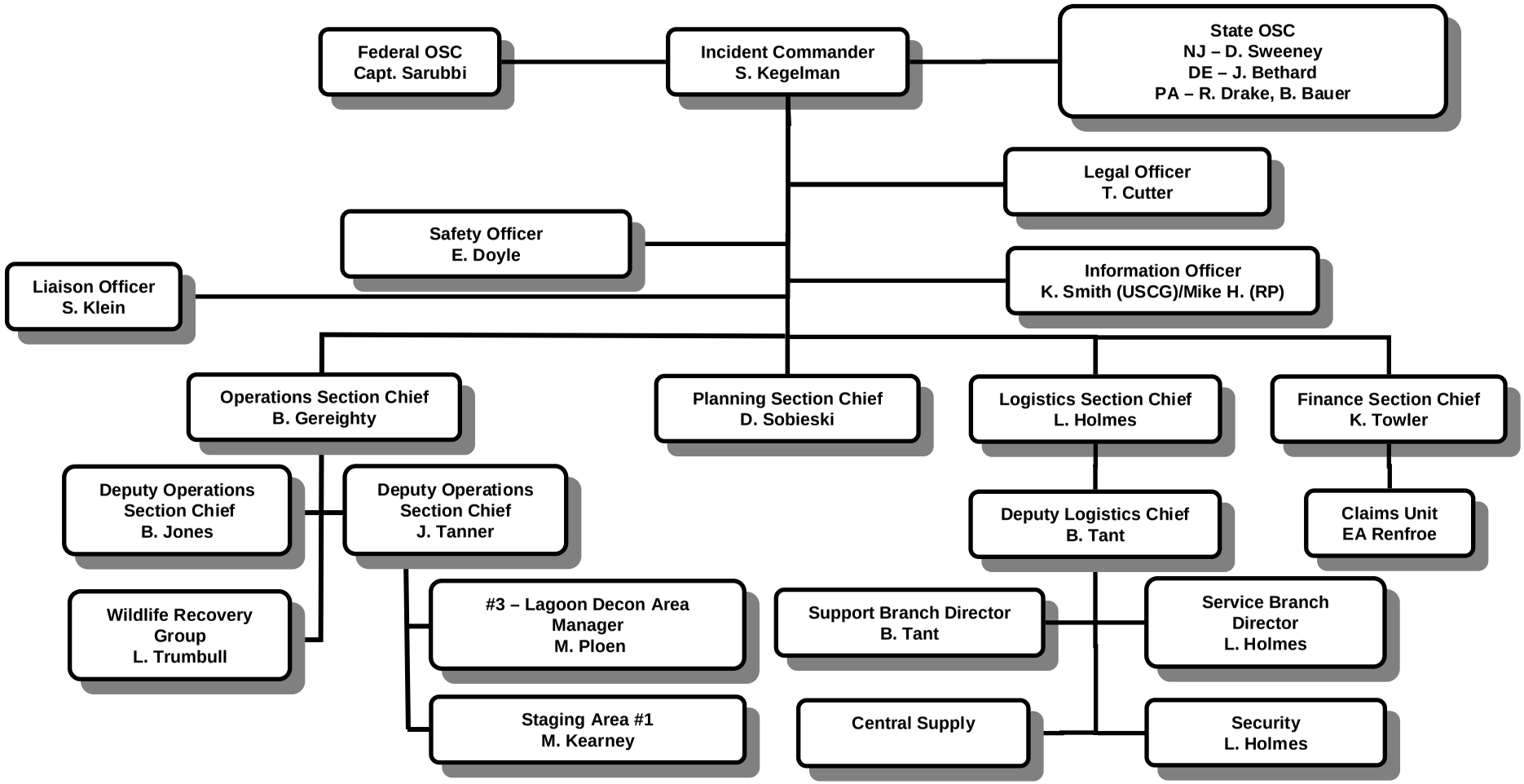
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR RECOVERY ORGANIZATION CHART – 1/27/05-2/8/05



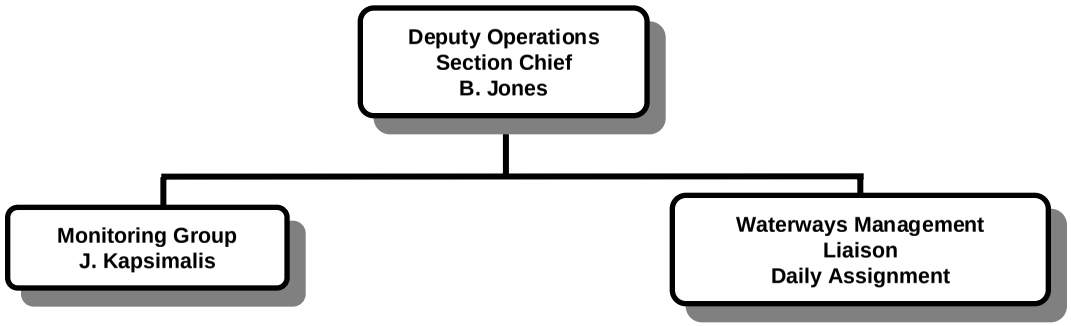
T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – 1/27/05-2/8/05



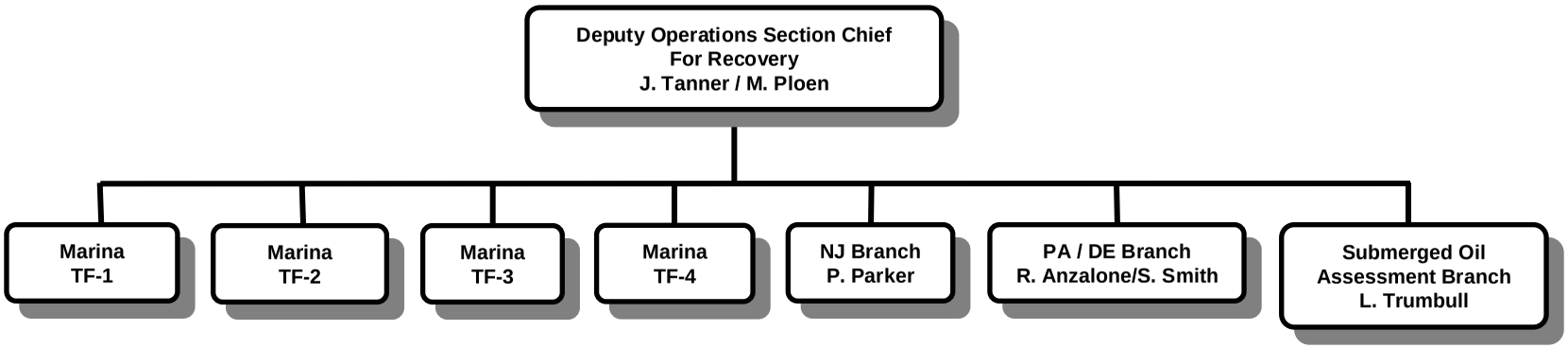
T/V ATHOS I - ICS-207 ORGANIZATION CHART – Severe Weather Operations



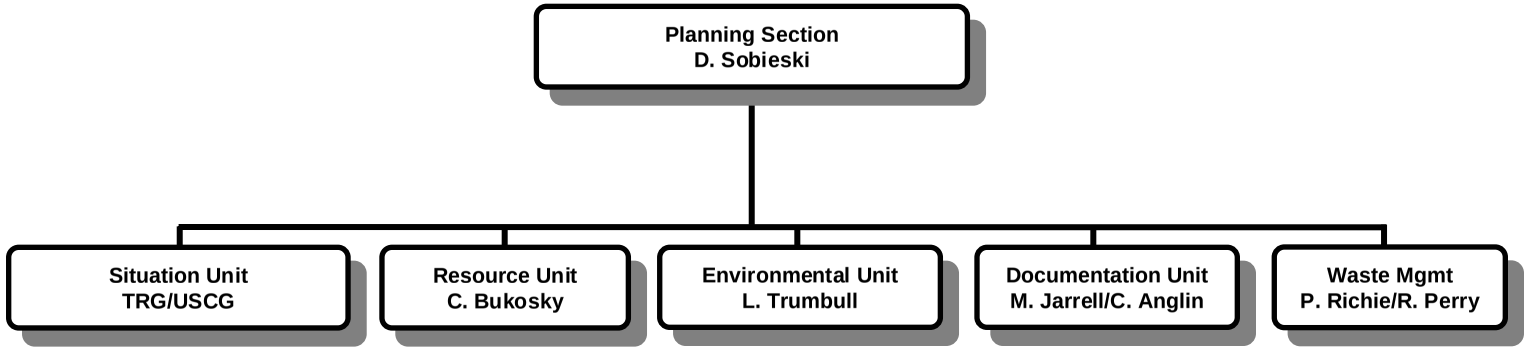
T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR PORT OPERATIONS
ORGANIZATION CHART – Severe Weather Operations



T/V ATHOS I - ICS-207 DEPUTY OPS CHIEF FOR RECOVERY
ORGANIZATION CHART – Severe Weather Operations



T/V ATHOS I - ICS-207 PLANNING ORGANIZATION CHART – Severe Weather Operations



Weather Forecast

Jan 26 Wednesday
Wind: W 10 to 15 mph. Mostly cloudy. A chance of rain and snow showers in the afternoon. Chance of precipitation 30 percent.
High 41F, Low 19F.

Jan 27 Thursday
Wind: N 11 mph. Mix of sun and clouds.
High 24F, Low 18F

Jan 28 Friday
Wind: NNE 6 mph. Abundant sunshine.
High 26F, Low 16F.

Tide Table

Billingsport, New Jersey
39.8500° N, 75.2500°

Date	Day	High	Low	High	Low	High	Sunrise	Sunset
01/26/2005	Wed	1:39 AM	8:23 AM	1:53 PM	9:04 PM		7:14 AM	5:13 PM
01/27/2005	Thu	2:18 AM	9:05 AM	2:29 PM	9:43 PM		7:13 AM	5:14 PM
01/28/2005	Fri	2:54 AM	9:48 AM	3:04 PM	10:21 PM		7:12 AM	5:15 PM
01/29/2005	Sat	3:28 AM	10:31 AM	3:38 PM	10:59 PM		7:11 AM	5:17 PM
01/30/2005	Sun	4:01 AM	11:16 AM	4:13 PM	11:38 PM		7:10 AM	5:18 PM
01/31/2005	Mon	4:38 AM	12:05 PM	4:56 PM			7:10 AM	5:19 PM

TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Shoreline Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; slippery surfaces while conducting boat operations

General Safety Concerns

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (no known hazard(s))

- **Tyvek-type and /or rain gear.**
- **Hard hat when overhead hazards exist**
- **Safety glasses/goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decontamination.

Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety rules of the facility will apply as long as the safety rules do not contradict this Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED VIA THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING THE HOT ZONE MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

Wintertime Slips, Trips, and Falls

Slip, trip, and fall injuries are the most common type of injury that occur during the winter months because of wet, icy, and snowy conditions.

Walking-related injuries often occur when people are rushing or taking shortcuts.

During cold weather conditions, special attention should be paid to the following:

- Make sure you wear proper footwear.
- Make sure that walking surfaces are cleared of ice and snow. If a walkway is simply too slippery to walk on or work safely, it should be shut down until the area can be cleared or conditions improve.
- Ensure that walkways are cleared of obstacles and debris which can pose additional hazards under ice and snow.
- Recognize that snowy conditions, combined with heavy winter apparel, can limit your ability to see and hear.
- Take extra precautions to be aware of the work environment and to avoid slip, trip, and fall hazards.
- Here are some tips for walking in snowy and icy conditions:
  1. Use small steps
  2. Use handrails, when available
  3. Use smooth motions
  4. Always stay aware and alert. If possible, avoid doing other tasks while walking.
  5. When the nature of the work requires you to inspect equipment or do other activities while walking, frequently scan your path for obstructions or hazards.
  6. Always look forward and establish sure footing with each step. Never walk backwards, and when moving through an area, choose a path that is level and stable.

Towing Your Boat and Trailer Safely

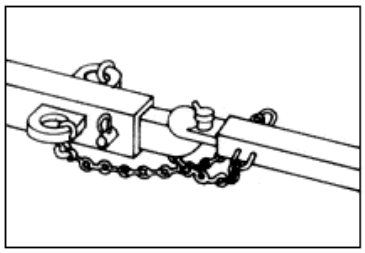
Performing a safety inspection before each trip is important to the safe operation of your trailer and ensuring that the trailer is secured properly before towing onto public roadways.

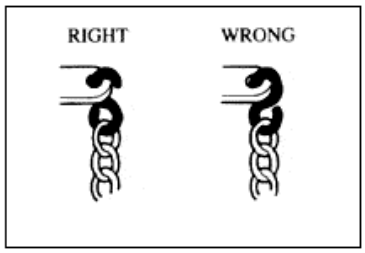
Make sure that:

- the pin securing the ball mount to the receiver is intact.
- the hitch coupler is secured.
- spring bar hinges are tight with the safety clips in place (for load equalizer or weight distributing hitches).
- safety chains are properly attached.
- the electrical plug is properly installed.

Check Before You Go Out On The Highway…

- The tow ball and coupler are the same size and bolts with washers are tightly secured. (The vibration of road travel can loosen them.)
- The coupler is completely over the ball and the latching mechanism is locked.
- The trailer is loaded evenly from front to rear as well as side to side.
- The safety chains are attached crisscrossing under the coupler to the frame of the tow vehicle. If the ball were to break, the trailer would follow in a straight line and prevent the coupler from dragging on the road.

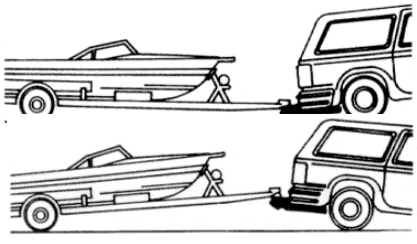




- The lights on the trailer function properly.

A tow vehicle and a trailer presents a weight consideration concern. For safe towing, the tow vehicle must be a proper match for the trailer. Keep these reminders in mind:

- Too much weight on the hitch will cause the rear wheels of the tow vehicle to drag and may make steering more difficult.
- Too much weight on the rear of the trailer will cause the trailer to "fishtail" and may reduce traction or even lift the rear wheels of the tow vehicle off the ground.



Near Miss
Performing an Operational Pre-Check on all Rolling Equipment

Recently, an operator of a 4-wheeled all terrain vehicle (ATV) drove it up onto an open-sided trailer for transport. When the operator tried to activate the brakes, they failed to grab. The ATV hit another piece of equipment causing minor damage to the bumper. No one was injured.

The cause of the incident was a master cylinder failure on this 5- year old vehicle.

This near miss shows the need to perform a pre-operations check on a vehicle before placing it in service.

- Before placing an ATV in service, test the brakes with your foot or by squeezing the hand brake.
- Always test the brakes on all rolling pieces of equipment.
- When you test brakes, they should not fully depress. You should feel resistance.

If you believe the brakes or other part of the vehicle are not operating properly, tag out the equipment as out of service and inform your supervisor.

ATTENTION: All ATHOS I Response Personnel

Sunoco Security

To all response personnel who may enter one of the following SUNOCO facilities:

Fort Mifflin Terminal
Hogg Island Wharf
Paulsboro Terminal
Eagle Point Refinery or Dock Area
Philadelphia Refinery
Marcus Hook Refinery

Sunoco has a Maritime or Port Security Plan in place for each of its facilities

The plan outlines specific requirements to be taken in the event of a breach in security and what measures will be employed at each of the different Maritime Security (MARSEC) Levels.

Each facility has posted at or near the entrance the MARSEC Level presently in effect. At present, MARSEC Level One, the lowest level, is in effect.

In the event you witness any suspicious activities that may compromise the security of these facilities, you should call or contact facility security immediately. Facility security will contact the Facility Security Officer for the facility.

The Facility Security Officer (FSO) for Fort Mifflin, Hogg Island, Eagle Point docks and the Paulsboro Terminal is Tom Crawford (Logistics) and for the Eagle Point, Marcus Hook and Philadelphia Refineries (Northeast Refining) the FSO is John Ryan.

Again, any breaches, suspected breaches, or witnessed compromises of security should be reported to facility security immediately.

It is not your responsibility as a responder to get involved other than to contact Sunoco Security. Sunoco has procedures in place to deal with security issues.

12 – Day AccuWeather Forecast for Philadelphia, PA

Thursday 1/27 **Mostly sunny; very cold**
High 21° F

Friday 1/28 **Sunny, but very cold**
High 24° F

Saturday 1/29 **Partly sunny**
High 36° F

Sunday 1/30 **Mostly cloudy**
High 38° F

Monday 1/31 **Mostly cloudy**
High 42° F

Wednesday 2/2 **Some sun**
High 48° F

Thursday 2/3 **Plenty of clouds**
High 41° F

Friday 2/4 **Clouds and sun**
High 39° F

Saturday 2/5 **Partly sunny**
High 46° F

Monday 2/7 **Snow possible in the morning**
High 39° F

Tuesday 2/8 **Rather cloudy**
High 39° F

ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	All for the Period Day 1 through 11

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 1/27/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/28/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/29/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/30/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 1/31/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Command & General Staff Meeting 1/31/2005 10:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Penn Room
Operations Briefing 2/1/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Delaware River Yachtman's League 2/1/2005 19:00	Update marina operators on cleanup plans and progress	UNIFIED COMMAND, COMMAND STAFF, OSC, PSC	Pennsylvania Yacht Club
Operations Briefing 2/2/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Science Committee 2/2/2005 13:00	Review spill related science issues	EUL, OSC, PSC	MSO Philadelphia
Citizens Advisory Panel 2/2/2005 17:30	Update spill progress and plans	FOSC & RPIC	To Be Determined

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:** Section, Planning	**at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	All for the Period Day 1 through 11

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 2/3/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Unified Command Conference Call 2/3/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Command Post
Operations Briefing 2/4/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 2/5/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
Operations Briefing 2/6/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room

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ICS 230 - Daily Meeting Schedule

Incident:	MV Athos I	**Prepared By:**	Section, Planning	**at** 1/22/2005 12:38
Period:	Period 26 (1/27/2005 06:00 - 2/8/2005 06:00)	**Version Name:**	All for the Period Day 12	

Meeting Name & Date/Time	Purpose	Attendees	Location
Operations Briefing 2/7/2005 07:00	Present IAP and assignments to the supervisors/leaders for the next operational period.	IC, COMMAND STAFF, GENERAL STAFF, SUL, RUL, SAM, COMMS UNIT, BRANCH DIRECTORS, TASK FORCE/STRIKE TEAM LEADERS, & GROUP LEADERS.	Penn Room
UC Objectives Meeting 2/7/2005 08:00	Review/Identify and prioritize objectives for the next operational period.	UC MEMBERS	Penn Room
Command & General Staff Meeting 2/7/2005 09:00	Situation Brief; Coordinate Command Staff functionc, responsibilities and objectives	GENERAL STAFF MEMBERS	Penn Room
Tactics Meeting 2/7/2005 11:30	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	To Be Determined
Planning Meeting 2/7/2005 15:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Penn Room

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Conference Call Procedure
MV Athos I

From time to time, the Unified Command will have a need to convene via conference call. Their needs could range from situational updates to critical information requiring Unified Command decisions.

The Unified Command will initiate conference calls by contacting the Planning Section Chief. The Planning Section Chief will require a list of persons that should be invited to participate in the Conference Call, the preferred time of the call, ask whether or not a scribe is required and a suggested agenda.

The Planning Section Chief will call ConferencePlus and schedule the call. The Planning Section Chief will then send an email to all invited conference call participants, which gives the call-in particulars and the agenda.

The Situation Unit and Operations and Planning must have a representative on the call to present information according to agenda.

WEEKLY UNIFIED COMMAND CONFERENCE CALL IN NUMBER:
Dial-In Number: 1 (888) 287-5343 (to join the audio conference call)
Alternate Dial-In: 1 (847) 619-6483
Pass code: 9285423# - If you call in before the moderator, you will be placed on hold with music background until the moderator

MODERATOR CALL IN ADDITIONAL NUMBER: 5233443

Agenda - Unified Command Meetings
Thursdays -- 0900hrs

1.	Introductions – UC reps self-introductions	All participants
2.	Situation Brief	Situation Unit Leader
3.	Planned Actions	Planning/Ops Chief
4.	Critical Issues/Needs	Operations Chief
5.	Review of Open Action Items	Situation Unit Leader
6.	Long Range Plan	Steve Kegelman
7.	New Jersey comments	NJ UC Rep
8.	Pennsylvania comments	PA UC Rep
9.	Delaware comments	DE UC Rep
10.	FOSC comments	FOSC
11.	Announce any necessary additional UC Meetings (other than Mondays)	RP
12.	Final remarks	RP
13.	***This concludes the Command and General Staff Meeting. Unified Command Members only from this point on.***	

1/5/05

D.M. Sobieski
The O'Brien's Group
January 10, 2005

Unified Command Long Term Incident Action Plan Conference Call Notifications Sheet

Name	Title	Agency	Phone	Cell	Fax	Email
Capt Jonathan Sarubbi	COTP	USCG	215-271-4803	215-778-4072	215-271-4903	jsarubbi@msogruphila.uscg.mil
Steve Kegelman		TOG	732-774-7895	732-245-4703	732-774-7896	steve.kegelman@theobriensgroup.com
Bob VanFossen	Asst. Director	NJ DEP	609-633-2168	609-780-6899	609-777-0985	robert.vanfossen@dep.state.nj.us
David Sweeney	Bureau Chief	NJDEP ER	609-292-1075	609-309-1748	609-777-0985	David.sweeney@dep.state.nj.us
Gary Pearson		NJDEP	973-609-3997	201-697-6794		gpearson@dep.state.nj.us
Glenn Gillespie	Deputy Director	DEMA	302-659-2234	382-222-8400	302-659-6855	glenn.gillespie@state.de.us
James Turner, III	Director	DEMA	302-659-2240	302-222-8402	302-659-6855	jamie.turner@state.de.us
Jamie Bethard	Envtl Scientist III	DNREC	302-739-3694	302-632-0264	302-739-5060	jamie.bethard@state.de.us
Ronald Drake	Emergency Response Mgr.	PADEP	484-250-5100	484-645-5981	484-250-5943	rdrake@state.pa.us
Bennett Anderson	Envtl Sci/SSC	DNREC	302-739-4590	302-382-0341	302-739-6140	bennett.anderson@state.de.us
Cdr Vickie Huyck	Ops -MSO Group Philadelphia	USCG	215-271-4952	215-778-5483	215-271-4967	vhuyck@msogruphila.uscg.mil
Cdr Roger Laferriere	CO- AST	USCG	609-724-008	609-351-7142	609-724-0232	rlaferriere@ast.uscg.mil
Robert Bauer (Bob)	Water Qual Spec Spvsr	PADEP	484-250-5132	484-645-5984		rbauer@state.pa.us
Daniel M. Sobieski		TOG	714-577-2113	714-342-6358	714-577-2118	dan.sobieski@theobriensgroup.com
Chris Gregory		TOG	714-577-2111	714-273-8036	714-577-2118	chris.gregory@theobriensgroup.com
Melanie Jarrell			337-984-7808	904-537-3507	337-984-4776	Melanie.Jarrell@att.net
Dave Hake		DEMA		302-222-6566		Dave.hake@state.de.us
Jim Strickland		DEMA		302-222-6578		Jim.Strickland@state.de.us
Mark Claveloux		DEMA		302-222-6656		Mark.Claveloux@state.de.us
Kurt Reuther	Enf Chief	DNREC	302-739-5072	302-270-9369	302-739-5060	Kurt.reuther@state.de.us

D.M. Sobieski
The O'Brien's Group
December 21, 2004

IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 31 (04/05/2005 06:00 to 04/19/2005 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) : _____

SOSC (PA) : _____

SOSC (NJ) : _____

SMTIC – Steve Kegelman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. Cleanup Priorities
4. Cleanup Endpoints & Methods
5. Memorandum on Wildlife Handling
6. ICS 202 - General Response Objectives
7. ICS 204 - Assignment List
8. ICS 205 - Communications Plan
9. ICS 206 - Medical Plan
10. ICS 207 - Organization Chart
11. ICS 223 - Health and Safety Message
12. ICS 230 - Daily Meeting Schedule
13. Website: www.incidentinfo.com

Your National Weather Service forecast

Philadelphia, PA

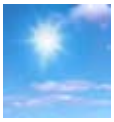
Enter Your "City, ST" or zip code Go

New! Cell Phone Weather Page (wap) URL: www.srh.noaa.gov/wml

NWS Mount Holly, NJ Homepage

Forecast as of: 326 AM EDT MON APR 4 2005

Forecast at a Glance

TODAY	TONIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY
								
Mostly Sunny Hi: 50°F	Mostly Clear Lo: 30°F	Partly Cloudy Hi: 65°F	Partly Cloudy Lo: 45°F	Partly Cloudy Hi: 69°F	Partly Cloudy Lo: 49°F	Chance Rain Hi: 65°F Pop: 50%	Chance Showers Lo: 41°F Pop: 50%	Chance Showers Hi: 55°F Pop: 50%

Detailed 7-day Forecast

Hazardous weather condition(s):

Hazardous Weather Outlook
Special Weather Statement

Today...Partly sunny this morning and mostly sunny this afternoon. Breezy with highs around 50. Northwest winds 15 to 25 mph.

Tonight...Mostly clear. Lows around 30. Northwest winds 10 to 20 mph.

Tuesday...Mostly sunny in the morning...Then becoming partly cloudy. Highs in the mid 60s. Northwest winds around 10 mph.

Tuesday Night...Partly cloudy. Lows in the mid 40s. Southwest winds 5 to 10 mph.

Wednesday ...Partly cloudy. Highs in the upper 60s. Southwest winds 10 to 15 mph.

Wednesday Night...Partly cloudy. Lows in the upper 40s.

Thursday...Mostly cloudy with a 50 percent chance of rain. Highs in the mid 60s.

Thursday Night...Mostly cloudy with a 50 percent chance of showers. Lows in the lower 40s.

Friday ...Mostly cloudy with a 50 percent chance of showers. Highs in the mid 50s.

Friday Night...Mostly cloudy with a 40 percent chance of showers. Lows in the upper 30s.

Saturday ...Mostly cloudy with a 40 percent chance of showers. Highs in the mid 50s.

Saturday Night...Partly cloudy. A chance of showers in the evening. Lows in the lower 40s.

Sunday ...Partly cloudy. Highs in the upper 50s.

Current Conditions

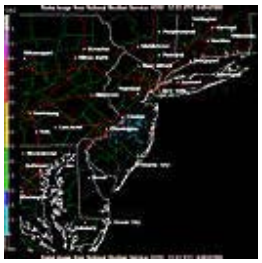
Philadelphia International Airport
Last Update on Apr 4, 8:54 am EDT

Partly Cloudy

46°F (8°C)

Humidity:	40 %
Wind Speed:	W 16 MPH
Barometer:	29.78" (1008.4 mb)
Dewpoint:	23°F (-5°C)
Wind Chill:	39°F (4°C)
Visibility:	10.00 mi.
More Local Wx:	**2 Day History**:

Radar and Satellite Images



Additional Forecasts & Information

Air Quality Forecasts
Forecast Discussion
Graphical Forecast Table
Local Climatology
Other Observations
Hydrology & Drought Info.
Current River Stages

Extended Forecast – Philadelphia Area
Tuesday April 5 – Monday April 18, 2005

Tuesday 4/5 **Mostly sunny and beautiful High 66 ° F**

Wednesday 4/6 **Mostly sunny; breezy High 74 ° F**

Thursday 4/7 **Clouds and sun, then rain High 68 ° F**

Friday 4/8 **Rather cloudy, rain possible High 58 ° F**

Sunday 4/10 **A good deal of sun High 60° F**

Monday 4/11 **Sunshine High 62° F**

Tuesday 4/12 **Clouds and sunshine High 59° F**

Wednesday 4/13 **Clouds giving way to some sun High 56° F**

Thursday 4/14 **Times of clouds and sun High 62° F**

Friday 4/15 **Partly sunny High 61° F**

Saturday 4/16 **Overcast with rain possible High 59° F**

Sunday 4/17 **Sun and some clouds High 56° F**

Monday 4/18 **Partial sunshine High 55° F**

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: PHILADELPHIA
MONTH: APRIL
YEAR: 2005
LATITUDE: 39 52 N
LONGITUDE: 75 15 W

TEMPERATURE IN F:							:PCPN:		SNOW:	WIND		:SUNSHINE:			SKY	:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
										AVG	MX	2MIN						
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	62	44	53	5	12	0	0.07	0.0	0	8.8	18	80	M	M	9	18	23	80
2	62	44	53	4	12	0	2.76	0.0	0	15.7	28	150	M	M	10	13	37	180
SM	124	88		24	0	2.83		0.0		24.5			M		19			
AV	62.0	44.0								12.2	FASTST		PSBL	%	10		MAX(MPH)	
								MISC	---->	28	150						37	180

NOTES:
LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: PHILADELPHIA
MONTH: APRIL
YEAR: 2005
LATITUDE: 39 52 N
LONGITUDE: 75 15 W

[TEMPERATURE DATA]

AVERAGE MONTHLY: 53.0
DPTR FM NORMAL: 4.5
HIGHEST: 62 ON 2, 1
LOWEST: 44 ON 2, 1

[PRECIPITATION DATA]

TOTAL FOR MONTH: 2.83
DPTR FM NORMAL: 2.59
GRTST 24HR 2.82 ON 1- 2

SNOW, ICE PELLETS, HAIL
TOTAL MONTH: 0.0 INCH
GRTST 24HR 0.0
GRTST DEPTH: 0

SYMBOLS USED IN COLUMN 16

1 = FOG
2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
3 = THUNDER
4 = ICE PELLETS
5 = HAIL
6 = GLAZE OR RIME
7 = BLOWING DUST OR SAND: VSBY 1/2 MILE OR LESS
8 = SMOKE OR HAZE
9 = BLOWING SNOW
X = TORNADO

[NO. OF DAYS WITH]

MAX 32 OR BELOW: 0
MAX 90 OR ABOVE: 0
MIN 32 OR BELOW: 0
MIN 0 OR BELOW: 0

[WEATHER - DAYS WITH]

0.01 INCH OR MORE: 2
0.10 INCH OR MORE: 1
0.50 INCH OR MORE: 1
1.00 INCH OR MORE: 1

[HDD (BASE 65)]

TOTAL THIS MO. 24
DPTR FM NORMAL -9
SEASONAL TOTAL 4252
DPTR FM NORMAL -52

CLEAR (SCALE 0-3) 0
PTCLDY (SCALE 4-7) 0
CLOUDY (SCALE 8-10) 2

```
[CDD (BASE 65) ]
TOTAL THIS MO.     0
DPTR FM NORMAL     0    [PRESSURE DATA]
SEASONAL TOTAL     0    HIGHEST SLP M ON M
DPTR FM NORMAL     0    LOWEST  SLP M ON M

[REMARKS]
```

Tides for Philapelphia, Municipal Pier 11 starting with April 4, 2005.

Day		High /Low	Tide Time	Height Feet	Sunrise Sunset	Moon	Time	% Moon Visible
M	4	Low	5:13 AM	0.7	6:39 AM	Rise	4:42 AM	28
	4	High	10:43 AM	6.5	7:28 PM	Set	2:43 PM	
	4	Low	6:00 PM	0.6				
	4	High	11:21 PM	6.0				
Tu	5	Low	6:15 AM	0.6	6:38 AM	Rise	5:14 AM	18
	5	High	11:43 AM	6.7	7:29 PM	Set	3:59 PM	
	5	Low	6:56 PM	0.6				
W	6	High	12:17 AM	6.5	6:36 AM	Rise	5:41 AM	10
	6	Low	7:15 AM	0.6	7:30 PM	Set	5:12 PM	
	6	High	12:38 PM	7.0				
	6	Low	7:49 PM	0.5				
Th	7	High	1:10 AM	7.0	6:35 AM	Rise	6:05 AM	4
	7	Low	8:10 AM	0.5	7:31 PM	Set	6:24 PM	
	7	High	1:30 PM	7.1				
	7	Low	8:38 PM	0.5				
F	8	High	1:59 AM	7.3	6:33 AM	Rise	6:29 AM	1
	8	Low	9:02 AM	0.4	7:32 PM	Set	7:35 PM	
	8	High	2:18 PM	7.1				
	8	Low	9:24 PM	0.5				
Sa	9	High	2:45 AM	7.5	6:31 AM	Rise	6:53 AM	0
	9	Low	9:52 AM	0.4	7:33 PM	Set	8:45 PM	
	9	High	3:05 PM	7.0				
	9	Low	10:09 PM	0.6				
Su	10	High	3:29 AM	7.4	6:30 AM	Rise	7:19 AM	1
	10	Low	10:39 AM	0.4	7:34 PM	Set	9:55 PM	
	10	High	3:51 PM	6.7				
	10	Low	10:51 PM	0.7				
M	11	High	4:12 AM	7.3	6:28 AM	Rise	7:49 AM	5
	11	Low	11:25 AM	0.4	7:35 PM	Set	11:03 PM	
	11	High	4:36 PM	6.4				
	11	Low	11:32 PM	0.7				

Tides for Paulsboro, Mantua Creek, N.J. starting with April 4, 2005.

Day		High /Low	Tide Time	Height Feet	Sunrise Sunset	Moon	Time	% Moon Visible
M	4	Low	4:47 AM	0.7	6:40 AM	Rise	4:42 AM	28
	4	High	10:17 AM	5.8	7:28 PM	Set	2:44 PM	
	4	Low	5:34 PM	0.6				
	4	High	10:55 PM	5.4				
Tu	5	Low	5:49 AM	0.6	6:38 AM	Rise	5:14 AM	18
	5	High	11:17 AM	6.0	7:29 PM	Set	3:59 PM	
	5	Low	6:30 PM	0.6				
	5	High	11:51 PM	5.8				
W	6	Low	6:49 AM	0.6	6:37 AM	Rise	5:41 AM	10
	6	High	12:12 PM	6.3	7:30 PM	Set	5:13 PM	
	6	Low	7:23 PM	0.5				
Th	7	High	12:44 AM	6.3	6:35 AM	Rise	6:06 AM	4
	7	Low	7:44 AM	0.5	7:31 PM	Set	6:25 PM	
	7	High	1:04 PM	6.4				
	7	Low	8:12 PM	0.5				
F	8	High	1:33 AM	6.6	6:34 AM	Rise	6:29 AM	1
	8	Low	8:36 AM	0.4	7:32 PM	Set	7:35 PM	
	8	High	1:52 PM	6.4				
	8	Low	8:58 PM	0.5				
Sa	9	High	2:19 AM	6.8	6:32 AM	Rise	6:54 AM	0
	9	Low	9:26 AM	0.4	7:33 PM	Set	8:45 PM	
	9	High	2:39 PM	6.3				
	9	Low	9:43 PM	0.6				
Su	10	High	3:03 AM	6.7	6:30 AM	Rise	7:20 AM	1
	10	Low	10:13 AM	0.4	7:34 PM	Set	9:55 PM	
	10	High	3:25 PM	6.0				
	10	Low	10:25 PM	0.7				
M	11	High	3:46 AM	6.6	6:29 AM	Rise	7:50 AM	5
	11	Low	10:59 AM	0.4	7:35 PM	Set	11:03 PM	
	11	High	4:10 PM	5.8				
	11	Low	11:06 PM	0.7				

Tides for Marcus Hook, Pa. starting with April 4, 2005.

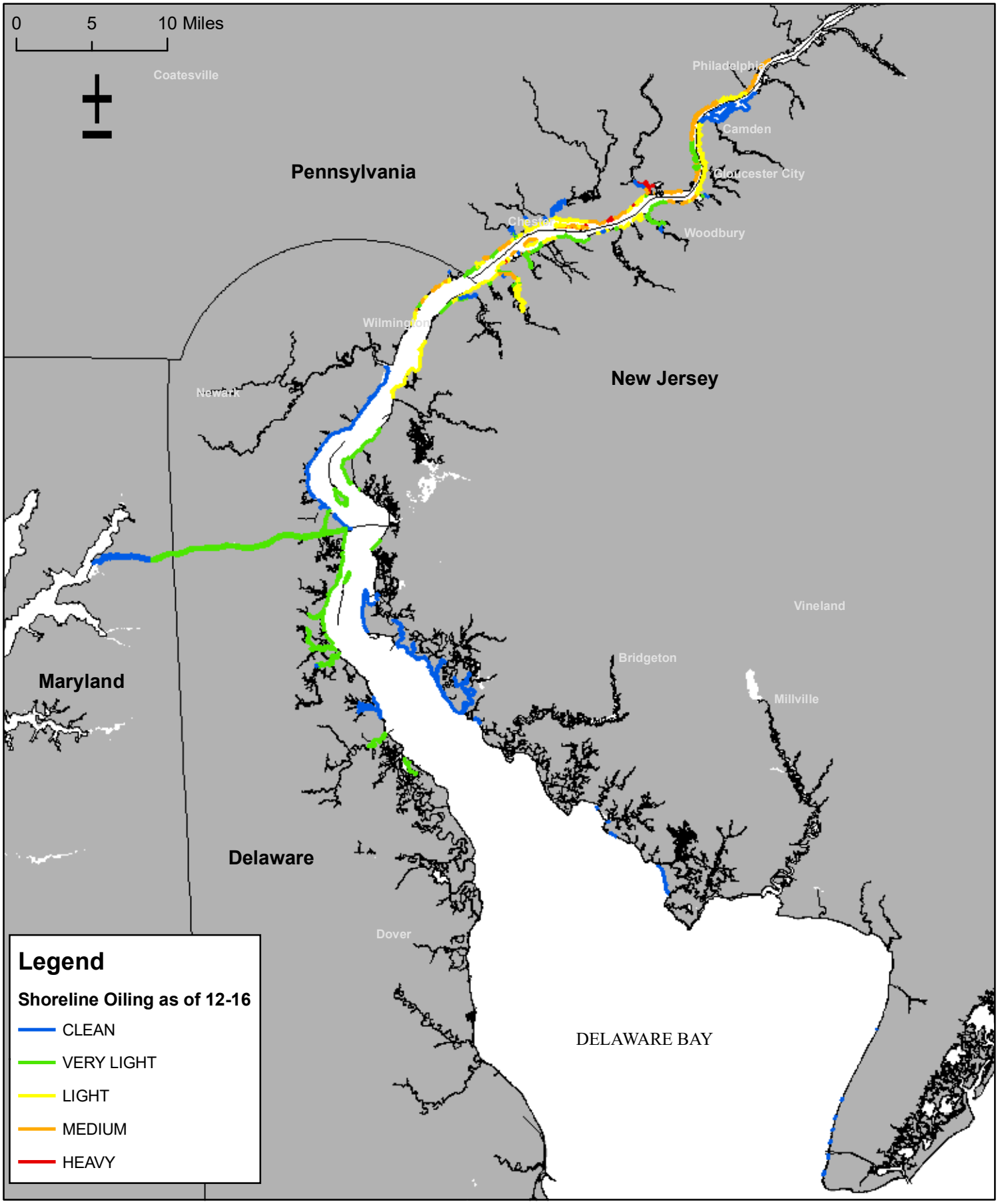
Day		High /Low	Tide Time	Height Feet	Sunrise Sunset	Moon	Time	% Moon Visible
M	4	Low	3:57 AM	0.6	6:41 AM	Rise	4:43 AM	28
	4	High	9:14 AM	5.8	7:29 PM	Set	2:45 PM	
	4	Low	4:44 PM	0.5				
	4	High	9:52 PM	5.4				
Tu	5	Low	4:59 AM	0.5	6:39 AM	Rise	5:14 AM	18
	5	High	10:14 AM	6.0	7:30 PM	Set	4:00 PM	
	5	Low	5:40 PM	0.5				
	5	High	10:48 PM	5.8				
W	6	Low	5:59 AM	0.5	6:37 AM	Rise	5:42 AM	10
	6	High	11:09 AM	6.3	7:31 PM	Set	5:14 PM	
	6	Low	6:33 PM	0.5				
	6	High	11:41 PM	6.3				
Th	7	Low	6:54 AM	0.5	6:36 AM	Rise	6:06 AM	4
	7	High	12:01 PM	6.4	7:32 PM	Set	6:25 PM	
	7	Low	7:22 PM	0.5				
F	8	High	12:30 AM	6.6	6:34 AM	Rise	6:30 AM	1
	8	Low	7:46 AM	0.4	7:33 PM	Set	7:36 PM	
	8	High	12:49 PM	6.4				
	8	Low	8:08 PM	0.5				
Sa	9	High	1:16 AM	6.8	6:33 AM	Rise	6:54 AM	0
	9	Low	8:36 AM	0.4	7:34 PM	Set	8:46 PM	
	9	High	1:36 PM	6.3				
	9	Low	8:53 PM	0.5				
Su	10	High	2:00 AM	6.7	6:31 AM	Rise	7:21 AM	1
	10	Low	9:23 AM	0.4	7:35 PM	Set	9:56 PM	
	10	High	2:22 PM	6.0				
	10	Low	9:35 PM	0.6				
M	11	High	2:43 AM	6.6	6:30 AM	Rise	7:50 AM	5
	11	Low	10:09 AM	0.4	7:36 PM	Set	11:04 PM	
	11	High	3:07 PM	5.8				
	11	Low	10:16 PM	0.6				

M/V Athos I, Delaware River, NJ/PA

Shoreline Oiling as of 12/16/2004

Graphic does not represent precise amounts or locations of oil.

USE ONLY AS A GENERAL REFERENCE



Objective:

Removal of gross oil before the focus is shifted to final cleanup activities

Gross (i.e., bulk) oil removal is proposed as a means to maximize the environmental benefit and effectiveness of shoreline cleanup operations. Shoreline segments have been prioritized (attached) based on the amount of oil, and the presence of sensitive resources or high public access.

As cleanup activities complete gross oil removal, response resources will be redeployed by the Operations Section according to the listed priorities. The decision to move the resources within a division will be the responsibility of the Division Supervisors. The Environmental Unit and SCAT Teams will be available to provide suggestions and/or guidance.

Operations Priorities for Cleanup

Priority 1 Heavy Oil With Special Issues	Priority 2 Heavy Oil No Special Issues	Priority 3 Moderate Oil With Special Issues	Priority 4 Moderate Oil No Special Issues	Priority 5 Light Oil With Special Issues	Priority 6 Very Light Oil With Special Issues	Priority 7 Light Oil No Special Issues	Priority 8 Very Light Oil No Special Issues
NJ-5-A	NJ-3-F	NJ-3-A	DE-1-B	NJ-2-A	DE-1-A	NJ-3-I	DE-7-B
PA-4-F		NJ-3-H	DE-1-C	NJ-2-C	DE-1-E	PA-5-D	NJ-4-B
PA-4-J		NJ-4-D	DE-1-D	NJ-3-G	DE-1-I		NJ-6-A
PA-5-B		NJ-5-B	DE-1-F	NJ-3-J	DE-2-D		NJ-6-D
PA-7-A		NJ-5-D	DE-1-G	NJ-3-L	NJ-1-A		NJ-6-E
PA-7-C		PA-1-C	DE-1-H	NJ-5-A	NJ-2-B		NJ-6-F
PA-7-D		PA-2-A	DE-1-J	NJ-5-C	NJ-4-A		NJ-6-G
PA-7-F		PA-3-A	DE-2-A	PA-1-C	NJ-6-C		NJ-6-H
		PA-3-F	DE-2-B	PA-4-C	NJ-7-A		NJ-7-C
		PA-4-A	DE-2-C	PA-5-B	NJ-7-B		NJ-9-A
		PA-4-B	NJ-3-B		PA-1-B		PA-2-C
		PA-4-D	NJ-3-C		PA-2-D		PA-2-E
		PA-4-E	NJ-3-D		PA-6-CRUM CR		PA-2-G
		PA-4-G	NJ-3-F				PA-6-A
		PA-4-H	NJ-4-E				PA-6-B
		PA-4-I	PA-2-B				
		PA-5-A	PA-2-F				
		PA-5-C	PA-2-H				
		PA-7-B	PA-2-I				
		PA-7-D	PA-3-B				
		PA-7-E	PA-3-C				
		PA-7-G	PA-3-D				

Conduct cleanup with minimal damage to environmental resources. i.e. Do not drive spilled oils into sediments by foot / mechanical traffic

A SCAT Special Issue Team (SIT) will evaluate historic, special environmental, or high-public access areas to provide more detailed and additional cleanup requirements.

Shoreline Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Flats (hard surface e.g. Tinicum I. NJ side)	General: No recoverable surface oil, buried oil layers or tarballs larger than dimes; no more than stain on sand	Manual removal with shovels/rakes and squeegees; small equipment (bobcat) to remove oil and oiled surface and subsurface sand; minimize removal of clean sand on and under oiled layers; Minimize equipment (bobcat) travel over oiled surfaces.
	Special: TBD by SIT (Special Issue Team)	
Sand Beaches; Mixed Sand and Fine Gravel Beaches	General: No recoverable surface oil, buried asphalt pavements or tarballs larger than dimes; no more than stain on gravel	Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers; small equipment (bobcat)to remove oil and oiled surface/subsurface sand and gravel. Minimize small equipment (bobcat)travel over oiled surfaces. Mechanical relocation of fine gravels into piles for flushing, including use of high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval.
	Special: TBD by SIT	
Course Gravel Beaches/Fill (e.g. cobbles, and larger)	No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Manual removal of surface oil using low pressure flushing and high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval by the SIT.
	Special: TBD by SIT	
Riprap/Stone Seawalls **Solid Seawall, Bulkheads and Docks**	General: No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Flushing and high-pressure/hot-water washing (hotsie), as needed. Containment/recovery of released oil.
	Special: No more recoverable or potential mobile oil on surface; Stop cleanup efforts when all oil is removed other than a stain. Additional cleaning or replacement of riprap to be considered by SIT.	In high-public access or special environmental / historic areas (e.g., Ft. Mifflin, eagle nesting, others to be determined): may request use of SWAs (surface washing agents) or special cleanup efforts for use as need to meet endpoint.

Mud Flats (e.g. soft surface, steps will push oil in sediments)	General: No potentially mobile oil.	To be determined on a site-specific basis by SIT.
Marshes	General: Oil on vegetation no longer wipes off on contact. No remaining recoverable or potentially mobile oil in accessible areas. (Accessible areas will be identified by SIT.)	To be determined on a site-specific basis by SIT. Options (cutting, In-situ-Burn, flushing, manual pickup of pooled oil, monitoring) to be determined on site-specific basis.
	Special: Other removal options will be considered by Environmental Unit.	

Debris Recovery Guidelines[1]

- Report dead and live wildlife to triage center at 215-365-1558. Collect and bag all dead wildlife.
- Manual removal of oiled debris that can be easily picked up and bagged.
- For small unoiled debris that can be easily picked up, move to the supra tidal zone if it has the potential to become oiled in its current location.
- Leave unoiled debris in place if it does not have the potential to become oiled.
- Cut and remove oiled logs < 6 inches in diameter (cut in into lengths < 6 feet).
- Manual removal of oiled debris (other than logs) < 6 inches in diameter and < 6 feet in length.
- Clean large (> 6 inches in diameter and/or 6 feet in length) oiled debris in place. Recover oil using appropriate sorbents. Approved cleaning methods for large oiled debris are presented below:

Method	Handling	RRT Approval	Special Permits
Scraping	No	No	No
Wiping	No	No	No
Hotsie	No	No	No

The following options require special approval

Method	Handling	RRT Approval	Special Permits
SWAs	No	Yes	No
Burning	Yes	Yes	Yes

For questions regarding environmental issues, contact Lyle Trumbull at (610) 710-1919.

[1] Non-living oiled debris

Memorandum

To: **Operations Section Chief**

From: **EU**

Subject: **Protocol for handling dead wildlife carcasses found during shoreline cleanup.**

As workcrews are cleaning oiled-shorelines and structures or removing oiled-debris they are likely to encounter dead oiled wildlife. Please handle wildlife carcasses as follows.

A. Dead Oiled Wildlife

All dead oiled wildlife (birds, fish, mammals, turtles) shall be bagged and held for the Wildlife Recovery Unit, and not disposed with other oiled material.

1. **Carefully approach the carcass and confirm that it is dead. If the animal is not dead do not attempt to capture it – contact the EU Leader at (610) 710-1919 immediately for instructions.**

2. **If the animal is confirmed to be dead, place the carcass into a plastic bag – DO NOT mix carcasses together in the same bag – ONE carcass per bag.**

3. **Tie the bag closed and give it to the crew leader.**

4. **The crew leader shall immediately notify the EU Leader at (610) 710-1919 to have the carcasses picked up – do not leave bagged oiled carcasses unattended in the field.**

B. Live Oiled Wildlife

Clean up crews shall not attempt to capture live wildlife.

1. **Live oiled wildlife seen during clean up efforts should be reported by the crew leader to the EU Leader Lyle Trumbull and relay the location, time, number and types of oiled wildlife seen. If Lyle Trumbull is unavailable call Tri-state Bird Rescue at 302-737-9543.**

If you have any questions, please contact me at (610) 710-1919.

ICS 202 - General Response Objectives

Incident: MT Athos I	Prepared By: Planning Section at 4/3/2005 09:26
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Version Name: Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to clean waterfront facilities per facility priority list.		
Decon recreational vessels		
Continue aggressive shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact.		
Monitor areas of special interest for possible submerged oil threat (water intake consortium)		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Begin process of identifying areas where there is no further action required. These areas will be areas where the clean up is complete. Some areas will be identified for final "Sign Off"		
Unified Command Emphasis:		
• Safety First		

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #1
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	K. Benedict		609-234-0828	
Task Force Supervisor - USCG	ENS Kulesa		609-351-8514	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #1	Manpower: Responder	Responders	55 each	
Task Force #1	Manpower: Supervisor	Supervisor	4 each	
Task Force #1	Pressure Washers / Wash	Pressure Washers	12 each	
Task Force #1	Pumps	Pumps	7 each	
Task Force #1	Vehicle	Vehicles	8 each	
Task Force #1	Vessel	Vessels	8 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #1					
SWS Environmental First Re	Pressure Washers / Wa	1203 Hotsie	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1412 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1626 Hotsie, Yanma	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1628 Hotsie, Yanma	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1633 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1637 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3011 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3048 Yanmar	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3049 Yanmar	1 each		Assigned
SWS Environmental First Re	Pumps	1266 Trash Pump	1 each	3 inch(es)	Assigned
Environmental Restoration	Pumps	1542 Trash Pump	1 each	2 inch(es)	Assigned
Global Remediation Service	Pumps	1806 Transfer Pump	1 each	2 inch(es)	Assigned
Clean Harbors Environment	Pumps	1807 Honda Transfe	1 each	2 inch(es)	Assigned
Clean Harbors Environment	Pumps	1808 Honda Transfe	1 each	2 inch(es)	Assigned
SWS Environmental First Re	Trailer	1477 Haulmark	1 each		Assigned
SWS Environmental First Re	Vehicle	1029 Chevy	1 each		Assigned
SWS Environmental First Re	Vehicle	1030 Stake Bed	1 each		Assigned
SWS Environmental First Re	Vehicle	1262 F-450	1 each		Assigned
SWS Environmental First Re	Vehicle	1270 Explorer	1 each		Assigned
SWS Environmental First Re	Vehicle	1401 F-150	1 each		Assigned
SWS Environmental First Re	Vehicle	1402 F-250	1 each		Assigned
SWS Environmental First Re	Vehicle	1406 F-250	1 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #1
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #1					
SWS Environmental First Re	Vehicle	1600 F-350	1 each		Assigned
Clean Harbors Environment	Vessel	0493 Vessel <21 - Jc	1 each	18 feet	Assigned
Clean Harbors Environment	Vessel	0494 Vessel <21 - Jc	1 each	18 feet	Assigned
SWS Environmental First Re	Vessel	1261 Vessel > 21 Fla	1 each	25 feet	Assigned
SWS Environmental First Re	Vessel	1264 Vessel > 21 Fla	1 each	25 feet	Assigned
SWS Environmental First Re	Vessel	1554 Vessel > 21	1 each	27 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #1					
North Star/Sea Tow	Manpower: Responder	Spill Tech	3 each		Assigned
SWS Environmental First Re	Manpower: Responder	Spill Tech	47 each		Assigned

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #1
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA1A
  Continue work in Penn Treaty Park, Penns Park North and South. Complete by 4/30/2005.
  Hotsie oil band on piers;
  Oil may be stranded on rocky areas between bays - Hotsie if contaminated
  Remove oiled debris.

- PA2A
  Pier 3 & 5:
  Continue clean up of marina. Maximize use of Pier 24, Lagoon, and open births to facilitate completion. Complete by 5/5/2005.
  S side of pier – hotsie structure as needed.

  Independence Seaport Museum (Hyatt Cove):
  Continue work thru completion thence roll crew into Chart House. Complete by 4/12/2005.
  Hotsie oiled band on north side of pier and back corner.
  Moshulu Dock
  Hotsie land side and south side seawall and pilings.

  Chart House Restaurant:
  Anticipate crew mob. on 4/13/2005. Complete by 5/3/2005.
  Hotsie oiled riprap in front of Chart House.
  Hotsie oiled band on wall on s side of restaurant.
  Secure Ops by 1530 dailey, no ops on Sunday.

  Bay N of Heliport:
  No current operations - anticipate mob. in of resources from PA 1 on 5/3/2005. Complete by 5/15/2005.
  Hotsie North and South side of heliport;
  Special attention to possible pavement on N corer of bay north of heliport. Manual removal as necessary;
  Hotsie oiled band along pier 40 seawall.

- PA2B:
  No current operations - anticipate mob. in of resources from PA 1 on 5/3/2005. Complete by 5/15/2005.
  Hotsie oil band on piers;
  Oil stranded on rocky areas between bays
  Hotsie if contaminated
  Remove oiled debris.

- PA2C:
  Wal Mart and Home Depot:
  No current operations - anticipate mob. in of resources from Pier 3 & 5 on 5/7/2005. Complete by 5/21/2005.
  Home Depot: hotsie oiled band especially north walls of bays;
  Walmart-Hotsie oiled band around entire pier as needed.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #1
Approved By Signature:	

- PA2D:
  No current operations - anticipate mob. in of resources from Pier 3 & 5 on 5/7/2005. Complete by 5/21/2005.

- PA2E:
  No current operations - anticipate mob. in of resources from Chart House on 5/3/2005. Complete by 5/25/2005.

- PA2F:
  No current operations - anticipate mob. in of resources from Chart House on 5/3/2005. Complete by 5/25/2005.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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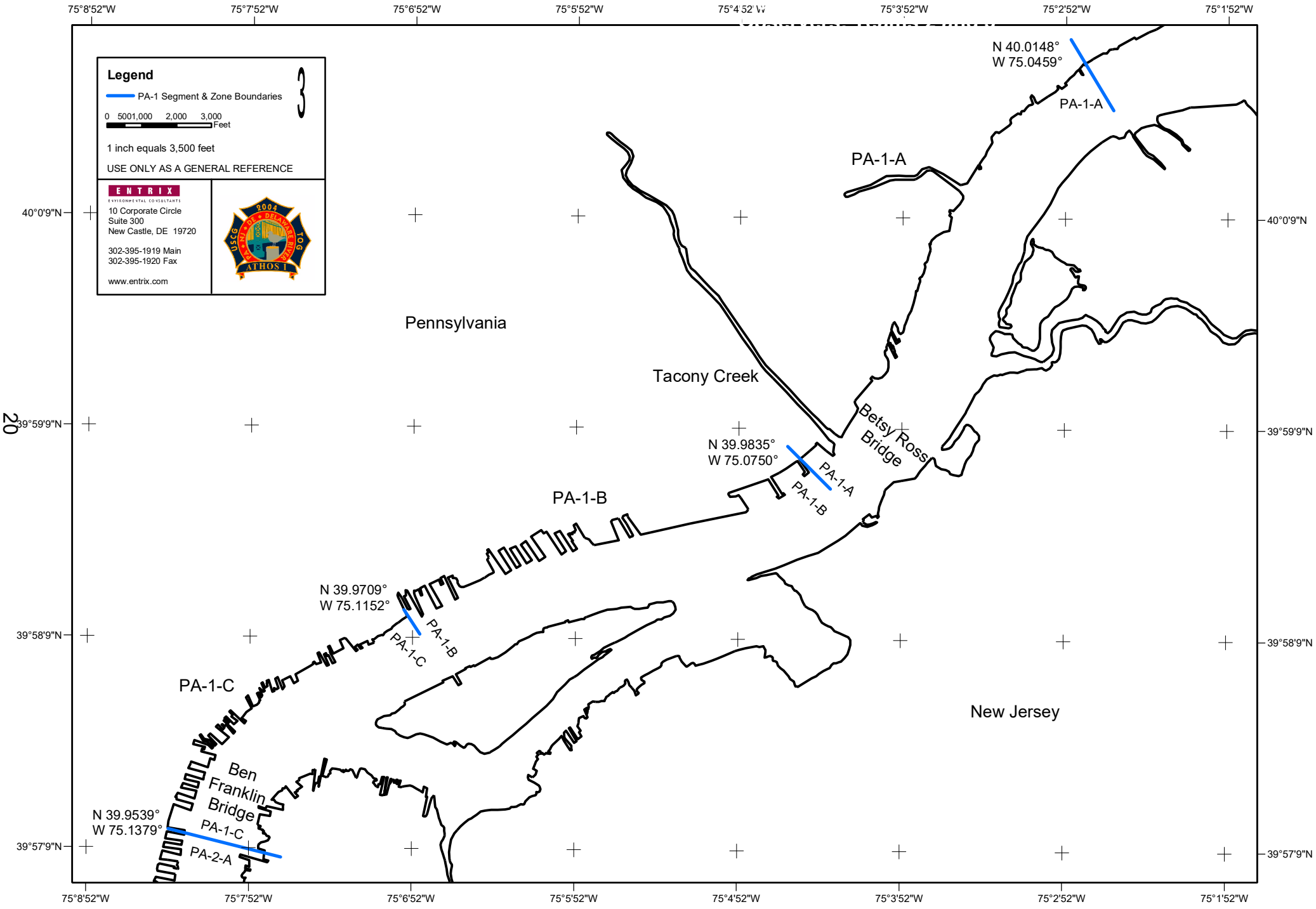
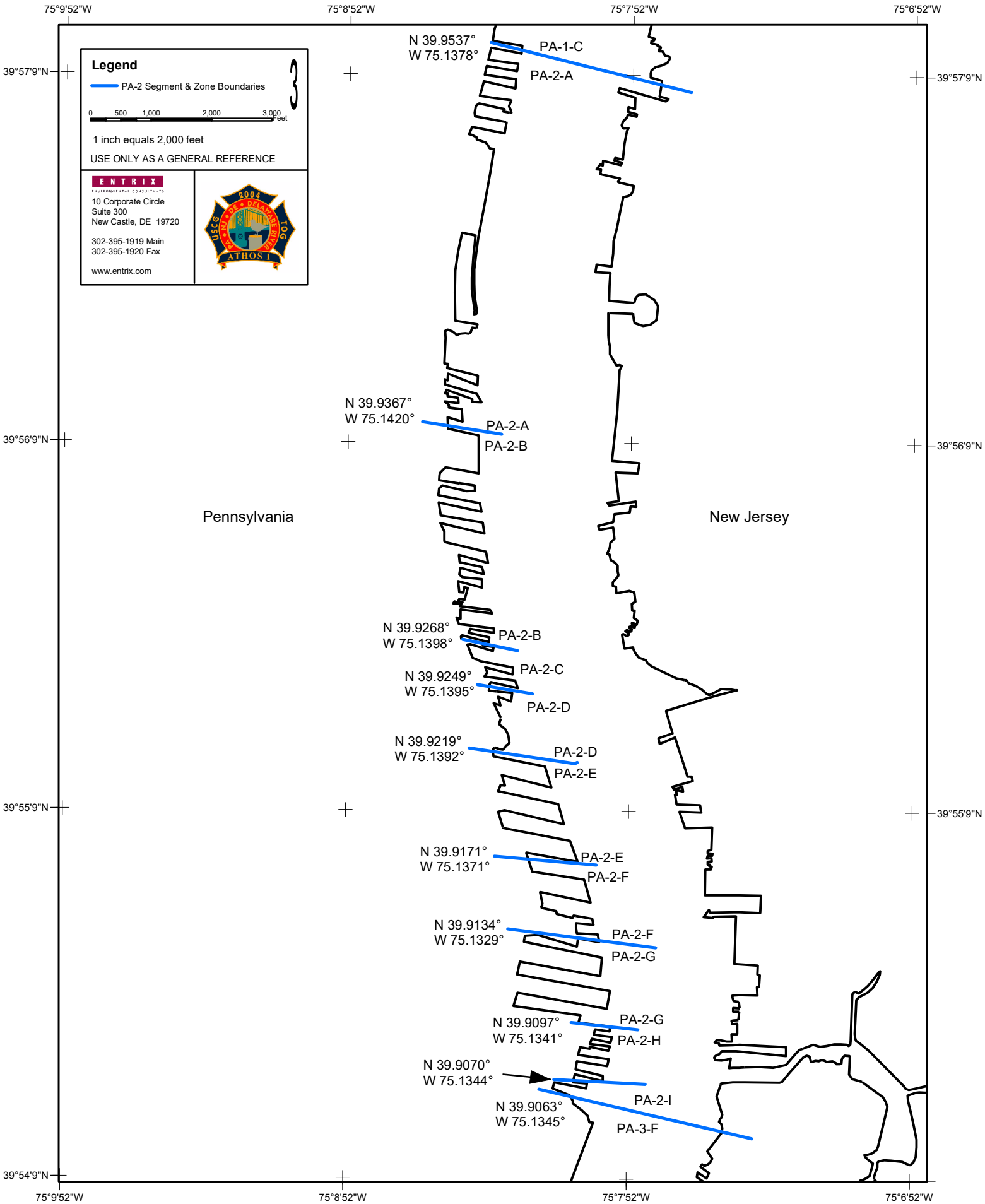
T/V Athos I Oil Spill

SCAT Map PA-1

Spring 2005 SCAT

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75°8'52"W
75°7'52"W
75°6'52"W
39°57'9"N
39°56'9"N
39°55'9"N
39°54'9"N
Legend
PA-2 Segment & Zone Boundaries
0 500 1,000 2,000 3,000 Feet
1 inch equals 2,000 feet
USE ONLY AS A GENERAL REFERENCE
ENTRIX
10 Corporate Circle
Suite 300
New Castle, DE 19720
302-395-1919 Main
302-395-1920 Fax
www.entrix.com
USCG
2004
ATHOS I
N 39.9537°
W 75.1378°
PA-1-C
PA-2-A
N 39.9367°
W 75.1420°
PA-2-A
PA-2-B
Pennsylvania
New Jersey
N 39.9268°
W 75.1398°
PA-2-B
PA-2-C
N 39.9249°
W 75.1395°
PA-2-D
N 39.9219°
W 75.1392°
PA-2-D
PA-2-E
N 39.9171°
W 75.1371°
PA-2-E
PA-2-F
N 39.9134°
W 75.1329°
PA-2-F
PA-2-G
N 39.9097°
W 75.1341°
PA-2-G
PA-2-H
N 39.9070°
W 75.1344°
N 39.9063°
W 75.1345°
PA-2-I
PA-3-F

ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #2
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	P. Rutherford		631-926-4700	
Task Force Supervisor - USCG	BMC Kessel		251-680-9583	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #2	Manpower: Responder	Responders	69 each	
Task Force #2	Manpower: Supervisor	Supervisor	10 each	
Task Force #2	Pressure Washers / Wash	Pressure Washers	28 each	
Task Force #2	Pumps	Pumps	18 each	
Task Force #2	Vehicle	Vehicle	16 each	
Task Force #2	Vessel	Vessels	19 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
NRC - National Response C	Barge: Inland	2017 Barge Set	1 each		Assigned
NRC - National Response C	Barge: Inland	2018 Barge Set	1 each		Assigned
NRC - National Response C	Barge: Inland	2540 Barge Set	1 each		Assigned
TOG	Generator	2901 Coleman 250	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0905 Shark	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0906 Shark	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1205 Hotsie	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1206 Hotsie	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1207 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1221 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1222 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1223 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1224 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1617 Hotsie, Yanma	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1618 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1620 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1621 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1630 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1631 Hotsie	1 each		Assigned
Clean Harbors Environment	Pressure Washers / Wa	1644 Hotsie	1 each		Assigned
TOG	Pressure Washers / Wa	1672 Hotsie	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1678 Shark	1 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #2
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Clean Venture, Inc.	Pressure Washers / Wa	1685 Alladin	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2282 Hotsie	1 each		Assigned
TOG	Pressure Washers / Wa	2295 Hotsie	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2530 MI-T-M	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2532 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2533 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2535 Hotsie	1 each		Assigned
Kens Marine Service	Pumps	0907 Pump	1 each		Assigned
USES	Pumps	1081 Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1208 Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1209 Honda Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1210 Honda Pump	1 each		Assigned
Global Remediation Service	Pumps	1247 Honda Trash P	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1661 Yanmar	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1664 Pump	1 each		Assigned
Clean Harbors Environment	Pumps	1680 Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1683 Honda Pump	1 each		Assigned
Fleet Environmental Services	Pumps	2537 Tsunami	1 each	3 inch(es)	Assigned
Global Remediation Service	Pumps	2538 Tsurumi	1 each	3 inch(es)	Assigned
Global Remediation Service	Pumps	2539 Tsurumi	1 each	2 inch(es)	Assigned
North Star/Sea Tow	Pumps	2902 Pump	1 each		Assigned
SWS Environmental First Re	Vehicle	1418 Ford 4x4	1 each		Assigned
NRC - National Response C	Vehicle	1545 Ford 4x4	1 each		Assigned
NRC - National Response C	Vehicle	1546 Ford 4x4	1 each		Assigned
SWS Environmental First Re	Vehicle	1593 White Ford	1 each		Assigned
Clean Venture, Inc.	Vehicle	1686 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1687 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1688 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1689 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1690 F-250	1 each		Assigned
USES	Vehicle	1730 Ford Van	1 each		Assigned
NRC - National Response C	Vehicle	2020 Chevy 4x4	1 each		Assigned
Clean Harbors Environment	Vehicle	2394 Ext Cab F-250	1 each		Assigned
Fleet Environmental Services	Vehicle	2523 F-250	1 each		Assigned
Fleet Environmental Services	Vehicle	2524 F-350	1 each		Assigned
Fleet Environmental Services	Vehicle	2525 F-250	1 each		Assigned
SWS Environmental First Re	Vessel	0398 Vessel > 21 Cu	1 each	28 feet	Assigned
North Star/Sea Tow	Vessel	0402 Vessel > 21 Ca	1 each	32 feet	Assigned
Global Remediation Service	Vessel	0422 Vessel > 21 Ba	1 each	28 feet	Assigned
Kens Marine Service	Vessel	0909 Vessel > 21 Re	1 each	32 feet	Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #2
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Clean Venture, Inc.	Vessel	1201 Vessel > 21	1 each	27 feet	Assigned
Clean Venture, Inc.	Vessel	1202 Vessel > 21	1 each	27 feet	Assigned
Environmental Restoration	Vessel	1420 Vessel > 21	1 each	28 feet	Assigned
Clean Harbors Environment	Vessel	1681 Vessel < 21	1 each	24 feet	Assigned
Clean Harbors Environment	Vessel	1682 Vessel < 21	1 each	24 feet	Assigned
Clean Venture, Inc.	Vessel	1684 Vessel > 21 Pri	1 each	24 feet	Assigned
Clean Harbors Environment	Vessel	2334 Vessel < 21 Pu	1 each	20 feet	Assigned
Fleet Environmental Service	Vessel	2526 Vessel > 21 Se	1 each	24 feet	Assigned
Fleet Environmental Service	Vessel	2527 Vessel > 21 W	1 each	22 feet	Assigned
Fleet Environmental Service	Vessel	2528 Vessel > 21 W	1 each	22 feet	Assigned
Fleet Environmental Service	Vessel	2529 Vessel > 21 W	1 each	22 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Clean Harbors Environment	Manpower: Responder	Spill Tech	8 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Spill Tech	12 each		Assigned
Environmental Restoration	Manpower: Responder	Spill Tech	2 each		Assigned
Fleet Environmental Service	Manpower: Responder	Spill Tech	10 each		Assigned
Global Remediation Service	Manpower: Responder	Spill Tech	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Spill Tech	3 each		Assigned
Kens Marine Service	Manpower: Responder	Spill Tech	3 each		Assigned
North Star/Sea Tow	Manpower: Responder	Spill Tech	3 each		Assigned
SWS Environmental First Re	Manpower: Responder	Spill Tech	5 each		Assigned
USES	Manpower: Responder	Spill Tech	5 each		Assigned

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ICS 204 - Assignment List

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Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #2
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA3A:
  Kavearner Shipyard:
  Continue work in DD # 5. Complete by 4/9/2005.

- PA3B:
  Navy Yard:
  Continue work in yard piers and seawalls at south side of pier 6. Complete by 4/16/2005.
  Navy Yard (BTWN Pier 5 and DD # 3):
  Continue clean up of seawall and beach area. Complete by 4/7/2005.
  Navy Yard:
  Continue Hotsie work of seawall and piers north side of pier 5. Complete by 4/16/2005.

- PA3C:
  Navy Yard Seawall:
  Continue work at ferry landing to Admiral Row cobble wall. Complete by 4/20/2005.

- PA3D:
  Navy Yard Seawall:
  Continue seawall Hotsie work. Complete by 4/12/2005.

- PA3E:
  Turtle Cove II - Vane Bros and Coal Dock Coves:
  Clean beach areas by 4/12/2005, then continue with dock and seawall. Consult with EU on turtle migration prior to begining seawalls.

MAT Data:
Hotsie riprap and gabeon on north shore of Navy Yard bridge.
Hotsie rock wall entrance to basin and river as needed to remove crusty oil.
Hotsie piers as needed to remove crusty oil.
Hostie docks as needed to remove crusty oil.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

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ICS 204 - Assignment List

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Prepared By Signature:	Task Force: Task Force #2
Approved By Signature:	

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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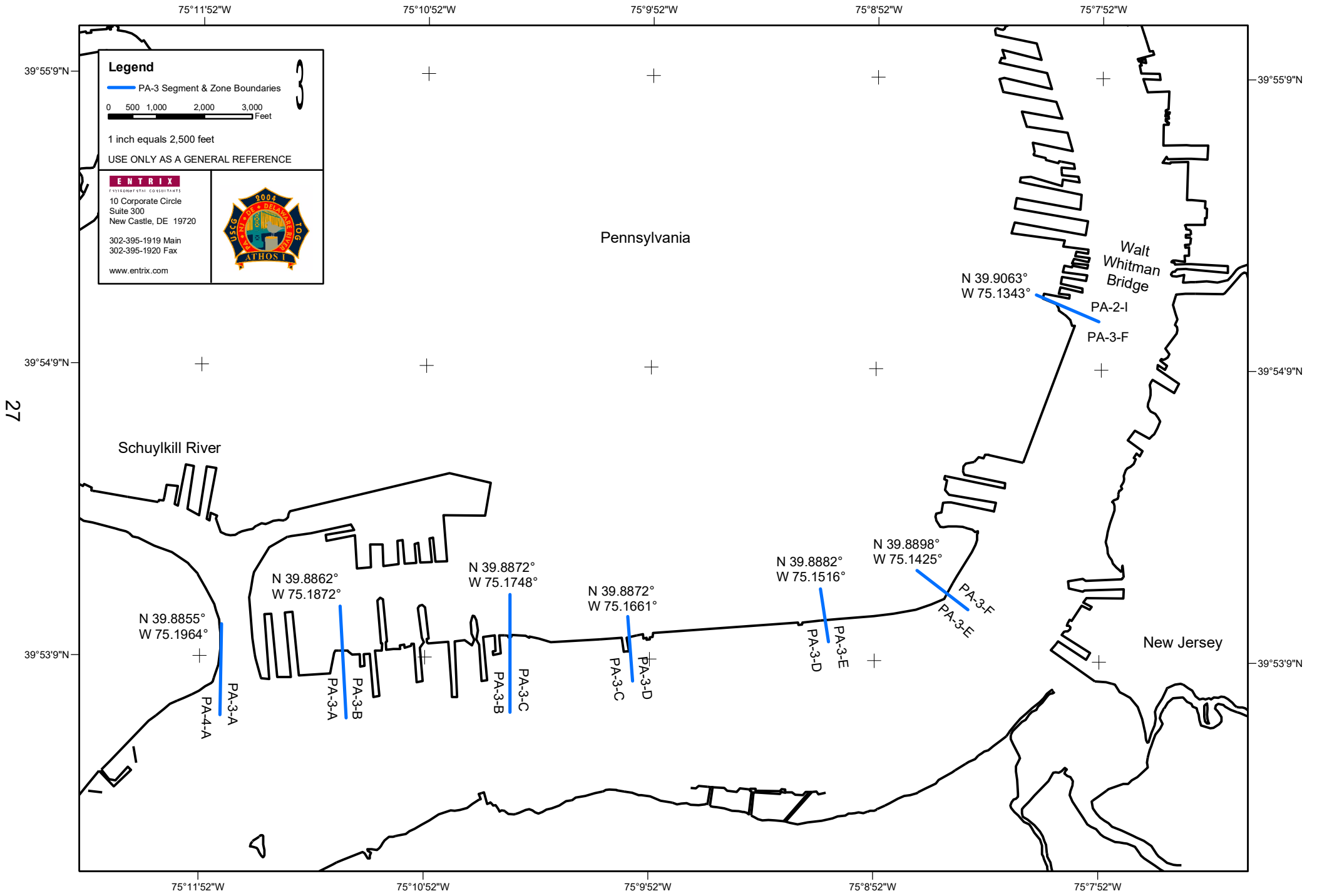
T/V Athos I Oil Spill

SCAT Map PA-3

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #3
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	M. Jenkins		985-768-2328	
Task Force Supervisor - USCG	BM3 Knorr		609-351-8509	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #3	Manpower: Responder	Responders	99 each	
Task Force #3	Manpower: Supervisor	Supervisors	10 each	
Task Force #3	Pressure Washers / Wash	Pressure Washers	34 each	
Task Force #3	Pumps	Pumps	17 each	
Task Force #3	Vehicle	Vehicles	26 each	
Task Force #3	Vessel	Vessels	10 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Kens Marine Service	Pressure Washers / Wa	1094 Shark	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1096 Shark	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1098 Shark	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1287 Shark	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1288 Shark	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1291 Honda	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1295 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1296 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1297 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1298 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1550 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1601 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1603 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1604 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1605 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1606 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1607 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1608 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1609 Hotsie	1 each		Assigned
Kens Marine Service	Pumps	1092 Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1659 Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1660 Pump	1 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #3
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Environmental Restoration	Trailer	1293 Cargo Trailer	1 each	16 feet	Assigned
Environmental Restoration	Trailer	1460 Cargo Trailer	1 each	20 feet	Assigned
Kens Marine Service	Vehicle	1091 4x4 F-350	1 each		Assigned
Kens Marine Service	Vehicle	1093 7 Passanger V	1 each		Assigned
Kens Marine Service	Vehicle	1095 9 Passanger V	1 each		Assigned
Kens Marine Service	Vehicle	1097 4x4 Dodge Dur	1 each		Assigned
Environmental Restoration	Vehicle	1226 Chevy	1 each		Assigned
Environmental Restoration	Vehicle	1227 F-550 Teak Be	1 each		Assigned
Environmental Restoration	Vehicle	1228 F-450 Steak Be	1 each		Assigned
Environmental Restoration	Vehicle	1229 Chevy 3/4 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1294 Chevy 3/4 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1451 Chevy 1/2 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1452 Dodge Van	1 each		Assigned
Environmental Restoration	Vehicle	1453 Chevy 3/4 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1454 Suzuki Vinson	1 each		Assigned
Environmental Restoration	Vehicle	1480 F-250 4x4	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1700 ATV	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Clean Harbors Environment	Manpower: Responder	Spill Tech	32 each		Assigned
Environmental Restoration	Manpower: Responder	Spill Tech	29 each		Assigned
Garner	Manpower: Responder	Spill Tech	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Spill Tech	24 each		Assigned
Kens Marine Service	Manpower: Responder	Spill Tech	13 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #3
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue work in Hog Island Terminal.
Complete booming of area around burned out dock by 4/5/2005.
Complete Honey Comb Wharf by 5/12/2005.
Make preperations for water flushing ops to commence on or about 4/11/2005 at riprap.

-PA-4E:
Hotsie riprap
cut oiled vegetaion

-PA-4F:
Hotsie riprap south of Fort Mifflin
Hostie or scrape oiled debris
Remove tar patties from sandy beach at the base of Fort Mifflin seawall
Maintain snare and boom in the inlet to Fort Mifflin Moat

Work Assignment Special Instructions

- PA-4J4:
Western end of rock wall downstream to the border or PA-4/PA-5
Rip rap/sandy beach
Hotsie rip rap as needed
Remove patties from sand flat
Pressure wash live tree roots – cold wash
Hotsie or scrape oiled woody debris

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #3
Approved By Signature:	

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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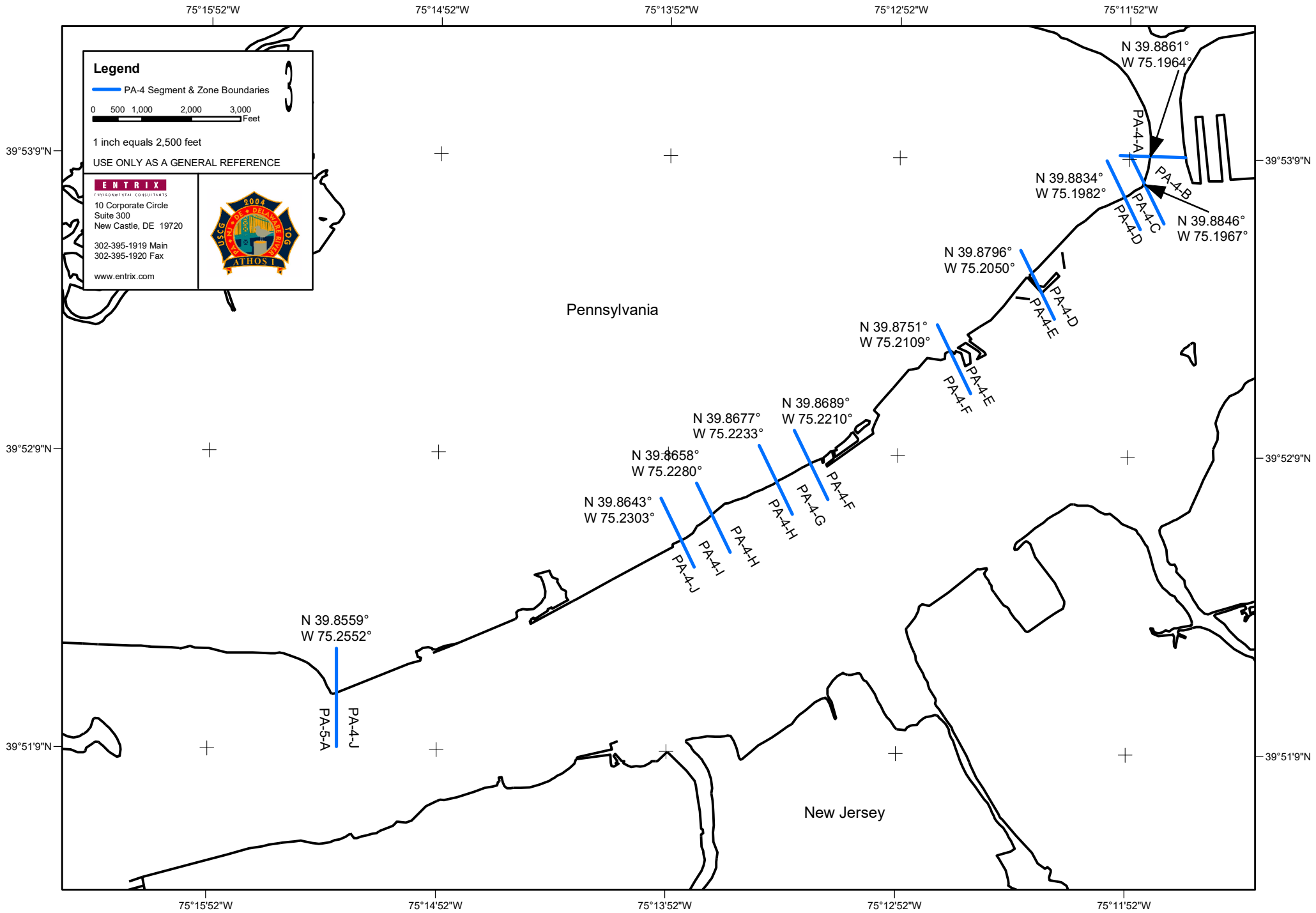
T/V Athos I Oil Spill

SCAT Map PA-4

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #4
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor- TOG	D. Marsh		713-569-2060	
Task Force Supervisor - USCG	MST1 Lettinger		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #4	Manpower: Responder	Responders	40 each	
Task Force #4	Manpower: Supervisor	Supervisor	5 each	
Task Force #4	Pressure Washers / Wash	Pressure Washers	10 each	
Task Force #4	Pumps	Pumps	5 each	
Task Force #4	Vehicle	Vehicles	5 each	
Task Force #4	Vessel	Vessels	7 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #4					
Industrial Cleanup, Inc. - ICI	Barge: Inland	1551 Deck Barge	1 each	20 feet	Assigned
Industrial Cleanup, Inc. - ICI	Barge: Inland	1552 Deck Barge	1 each	20 feet	Assigned
TOG	Generator	1212 Generator	1 each		Assigned
TOG	Generator	1537 Generator	1 each		Assigned
TOG	Generator	1541 Powermate 375	1 each		Assigned
North Star/Sea Tow	Pressure Washers / Wa	0793 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1216 Hotsie	1 each		Assigned
Clean Harbors Environment	Pressure Washers / Wa	1218 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1220 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1230 Honda	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1624 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1640 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1643 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2293 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3013 Hotsie	1 each		Assigned
Clean Harbors Environment	Pumps	1217 Trash Pump	1 each	3 inch(es)	Assigned
Global Remediation Service	Pumps	1248 Honda Trash P	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	1529 Trash Pump	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	2236 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3014 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3023 Trash Pump	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Trailer	1544 Utility Trailer	1 each	12 feet	Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #4
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #4					
Industrial Cleanup, Inc. - ICI	Vehicle	1436 15 Passanger '	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1543 Honda Rubico	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1547 15 Passanger '	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1548 Chevy 4x4	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1549 F-350	1 each		Assigned
TOG	Vehicle	2651 Ford Explorer	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vessel	1219 Vessel > 21 Br	1 each	27 feet	Assigned
North Star/Sea Tow	Vessel	1240 Vessel > 21 Ce	1 each	27 feet	Assigned
Moran	Vessel	1530 Vessel > 21	1 each	27 feet	Assigned
Industrial Cleanup, Inc. - ICI	Vessel	1553 Vessel > 21 Br	1 each	27 feet	Assigned
Clean Harbors Environment	Vessel	2653 Vessel < 21 Jo	1 each	18 feet	Assigned
Clean Harbors Environment	Vessel	2764 Vessel < 21 Jo	1 each	10 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #4					
Fleet Environmental Service	Manpower: Responder	Spill Tech	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Spill Tech	28 each		Assigned
Moran	Manpower: Responder	Spill Tech	3 each		Assigned
North Star/Sea Tow	Manpower: Responder	Spill Tech	1 each		Assigned

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #4
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA-6-A:
Continue work at Boeing & Foamex. Complete by 4/8/2005.
Complete Penn Terminal & PA 6-B1 by 4/11/2005.
Hotsie oil coat on concrete and steel seawalls from39.50.984, 75.20.481 up to 39.51.111, 75.20.097. (2) Manually remove oiled debris and hotsie oil coat on riprap from 39.51.111, 75.20.087 to 39.51.167, 75.19.917. (3) check cove for band on riprap – hotsie if necessary. (4) Hotsie seawall at power plant 39.51.316, 75.19.523, (5) hotsie seawall, wire-covered riprap
at Boeing facility at 39.51.462, 75.19.057. Use caution in this area.
Hotsie riprap and large debris on Fomex Beach. Manually remove small oiled debris and pavement @ 39.51.220 x 75.20.056, and asphalt pavement in area. Cut oiled weeds from top of pilings where oiled.
Hotsie riprap inside lagoon north of Fomex beach. Remove oiled debris.

- PA6B:
Continue progress in old shipyard. Complete by 4/14/2005.
Complete remainder of PA 6-B by 5/1/2005.
Hotsie seawalls and riprap from Ridley creek to Com Barry Bridge.
Hotsie seawalls and riprap at Degussa facility (39.50.159, 75.22.087) and Chester Water dept. (39.50.243, 75.21.905).
Use hand shovels to remove asphalt pavement on beach near water dept. (2) hotsie seawalls upstream of Chester Creek
from 39.50.461, 75.21.495 (near warehouses). (3) hotsie seawalls on upstream sides of shipyard slips. Note: pavement continues subsurface throughout the area.
From CMdr Barry Bridge to Pier:
Prune live oiled vegetation. Hotsie or scrape large woody vegetation. Spot hotsie riprap. Remove small oiled debris.

- PA6:
South of Banacor
There is a portion of the shoreline with dilapidated pier, rocks, trees and shrubs, with oiled line apparent for about 25'.
Hotsie affected areas and remove debris.
Cut shurbs at oiled line as needed. Area located within 1500' of Banacor.
North of this, remove pompom and woody debris.
Further north, remove sorbent boom tangled in wood pylons.

- PA8:
Crews mobing in from PA 6 on or about 5/1/2005.
Complete the remainder of PA 8 A-E by 5/15/2005
Cut oiled phragmites and branches at oiled line.
Hotsie riprap, docks, and seawalls

- PA8C:
Remove tar balls and oiled debris

- PA8E:
Downstream cove: Hotsie riprap

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #4
Approved By Signature:	

Remove tar patties and oiled debris
Cut oiled phragmites at oiled line.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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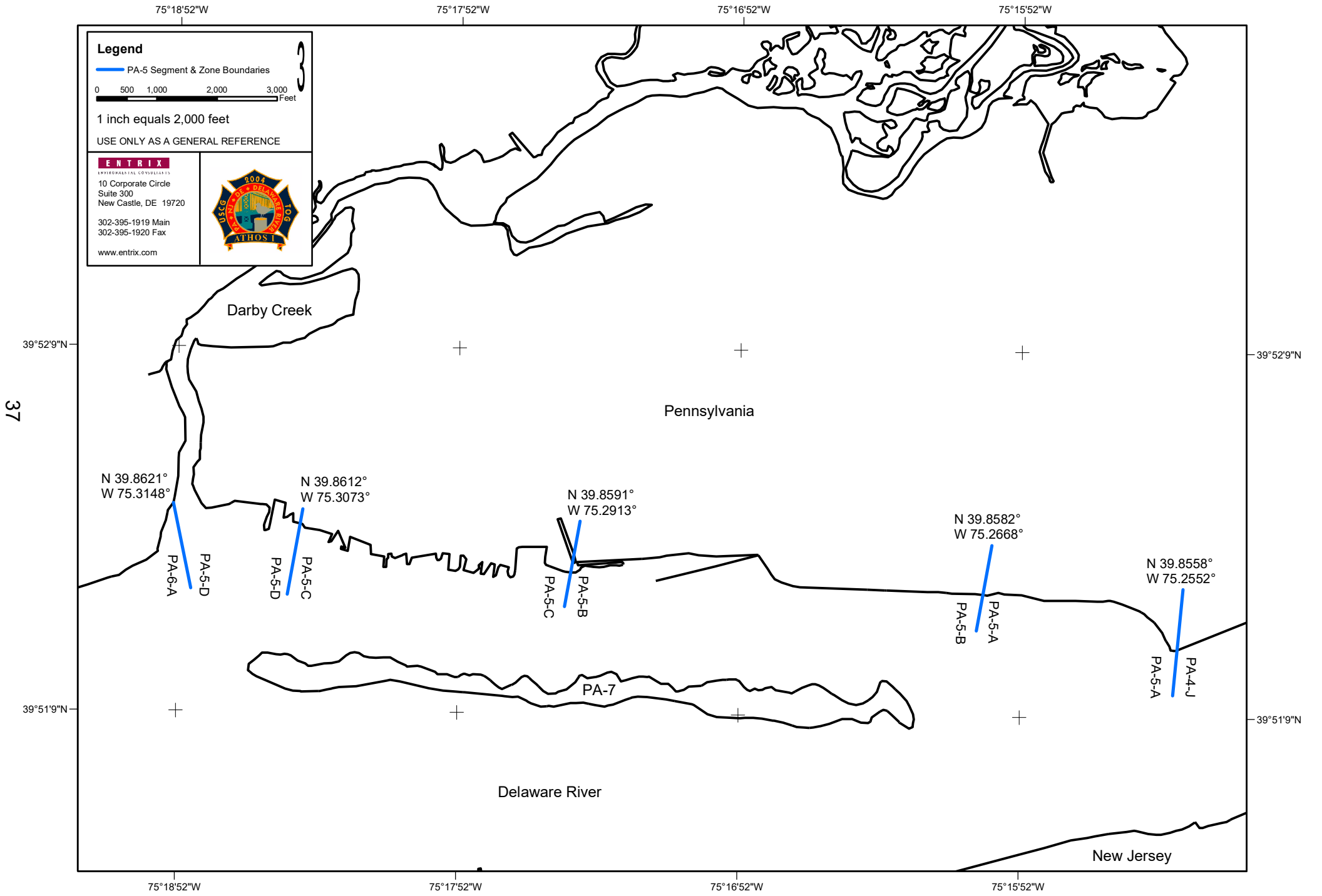
T/V Athos I Oil Spill

SCAT Map PA-5

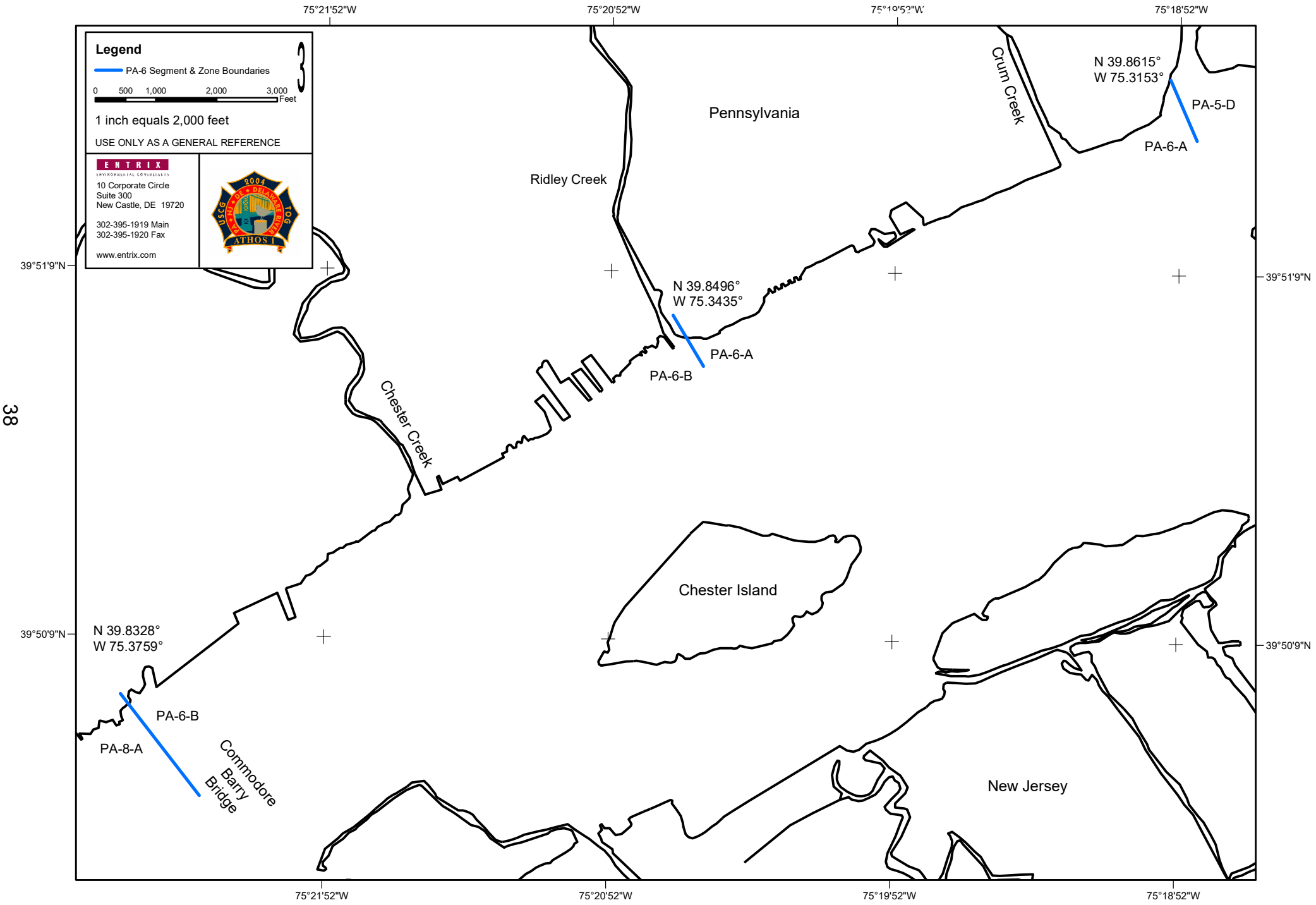
Spring 2005 SCAT



T/V Athos I Oil Spill

SCAT Map PA-6

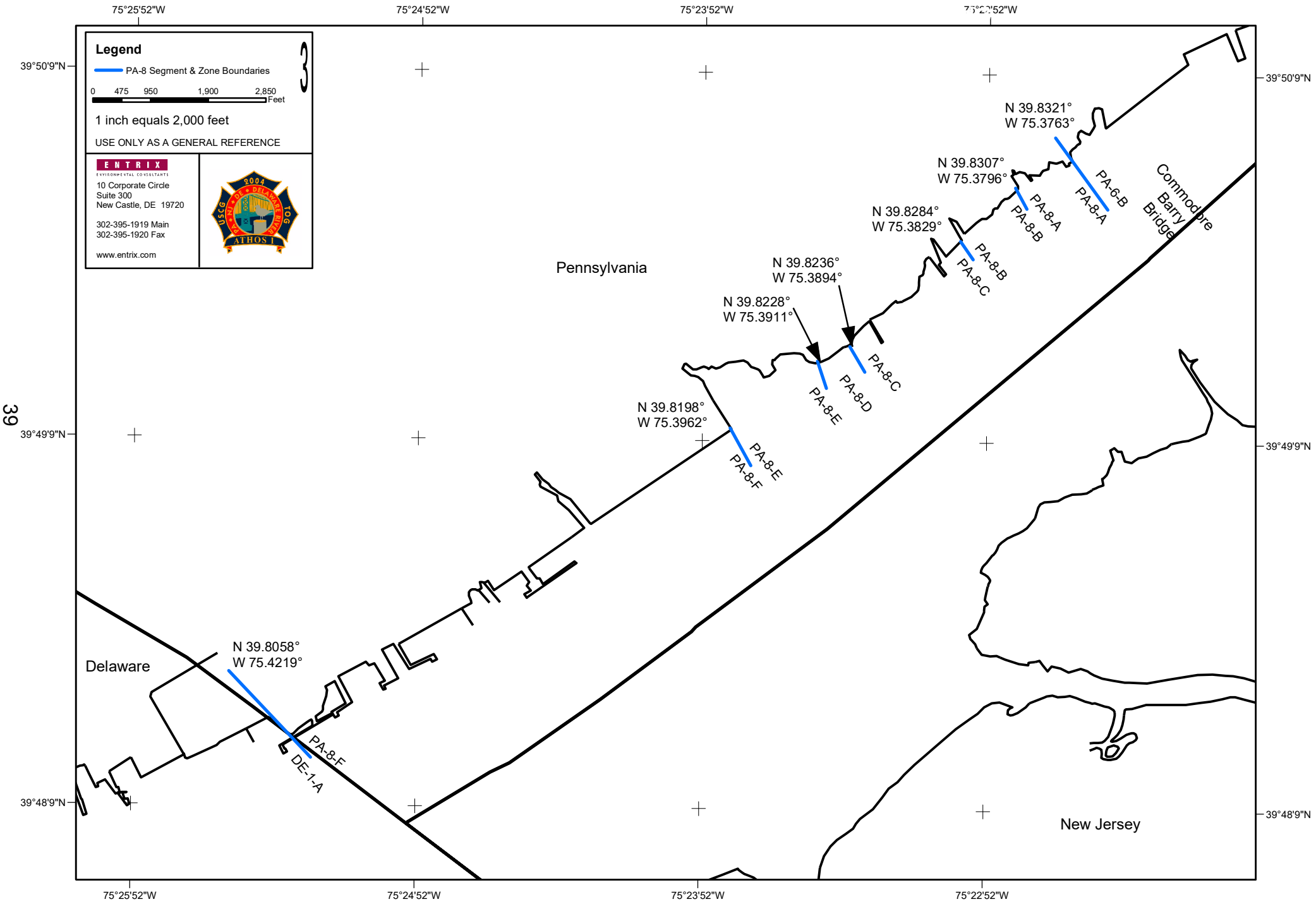
Spring 2005 SCAT



T/V Athos I Oil Spill

SCAT Map PA-8

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #5
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	J. Topic		952-201-1002	
Task Force Supervisor- USCG	MST3 Furguson		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #5	Manpower: Responder	Responders	79 each	
Task Force #5	Manpower: Supervisor	Supervisors	9 each	
Task Force #5	Pressure Washers / Wash	Pressure Washers	6 each	
Task Force #5	Pumps	Pumps	3 each	
Task Force #5	Vehicle	Vehicles	11 each	
Task Force #5	Vessel	Vessels	5 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #5					
Environmental Restoration	Equipment: Heavy	3101 T200 Tracked	1 each		Assigned
TOG	Generator	0631 Coleman 1850	1 each		Assigned
TOG	Generator	0634 Coleman 1850	1 each		Assigned
TOG	Generator	1015 Powermate G2	1 each		Assigned
Miller Environmental Group,	Storage: Liquid	1036 Gasoline	1 each	1000 gallo	Assigned
Miller Environmental Group,	Storage: Liquid	1037 Diesel	1 each	500 gallon	Assigned
Miller Environmental Group,	Storage: Liquid	1038 Diesel	1 each	1000 gallo	Assigned
Kens Marine Service	Vehicle	0911 9 Passanger V	1 each		Assigned
Kens Marine Service	Vehicle	1099 F-150	1 each		Assigned
Kens Marine Service	Vehicle	1100 F-350	1 each		Assigned
Kens Marine Service	Vehicle	1338 F-150	1 each		Assigned
Kens Marine Service	Vehicle	1342 9 Passanger V	1 each		Assigned
Kens Marine Service	Vehicle	1343 Grand Cheroke	1 each		Assigned
Kens Marine Service	Vehicle	1344 7 Passanger V	1 each		Assigned
Kens Marine Service	Vehicle	1345 9 Passanger V	1 each		Assigned
Kens Marine Service	Vehicle	1347 4x4 Dodge Du	1 each		Assigned
Miller Environmental Group,	Vessel	1071 LCM (Landing (	1 each	74 feet	Assigned
Miller Environmental Group,	Vessel	1072 Vessel > 21	1 each	27 feet	Assigned
Global Remediation Service	Vessel	Vessel > 21	1 each	34 feet	Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #5
Approved By Signature:	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #5					
Global Remediation Service	Manpower: Responder	Spill Tech	2 each		Assigned
Kens Marine Service	Manpower: Responder	Spill Tech	33 each		Assigned
Miller Environmental Group,	Manpower: Responder	Spill Tech	19 each		Assigned

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue focused debris removal in PA 7 - M, N, & O. Use additional 25 resources ETA 4/7/2005, to complete by 4/30/2005.
Continue bag removal with tides as permitted.
Continue MLLW monitoring and spot removal of rocks, mats and sand in A-G as tides permit.

- PA7:
  Hand or mechanical removal of debris and tar patties.
  Cold water pressure wash of oiled root systems.
  Scrape or hotsie large debris.
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Cut oiled non-woody vegetation at oiled line.
  Use only established paths on interior of Island.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #5
Approved By Signature:	

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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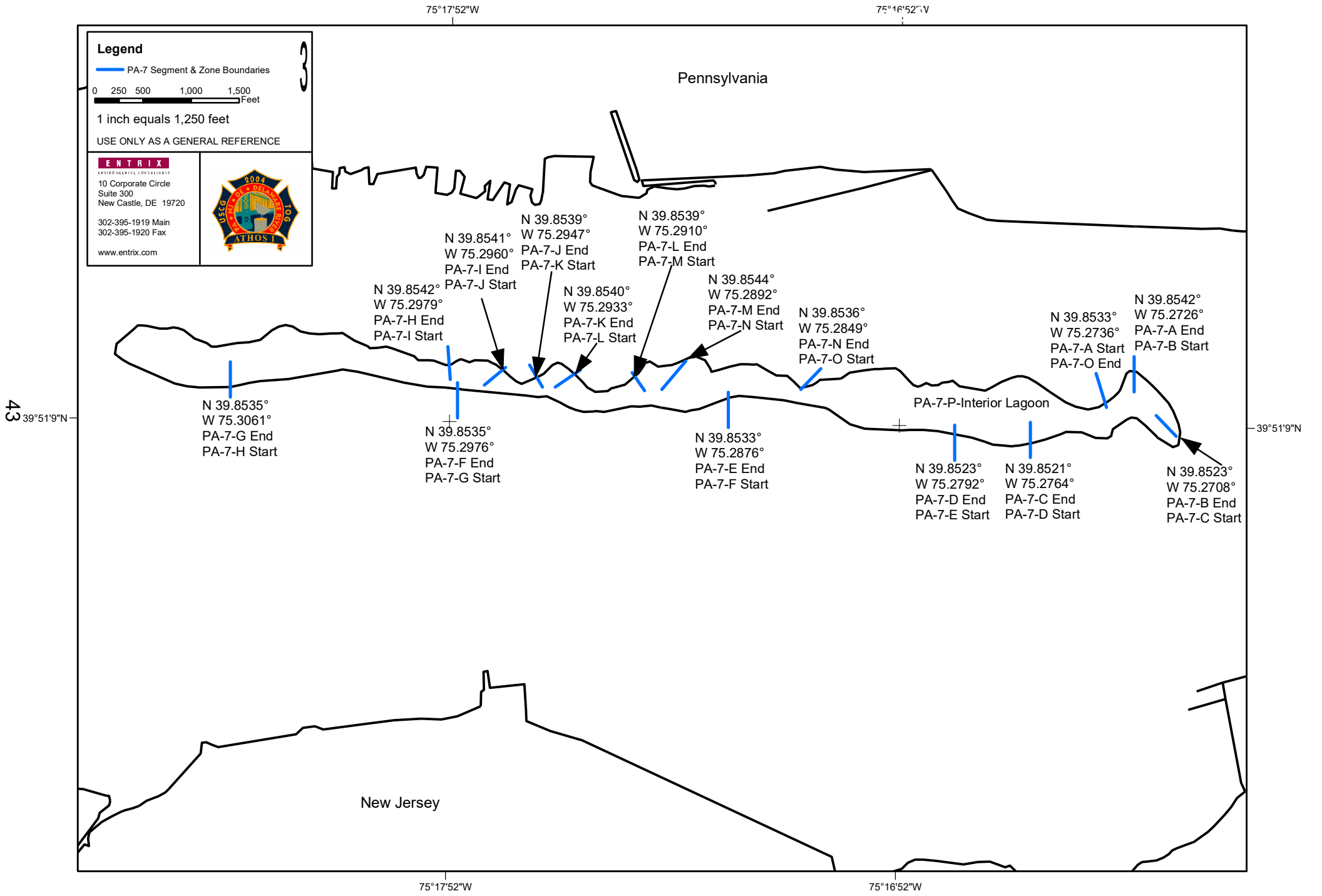
T/V Athos I Oil Spill

SCAT Map PA-7

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #6
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	I. Will		952-250-3161	
Task Force Supervisor - USCG	MST2 Devine		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #6	Manpower: Responder	Responders	32 each	
Task Force #6	Manpower: Supervisor	Supervisors	4 each	
Task Force #6	Pressure Washers / Wash	Pressure Washers	6 each	
Task Force #6	Pumps	Pumps	4 each	
Task Force #6	Vehicle	Vehicles	8 each	
Task Force #6	Vessel	Vessels	9 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #6					
TOG	Equipment: Heavy	2302 Toyota	1 each		Assigned
TOG	Equipment: Heavy	2958 John Deere	1 each		Assigned
Clean Harbors Environment	Pressure Washers / Wa	2303 Hotsie	1 each		Assigned
Clean Harbors Environment	Pressure Washers / Wa	2951 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3015 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3040 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3041 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3042 Pressure Wash	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1010 Trash Pump	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	2231 Wash Pump	1 each		Assigned
Clean Harbors Environment	Pumps	2952 Pump	1 each	2 inch(es)	Assigned
USES	Pumps	3016 Trash Pump	1 each		Assigned
TOG	Storage: Solid	2336 Container	1 each	20 feet	Assigned
TOG	Storage: Solid	2337 Container	1 each	20 feet	Assigned
Clean Harbors Environment	Trailer	0465 Load Rite	1 each	21 feet	Assigned
Clean Harbors Environment	Trailer	0471 Sea Lion	1 each	24 feet	Assigned
Clean Harbors Environment	Trailer	0477 Magic Tilt	1 each	26 feet	Assigned
Clean Harbors Environment	Trailer	0485 Sport Man	1 each	24 feet	Assigned
Clean Harbors Environment	Trailer	0487 Easy Load	1 each	24 feet	Assigned
Clean Harbors Environment	Trailer	1769 Utility	1 each	16 feet	Assigned
Clean Harbors Environment	Trailer	2383 Magic Trail	1 each	30 feet	Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #6
Approved By Signature:	

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #6					
Clean Harbors Environment	Manpower: Responder	Spill Tech	8 each		Assigned
Moran	Manpower: Responder	Spill Tech	19 each		Assigned

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue shoreline clean up of area adjacent to Gloucester City Marina in NJ 2-A. Complete by 4/17/2005.
Continue shoreline clean up and Hotsie work of piers and bulkheads in Wiggins Park, Tweeter Center and Battleship NJ in NJ 2-C. Complete by 4/18/2005.
- NJ 2:
  Hotsie from BF bridge south as needed
  Concentrate on high public use areas at Campbell field, Tweeter Center
  Battleship NJ
  Hotsie north side of BF bridge piers.
  Remove possible pavement south of Camden Refrigeration
  Hotsie concrete wall by cement company
  Remove mat from north bank of Newton Creek
  Hotsie both walls of Newton Creek
  Hotsie seawall near Gloucester Marina
  Hotsie Koch Marine Terminal seawall

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #6
Approved By Signature:	

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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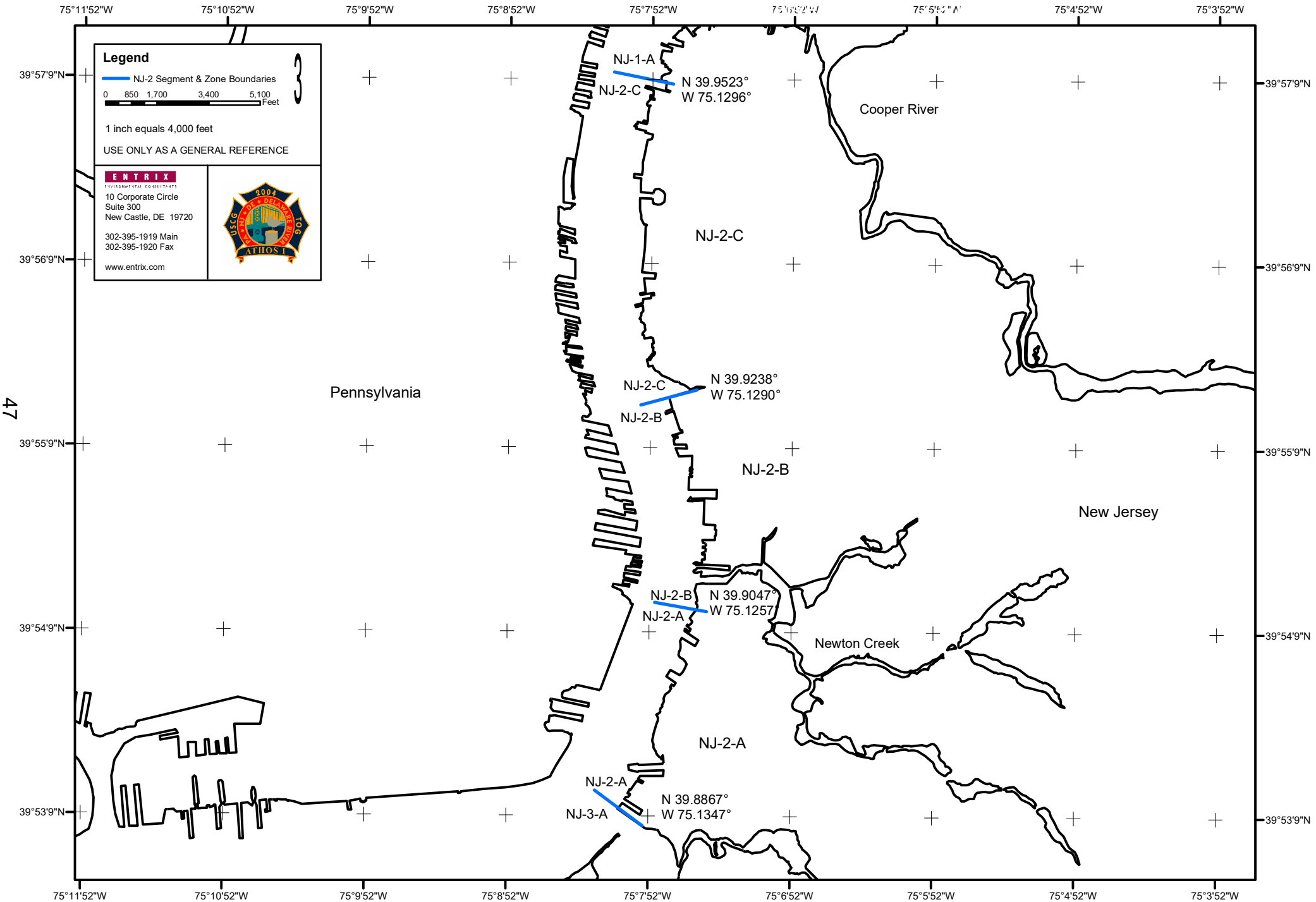
T/V Athos I Oil Spill

SCAT Map NJ-2

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #7
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	P. Parker		270-559-2735	
Task Force Supervisor - USCG	MK1 Pettis		415-798-4604	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #7	Manpower: Responder	Responders	53 each	
Task Force #7	Manpower: Supervisor	Supervisors	6 each	
Task Force #7	Pressure Washers / Wash	Pressure Washers	8 each	
Task Force #7	Pumps	Pumps	4 each	
Task Force #7	Vehicle	Vehicles	11 each	
Task Force #7	Vessel	Boats < 21'	3 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #7					
Fleet Environmental Services	Generator	2522 DCA 25SSIU	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	0741 Hotsie	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2513 Mighty TM	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2514 Honda	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2515 Hotsie	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2516 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2517 Mighty TM	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2531 Hotsie	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2541 Might M	1 each		Assigned
Fleet Environmental Services	Pressure Washers / Wa	2543 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3047 Pressure Wash	1 each		Assigned
Fleet Environmental Services	Pumps	2518 Honda	1 each	3 inch(es)	Assigned
Fleet Environmental Services	Pumps	2519 Tsunami	1 each	3 inch(es)	Assigned
Fleet Environmental Services	Pumps	2520 Tsunami	1 each	3 inch(es)	Assigned
Fleet Environmental Services	Trailer	2521 Scottsman	1 each	36 feet	Assigned
Fleet Environmental Services	Vehicle	2502 Rack Body	1 each		Assigned
Fleet Environmental Services	Vehicle	2503 Mitsubishi Rac	1 each		Assigned
Fleet Environmental Services	Vehicle	2504 Isuzu Rodeo	1 each		Assigned
Fleet Environmental Services	Vehicle	2505 Dodge	1 each		Assigned
Fleet Environmental Services	Vehicle	2506 GMC	1 each		Assigned
Fleet Environmental Services	Vehicle	2507 Plymouth Voya	1 each		Assigned
Fleet Environmental Services	Vehicle	2508 F-350 Van	1 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #7
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #7					
Fleet Environmental Service	Vehicle	2509 Ford Club	1 each		Assigned
Fleet Environmental Service	Vehicle	2510 Nissan Titan - I	1 each		Assigned
Fleet Environmental Service	Vehicle	2511 F-350 - Utility T	1 each		Assigned
Fleet Environmental Service	Vehicle	2512 Ford Van	1 each		Assigned
Fleet Environmental Service	Vessel	2501 Vessel > 21 LC	1 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #7					
Clean Harbors Environment	Manpower: Responder	Spill Tech	4 each		Assigned
Fleet Environmental Service	Manpower: Responder	Spill Tech	49 each		Assigned

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #7
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue working with assigned complement in NJ 5 A-G.
Continue work in NJ 3 J-L.

- NJ3A-F:
  Complete by 4/20/2005
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Mechanical raking /or manual turn over of cobble or small boulders - high volume water flush or hotsie
  Remove buried oil/tar mats

- NJ3G:
  Complete by 4/20/2005
  South to Ferry Dock
    Hotsie or scrape oiled woody debris greater than 6 inches in diameter
    Remove oiled woody debris less than 6 inches in diameter
    Manual removal utilizing mechanical hauling of fine gravel and pebbles
    Manual or mechanical removal of oil coated cobble and mechanical hauling
    Mechanical raking /or manual turn over of cobble or small boulders - high volume water flush or hotsie
    Hotsie rock around West Deptford Boat Ramp
    Remove buried oil just downstream of W Deptford Boat Ramp (1-2' below surface)
    Cold water pressure wash all oiled live trees

- Ferry Dock to NJ3H :
  Sand/small cobble beach
  Remove any tar mats
  Mechanical removal oil coated pebbles and cobble
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Manual removal of oily debris as necessary
  Cold water pressure wash all oiled live trees
  Manual removal of tar mats
  Manually locate and identify all buried oil areas and manual removal with the use of machinery
  Note: High public use

- NJ3H:
  Remove any tar mats
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Small cobble, manual removal (possible mechanized hauling)
  National Park down to Woodbury creek
  Coarse grain sandy beach /riprap
  Hotsie riprap/consider high volume warm water
  Move cobble, remove tar, remove tar mats, hotsy cobble

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Manually remove small cobble - use mechanized hauling
Note: High public use area

- NJ3I:
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Cold water pressure wash all oiled live trees

- NJ3J:
Continue oiled phragmites removal adjacent to Riverwinds in NJ 3-J. Complete by 4/8/2005.
Cut oiled phragmites at oiled line.
Removed oiled mat from southern side cover
Remove oiled (drag) woody debris - drag from high public area and hotsie
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Move cobble, remove tar, remove tar mats, hotsie cobble
Cold water pressure wash all oiled live trees
Note: High public use area

- NJ3K:
Complete by 4/23/2005.
Manual removal of oiled gravel/patties
Cut non-woody vegetation/branches at oiled line.
Cold-water pressure wash oiled live trees
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Hotsie boulders

Special Instructions for Division / Group

- NJ3L:
Complete by 4/23/2005.
Citgo Beach
Sand cobble /boulders
Move cobble, remove tar mats/asphalt; hotsie cobble
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Remove oiled sediment to 1 foot depth along bank or MAIN DITCH
Agitate sediment to expose/diffuse buried oil - do not rake below clay layer
Note: do not rake below clay layer

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #7
Approved By Signature:	

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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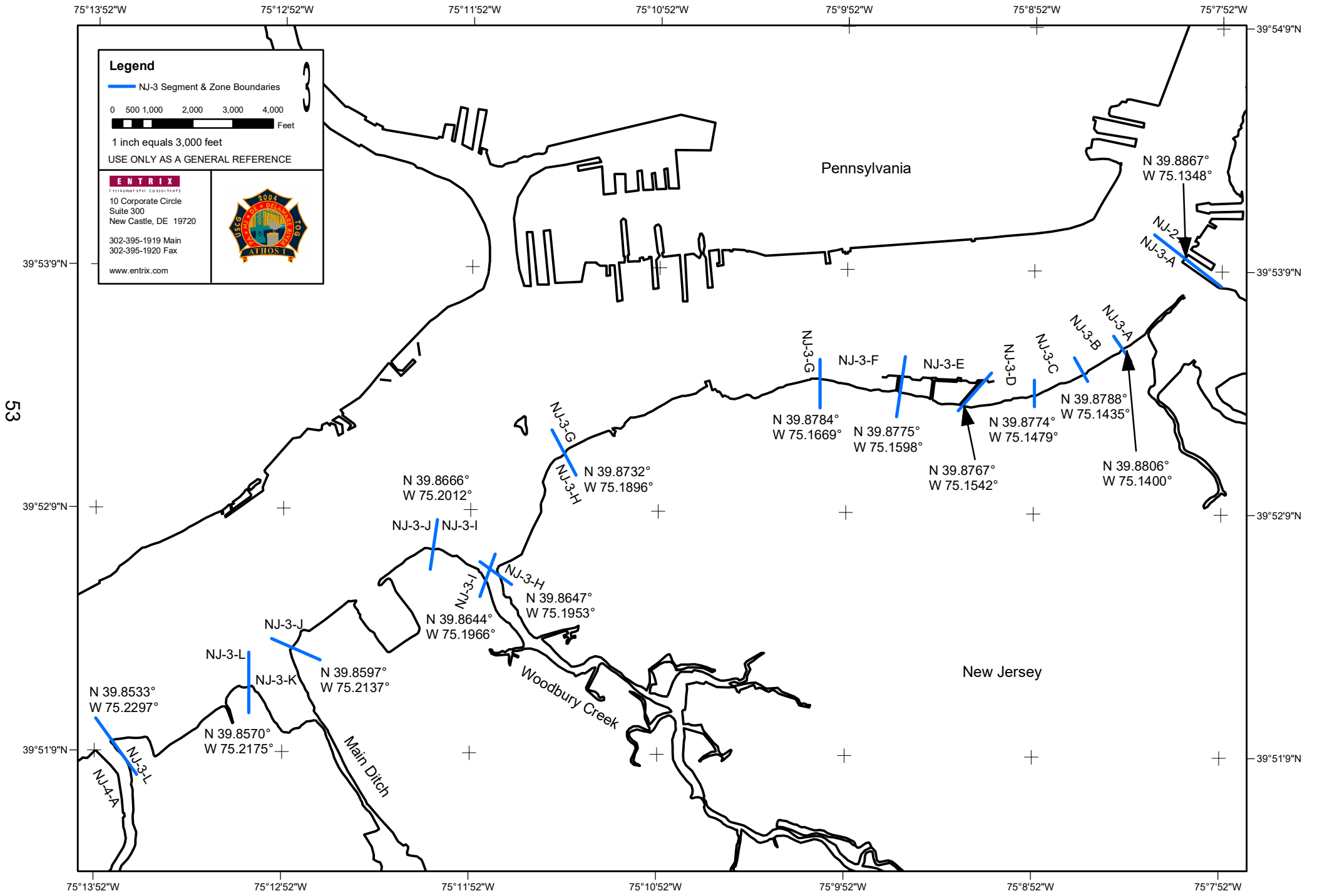
T/V Athos I Oil Spill

SCAT Map NJ-3

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #8
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	P. Richie		612-210-9051	
Task Force Supervisor - USCG	BMC Balliet		415-559-9640	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #8	Manpower: Responder	Responders	64 each	
Task Force #8	Manpower: Supervisor	Supervisors	7 each	
Task Force #8	Pressure Washers / Wash	Pressure Washers	9 each	
Task Force #8	Vehicle	Vehicles	24 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #8					
TOG	Generator	1703 Honda 5.0	1 each		Assigned
TOG	Generator	1909 Powermate	1 each		Assigned
TOG	Generator	2012 Coleman	1 each		Assigned
TOG	Generator	94611094 Coleman	1 each		Assigned
USES	Pressure Washers / Wa	3001 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3002 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3003 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3004 Hotsie Karoher	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3006 Hotsie All Ame	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3007 Hotsie ALK TA	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3008 Hotsie All Ame	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3009 Hotsie All Ame	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3010 Hotsie All Ame	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3021 Hotsie ALK TA	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	3032 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3043 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3045 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3046 All American	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3052 All American	1 each		Assigned
Environmental Restoration	Pumps	2702 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2704 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2706 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2710 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2712 Trash Pump	1 each	2 inch(es)	Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #8
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #8					
USES	Trailer	1257 Trailer	1 each	8 feet	Assigned
USES	Trailer	1449 Trailer	1 each	8 feet	Assigned
USES	Vehicle	1258 Honda Formar	1 each		Assigned
USES	Vehicle	1448 Honda Ranche	1 each		Assigned
USES	Vehicle	PA402 Toyota 4 Rur	1 each		Assigned
SWS Environmental First Re	Vehicle	PSF-7884 POV GMC	1 each		Assigned
USES	Vehicle	RMR84M 16 Passar	1 each		Assigned
SWS Environmental First Re	Vehicle	SSX-5348 POV Cam	1 each		Assigned
SWS Environmental First Re	Vehicle	SSX6671 POV Nissa	1 each		Assigned
SWS Environmental First Re	Vehicle	TRX-4853 POV Toyo	1 each		Assigned
SWS Environmental First Re	Vehicle	TSB4116 POV Chev	1 each		Assigned
SWS Environmental First Re	Vehicle	WL16EB POV Toyot	1 each		Assigned
SWS Environmental First Re	Vehicle	WL19EB POV Pontia	1 each		Assigned
USES	Vessel	0424 Vessel > 21 Ro	1 each	28 feet	Assigned
USES	Vessel	0426 Vessel > 21 Ro	1 each	26 feet	Assigned
USES	Vessel	0428 Vessel < 21 Fla	1 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #8					
SWS Environmental First Re	Manpower: Responder	Spill Tech	13 each		Assigned
USES	Manpower: Responder	Spill Tech	55 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #8
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Consolidate work into PA4-A - PA4-E.
Complete work in PA 4-E by 4/28/2005 with addition of hot water flush.

- PA-4A:
I95 Bridge on Schuylkill River south to start of wooden bulkhead
Rip rap/mudflat/small cove at southern end of zone
Hotsie oiled riprap throughout the entire zone
Cut the branches from live oiled vegetation at oiled line.
High Pressure Cold Water wash (HPCW) the trunks and roots of oiled live trees throughout this segment
(notes: hotsie from land – 50-75' of mudflats @ low tide, access difficult – two levels of reeds and steep hill to rip rap, see general notes below)

- PA-4B:
Complete work in PA 4-B by 4/10/2005.
Wooden bulkhead to the mouth of the Schuylkill River
Hotsie oiled riprap throughout the entire zone
Cut the branches from live oiled vegetation at oiled line.
Pressure wash or scrape the trunks and roots of oiled live trees throughout this segment
Check wooden bulkhead by boat and hotsie if oiled
(notes: hotsie from land – 50-75' of mudflats @ low tide, access difficult – two levels of reeds and steep hill to rip rap, see general notes below)

- PA-4C:
Mouth of the Schuylkill River to 500 feet downstream

- PA- 4D:
Complete work in PA 4-D by 5/12/2005.
Provide crews for debris sweeps of PA 4 A&C as available.
Shoreline from PA-4C to the old Army Corps of Engineers (ACOE) Dock
Hotsie oiled riprap throughout the entire zone
Cut the branches from live oiled vegetation at oiled line.
Pressure wash or scrape the trunks and roots of oiled live trees throughout this segment
(notes: access to area is difficult but not as difficult as PA-4A or PA-4B)
Old ACOE Dock and Breakwater
Hotsie old dock and breakwater
Cut the branches from live oiled vegetation at oiled line.
Old ACOE dock downstream to new ACOE dock
Hotsie rip rap as needed
Complete hotsie of ACOE dock from barge (dock should be complete)
Cut the branches from live oiled vegetation at oiled line.
(notes: access to the upstream ½ of this segment is difficult)

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #8
Approved By Signature:	

Old Fort Mifflin Dock
Hotsie dock and remove debris/tar patties from cove

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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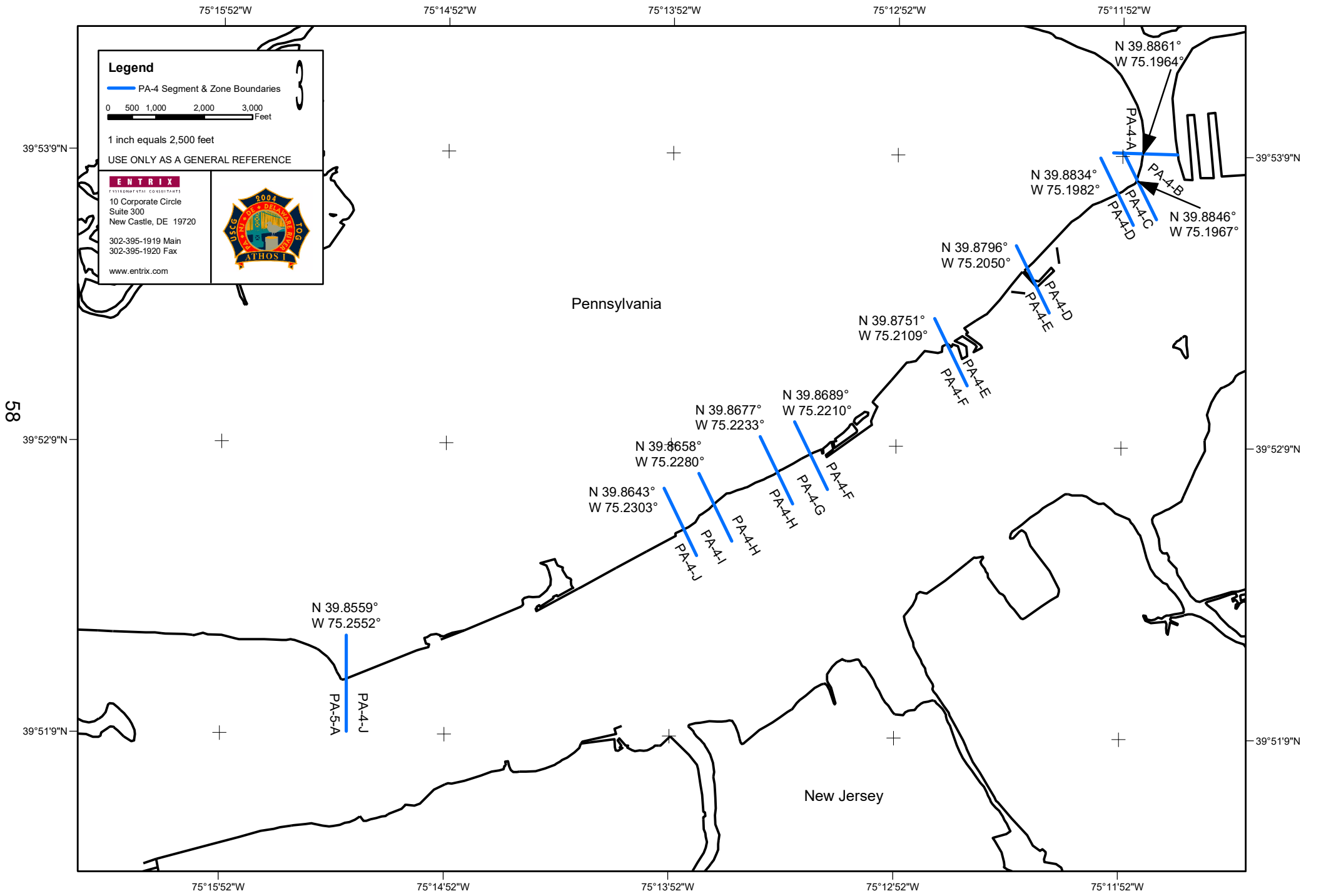
T/V Athos I Oil Spill

SCAT Map PA-4

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #9
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	TBD		TBD	
Task Force Supervisor - USCG	TBD		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #9	Manpower: Responder	Spill Techs	65 each	
Task Force #9	Pressure Washers / Wash	Hotsie	8 each	
Task Force #9	Pumps	Pump	5 each	
Task Force #9	Vessel	Vessel	2 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
TOG	Generator	0707 Honda 5.0	1 each		Assigned
TOG	Generator	1515 Powermate 375	1 each		Assigned
TOG	Generator	1519 Powermate 375	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1265 Pressure Wash	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1311 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1312 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1313 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1314 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1315 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1428 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1625 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1635 Hotsie	1 each		Assigned
North Star/Sea Tow	Pressure Washers / Wa	2294 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2701 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2703 Hotsie DH403C	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2705 Hotsie DH403C	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2709 Hotsie 440SF	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2711 Hotsie 3004	1 each		Assigned
TOG	Pumps	1211 Pump	1 each	2 inch(es)	Assigned
Kens Marine Service	Pumps	1213 Trash Pump	1 each	2 inch(es)	Assigned
Clean Harbors Environment	Pumps	1214 Trash Pump	1 each	2 inch(es)	Assigned
USES	Pumps	1662 Trash Pump	1 each		Assigned
USES	Trailer	1255 Utility	1 each	8 feet	Assigned
USES	Vehicle	1251 F-250	1 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #9
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
USES	Vehicle	1252 F-350	1 each		Assigned
USES	Vehicle	1253 16 Passanger '	1 each		Assigned
USES	Vehicle	1254 Honda Formar	1 each		Assigned
USES	Vehicle	1259 F-350	1 each		Assigned
USES	Vehicle	1260 Dodge Truck	1 each		Assigned
USES	Vehicle	1399 Dodge Ram 35	1 each		Assigned
USES	Vehicle	1400 16 Passanger '	1 each		Assigned
USES	Vehicle	1434 F-350 Stake Be	1 each		Assigned
USES	Vehicle	1439 16 Passanger '	1 each		Assigned
SWS Environmental First Re	Vehicle	AFH1235 PO Chevy	1 each		Assigned
USES	Vehicle	FTY2375 Chevy Tra	1 each		Assigned
USES	Vehicle	FWG9214 Ford Exp	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
SWS Environmental First Re	Manpower: Responder	Spill Tech	40 each		Assigned

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #9
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Consolidate work into PA 4-F - PA 4-H.
Continue ops with current force strength.

- PA-4G:
  Complete PA 4-G by 4/23/2005
  Downstream of Sunoco (Ft. Mifflin) to where rip rap ends
  Rip rap/large cobble beach/pylons
  Hotsie rip rap as needed
  Hotsie or scrape old wooden pier supports
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Cut oiled branches from live tree at oiled line.
  Manually remove matting/pavement
  Remove asphalt and heavy oiled sediment from around and beneath cobbles; hotsie cobbles;
  PWCW or scrape the trunks and roots of oiled live trees throughout this segment
  (notes: canal behind beach feeds moat; do not remove snare and sausage boom here)
  Refer to general notes below

- PA-4H:
  Complete PA 4 F&H by 5/5/2005
  Area from end of rip rap downstream to fire department building/boat ramp
  Sandy beach/old wooden pilings/concrete piers
  Hotsie concrete piers
  Hotsie or scrape old wooden pier supports
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Remove asphalt and heavy oiled sediment from around and beneath cobbles; hotsie cobbles;
  Cut oiled branches from live tree at oiled line.
  Pressure wash or scrape the trunks and roots of oiled live trees throughout this segment
  Refer to general notes below

- PA-4I:
  Complete PA 4-I by 4/7/2005
  Shoreline from fire department building/boat ramp to Sunoco Hog Island facility
  Sandy beach/old wooden pilings/concrete piers
  Hotsie concrete piers
  Hotsie or scrape old wooden pier supports
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Cut oiled branches from live tree at oiled line.

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Pressure wash or scrape the trunks and roots of oiled live trees throughout this segment
Refer to general notes below

- PA-4J1:
Large cove just south of Sunoco Hog Island
Sand/cobble beach/old seawall/pylons
Hotsie or scrape old wooden piers and bulkheads
Hotsie rip rap as needed
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Remove asphalt mats on beach
Refer to general notes below

- PA-4J2:
Area from cove downstream to the seawall
Sand beach/sand flat
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Hotsie rock piles and redistribute rocks
Manually remove tar mats and small tar patties
(notes: be careful not to drive oil into sediment, place black matting underneath the debris and rocks during large hotsie operations such as piles of rocks or woody debris).
Refer to general notes below

Special Instructions for Division / Group

- PA-4J3:
Rock wall/small cove
Remove small tar patties from sand flat
Pressure wash live tree roots or trunk - cold water
Hotsie upstream quarter of wall, focus on cracks to mobilize and collect released oil. (try land and water sides)
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Monitor rock wall for seepage, place snare to collect floating oil if observed
Refer to general notes below

- PA-4J4:
Western end of rock wall downstream to the border or PA-4/PA-5
Rip rap/sandy beach
Hotsie rip rap as needed
Remove patties from sand flat
Pressure wash live tree roots – cold wash
Hotsie or scrape oiled woody debris

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Delaware / Pennsylvania
Prepared By Signature:	Task Force: Task Force #9
Approved By Signature:	

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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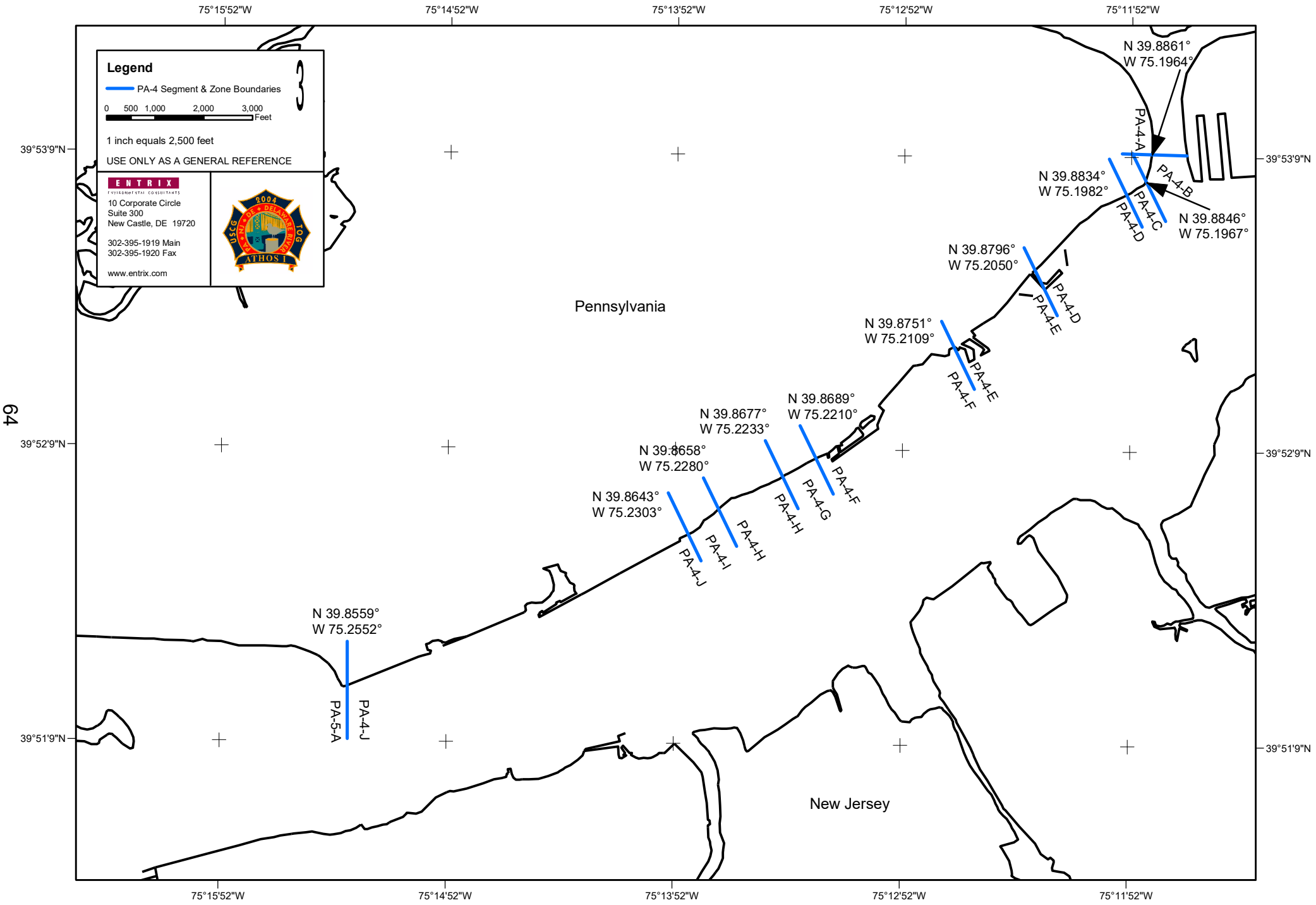
T/V Athos I Oil Spill

SCAT Map PA-4

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #10
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	TBD		TBD	
Task Force Supervisor - USCG	TBD		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #10	Manpower: Responder	Spill Tech	50 each	
Task Force #10	Pressure Washers / Wash	Hotsie	20 each	
Task Force #10	Pumps	Pump	10 each	

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #10
Approved By Signature:	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

50 Additional personnel to NJ 4-5 by 4/8/2005.
Continue tar mat, woody debris, and small cobble removal. Scrape/Hotsie large wood.
Anticipate high volume flushing of cobble/riprap in heavely oiled area's on or about 4/15.

- NJ4A:
  Mechanized removal of mats, mechanical removal of oil cobbles, gravel
  Manual removal of oiled trash (maintenance)
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Cold-water pressure wash

- ST Services Dock:
  Hotsie pier /bulkhead to remove oil residue

- Valero Refinery:
  Hotsie pier/bulkhead to remove oil residue
  Note: small residential area

- NJ4B:
  Cionell Creek to Pier at Rapauno Products
  Riprap - high volume warm water flush
  Boat Ramp at Rapauno Products- locate and remove visible and buried asphalt mats.

- NJ4C:
  Dupont Property
  Remove oil and oiled debris from wooden bulkhead and at corner of pier
  Remove oiled trash
  Riprap - high volume warm water flush
  Hotsie bulkhead
  Note: Beware of pipelines in area.
  Note: NO WORK AT MONDS ISLAND: no entrance allowed.

- NJ4D:
  Floodgate Road South
  Hotsie floodgate and riprap w/in 200' on both sides of floodgate
  Mechanical removal of oiled pebbles, gravel and cobble.
  Cut oiled phragmites at oiled line.
  Remove oiled floatable debris as necessary (maintenance)
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Remove oiled cobble, remove tar, remove large tar mats, hotsie cobble (at northern point).
  From cove to point at old Canal
  Mechanical/manual removal of oiled mat

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Incident: MT Athos I	Branch:
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: New Jersey
Prepared By Signature:	Task Force: Task Force #10
Approved By Signature:	

- NJ4E:
  Old Canal (aka Little Timber Creek)

  Mechanical removal of oiled cobble and small boulders
  2 oil lines with matting - can use mechanical removal
  Hotsie or hot water flush boulders.
  Note: For combination to gates (see R. Schrader)

- NJ5:
  Mechanical removal of oiled cobble, gravel
  Mechanical raking or turnover of small boulders,high volume water flush of boulders and riprap when temps allow.
  Remove oiled floatable debris as necessary (maintenance)
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter.
  Manual removal of asphalt mats in and around boulders
  Identify buried oil - manual removal with use of machinery if possible.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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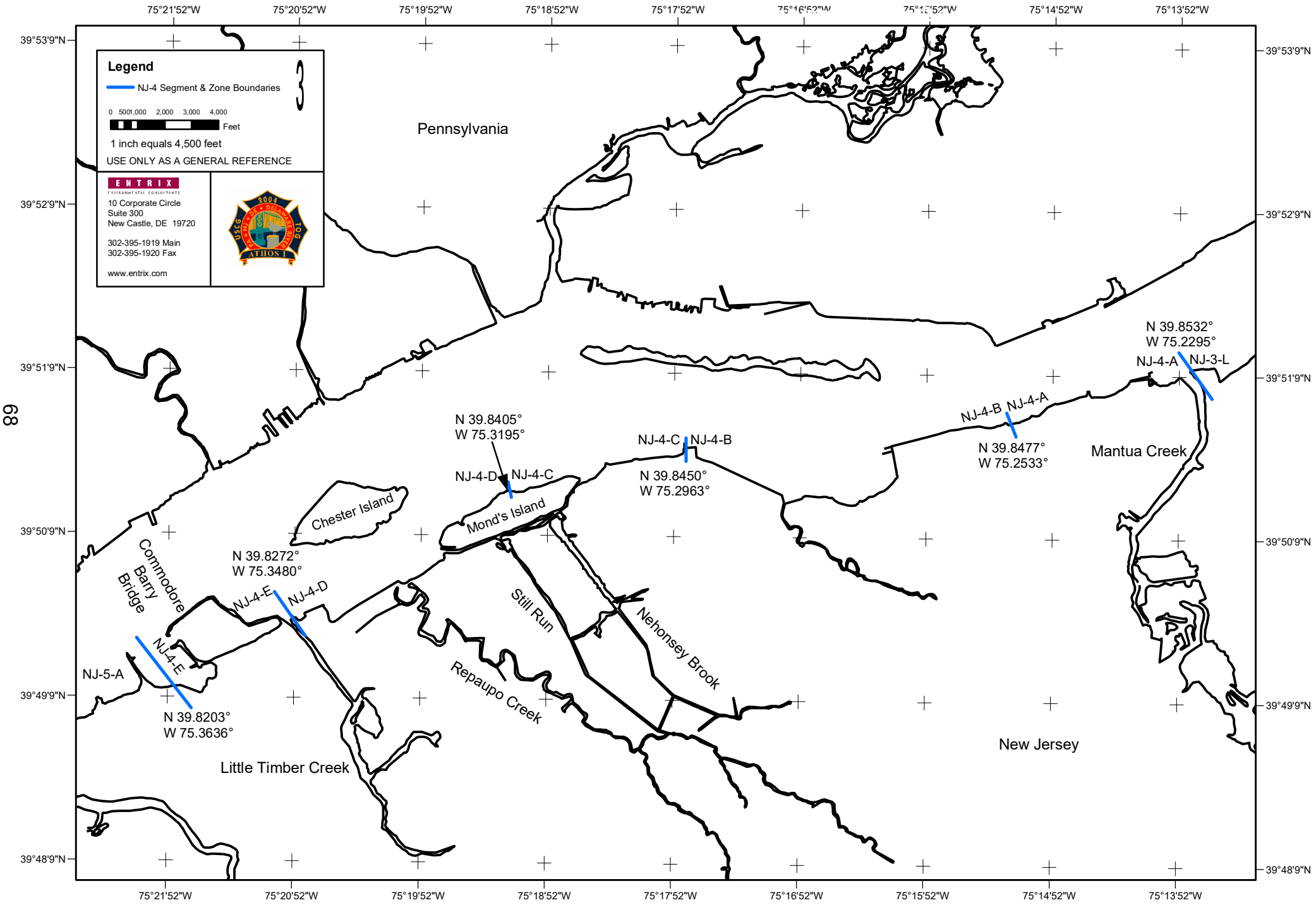
T/V Athos I Oil Spill

SCAT Map NJ-4

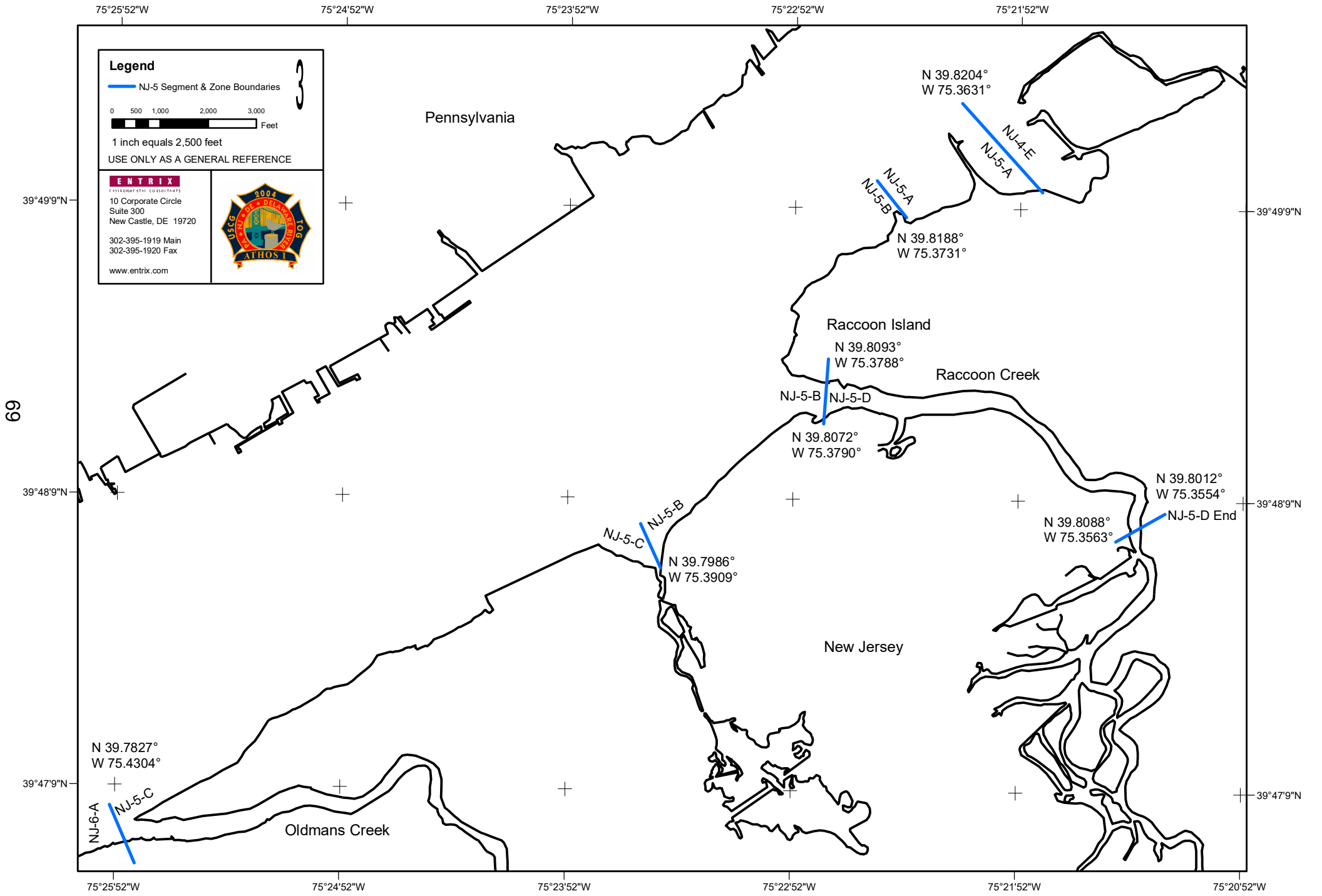
Spring 2005 SCAT



T/V Athos I Oil Spill

SCAT Map NJ-5

Spring 2005 SCAT



ICS 204 - Assignment List

Incident: MT Athos I	Branch: Staging Areas
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Staging #1
Prepared By Signature:	Task Force:
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	B. Barker		985-381-0697	
Task Force Supervisor - USCG	MK3 Wilson		609-351-7152	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Staging #1	Manpower: Responder	Responders	23 each	
Staging #1	Manpower: Supervisor	Supervisors	1 each	
Staging #1	Vehicle	Vehicles	4 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Staging #1					
TOG	Boom	Boom	63000 feet	18 inch(es)	At Staging
Environmental Restoration	Equipment: Heavy	0508 Forks	1 each		Assigned

Assignments

Support field operations.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch: Deputy Operations Section
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Staging #2
Prepared By Signature:	Task Force:
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy - TOG	J. Tanner		251-454-6397	
Ops Section Deputy - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	M. Kearney		610-517-6492	
Task Force Supervisor - USCG	E. Macabeo		415-720-4130	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Lagoon	Manpower: Responder	Responders	10 each	
Lagoon	Manpower: Supervisor	Supervisors	5 each	
Lagoon	Pressure Washers / Wash	Pressure Washers	2 each	
Lagoon	Vehicle	Vehicles	8 each	
Lagoon	Vessel	Vessels	1 each	
Recreational Boat Cleaning	Manpower: Responder	Responders	35 each	
Recreational Boat Cleaning	Manpower: Supervisor	Supervisors	1 each	
Recreational Boat Cleaning	Vehicle	Vehicles	7 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
TOG	Boom	Boom	6400 feet	18 inch(es)	Assigned
TOG	Boom	Boom	22650 feet	18 inch(es)	Out-of-Service
TOG	Crane	2137 Crane	1 each	35 ton(s)	Assigned
TOG	Equipment: Heavy	1559 Volvo	1 each		Assigned
TOG	Equipment: Heavy	2119 Fork Lift	1 each		Assigned
TOG	Equipment: Heavy	2134 Sweeper	1 each		Assigned
TOG	Generator	1474 Coleman 1850	1 each		Assigned
TOG	Generator	1475 Coleman 1850	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	0792 Hotsie, MTM	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0914 Hotsie	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0917 Hotsie	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1413 Hotsie	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1415 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1540 Hotsie	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1599 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1611 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1619 Pressure Wash	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1623 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1627 Hotsie, Yanma	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1636 Hotsie	1 each		Assigned

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ICS 204 - Assignment List

Incident: MT Athos I	Branch: Deputy Operations Section
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Staging #2
Prepared By Signature:	Task Force:
Approved By Signature:	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1638 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1641 Hotsie	1 each		Assigned
Clean Harbors Environment	Pressure Washers / Wa	1642 Hotsie	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	1677 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2534 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1665 Trash Pump	1 each	2 inch(es)	Assigned
Global Remediation Service	Pumps	1676 Pump	1 each		Assigned
TOG	Pumps	1679 Pump	1 each	2 inch(es)	Assigned
Fleet Environmental Service	Pumps	2536 Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	3022 Trash Pump	1 each	2 inch(es)	Assigned
Kens Marine Service	Storage: Liquid	3104 Bucket	1 each	300 gallon	Assigned
Kens Marine Service	Storage: Liquid	3105 Bucket	1 each	300 gallon	Assigned
Kens Marine Service	Storage: Liquid	3106 Bucket	1 each	300 gallon	Assigned
TOG	Storage: Solid	1031 Sea Can	1 each	40 feet	Assigned
TOG	Storage: Solid	1032 Sea Can	1 each	40 feet	Assigned
TOG	Storage: Solid	1033 Sea Can	1 each	40 feet	Assigned
TOG	Storage: Solid	1034 Sea Can	1 each	40 feet	Assigned
NRC - National Response C	Trailer	2185 Barge Trailer	1 each		Assigned
NRC - National Response C	Trailer	2186 Barge Trailer	1 each		Assigned
NRC - National Response C	Trailer	2187 Barge Trailer	1 each		Assigned
Clean Harbors Environment	Vehicle	1558 Flatbed	1 each		Assigned
Clean Harbors Environment	Vehicle	2111 F-250	1 each		Assigned
Clean Harbors Environment	Vehicle	2123 F-450	1 each		Assigned
Clean Harbors Environment	Vehicle	2196 Ford Pickup F-2	1 each		Assigned
Clean Harbors Environment	Vessel	0491 Vessel <21 - Jo	1 each	18 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
Industrial Cleanup, Inc. - ICI	Vacuum Unit	1657 Vac Unit	1 each		Assigned

Assignments

Decontaminate response equipment.
Continue to clean recreational boats in-place, at pier 24, or at the Lagoon.
Provide on site mechanic service for field equipment support.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch: Deputy Operations Section
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group: Staging #2
Prepared By Signature:	Task Force:
Approved By Signature:	

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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ICS 204 - Assignment List

Incident: MT Athos I	Branch: Method Assessment Team
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Division/Group:
Prepared By Signature:	Task Force:
Approved By Signature:	

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	C. Bukosky		609-510-7719	
Environmental Unit	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

MAT will assess and compile cleanup data and identify areas requiring additional cleanup resources. Conduct shoreline surveys according to MAT plan. Report information to Planning for coordination of response resources.

Description of Work

On standy to assess newly reported areas requiring cleanup resources. Compile list of areas worked and conduct targeted site visit to assess completeness.

Location of Work

Teams will be deployed by EUL as necessary.

Work Assignment Special Instructions

All reports will reference Areas as noted on attached maps.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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ICS 205 - Communications Plan

Incident: MT Athos I	Prepared By: Section, Planning at 4/3/2005 09:26
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Version Name: Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Unified Command Staff	267-765-3469		-	-	○ Yes ◉ No
Safety Hotline			-	-	○ Yes ◉ No
Safety	267-765-3455		-	-	○ Yes ◉ No
Operations	267-765-3439		-	-	○ Yes ◉ No
Operations	267-765-3445		-	-	○ Yes ◉ No
Operations	267-765-3448		-	-	○ Yes ◉ No
Operations	267-765-3452		-	-	○ Yes ◉ No
Operations WWM/Wake Notification	267-765-4889		-	-	○ Yes ◉ No
Operations Vessel Movement	215-271-4889		-	-	○ Yes ◉ No
Operations Vessel Movement	215-778-5841		-	-	○ Yes ◉ No
Planning	267-765-3440		-	-	○ Yes ◉ No
Planning	267-765-3443		-	-	○ Yes ◉ No
Planning Waste	267-765-3444		-	-	○ Yes ◉ No
Planning Resource/Situation	267-765-3447		-	-	○ Yes ◉ No
Planning Oiled Wildlife	302-737-9543		-	-	○ Yes ◉ No

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ICS 205 - Communications Plan

Incident: MT Athos I	Prepared By: Section, Planning at 4/3/2005 09:26
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Version Name: Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Rec Boat Hotline (Renfro)	267-765-3450		-	-	○ Yes ◉ No
Logistics	267-765-3432		-	-	○ Yes ◉ No
Logistics	267-765-3453		-	-	○ Yes ◉ No
Logistics	267-765-3454		-	-	○ Yes ◉ No
Logistics	267-765-3471		-	-	○ Yes ◉ No
National Pollution Funds Center Claims Branch	202-493-6845		-	-	○ Yes ◉ No
Finance	215-923-4633x335	267-765-3490	-	-	○ Yes ◉ No
Finance USCG	267-765-3437		-	-	○ Yes ◉ No
Command Post Fax Incoming		215-923-4476	-	-	○ Yes ◉ No
Command Post Fax Outgoing		267-765-3456	-	-	○ Yes ◉ No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2479		-	-	○ Yes ◉ No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-3004		-	-	○ Yes ◉ No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)		610-521-2851	-	-	○ Yes ◉ No
Forward Command Post (Lagoon) Staging 2	610-521-8914	610-521-8913	-	-	○ Yes ◉ No
Staging Area #1	856-686-0037	856-686-1521	-	-	○ Yes ◉ No

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ICS 205 - Communications Plan

Incident: MT Athos I	Prepared By: Section, Planning at 4/3/2005 09:26
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Version Name: Communication Plan

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post Safety	610-521-8916	610-521-8915	-	-	○ Yes ◉ No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency
VHF-FM	18A	Vessel Dispatch	156.900 MHZ	Near/On shore recovery	All Near/On shore secondary freq.
VHF-FM	13	Navigation Safety	156.650 MHZ	Bridge to Bridge	Ship to Ship navigation safety

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ICS 206 - Medical Plan

Incident: MT Athos I	Prepared By: Medical Unit Leader at 4/3/2005 09:26
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Version Name: Medical Plan - Period 30

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio
Safety Officer - Lagoon	Essington	Yes	(610) 521-8916	

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio
Delaware County, PA	911	Yes	911	
Thomas Jefferson University Hospita	911	Yes	911	
Philadelphia County, PA	911	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospita	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffe	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Stat	Yes	No	(856) 342-2345	
Christiana Medical Center	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	
Memorial Hospital of Salem County	Salem, NJ - United States	Yes	No	(856) 425-3288	
Temple University Hospital	Philadelphia, PA - United	Yes	Yes	(215) 707-2876	
Underwood Memorial Hospital	Woodbury, NJ - United St	Yes	No	(856) 845-0100	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Submit written report to Safety officer or representative. Safety Officer: (610) 521-8916.
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
For EMS services on the NJ side, we have established direct contact numbers to EMS dispatchers in each county.
Camden County (NJ 1&2) - 856-757-7502
Gloucester County (NJ 3&4) - 856-589-0911
Salem County (NJ 5,6,7,8,9,10&11) - 856-769-2959
Hyperbaric Chamber is located at University of Pennsylvania Hospital.

Occupational Health Services (Minor Injuries/Illnesses):

Nova Care	Lester, PA	(610) 521-6880	(610) 521-5531(fax)
Nova Care	South Philadelphia	(215) 467-5800	
Nova Care @ Hahnmann University	Philadelphia, PA	(215) 762-8525	

*All minor injuries/illnesses during working hours are recommended to be seen at a Nova Care Facility.

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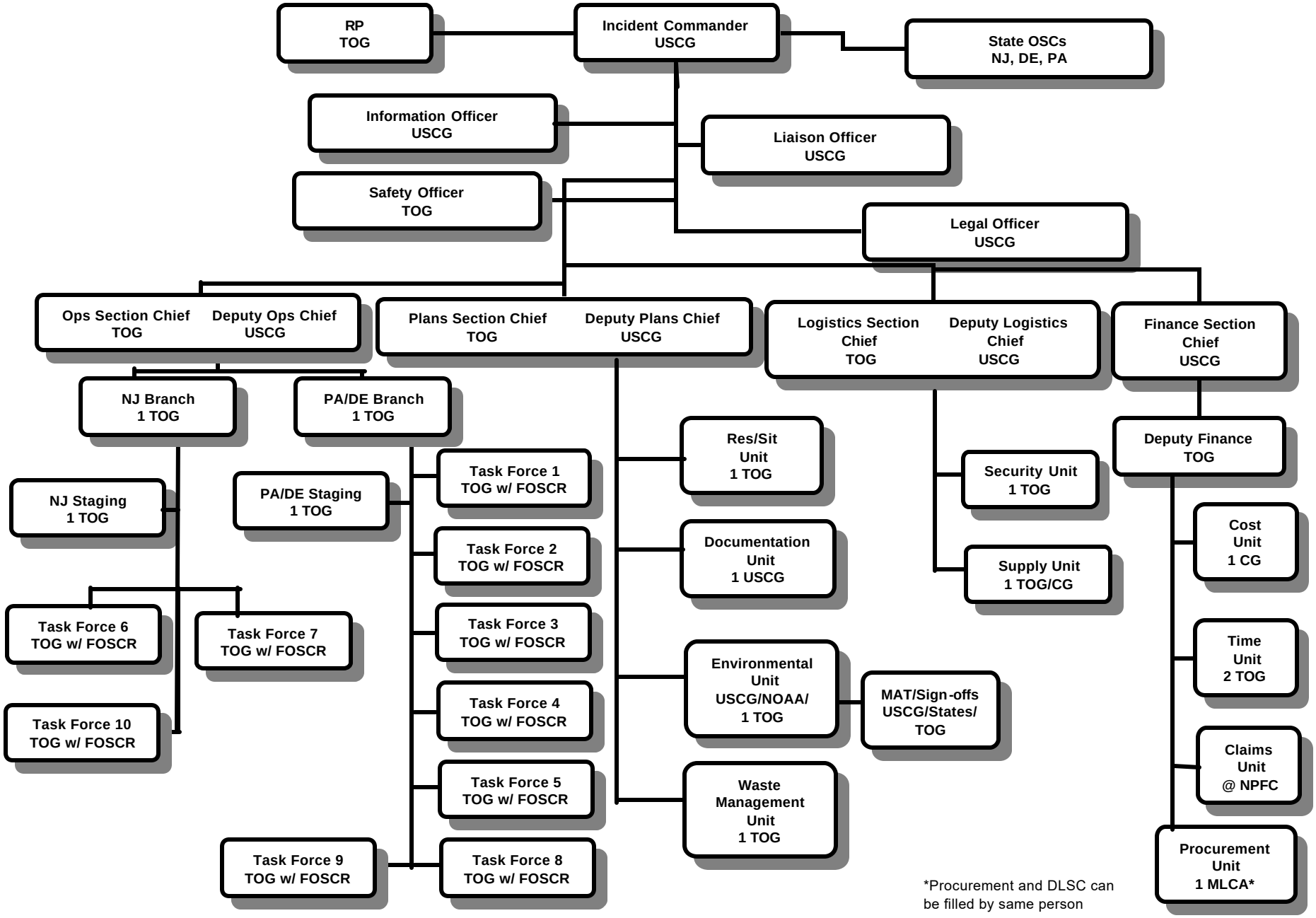
M/V ATHOS I - ICS-207 FOR FEDERALIZED RESPONSE –4/5/05 - 4/19/05



WEATHER FORECAST

Tuesday 5 April

During the day, mostly sunny and beautiful. Winds from the W at 9 mph, gusting to 18 mph. High of 66°; max UV: 6. In the evening, mainly cloudy. Winds from the S at 6 mph; gusting to 14 mph. Low of 48°.

Wednesday 6 April

During the day, sunny to partly cloudy and pleasant. Winds from the SSW at 10 mph, gusting to 20 mph. High of 74°; max UV: 6. In the evening, mainly cloudy. Winds from the S at 11 mph; gusting to 19 mph. Low of 54°.

Thursday 7 April

During the day, times of clouds and sun in the morning, becoming breezy with rain late in the afternoon. Winds SSE at 16 mph with gusts to 30 mph. High of 68°. Max UV: 6. In the evening, clouds with rain possible. Winds from SSE at 16 mph with gusts of 28 mph. Low of 47°.

Tide Table

Billingsport, New Jersey
39.8500° N, 75.2500°

Date	Day	High	Low	High	Low	High	Sunrise	Sunset
4/05/2005	Tue		5:38 AM EDT	11:02 AM EDT	6:19 PM EDT	11:36 PM EDT	6:38 AM EDT	7:29 PM EDT
4/06/2005	Wed		6:37 AM EDT	11:57 AM EDT	7:11 PM EDT		6:36 AM EDT	7:30 PM EDT
4/07/2005	Thu	12:29 AM EDT	7:33 AM EDT	12:48 PM EDT	8:00 PM EDT		6:35 AM EDT	7:31 PM EDT

Site Safety Officer on Duty Today: Archie Gresham @ 302-293-8960

TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Beach Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; wave and wake concerns while conducting boat operations.

To report Wake Incidents to the Waterway Management Unit of the USCG during the day (0730 to 1600) call 215-271-4889. After hours and on week-ends call 215-271-4807.

GENERAL SAFETY CONCERNS

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (modified)

- **Tyvek-type and /or rain gear (see Protective Clothing Matrix).**
- **Hard hat when overhead hazards exist (also Hogg Island area)**
- **Safety glasses with side shields (ANSI approved) /goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decontamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety and security rules of the facility will apply as long as the safety rules do not contradict the Site Safety Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED TO THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING FIELD WORK AREAS MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to regulatory agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

VESSEL SAFETY

The operator is responsible for the safety of the crew and vessel at all times. The vessel shall never be operated in a manner that threatens safety of the crew or vessel. The operator is to ensure that ALL personnel aboard the vessel are wearing lifejackets AT ALL TIMES! Under no circumstances are personnel to enter the water while the vessel is underway or the vessel's engine(s) is(are) running.

It is the operators' responsibility to ensure the vessel is seaworthy and in safe operating condition prior to leaving shore. The operator will inspect the vessel and determine that all required operational and safety equipment is on board and in proper working condition.

The operator is responsible for safe transport, launch, operation, and recovery of the vessel.

In the event of a boating accident, the operator is the primary person responsible for the vessel and crew. If vessel or crew is in imminent danger, the operator should contact the US Coast Guard immediately.

Ensure vessels are not overloaded with personnel or equipment, and consult vessel capacity according to the boat plate or sticker.

All vessels will carry on board an air horn to be available for emergency sound signaling.

USE THE RIGHT VESSEL FOR THE RIGHT JOB!

Stop Vessel Operations Criteria (Weather)

Vessels will cease operations when any of the following occur:

1. Visible lightning strike
2. 25 knot winds
3. Sea state:

>60' vessels: 6'	30'-60' vessels: 5'	20'-30' vessels: 4'	<20' vessels: 3'

4. Whenever the Safety Officer or one of his assistants deems operations too hazardous to continue.
5. Whenever the vessel operator deems it too hazardous to continue operations.

Vessel operators and response supervisors need not wait for a Safety Officer to deem operations too dangerous. If you feel that the conditions are too hazardous to safely operate in, discontinue operations, notify your supervisor, and then notify the Safety Officer. You may be the first responder to experience hazardous conditions, and your input to the Safety Officer may provide a valuable heads-up to the rest of the command.

Nighttime vessel operations and restrictions

All vessels with lengths of 20 feet or less are required to be safely moored/recovered prior to sunset.

Flat-bottom, “john boat” style boats are not permitted to operate at night and should be safely moored/recovered prior to sunset.

All vessels not specifically restricted from nighttime ops, as detailed above, may only operate after sunset with the proper use of navigation lights as required by Chapter I of the Navigation Rules.

Personal Protective Equipment (PPE) requirements:

All responders working on or near the water must wear a Personal Floatation Device (PFD). Near means within 3 feet.

During Winter Operations:

Responders performing the following operations must wear “Mustang” exposure suits:

- Waterborne SCAT teams
- Boom tending and placement teams
- Waterborne vessel decon teams
- Waterborne wildlife recovery teams
- Permanent boat drivers/crew

Crews of vessels equipped with enclosed, heated cabins, where the crew will primarily remain, are excluded from the exposure suit requirement.

Passengers are defined as personnel who will be transported by boat for a short distance, less than a half mile, to review a job, task or beach area or whom are being transported to a remote work site.

Passengers are not required to wear a mustang suit as long as the boat transport is near shore, no more than 200’ from the shore. However, if the boat has to go further than 200’ into the river or cross the river –mustangs are required.

Requests for deviation from the above requirements should be directed to the Site Safety Officer, Ed Doyle (302) 293-8959.

SAFE REMOVAL OF PPE

As a reminder, early in the response we experienced two incidents injuries were personnel were removing PPE using a box cutter. In one incident a person cut himself while changing the blade in a box cutter. In the other instance, the individual inadvertently lacerated both his legs. This cut was severe enough to require 7 stitches and could have been potentially life threatening if first aid had not been rendered by a fellow worker who stopped the flow of blood with a pressure bandage.

The use of box cutters, knives, or razors to remove PPE is strictly prohibited.
Utility scissors are widely available in every work zone. If you do not have a pair of utility scissors or access to a pair, inform your supervisor or zone manager immediately, and every effort will be made to provide you with a pair.

ICS 230 - Daily Meeting Schedule

Incident: MT Athos I	Prepared By: Section, Planning at 4/3/2005 09:26
Period: Period 31 (4/5/2005 06:00 - 4/19/2005 06:00)	Version Name: Period 31

Meeting Name & Date/Time	Purpose	Attendees	Location
Unified Command Conference Call 4/6/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Command Center
MAT Meeting 4/8/2005 09:00	Review shoreline data	State MAT Reps, PSC, EUL, & SCRIBE	Command Center
Command & General Staff Meeting 4/11/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Penn Room
Unified Command Conference Call 4/14/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Command Center
MAT Meeting 4/15/2005 09:42	Review shoreline data	State MAT Reps, PSC, EUL, & SCRIBE	Command Center
UC Objectives Meeting 4/18/2005 09:00	Review/Identify and prioritize objectives for the next operational period.	UC MEMBERS	Penn Room
Command & General Staff Meeting 4/18/2005 09:00	Coordinate Command Staff functions, responsiblities and objectives.	UC AND GENERAL STAFF	Penn Room
OEM Meeting 4/18/2005 10:00	Update regional OEMs on response status	UC Members, PSC, OSC	Command Center
Tactics Meeting 4/18/2005 10:30	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	To Be Determined
Planning Meeting 4/18/2005 14:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Penn Room

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Conference Call Procedure
MV Athos I

From time to time, the Unified Command will have a need to convene via conference call. Their needs could range from situational updates to critical information requiring Unified Command decisions.

The Unified Command will initiate conference calls by contacting the Planning Section Chief. The Planning Section Chief will require a list of persons that should be invited to participate in the Conference Call, the preferred time of the call, ask whether or not a scribe is required and a suggested agenda.

The Planning Section Chief will call ConferencePlus and schedule the call. The Planning Section Chief will then send an email to all invited conference call participants, which gives the call-in particulars and the agenda.

The Situation Unit and Operations and Planning must have a representative on the call to present information according to agenda.

WEEKLY UNIFIED COMMAND CONFERENCE CALL IN NUMBER:
Dial-In Number: 1 (888) 287-5343 (to join the audio conference call)
Alternate Dial-In: 1 (847) 619-6483
Pass code: 9285423# - If you call in before the moderator, you will be placed on hold with music background until the moderator

MODERATOR CALL IN ADDITIONAL NUMBER: 5233443

Agenda - Unified Command Meetings
Thursdays -- 0900hrs

1.	Introductions – UC reps self-introductions	All participants
2.	Situation Brief	Situation Unit Leader
3.	Planned Actions	Planning/Ops Chief
4.	Critical Issues/Needs	Operations Chief
5.	Review of Open Action Items	Situation Unit Leader
6.	Long Range Plan	Steve Kegelman
7.	New Jersey comments	NJ UC Rep
8.	Pennsylvania comments	PA UC Rep
9.	Delaware comments	DE UC Rep
10.	FOSC comments	FOSC
11.	Announce any necessary additional UC Meetings (other than Mondays)	RP
12.	Final remarks	RP
13.	*This concludes the Command and General Staff Meeting. Unified Command Members only from this point on.*	

1/5/05

D.M. Sobieski
The O'Brien's Group
February 7, 2005

Unified Command Long Term Incident Action Plan Conference Call Notifications Sheet

Name	Title	Agency	Phone	Cell	Fax	Email
Capt Jonathan Sarubbi	COTP	USCG	215-271-4803	215-778-4072	215-271-4903	jsarubbi@msogruphila.uscg.mil
Steve Kegelman		TOG	732-774-7895	732-245-4703	732-774-7896	steve.kegelman@theobriensgroup.com
Bob VanFossen	Asst. Director	NJ DEP	609-633-2168	609-780-6899	609-777-0985	robert.vanfossen@dep.state.nj.us
David Sweeney	Bureau Chief	NJDEP ER	609-292-1075	609-309-1748	609-777-0985	David.sweeney@dep.state.nj.us
Gary Pearson		NJDEP	973-609-3997	201-697-6794		gpearson@dep.state.nj.us
Glenn Gillespie	Deputy Director	DEMA	302-659-2234	382-222-8400	302-659-6855	glenn.gillespie@state.de.us
James Turner, III	Director	DEMA	302-659-2240	302-222-8402	302-659-6855	jamie.turner@state.de.us
Jamie Bethard	Envtl Scientist III	DNREC	302-739-3694	302-632-0264	302-739-5060	jamie.bethard@state.de.us
Ronald Drake	Emergency Response Mgr.	PADEP	484-250-5100	484-645-5981	484-250-5943	rdrake@state.pa.us
Bennett Anderson	Envtl Sci/SSC	DNREC	302-739-4590	302-382-0341	302-739-6140	bennett.anderson@state.de.us
Cdr Vickie Huyck	Ops -MSO Group Philadelphia	USCG	215-271-4952	215-778-5483	215-271-4967	vhuyck@msogruphila.uscg.mil
Cdr Roger Laferriere	CO- AST	USCG	609-724-008	609-351-7142	609-724-0232	rlaferriere@ast.uscg.mil
Robert Bauer (Bob)	Water Qual Spec Spvsr	PADEP	484-250-5132	484-645-5984		rbauer@state.pa.us
Daniel M. Sobieski		TOG	714-577-2113	714-342-6358	714-577-2118	dan.sobieski@theobriensgroup.com
Chris Gregory		TOG	714-577-2111	714-273-8036	714-577-2118	chris.gregory@theobriensgroup.com
Melanie Jarrell			337-984-7808	904-537-3507	337-984-4776	Melanie.Jarrell@att.net
Dave Hake		DEMA		302-222-6566		Dave.hake@state.de.us
Jim Strickland		DEMA		302-222-6578		Jim.Strickland@state.de.us
Mark Claveloux		DEMA		302-222-6656		Mark.Claveloux@state.de.us
Kurt Reuther	Enf Chief	DNREC	302-739-5072	302-270-9369	302-739-5060	Kurt.reuther@state.de.us

D.M. Sobieski
The O'Brien's Group
December 21, 2004

IAP Cover Sheet

Incident Name:	**Operational Period to be covered by IAP:**
MV Athos I	Period 32 (04/19/2005 06:00 to 05/3/2005 06:00)

Approved by:

FOSC – Captain Sarubbi: _____

SOSC (DE) : _____

SOSC (PA) : _____

SOSC (NJ) : _____

SMTIC – Steve Kegelman: _____

Incident Action Plan

Prepared By:	**Prepared Date/Time:**

Incident Action Plan Table of Contents

1. Weather Report
2. Picture Report
3. Cleanup Priorities
4. Cleanup Endpoints & Methods
5. Memorandum on Wildlife Handling
6. ICS 202 - General Response Objectives
7. ICS 204 - Assignment List
8. ICS 205 - Communications Plan
9. ICS 206 - Medical Plan
10. ICS 207 - Organization Chart
11. ICS 223 - Health and Safety Message
12. ICS 230 - Daily Meeting Schedule
13. Website: www.incidentinfo.com

Your National Weather Service forecast

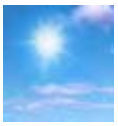
Philadelphia, PA

Enter Your "City, ST" or zip code Go

NWS Philadelphia, PA
Point forecast for 39.98N -75.15W Last Update: 4:00 am EDT April 18, 2005

Forecast at a Glance

See proposed changes to the weather forecasts icons

Today	Tonight	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday
								
Mostly Sunny Hi 76°F	Mostly Clear Lo 53°F	Mostly Sunny Hi 80°F	Slight Chc Rain Lo 60°F	Chance Rain Hi 82°F	Chance Rain Lo 56°F	Chance Rain Hi 69°F	Partly Cloudy Lo 48°F	Partly Cloudy Hi 65°F

Detailed 7-day Forecast

Today: Mostly sunny, with a high near 76. Calm wind becoming south around 6 mph.

Tonight: Mostly clear, with a low around 53. South wind between 5 and 8 mph becoming calm.

Tuesday: Mostly sunny, with a high near 80. Calm wind becoming south between 7 and 10 mph.

Tuesday Night: A slight chance of showers between 8pm and 2am. Partly cloudy, with a low near 60. South wind between 3 and 9 mph. Chance of precipitation is 20%.

Wednesday: A chance of showers, mainly after 3pm. Partly cloudy, with a high near 82. Calm wind becoming west between 8 and 11 mph. Chance of precipitation is 30%. New rainfall amounts of less than a tenth of an inch possible.

Wednesday Night: A chance of showers. Partly cloudy, with a low around 56. Chance of precipitation is 30%. New rainfall amounts of less than a tenth of an inch possible.

Thursday: A chance of showers, mainly before 9am. Partly cloudy, with a high around 69. Chance of precipitation is 30%.

Thursday Night: Partly cloudy, with a low around 48.

Friday: Partly cloudy, with a high near 65.

Friday Night: Partly cloudy, with a low near 45.

Saturday: A chance of rain, mainly after 2pm. Mostly cloudy, with a high near 63. Chance of precipitation is 30%.

Saturday Night: A chance of rain. Mostly cloudy, with a low around 44. Chance of precipitation is 30%.

Sunday: A chance of rain, mainly before noon. Mostly cloudy, with a high around 61. Chance of precipitation is 30%.

Current Conditions

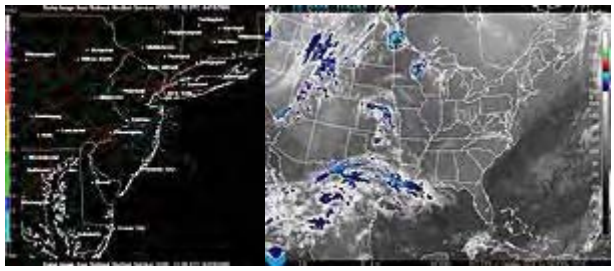
Philadelphia International Airport
Last Update on Apr 18, 6:54 am EDT

A Few Clouds

54°F (12°C)

Humidity:	40 %
Wind Speed:	Calm
Barometer:	30.12" (1019.7 mb)
Dewpoint:	30°F (-1°C)
Visibility:	10.00 mi.
More Local Wx:	**2 Day History**:

Radar and Satellite Images



Additional Forecasts & Information

Zone Area Forecast for Philadelphia County, PA
Air Quality Forecasts

Printable Forecast
Text Only Forecast
Text Forecast (°C)
About Point Forecasts
Hourly Weather Graph
Tabular Forecast
Hazardous Weather
Forecast Discussion
Regional Weather Conditions
Past Weather Information
Interactive Forecast Map
Home

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: PHILADELPHIA
MONTH: APRIL
YEAR: 2005
LATITUDE: 39 52 N
LONGITUDE: 75 15 W

TEMPERATURE IN F:							:PCPN:		SNOW:	WIND			:SUNSHINE:		SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
												AVG	MX	2MIN				
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	62	44	53	5	12	0	0.07	0.0	0	8.8	18	80	M	M	9	18	23	80
2	62	44	53	4	12	0	2.76	0.0	0	15.7	28	150	M	M	10	13	37	180
3	47	39	43	-6	22	0	0.02	0.0	0	20.8	33	200	M	M	10	1	41	200
4	62	41	52	3	13	0	0.00	0.0	0	18.3	31	280	M	M	3		39	280
5	67	40	54	4	11	0	0.00	0.0	0	7.9	14	240	M	M	3		17	330
6	77	44	61	11	4	0	0.00	0.0	0	4.7	14	200	M	M	3		18	200
7	75	60	68	18	0	3	0.11	0.0	0	14.6	30	220	M	M	7	18	40	230
8	63	45	54	3	11	0	0.70	0.0	0	9.1	18	10	M	M	8	18	29	350
9	64	44	54	3	11	0	0.00	0.0	0	8.6	17	30	M	M	1		28	40
10	74	41	58	7	7	0	0.00	0.0	0	4.5	12	280	M	M	2	8	16	300
11	65	41	53	1	12	0	0.00	0.0	0	10.1	24	30	M	M	2		29	30
12	60	38	49	-3	16	0	0.00	0.0	0	9.3	18	20	M	M	2		28	190
13	60	41	51	-1	14	0	0.00	0.0	0	7.8	17	80	M	M	4		22	80
14	66	40	53	0	12	0	0.00	0.0	0	11.5	22	100	M	M	1		25	90
15	57	39	48	-5	17	0	0.00	0.0	0	14.4	25	40	M	M	0		32	30
16	60	38	49	-4	16	0	0.00	0.0	0	9.6	20	90	M	M	1		26	90
17	75	38	57	3	8	0	0.00	0.0	0	7.0	15	270	M	M	2	8	18	260
SM	1096	717		198	3	3.66		0.0	182.7				M		68			
AV	64.5	42.2								10.7	FASTST		PSBL	%	4		MAX(MPH)	
							MISC ---->			33	200						41	200

NOTES:
LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: PHILADELPHIA
MONTH: APRIL
YEAR: 2005
LATITUDE: 39 52 N
LONGITUDE: 75 15 W

[TEMPERATURE DATA]

AVERAGE MONTHLY: 53.3
DPTR FM NORMAL: 2.3
HIGHEST: 77 ON 6
LOWEST: 38 ON 17,16

[PRECIPITATION DATA]

TOTAL FOR MONTH: 3.66
DPTR FM NORMAL: 1.70
GRTST 24HR 2.82 ON 1- 2

SNOW, ICE PELLETS, HAIL
TOTAL MONTH: 0.0 INCH
GRTST 24HR 0.0
GRTST DEPTH: 0

SYMBOLS USED IN COLUMN 16

1 = FOG
2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
3 = THUNDER
4 = ICE PELLETS
5 = HAIL
6 = GLAZE OR RIME
7 = BLOWING DUST OR SAND: VSBY 1/2 MILE OR LESS
8 = SMOKE OR HAZE
9 = BLOWING SNOW
X = TORNADO

[NO. OF DAYS WITH]

MAX 32 OR BELOW: 0
MAX 90 OR ABOVE: 0

[WEATHER - DAYS WITH]

0.01 INCH OR MORE: 5
0.10 INCH OR MORE: 3

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MIN 32 OR BELOW:   0    0.50 INCH OR MORE:   2
MIN  0 OR BELOW:   0    1.00 INCH OR MORE:   1

[HDD (BASE 65) ]
TOTAL THIS MO.   198    CLEAR  (SCALE 0-3)  11
DPTR FM NORMAL   -40    PTCLDY (SCALE 4-7)   2
SEASONAL TOTAL  4426    CLOUDY (SCALE 8-10)  4
DPTR FM NORMAL   -83

[CDD (BASE 65) ]
TOTAL THIS MO.     3
DPTR FM NORMAL     3    [PRESSURE DATA]
SEASONAL TOTAL     3    HIGHEST SLP M ON M
DPTR FM NORMAL     3    LOWEST  SLP M ON M

[REMARKS]
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Tides for Philapelphia, Municipal Pier 11 starting with April 19, 2005.

Day		High /Low	Tide Time	Height Feet	Sunrise Sunset	Moon	Time	% Moon Visible
Tu	19	Low	5:17 AM	1.0	6:16 AM	Set	4:16 AM	71
	19	High	11:09 AM	6.2	7:43 PM	Rise	2:56 PM	
	19	Low	5:58 PM	1.0				
	19	High	11:42 PM	6.0				
W	20	Low	6:14 AM	1.0	6:15 AM	Set	4:39 AM	79
	20	High	12:00 PM	6.3	7:44 PM	Rise	3:59 PM	
	20	Low	6:49 PM	1.0				
Th	21	High	12:29 AM	6.3	6:14 AM	Set	5:00 AM	87
	21	Low	7:09 AM	0.9	7:45 PM	Rise	5:02 PM	
	21	High	12:47 PM	6.4				
	21	Low	7:37 PM	1.0				
F	22	High	1:13 AM	6.6	6:12 AM	Set	5:21 AM	93
	22	Low	8:02 AM	0.8	7:46 PM	Rise	6:08 PM	
	22	High	1:31 PM	6.4				
	22	Low	8:22 PM	0.9				
Sa	23	High	1:52 AM	6.8	6:11 AM	Set	5:43 AM	97
	23	**Low**	**8:52 AM**	**0.7**	**7:47 PM**	**Rise**	**7:16 PM**	
	23	High	2:12 PM	6.4				
	23	Low	9:06 PM	0.9				
Su	24	High	2:30 AM	7.0	6:09 AM	Set	6:08 AM	99
	24	**Low**	**9:41 AM**	**0.5**	**7:48 PM**	**Rise**	**8:28 PM**	
	24	High	2:52 PM	6.2				
	24	Low	9:50 PM	0.8				
M	25	High	3:06 AM	7.1	6:08 AM	Set	6:37 AM	99
	25	**Low**	**10:28 AM**	**0.4**	**7:49 PM**	**Rise**	**9:42 PM**	
	25	High	3:31 PM	6.0				
	25	Low	10:33 PM	0.7				
Tu	26	High	3:42 AM	7.1	6:07 AM	Set	7:13 AM	97
	26	Low	11:16 AM	0.4	7:50 PM	Rise	10:57 PM	
	26	High	4:12 PM	5.9				
	26	Low	11:18 PM	0.7				
W	27	High	4:23 AM	7.1	6:05 AM	Set	7:58 AM	92
	27	Low	12:05 PM	0.4	7:51 PM			
	27	High	4:58 PM	5.7				
Th	28	Low	12:05 AM	0.6	6:04 AM	Rise	12:09 AM	84
	28	High	5:09 AM	6.9	7:52 PM	Set	8:55 AM	
	28	Low	12:56 PM	0.4				
	28	High	5:50 PM	5.5				
F	29	Low	12:57 AM	0.6	6:03 AM	Rise	1:11 AM	75
	29	High	6:04 AM	6.8	7:53 PM	Set	10:02 AM	
	29	Low	1:48 PM	0.5				
	29	High	6:50 PM	5.5				
Sa	30	Low	1:52 AM	0.7	6:02 AM	Rise	2:03 AM	65
	30	High	7:07 AM	6.6	7:54 PM	Set	11:15 AM	
	30	Low	2:44 PM	0.5				
	30	High	7:56 PM	5.5				
Su	1	Low	2:52 AM	0.8	6:00 AM	Rise	2:44 AM	54
	1	High	8:15 AM	6.5	7:55 PM	Set	12:31 PM	
	1	Low	3:41 PM	0.6				
	1	High	9:03 PM	5.7				
M	2	Low	3:54 AM	0.9	5:59 AM	Rise	3:17 AM	42
	2	High	9:22 AM	6.5	7:56 PM	Set	1:46 PM	
	2	Low	4:38 PM	0.6				
	2	High	10:06 PM	6.1				

Tides for Billingsport, N.J. starting with April 19, 2005.

Day		High /Low	Tide Time	Height Feet	Sunrise Sunset	Moon	Time	% Moon Visible
Tu	19	Low	4:40 AM	0.9	6:17 AM	Set	4:16 AM	71
	19	High	10:28 AM	5.6	7:43 PM	Rise	2:56 PM	
	19	Low	5:21 PM	0.9				
	19	High	11:01 PM	5.5				
W	20	Low	5:37 AM	0.9	6:16 AM	Set	4:39 AM	79
	20	High	11:19 AM	5.7	7:44 PM	Rise	3:59 PM	
	20	Low	6:12 PM	0.9				
	20	High	11:48 PM	5.7				
Th	21	Low	6:32 AM	0.8	6:14 AM	Set	5:01 AM	87
	21	High	12:06 PM	5.8	7:45 PM	Rise	5:03 PM	
	21	Low	7:00 PM	0.9				
F	22	High	12:32 AM	6.0	6:13 AM	Set	5:22 AM	93
	22	Low	7:25 AM	0.7	7:46 PM	Rise	6:08 PM	
	22	High	12:50 PM	5.8				
	22	Low	7:45 PM	0.8				
Sa	23	High	1:11 AM	6.2	6:11 AM	Set	5:44 AM	97
	23	Low	8:15 AM	0.6	7:47 PM	Rise	7:16 PM	
	23	High	1:31 PM	5.8				
	23	Low	8:29 PM	0.8				
Su	24	High	1:49 AM	6.4	6:10 AM	Set	6:09 AM	99
	24	Low	9:04 AM	0.5	7:48 PM	Rise	8:28 PM	
	24	High	2:11 PM	5.6				
	24	Low	9:13 PM	0.7				
M	25	High	2:25 AM	6.5	6:09 AM	Set	6:38 AM	99
	25	Low	9:51 AM	0.4	7:49 PM	Rise	9:42 PM	
	25	High	2:50 PM	5.5				
	25	Low	9:56 PM	0.6				
Tu	26	High	3:01 AM	6.5	6:07 AM	Set	7:14 AM	97
	26	Low	10:39 AM	0.4	7:50 PM	Rise	10:57 PM	
	26	High	3:31 PM	5.4				
	26	Low	10:41 PM	0.6				
W	27	High	3:42 AM	6.5	6:06 AM	Set	7:59 AM	92
	27	Low	11:28 AM	0.4	7:51 PM			
	27	High	4:17 PM	5.2				
	27	Low	11:28 PM	0.5				
Th	28	High	4:28 AM	6.3	6:05 AM	Rise	12:09 AM	84
	28	Low	12:19 PM	0.4	7:52 PM	Set	8:55 AM	
	28	High	5:09 PM	5.0				
F	29	Low	12:20 AM	0.5	6:03 AM	Rise	1:11 AM	75
	29	High	5:23 AM	6.2	7:53 PM	Set	10:02 AM	
	29	Low	1:11 PM	0.5				
	29	High	6:09 PM	5.0				
Sa	30	Low	1:15 AM	0.6	6:02 AM	Rise	2:03 AM	65
	30	High	6:26 AM	6.0	7:54 PM	Set	11:16 AM	
	30	Low	2:07 PM	0.5				
	30	High	7:15 PM	5.0				
Su	1	Low	2:15 AM	0.7	6:01 AM	Rise	2:44 AM	54
	1	High	7:34 AM	5.9	7:55 PM	Set	12:32 PM	
	1	Low	3:04 PM	0.5				
	1	High	8:22 PM	5.2				
M	2	Low	3:17 AM	0.8	6:00 AM	Rise	3:17 AM	42
	2	High	8:41 AM	5.9	7:56 PM	Set	1:47 PM	
	2	Low	4:01 PM	0.5				
	2	High	9:25 PM	5.6				

Tides for Marcus Hook, Pa. starting with April 19, 2005.

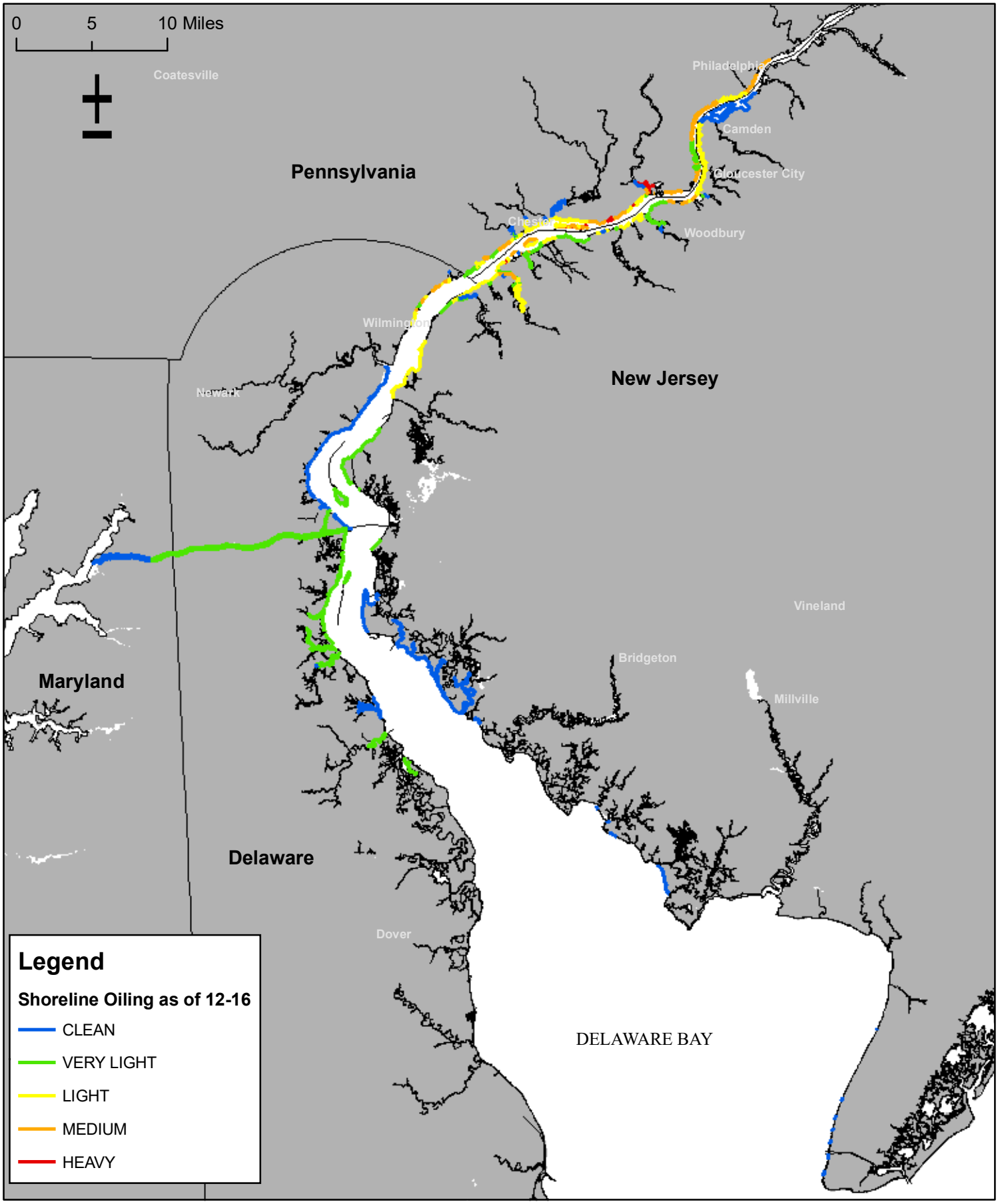
Day		High /Low	Tide Time	Height Feet	Sunrise Sunset	Moon	Time	% Moon Visible
Tu	19	Low	4:01 AM	0.9	6:18 AM	Set	4:17 AM	71
	19	High	9:40 AM	5.6	7:44 PM	Rise	2:57 PM	
	19	Low	4:42 PM	0.9				
	19	High	10:13 PM	5.4				
W	20	Low	4:58 AM	0.9	6:16 AM	Set	4:40 AM	79
	20	High	10:31 AM	5.7	7:45 PM	Rise	4:00 PM	
	20	Low	5:33 PM	0.9				
	20	High	11:00 PM	5.7				
Th	21	Low	5:53 AM	0.8	6:15 AM	Set	5:01 AM	87
	21	High	11:18 AM	5.8	7:46 PM	Rise	5:03 PM	
	21	Low	6:21 PM	0.9				
	21	High	11:44 PM	5.9				
F	22	Low	6:46 AM	0.7	6:14 AM	Set	5:22 AM	93
	22	High	12:02 PM	5.8	7:47 PM	Rise	6:09 PM	
	22	Low	7:06 PM	0.8				
Sa	23	High	12:23 AM	6.1	6:12 AM	Set	5:45 AM	97
	23	Low	7:36 AM	0.6	7:48 PM	Rise	7:17 PM	
	23	High	12:43 PM	5.8				
	23	Low	7:50 PM	0.8				
Su	24	High	1:01 AM	6.3	6:11 AM	Set	6:10 AM	99
	24	Low	8:25 AM	0.5	7:49 PM	Rise	8:28 PM	
	24	High	1:23 PM	5.6				
	24	Low	8:34 PM	0.7				
M	25	High	1:37 AM	6.4	6:09 AM	Set	6:39 AM	99
	25	Low	9:12 AM	0.4	7:50 PM	Rise	9:43 PM	
	25	High	2:02 PM	5.4				
	25	Low	9:17 PM	0.6				
Tu	26	High	2:13 AM	6.4	6:08 AM	Set	7:15 AM	97
	26	Low	10:00 AM	0.4	7:51 PM	Rise	10:58 PM	
	26	High	2:43 PM	5.3				
	26	Low	10:02 PM	0.6				
W	27	High	2:54 AM	6.4	6:07 AM	Set	8:00 AM	92
	27	Low	10:49 AM	0.4	7:52 PM			
	27	High	3:29 PM	5.1				
	27	Low	10:49 PM	0.5				
Th	28	High	3:40 AM	6.2	6:05 AM	Rise	12:09 AM	84
	28	Low	11:40 AM	0.4	7:53 PM	Set	8:56 AM	
	28	High	4:21 PM	5.0				
	28	Low	11:41 PM	0.5				
F	29	High	4:35 AM	6.1	6:04 AM	Rise	1:12 AM	75
	29	Low	12:32 PM	0.5	7:54 PM	Set	10:03 AM	
	29	High	5:21 PM	5.0				
Sa	30	Low	12:36 AM	0.6	6:03 AM	Rise	2:03 AM	65
	30	High	5:38 AM	5.9	7:55 PM	Set	11:17 AM	
	30	Low	1:28 PM	0.5				
	30	High	6:27 PM	5.0				
Su	1	Low	1:36 AM	0.7	6:02 AM	Rise	2:45 AM	54
	1	High	6:46 AM	5.8	7:56 PM	Set	12:33 PM	
	1	Low	2:25 PM	0.5				
	1	High	7:34 PM	5.1				
M	2	Low	2:38 AM	0.8	6:00 AM	Rise	3:18 AM	42
	2	High	7:53 AM	5.8	7:57 PM	Set	1:48 PM	
	2	Low	3:22 PM	0.5				
	2	High	8:37 PM	5.5				

M/V Athos I, Delaware River, NJ/PA

Shoreline Oiling as of 12/16/2004

Graphic does not represent precise amounts or locations of oil.

USE ONLY AS A GENERAL REFERENCE



Objective:

Removal of gross oil before the focus is shifted to final cleanup activities

Gross (i.e., bulk) oil removal is proposed as a means to maximize the environmental benefit and effectiveness of shoreline cleanup operations. Shoreline segments have been prioritized (attached) based on the amount of oil, and the presence of sensitive resources or high public access.

As cleanup activities complete gross oil removal, response resources will be redeployed by the Operations Section according to the listed priorities. The decision to move the resources within a division will be the responsibility of the Division Supervisors. The Environmental Unit and SCAT Teams will be available to provide suggestions and/or guidance.

Operations Priorities for Cleanup

Priority 1 Heavy Oil With Special Issues	Priority 2 Heavy Oil No Special Issues	Priority 3 Moderate Oil With Special Issues	Priority 4 Moderate Oil No Special Issues	Priority 5 Light Oil With Special Issues	Priority 6 Very Light Oil With Special Issues	Priority 7 Light Oil No Special Issues	Priority 8 Very Light Oil No Special Issues
NJ-5-A	NJ-3-F	NJ-3-A	DE-1-B	NJ-2-A	DE-1-A	NJ-3-I	DE-7-B
PA-4-F		NJ-3-H	DE-1-C	NJ-2-C	DE-1-E	PA-5-D	NJ-4-B
PA-4-J		NJ-4-D	DE-1-D	NJ-3-G	DE-1-I		NJ-6-A
PA-5-B		NJ-5-B	DE-1-F	NJ-3-J	DE-2-D		NJ-6-D
PA-7-A		NJ-5-D	DE-1-G	NJ-3-L	NJ-1-A		NJ-6-E
PA-7-C		PA-1-C	DE-1-H	NJ-5-A	NJ-2-B		NJ-6-F
PA-7-D		PA-2-A	DE-1-J	NJ-5-C	NJ-4-A		NJ-6-G
PA-7-F		PA-3-A	DE-2-A	PA-1-C	NJ-6-C		NJ-6-H
		PA-3-F	DE-2-B	PA-4-C	NJ-7-A		NJ-7-C
		PA-4-A	DE-2-C	PA-5-B	NJ-7-B		NJ-9-A
		PA-4-B	NJ-3-B		PA-1-B		PA-2-C
		PA-4-D	NJ-3-C		PA-2-D		PA-2-E
		PA-4-E	NJ-3-D		PA-6-CRUM CR		PA-2-G
		PA-4-G	NJ-3-F				PA-6-A
		PA-4-H	NJ-4-E				PA-6-B
		PA-4-I	PA-2-B				
		PA-5-A	PA-2-F				
		PA-5-C	PA-2-H				
		PA-7-B	PA-2-I				
		PA-7-D	PA-3-B				
		PA-7-E	PA-3-C				
		PA-7-G	PA-3-D				

Conduct cleanup with minimal damage to environmental resources. i.e. Do not drive spilled oils into sediments by foot / mechanical traffic

A SCAT Special Issue Team (SIT) will evaluate historic, special environmental, or high-public access areas to provide more detailed and additional cleanup requirements.

Shoreline Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Flats (hard surface e.g. Tinicum I. NJ side)	General: No recoverable surface oil, buried oil layers or tarballs larger than dimes; no more than stain on sand	Manual removal with shovels/rakes and squeegees; small equipment (bobcat) to remove oil and oiled surface and subsurface sand; minimize removal of clean sand on and under oiled layers; Minimize equipment (bobcat) travel over oiled surfaces.
	Special: TBD by SIT (Special Issue Team)	
Sand Beaches; Mixed Sand and Fine Gravel Beaches	General: No recoverable surface oil, buried asphalt pavements or tarballs larger than dimes; no more than stain on gravel	Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers; small equipment (bobcat)to remove oil and oiled surface/subsurface sand and gravel. Minimize small equipment (bobcat)travel over oiled surfaces. Mechanical relocation of fine gravels into piles for flushing, including use of high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval.
	Special: TBD by SIT	
Course Gravel Beaches/Fill (e.g. cobbles, and larger)	No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Manual removal of surface oil using low pressure flushing and high-pressure/hot-water washing (hotsie), with containment/recovery of released oil; return gravel to original location and contour. Use of heavy equipment will require additional approval by the SIT.
	Special: TBD by SIT	
Riprap/Stone Seawalls **Solid Seawall, Bulkheads and Docks**	General: No more recoverable or potentially mobile oil on surface, doesn't rub off on contact Visible heavy product that could be mobilized should be removed.	Flushing and high-pressure/hot-water washing (hotsie), as needed. Containment/recovery of released oil.
	Special: No more recoverable or potential mobile oil on surface; Stop cleanup efforts when all oil is removed other than a stain. Additional cleaning or replacement of riprap to be considered by SIT.	In high-public access or special environmental / historic areas (e.g., Ft. Mifflin, eagle nesting, others to be determined): may request use of SWAs (surface washing agents) or special cleanup efforts for use as need to meet endpoint.

Mud Flats (e.g. soft surface, steps will push oil in sediments)	General: No potentially mobile oil.	To be determined on a site-specific basis by SIT.
Marshes	General: Oil on vegetation no longer wipes off on contact. No remaining recoverable or potentially mobile oil in accessible areas. (Accessible areas will be identified by SIT.)	To be determined on a site-specific basis by SIT. Options (cutting, In-situ-Burn, flushing, manual pickup of pooled oil, monitoring) to be determined on site-specific basis.
	Special: Other removal options will be considered by Environmental Unit.	

Debris Recovery Guidelines[1]

- Report dead and live wildlife to triage center at 215-365-1558. Collect and bag all dead wildlife.
- Manual removal of oiled debris that can be easily picked up and bagged.
- For small unoiled debris that can be easily picked up, move to the supra tidal zone if it has the potential to become oiled in its current location.
- Leave unoiled debris in place if it does not have the potential to become oiled.
- Cut and remove oiled logs < 6 inches in diameter (cut in into lengths < 6 feet).
- Manual removal of oiled debris (other than logs) < 6 inches in diameter and < 6 feet in length.
- Clean large (> 6 inches in diameter and/or 6 feet in length) oiled debris in place. Recover oil using appropriate sorbents. Approved cleaning methods for large oiled debris are presented below:

Method	Handling	RRT Approval	Special Permits
Scraping	No	No	No
Wiping	No	No	No
Hotsie	No	No	No

The following options require special approval

Method	Handling	RRT Approval	Special Permits
SWAs	No	Yes	No
Burning	Yes	Yes	Yes

For questions regarding environmental issues, contact Lyle Trumbull at (610) 710-1919.

[1] Non-living oiled debris

Memorandum

To: **Operations Section Chief**

From: **EU**

Subject: **Protocol for handling dead wildlife carcasses found during shoreline cleanup.**

As workcrews are cleaning oiled-shorelines and structures or removing oiled-debris they are likely to encounter dead oiled wildlife. Please handle wildlife carcasses as follows.

A. Dead Oiled Wildlife

All dead oiled wildlife (birds, fish, mammals, turtles) shall be bagged and held for the Wildlife Recovery Unit, and not disposed with other oiled material.

1. **Carefully approach the carcass and confirm that it is dead. If the animal is not dead do not attempt to capture it – contact the EU Leader at (610) 710-1919 immediately for instructions.**

2. **If the animal is confirmed to be dead, place the carcass into a plastic bag – DO NOT mix carcasses together in the same bag – ONE carcass per bag.**

3. **Tie the bag closed and give it to the crew leader.**

4. **The crew leader shall immediately notify the EU Leader at (610) 710-1919 to have the carcasses picked up – do not leave bagged oiled carcasses unattended in the field.**

B. Live Oiled Wildlife

Clean up crews shall not attempt to capture live wildlife.

1. **Live oiled wildlife seen during clean up efforts should be reported by the crew leader to the EU Leader Lyle Trumbull and relay the location, time, number and types of oiled wildlife seen. If Lyle Trumbull is unavailable call Tri-state Bird Rescue at 302-737-9543.**

If you have any questions, please contact me at (610) 710-1919.

ICS 202 - General Response Objectives

Incident:	MT Athos I	**Prepared By:**	Planning Section **at** 4/16/2005 13:00
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Version Name:**	Unified Command Objectives

Overall and Tactical Objectives

	Assigned To	Status
Conduct operations in accordance with the site safety plan.		
Continue to clean waterfront facilities per facility priority list.		
Decon recreational vessels		
Continue aggressive shoreline cleanup and disposal operation.		
Continue to assess the location and extent of oil impact.		
Monitor areas of special interest for possible submerged oil threat (water intake consortium)		
Collect, recover, and rehabilitate injured wildlife.		
Continue to keep stake holders and public informed.		
Begin process of identifying areas where there is no further action required. These areas will be areas where the clean up is complete. Some areas will be identified for final "Sign Off"		
Unified Command Emphasis:		
• Safety First		

Approved By

: _____

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #1
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	K. Benedict		609-234-0828	
Task Force Supervisor - USCG	BM1 Bittle		609-351-8501	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #1	Manpower: Responder	Responders	55 each	
Task Force #1	Manpower: Supervisor	Supervisor	4 each	
Task Force #1	Pressure Washers / Wash	Pressure Washers	12 each	
Task Force #1	Pumps	Pumps	7 each	
Task Force #1	Vehicle	Vehicles	8 each	
Task Force #1	Vessel	Vessels	8 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #1					
TOG	Generator	0006 Coleman 6250	1 each		Assigned
TOG	Generator	0007 Coleman 6250	1 each		Assigned
TOG	Generator	1457 Honda FG 280(	1 each		Assigned
TOG	Generator	1458 Honda FG 280(	1 each		Assigned
TOG	Generator	1459 Coleman 1850	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0914 Hotsie	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0917 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1628 Hotsie, Yanmai	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1642 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2535 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3011 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3049 Yanmar	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3053 Hotsie	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3071 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3217 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3223 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3244 Hotsie	1 each		Assigned
Environmental Restoration	Pumps	1542 Trash Pump	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1694 Yanmar Pump	1 each	2 inch(es)	Assigned
Global Remediation Services	Pumps	1806 Transfer Pump	1 each	2 inch(es)	Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #1
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #1					
Clean Harbors Environmenta	Pumps	1808 Honda Transfe	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3013 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3014 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3054 Trash Pump	1 each	2 inch(es)	Assigned
SWS Environmental First Re	Trailer	1477 Haulmark	1 each		Assigned
SWS Environmental First Re	Vehicle	1021 Chevy Trailblaz	1 each		Assigned
SWS Environmental First Re	Vehicle	1029 Chevy	1 each		Assigned
SWS Environmental First Re	Vehicle	1030 Stake Bed	1 each		Assigned
SWS Environmental First Re	Vehicle	1262 F-450	1 each		Assigned
SWS Environmental First Re	Vehicle	1267 Ford F-250	1 each		Assigned
SWS Environmental First Re	Vehicle	1270 Explorer	1 each		Assigned
SWS Environmental First Re	Vehicle	1401 F-150	1 each		Assigned
SWS Environmental First Re	Vehicle	1402 F-250	1 each		Assigned
North Star	Vehicle	1587 Response Vehi	1 each		Assigned
SWS Environmental First Re	Vehicle	1593 White Ford	1 each		Assigned
SWS Environmental First Re	Vehicle	1600 F-350	1 each		Assigned
North Star/Sea Tow	Vehicle	Pick up Truck 4x4 Fc	1 each		Assigned
Clean Harbors Environmenta	Vessel	0493 Vessel <21 - Jc	1 each	18 feet	Assigned
Clean Harbors Environmenta	Vessel	0494 Vessel <21 - Jc	1 each	18 feet	Assigned
SWS Environmental First Re	Vessel	1261 Vessel > 21 Fla	1 each	25 feet	Assigned
SWS Environmental First Re	Vessel	1264 Vessel > 21 Fla	1 each	25 feet	Assigned
SWS Environmental First Re	Vessel	1554 Vessel > 21	1 each	27 feet	Assigned
North Star	Vessel	1588 Boat > 21'	1 each	24 feet	Assigned
North Star	Vessel	1589 Boat > 21'	1 each	24 feet	Assigned
Clean Harbors Environmenta	Vessel	1734 John Boat (Low	1 each	14 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #1					
North Star/Sea Tow	Manpower: Responder	Spill Tech	3 each		Assigned
SWS Environmental First Re	Manpower: Responder	Spill Tech	47 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #1
Approved By Signature:			

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA1A:
  Complete by 4/30/2005.
  Continue work in Penn Treaty Park, Penns Park North and South.
  Hotsie oil band on piers;
  Oil may be stranded on rocky areas between bays - Hotsie if contaminated
  Remove oiled debris.

- PA2A:
  Complete by 5/5/2005.
  Pier 3 & 5:
  Continue clean up of marina. Maximize use of Pier 24, Lagoon, and open births to facilitate completion.
  S side of pier – hotsie structure as needed.

  Moshulu Dock:
  Complete by 4/24/2005.
  Hotsie land side and south side seawall and pilings.

  Chart House Restaurant:
  Anticipate crew mob. on 5/3/2005. Complete by 5/18/2005.
  Hotsie oiled riprap in front of Chart House.
  Hotsie oiled band on wall on s side of restaurant.
  Secure Ops by 1530 dailey, no ops on Sunday.

  Bay N of Heliport:
  Complete by 5/15/2005.
  Hotsie North and South side of heliport;
  Special attention to possible pavement on N corer of bay north of heliport. Manual removal as necessary;
  Hotsie oiled band along pier 40 seawall.

- PA2B:
  Complete by 5/15/2005.
  Hotsie oil band on piers;
  Oil stranded on rocky areas between bays
  Hotsie if contaminated
  Remove oiled debris.

- PA2C:
  Wal Mart and Home Depot:
  No current operations - anticipate mob. in of resources from Pier 3 & 5 on 5/7/2005. Complete by 5/21/2005.
  Home Depot: hotsie oiled band especially north walls of bays;
  Walmart-Hotsie oiled band around entire pier as needed.

- PA2D:
  No current operations - anticipate mob. in of resources from Pier 3 & 5 on 5/7/2005. Complete by 5/21/2005.

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ICS 204 - Assignment List

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Prepared By Signature:		**Task Force:**	Task Force #1
Approved By Signature:			

- PA2E:
  No current operations - anticipate mob. in of resources from Chart House on 5/3/2005. Complete by 5/25/2005.

- PA2F:
  No current operations - anticipate mob. in of resources from Chart House on 5/3/2005. Complete by 5/25/2005.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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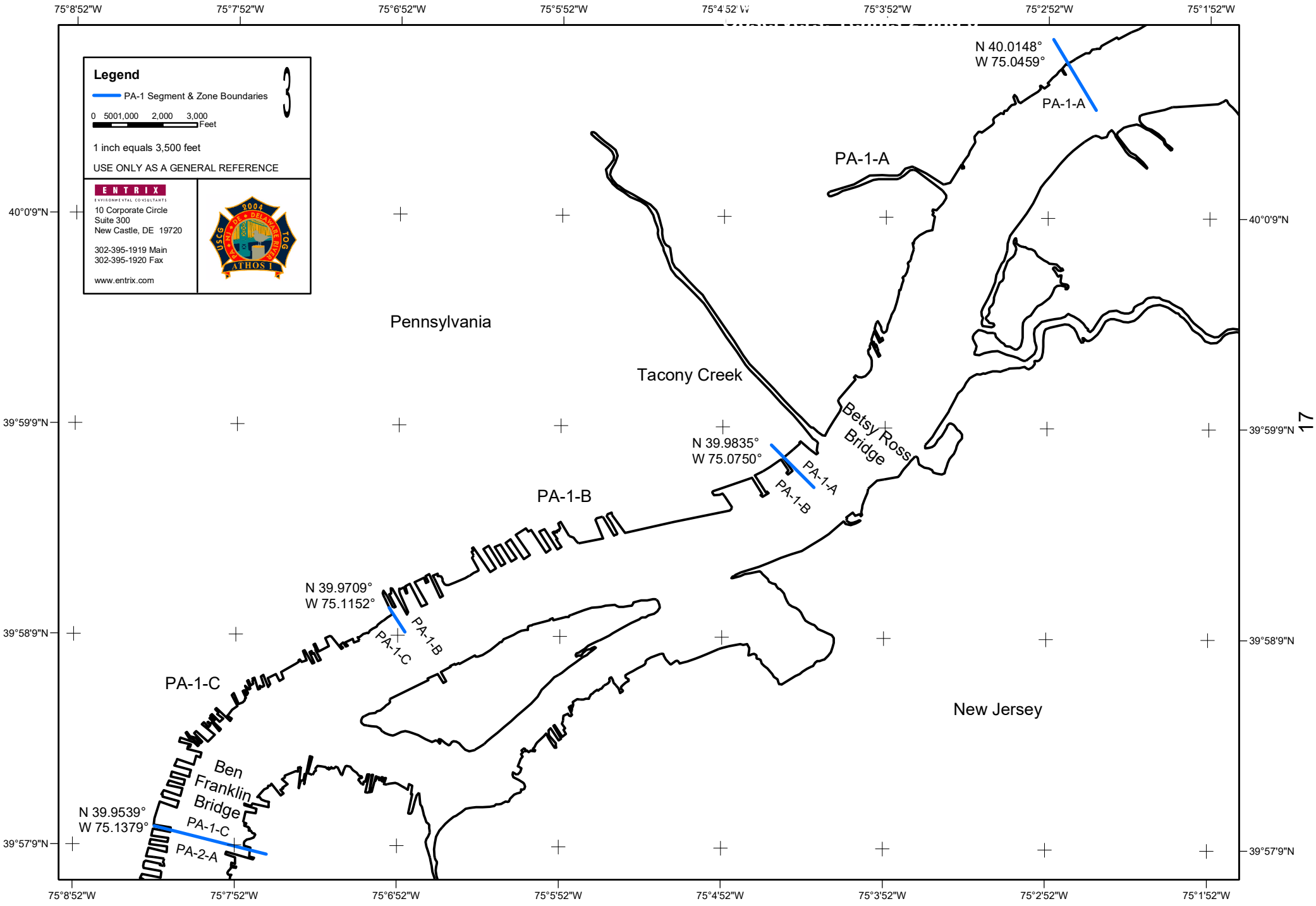
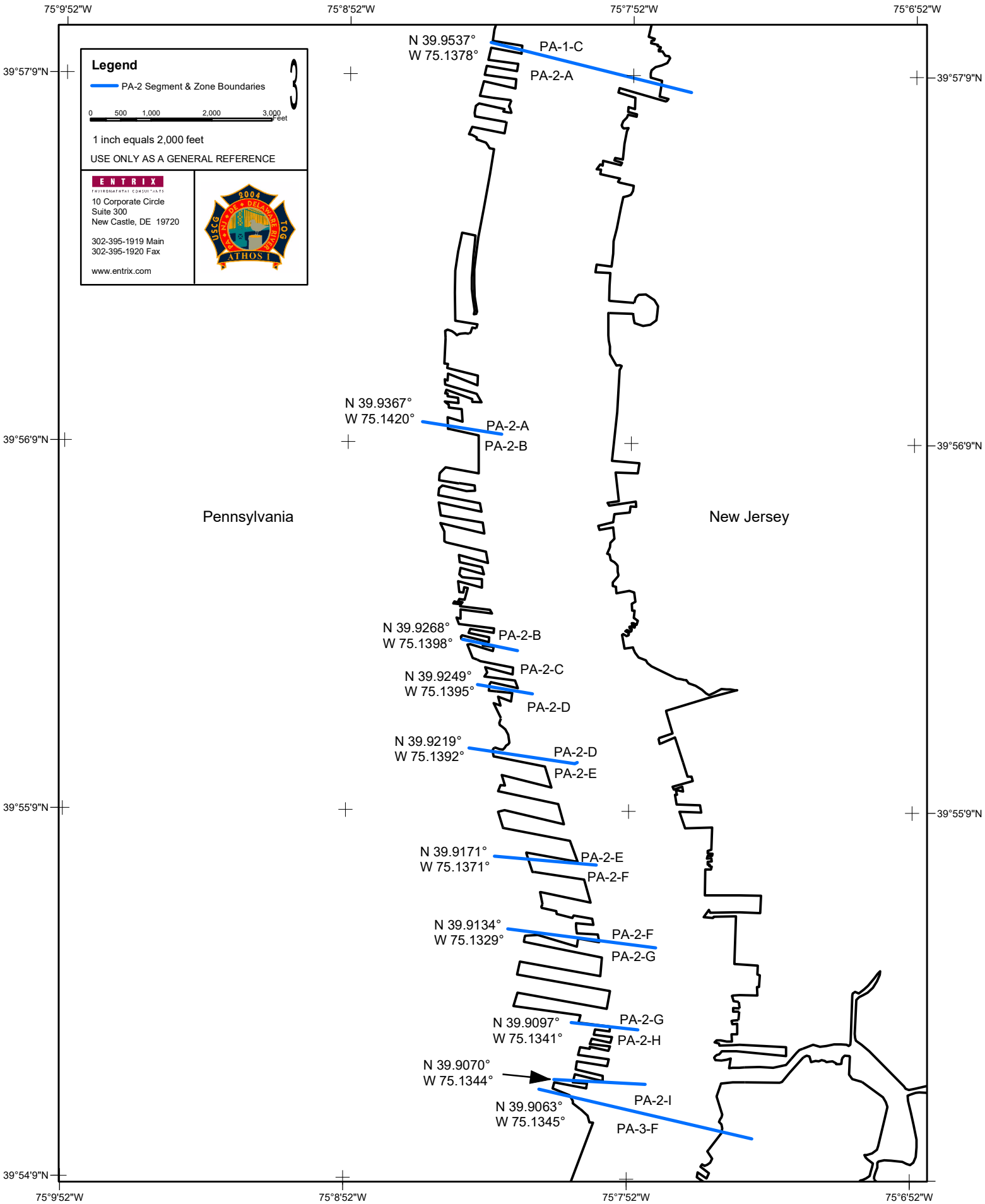
T/V Athos I Oil Spill

SCAT Map PA-1

Spring 2005 SCAT




75°9'52"W
75°8'52"W
75°7'52"W
75°6'52"W
39°57'9"N
39°56'9"N
39°55'9"N
39°54'9"N
Legend
PA-2 Segment & Zone Boundaries
0 500 1,000 2,000 3,000 Feet
1 inch equals 2,000 feet
USE ONLY AS A GENERAL REFERENCE
ENTRIX
10 Corporate Circle
Suite 300
New Castle, DE 19720
302-395-1919 Main
302-395-1920 Fax
www.entrix.com
USCG
2004
ATHOS I
N 39.9537°
W 75.1378°
PA-1-C
PA-2-A
N 39.9367°
W 75.1420°
PA-2-A
PA-2-B
Pennsylvania
New Jersey
N 39.9268°
W 75.1398°
PA-2-B
PA-2-C
N 39.9249°
W 75.1395°
PA-2-D
N 39.9219°
W 75.1392°
PA-2-D
PA-2-E
N 39.9171°
W 75.1371°
PA-2-E
PA-2-F
N 39.9134°
W 75.1329°
PA-2-F
PA-2-G
N 39.9097°
W 75.1341°
PA-2-G
PA-2-H
N 39.9070°
W 75.1344°
N 39.9063°
W 75.1345°
PA-2-I
PA-3-F

ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #2
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	J. Sanial		856-266-3810	
Task Force Supervisor - USCG	MST3 Ferguson		251-680-9677	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #2	Manpower: Responder	Responders	69 each	
Task Force #2	Manpower: Supervisor	Supervisor	10 each	
Task Force #2	Pressure Washers / Wash	Pressure Washers	28 each	
Task Force #2	Pumps	Pumps	18 each	
Task Force #2	Vehicle	Vehicle	16 each	
Task Force #2	Vessel	Vessels	19 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Fleet Environmental Service	Barge: Inland	2016 Spud Barge	1 each		Assigned
NRC - National Response C	Barge: Inland	2017 Barge Set	1 each		Assigned
NRC - National Response C	Barge: Inland	2018 Barge Set	1 each		Assigned
NRC - National Response C	Barge: Inland	2540 Barge Set	1 each		Assigned
TOG	Boom	Boom	300 feet	18 inch(es)	Assigned
TOG	Generator	2901 Coleman 250	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	0305 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	0792 Hotsie, MTM	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0905 Shark	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	0906 Shark	1 each		Assigned
Global Remediation Service	Pressure Washers / Wa	1084 Shark Hotsie	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1204 Hotsie	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1205 Hotsie	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1206 Hotsie	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1207 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1221 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1223 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1224 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1527 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1620 Hotsie	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #2
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1621 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1630 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1631 Hotsie	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	1678 Shark	1 each		Assigned
Clean Venture, Inc.	Pressure Washers / Wa	1685 Alladin	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1691 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2282 Hotsie	1 each		Assigned
TOG	Pressure Washers / Wa	2295 Hotsie	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2530 MI-T-M	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2533 Hotsie	1 each		Assigned
TBD	Pressure Washers / Wa	2908 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3003 Hotsie	1 each		Assigned
TBD	Pressure Washers / Wa	3026 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3031 Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3070 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3092 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3097 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3210 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3213 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3222 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3228 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3229 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3231 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3233 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3858 Hotsie	1 each		Assigned
Kens Marine Service	Pumps	0907 Pump	1 each		Assigned
USES	Pumps	1081 Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1208 Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1209 Honda Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1210 Honda Pump	1 each		Assigned
Global Remediation Service	Pumps	1247 Honda Trash P	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1661 Yanmar	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1664 Pump	1 each		Assigned
Clean Harbors Environmenta	Pumps	1680 Pump	1 each		Assigned
Clean Venture, Inc.	Pumps	1683 Honda Pump	1 each		Assigned
Fleet Environmental Service	Pumps	2537 Tsunami	1 each	3 inch(es)	Assigned
Global Remediation Service	Pumps	2538 Tsurumi	1 each	3 inch(es)	Assigned
Global Remediation Service	Pumps	2539 Tsurumi	1 each	2 inch(es)	Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #2
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
North Star/Sea Tow	Pumps	2902 Pump	1 each		Assigned
TBD	Pumps	3029 Pump	1 each		Assigned
Clean Venture, Inc.	Trailer	2910 Spill Trailer	1 each		Assigned
Clean Venture, Inc.	Trailer	2911 Spill Trailer	1 each		Assigned
SWS Environmental First Re	Vehicle	1406 F-250	1 each		Assigned
SWS Environmental First Re	Vehicle	1418 Ford 4x4	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1436 15 Passanger \	1 each		Assigned
NRC - National Response C(	Vehicle	1545 Ford 4x4	1 each		Assigned
NRC - National Response C(	Vehicle	1546 Ford 4x4	1 each		Assigned
Clean Venture, Inc.	Vehicle	1686 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1687 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1688 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1689 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	1690 F-250	1 each		Assigned
USES	Vehicle	1730 Ford Van	1 each		Assigned
NRC - National Response C(	Vehicle	2020 Chevy 4x4	1 each		Assigned
Clean Harbors Environmenta	Vehicle	2159 F150 Crew Cat	1 each		Assigned
Clean Harbors Environmenta	Vehicle	2394 Ext Cab F-250	1 each		Assigned
Fleet Environmental Service:	Vehicle	2523 F-250	1 each		Assigned
Fleet Environmental Service:	Vehicle	2524 F-350	1 each		Assigned
Fleet Environmental Service:	Vehicle	2525 F-250	1 each		Assigned
Clean Venture, Inc.	Vehicle	2909 F250 Crew Cat	1 each		Assigned
SWS Environmental First Re	Vessel	0398 Vessel > 21 Cu	1 each	28 feet	Assigned
North Star/Sea Tow	Vessel	0402 Vessel > 21 Ca	1 each	32 feet	Assigned
Global Remediation Service:	Vessel	0422 Vessel > 21 Ba	1 each	28 feet	Assigned
USES	Vessel	0424 Vessel > 21' R(	1 each	28 feet	Assigned
USES	Vessel	0426 Vessel > 21 Ro	1 each	26 feet	Assigned
USES	Vessel	0428 Vessel < 21 Fla	1 each	20 feet	Assigned
Kens Marine Service	Vessel	0909 Vessel > 21 Re	1 each	32 feet	Assigned
Clean Venture, Inc.	Vessel	1201 Vessel > 21	1 each	27 feet	Assigned
Clean Venture, Inc.	Vessel	1202 Vessel > 21	1 each	27 feet	Assigned
Clean Harbors Environmenta	Vessel	1681 Vessel < 21	1 each	24 feet	Assigned
Clean Harbors Environmenta	Vessel	1682 Vessel < 21	1 each	24 feet	Assigned
Clean Venture, Inc.	Vessel	1684 Vessel > 21 Pri	1 each	24 feet	Assigned
Clean Harbors Environmenta	Vessel	2334 Vessel < 21 Pu	1 each	20 feet	Assigned
Fleet Environmental Service:	Vessel	2526 Vessel > 21 Se	1 each	24 feet	Assigned
Fleet Environmental Service:	Vessel	2527 Vessel > 21 W(	1 each	22 feet	Assigned
Fleet Environmental Service:	Vessel	2528 Vessel > 21 W(	1 each	22 feet	Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #2
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Fleet Environmental Service	Vessel	2529 Vessel > 21 W	1 each	22 feet	Assigned
Clean Venture, Inc.	Vessel	2912 Vessel > 21' W	1 each	27 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #2					
Clean Harbors Environmenta	Manpower: Responder	Spill Tech	8 each		Assigned
Clean Venture, Inc.	Manpower: Responder	Spill Tech	12 each		Assigned
Environmental Restoration	Manpower: Responder	Spill Tech	2 each		Assigned
Fleet Environmental Service	Manpower: Responder	Spill Tech	10 each		Assigned
Global Remediation Service	Manpower: Responder	Spill Tech	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Spill Tech	3 each		Assigned
Kens Marine Service	Manpower: Responder	Spill Tech	3 each		Assigned
North Star/Sea Tow	Manpower: Responder	Spill Tech	3 each		Assigned
SWS Environmental First Re	Manpower: Responder	Spill Tech	5 each		Assigned
USES	Manpower: Responder	Spill Tech	5 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #2
Approved By Signature:			

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA3A:
  Kavearner Shipyard:
  Continue work in DD # 5. Complete by 4/30/2005.

- PA3B:
  Navy Yard:
  Navy Yard (BTWN Pier 5 and DD # 3):
  Navy Yard:
  Continue Hotsie work of seawall and piers north side of pier 5. Complete by 4/24/2005.

- PA3C:
  Navy Yard Seawall:
  Continue work at ferry landing to Admiral Row cobble wall. Complete by 4/20/2005.

- PA3D:
  Navy Yard Seawall:
  Continue seawall Hotsie work. Complete by 4/24/2005.

- PA3E:
  Turtle Cove II - Vane Bros and Coal Dock Coves:
  Clean beach areas by 4/30/2005, then continue with dock and seawall. Consult with EU on turtle migration prior to begining seawalls.

MAT Data:
Hotsie riprap and gabeon on north shore of Navy Yard bridge.
Hotsie rock wall entrance to basin and river as needed to remove crusty oil.
Hotsie piers as needed to remove crusty oil.
Hostie docks as needed to remove crusty oil.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #2
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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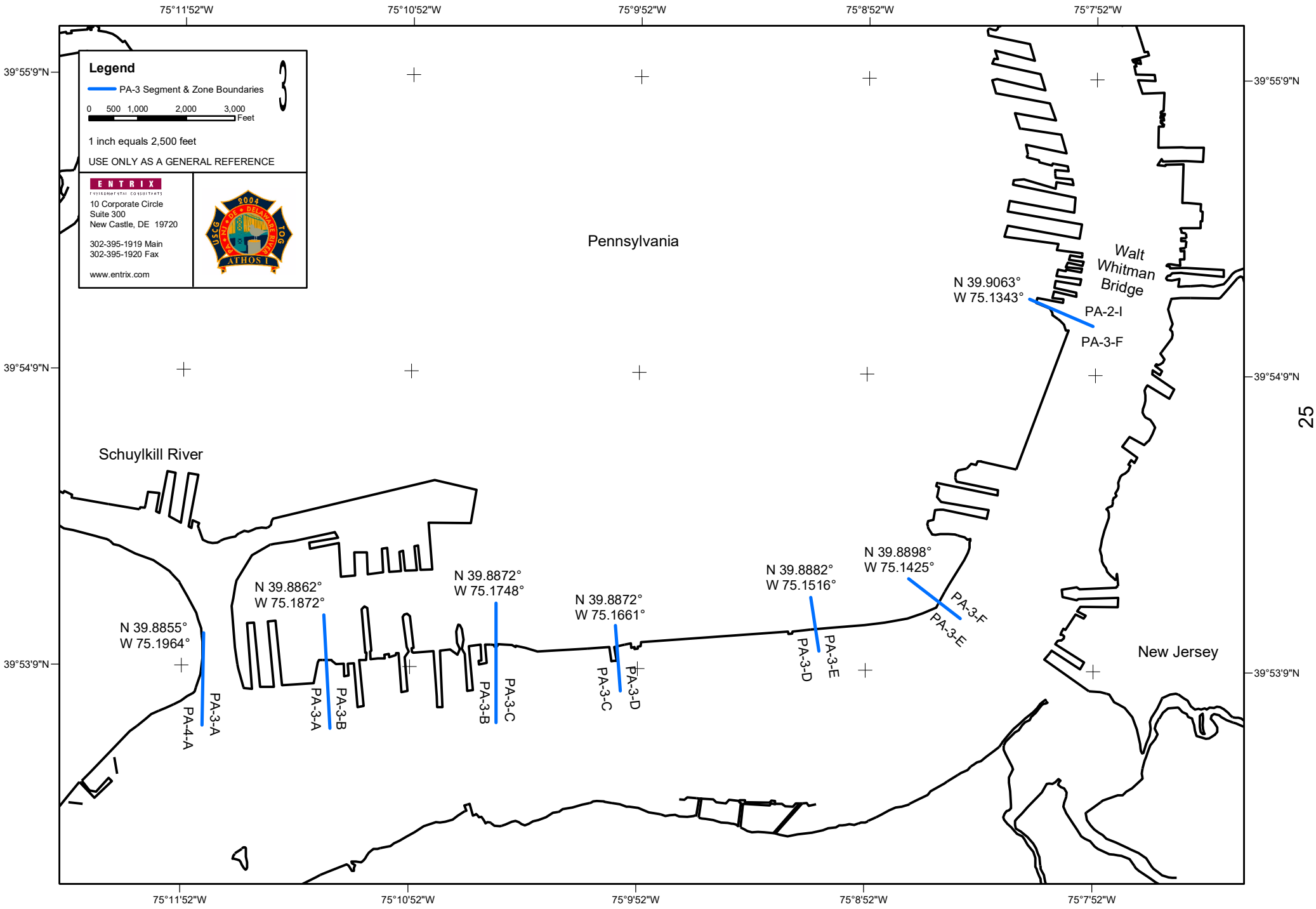
T/V Athos I Oil Spill

SCAT Map PA-3

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #3
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	M. Jenkins		985-768-2328	
Task Force Supervisor - USCG	MK1 Wojciechowski		609-351-8524	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #3	Manpower: Responder	Responders	99 each	
Task Force #3	Manpower: Supervisor	Supervisors	10 each	
Task Force #3	Pressure Washers / Wash	Pressure Washers	34 each	
Task Force #3	Pumps	Pumps	17 each	
Task Force #3	Vehicle	Vehicles	26 each	
Task Force #3	Vessel	Vessels	10 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Environmental Restoration	Pressure Washers / Wa	1291 Honda	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1295 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1296 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1297 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1298 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1601 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1603 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1604 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1605 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1606 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1607 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1608 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1609 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1613 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3073 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3074 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3075 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3076 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3077 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3080 Yanmar Hotsie	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #3
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3082 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3083 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3084 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3088 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3091 Hotsie, Yanmai	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3221 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3227 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3230 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3232 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3235 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3236 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3240 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3241 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3243 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3262 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3264 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3265 Hotsie	1 each		Assigned
Kens Marine Service	Pumps	1092 Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1659 Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1660 Pump	1 each		Assigned
Environmental Restoration	Trailer	1293 Cargo Trailer	1 each	16 feet	Assigned
Environmental Restoration	Trailer	1460 Cargo Trailer	1 each	20 feet	Assigned
Kens Marine Service	Vehicle	1091 4x4 F-350	1 each		Assigned
Kens Marine Service	Vehicle	1093 7 Passanger Vi	1 each		Assigned
Kens Marine Service	Vehicle	1095 9 Passanger Vi	1 each		Assigned
Kens Marine Service	Vehicle	1097 4x4 Dodge Dur	1 each		Assigned
Environmental Restoration	Vehicle	1226 Chevy	1 each		Assigned
Environmental Restoration	Vehicle	1227 F-550 Teak Be	1 each		Assigned
Environmental Restoration	Vehicle	1228 F-450 Steak Be	1 each		Assigned
Environmental Restoration	Vehicle	1229 Chevy 3/4 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1294 Chevy 3/4 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1451 Chevy 1/2 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1452 Dodge Van	1 each		Assigned
Environmental Restoration	Vehicle	1453 Chevy 3/4 Ton	1 each		Assigned
Environmental Restoration	Vehicle	1454 Suzuki Vinson	1 each		Assigned
Environmental Restoration	Vehicle	1480 F-250 4x4	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1700 ATV	1 each		Assigned
Clean Harbors Environmenta	Vessel	0491 Vessel <21 - Jc	1 each	18 feet	Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #3
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Miller Environmental Group,	Vessel	2752 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2754 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2755 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2757 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2758 Carolina Skiff w	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2759 Carolina Skiff w	1 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	2764 Vessel < 21 Jo	1 each	10 feet	Assigned
Miller Environmental Group,	Vessel	2775 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2776 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2777 Vessel < 21 Jo	1 each	20 feet	Assigned
Miller Environmental Group,	Vessel	2778 Vessel < 21 Jo	1 each	20 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #3					
Clean Harbors Environmenta	Manpower: Responder	Spill Tech	32 each		Assigned
Environmental Restoration	Manpower: Responder	Spill Tech	29 each		Assigned
Garner	Manpower: Responder	Spill Tech	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Spill Tech	24 each		Assigned
Kens Marine Service	Manpower: Responder	Spill Tech	13 each		Assigned

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue work in Hog Island Terminal.
Complete Honey Comb Wharf by 5/12/2005.
Tear off abandoned terminal - Load on sand scow for disposal. Remove oiled debris and submerged oil from under abandoned terminal. Complete by 5/12/2005.

- PA-4J4:
Western end of rock wall downstream to the border or PA-4/PA-5
Rip rap/sandy beach
Hotsie rip rap as needed
Remove patties from sand flat
Pressure wash live tree roots – cold wash
Hotsie or scrape oiled woody debris

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #3
Approved By Signature:			

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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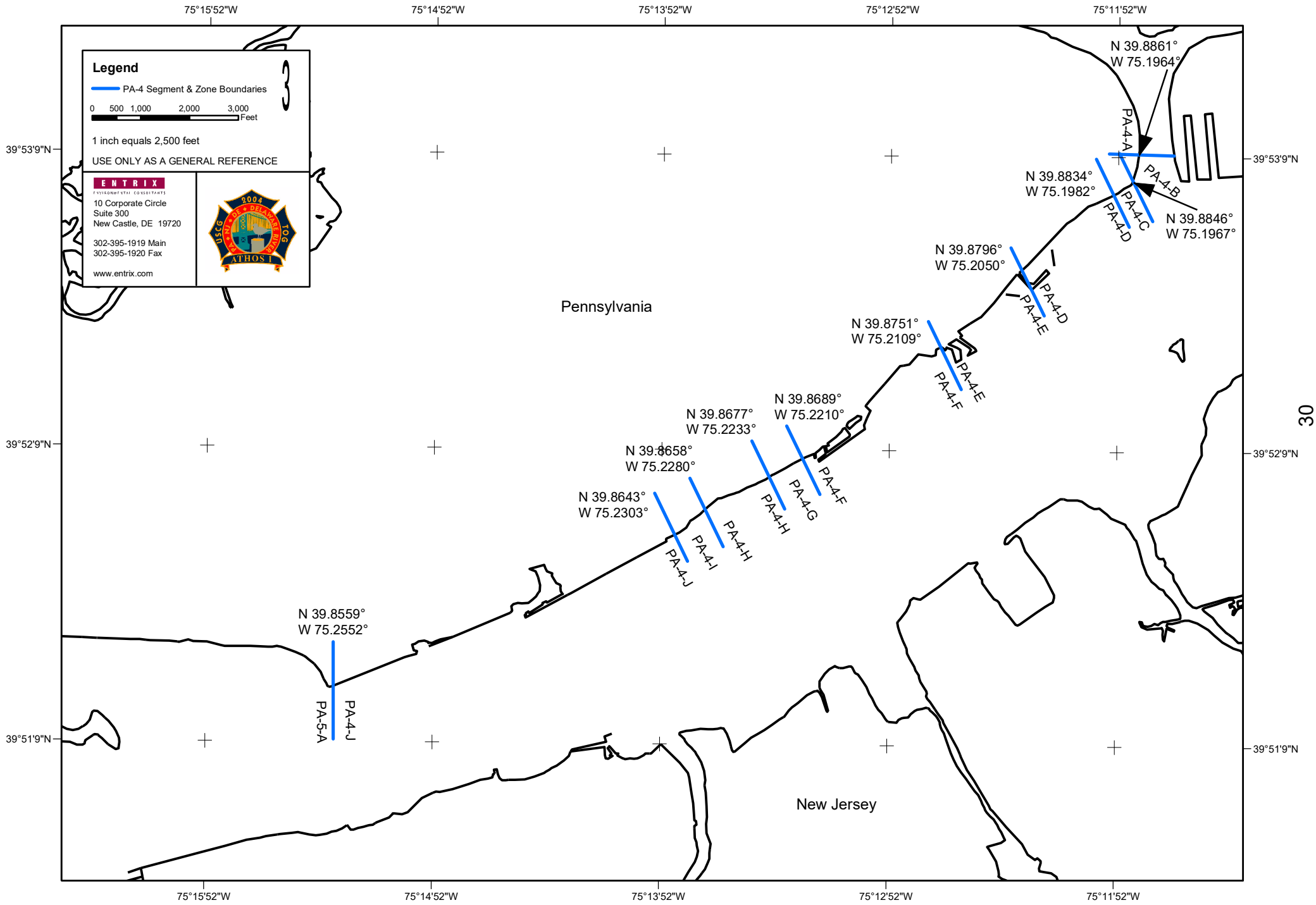
T/V Athos I Oil Spill

SCAT Map PA-4

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #4
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor- TOG	D. Marsh		713-569-2060	
Task Force Supervisor - USCG	MST1 Littenger		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #4	Manpower: Responder	Responders	40 each	
Task Force #4	Manpower: Supervisor	Supervisor	5 each	
Task Force #4	Pressure Washers / Wash	Pressure Washers	10 each	
Task Force #4	Pumps	Pumps	5 each	
Task Force #4	Vehicle	Vehicles	5 each	
Task Force #4	Vessel	Vessels	7 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #4					
Industrial Cleanup, Inc. - ICI	Barge: Inland	1551 Deck Barge	1 each	20 feet	Assigned
Industrial Cleanup, Inc. - ICI	Barge: Inland	1552 Deck Barge	1 each	20 feet	Assigned
TOG	Generator	0636 Generator 185(	1 each		Assigned
TOG	Generator	1212 Generator	1 each		Assigned
TOG	Generator	1537 Generator	1 each		Assigned
TOG	Generator	1541 Powermate 37!	1 each		Assigned
TOG	Generator	3205 Generator 185(	1 each		Assigned
TOG	Generator	3206 Generator 185(	1 each		Assigned
Clean Harbors Environmenta	Pressure Washers / Wa	1218 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1220 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1615 Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1624 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1626 Hotsie, Yanmai	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1638 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1640 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1643 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1648 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2262 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2293 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3009 Hotsie All Amei	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #4
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #4					
Environmental Restoration	Pressure Washers / Wa	3045 Pressure Wash	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3069 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3078 Yanmar Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3237 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3238 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3245 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3258 Hotsie	1 each		Assigned
Clean Harbors Environmenta	Pumps	1217 Trash Pump	1 each	3 inch(es)	Assigned
Global Remediation Services	Pumps	1248 Honda Trash P	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	1529 Trash Pump	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	2040 Trash Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	2231 Wash Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	2236 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3023 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3266 Trash Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Trailer	1544 Utility Trailer	1 each	12 feet	Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1543 Honda Rubicor	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1547 15 Passanger \	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1548 Chevy 4x4	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vehicle	1549 F-350	1 each		Assigned
TOG	Vehicle	2651 Ford Explorer	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Vessel	1219 Vessel > 21 Bri	1 each	27 feet	Assigned
North Star/Sea Tow	Vessel	1240 Vessel > 21 Ce	1 each	27 feet	Assigned
Moran	Vessel	1530 Vessel > 21	1 each	27 feet	Assigned
Industrial Cleanup, Inc. - ICI	Vessel	1553 Vessel > 21 Bri	1 each	27 feet	Assigned
Clean Harbors Environmenta	Vessel	2653 Vessel < 21 Jo	1 each	18 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #4					
Fleet Environmental Services	Manpower: Responder	Spill Tech	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Manpower: Responder	Spill Tech	28 each		Assigned
Moran	Manpower: Responder	Spill Tech	3 each		Assigned
North Star/Sea Tow	Manpower: Responder	Spill Tech	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #4
Approved By Signature:			

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA-6-A:
Continue work at Boeing & Foamex. Complete by 4/24/2005.
Complete Penn Terminal & PA 6-B1 by 4/24/2005.
Hotsie oil coat on concrete and steel seawalls from39.50.984, 75.20.481 up to 39.51.111, 75.20.097. (2) Manually remove
oiled debris and hotsie oil coat on riprap from 39.51.111, 75.20.087 to 39.51.167, 75.19.917. (3) check cove for band on riprap – hotsie if necessary. (4) Hotsie seawall at power plant 39.51.316, 75.19.523, (5) hotsie seawall, wire-covered riprap
at Boeing facility at 39.51.462, 75.19.057. Use caution in this area.
Hotsie riprap and large debris on Fomex Beach. Manually remove small oiled debris and pavement @ 39.51.220 x 75.20.056, and asphalt pavement in area. Cut oiled weeds from top of pilings where oiled.
Hotsie riprap inside lagoon north of Fomex beach. Remove oiled debris.

- PA6B:
Continue progress in old shipyard. Complete by 4/24/2005.
Complete remainder of PA 6-B by 5/1/2005.
Hotsie seawalls and riprap from Ridley creek to Com Barry Bridge.
Hotsie seawalls and riprap at Degussa facility (39.50.159, 75.22.087) and Chester Water dept. (39.50.243, 75.21.905).
Use hand shovels to remove asphalt pavement on beach near water dept. (2) hotsie seawalls upstream of Chester Creek
from 39.50.461, 75.21.495 (near warehouses). (3) hotsie seawalls on upstream sides of shipyard slips. Note: pavement continues subsurface throughout the area.
From CMdr Barry Bridge to Pier:
Prune live oiled vegetation. Hotsie or scrape large woody vegetation. Spot hotsie riprap. Remove small oiled debris.

- PA6:
South of Banacor
There is a portion of the shoreline with dilapidated pier, rocks, trees and shrubs, with oiled line apparent for about 25'.
Hotsie affected areas and remove debris.
Cut shurbs at oiled line as needed. Area located within 1500' of Banacor.
North of this, remove pompom and woody debris.
Further north, remove sorbent boom tangled in wood pylons.

- Remob to PA-3 by 4/27/2005.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #4
Approved By Signature:			

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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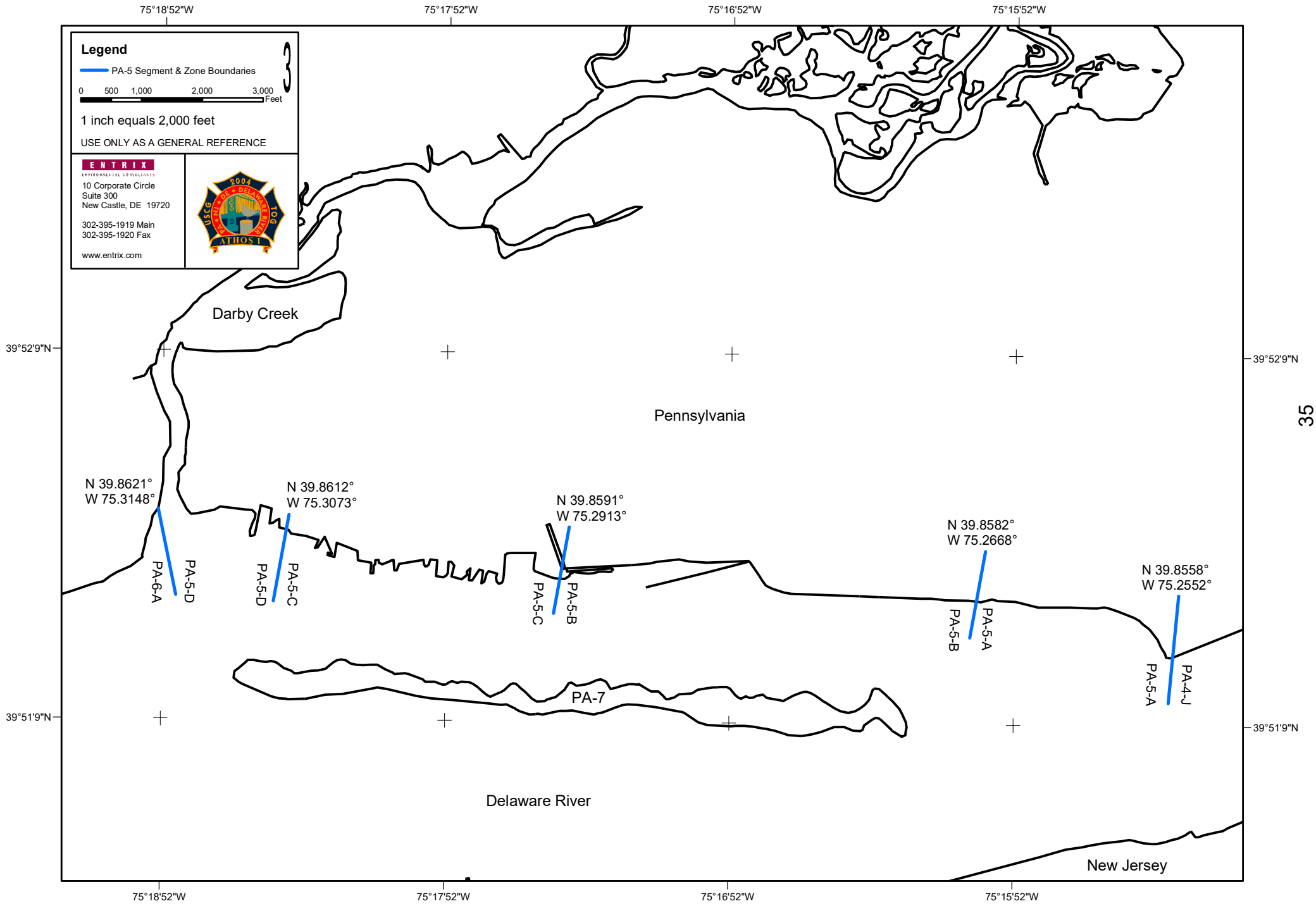
T/V Athos I Oil Spill

SCAT Map PA-5

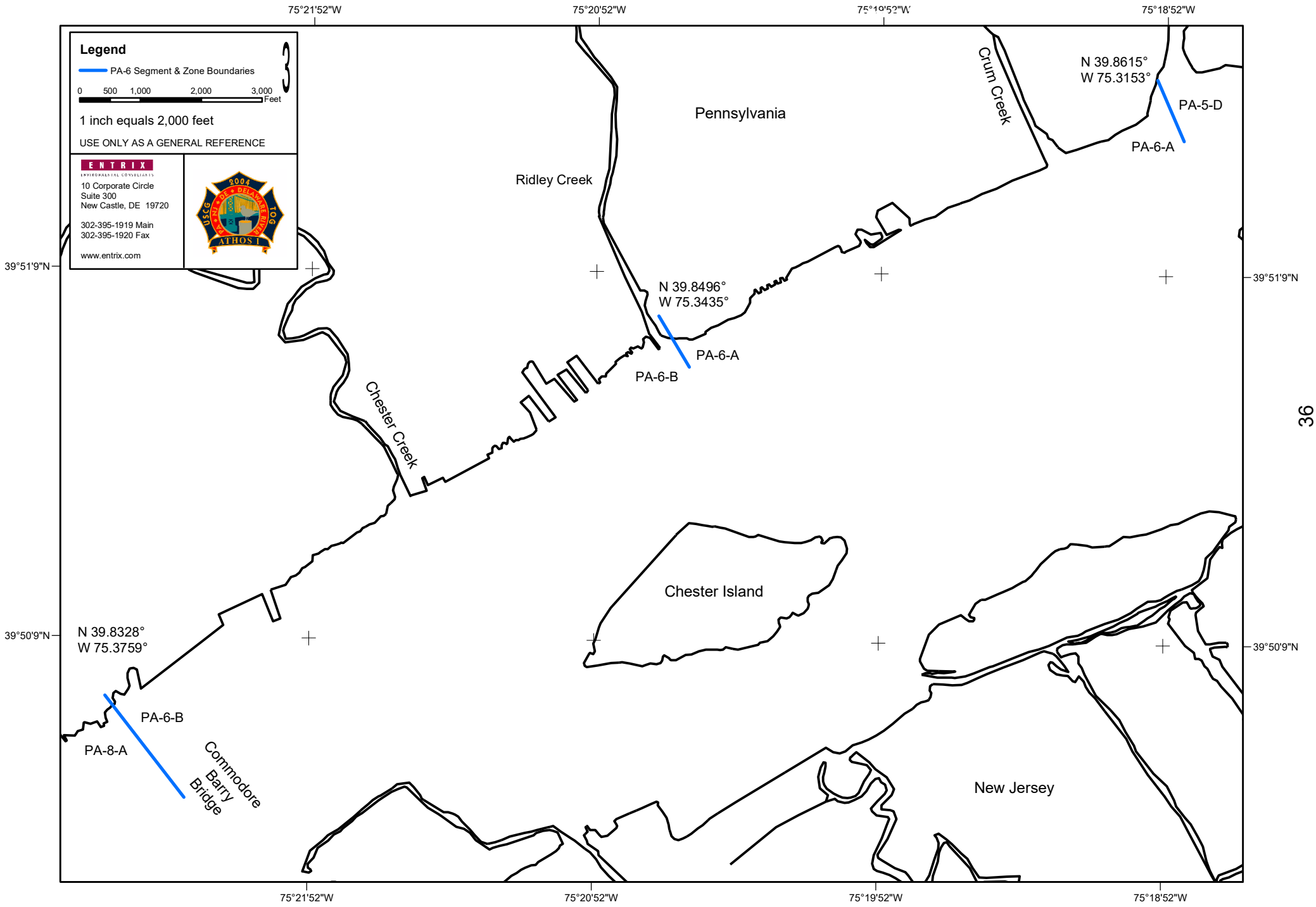
Spring 2005 SCAT



T/V Athos I Oil Spill

SCAT Map PA-6

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #5
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	J. Topic		952-201-1002	
Task Force Supervisor- USCG	MST3 Decker		251-680-8415	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #5	Manpower: Responder	Responders	79 each	
Task Force #5	Manpower: Supervisor	Supervisors	9 each	
Task Force #5	Pressure Washers / Wash	Pressure Washers	6 each	
Task Force #5	Pumps	Pumps	3 each	
Task Force #5	Vehicle	Vehicles	11 each	
Task Force #5	Vessel	Vessels	5 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #5					
Environmental Restoration	Equipment: Heavy	3101 T200 Tracked E	1 each		Assigned
Environmental Restoration	Equipment: Heavy	3102 Bucket	1 each		Assigned
Environmental Restoration	Equipment: Heavy	3103 Fork	1 each		Assigned
TOG	Generator	1015 Powermate G2	1 each		Assigned
TOG	Generator	2599 Coleman 1850	1 each		Assigned
TOG	Generator	2600 Coleman 3750	1 each		Assigned
Miller Environmental Group,	Storage: Liquid	1036 Gasoline	1 each	1000 gallor	Assigned
Miller Environmental Group,	Storage: Liquid	1037 Diesel	1 each	500 gallon	Assigned
Miller Environmental Group,	Storage: Liquid	1038 Diesel	1 each	1000 gallor	Assigned
Kens Marine Service	Vehicle	0911 9 Passanger Va	1 each		Assigned
Global Remediation Services	Vehicle	1050 Pickup	1 each		Assigned
Kens Marine Service	Vehicle	1099 F-150	1 each		Assigned
Kens Marine Service	Vehicle	1100 F-350	1 each		Assigned
Kens Marine Service	Vehicle	1281 Mule 4x4	1 each		Out-of-Service
Kens Marine Service	Vehicle	1282 Suzuki King Qu	1 each		Assigned
Kens Marine Service	Vehicle	1338 F-150	1 each		Assigned
Kens Marine Service	Vehicle	1342 9 Passanger Va	1 each		Assigned
Kens Marine Service	Vehicle	1343 Grand Cheroke	1 each		Assigned
Kens Marine Service	Vehicle	1344 7 Passanger Va	1 each		Assigned
Kens Marine Service	Vehicle	1345 9 Passanger Va	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #5
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #5					
Kens Marine Service	Vehicle	1347 4x4 Dodge Dur	1 each		Assigned
Kens Marine Service	Vehicle	2597 4x4 Mule	1 each		Assigned
Ken's Marine	Vehicle	2598 4x4 Mule	1 each		Assigned
Global Remediation Services	Vessel	1049 Vessel > 21	1 each	35 feet	Assigned
Miller Environmental Group,	Vessel	1071 LCM (Landing (	1 each	74 feet	Assigned
Miller Environmental Group,	Vessel	1072 Vessel > 21	1 each	27 feet	Assigned
Global Remediation Services	Vessel	Vessel > 21	1 each	34 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #5					
Global Remediation Services	Manpower: Responder	Spill Tech	4 each		Assigned
Kens Marine Service	Manpower: Responder	Spill Tech	33 each		Assigned
Miller Environmental Group,	Manpower: Responder	Spill Tech	19 each		Assigned
Miller Environmental Group,	Manpower: Responder	Spill Tech	25 each		Assigned

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue focused debris removal in PA 7 - M, N, & O. Complete by 4/30/2005.
Continue bag removal with tides as permitted.
Continue MLLW monitoring and spot removal of rocks, mats and sand in A-G as tides permit.

- PA7:
  Hand or mechanical removal of debris and tar patties.
  Cold water pressure wash of oiled root systems.
  Scrape or hotsie large debris.
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Cut oiled non-woody vegetation at oiled line.
  Use only established paths on interior of Island.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #5
Approved By Signature:			

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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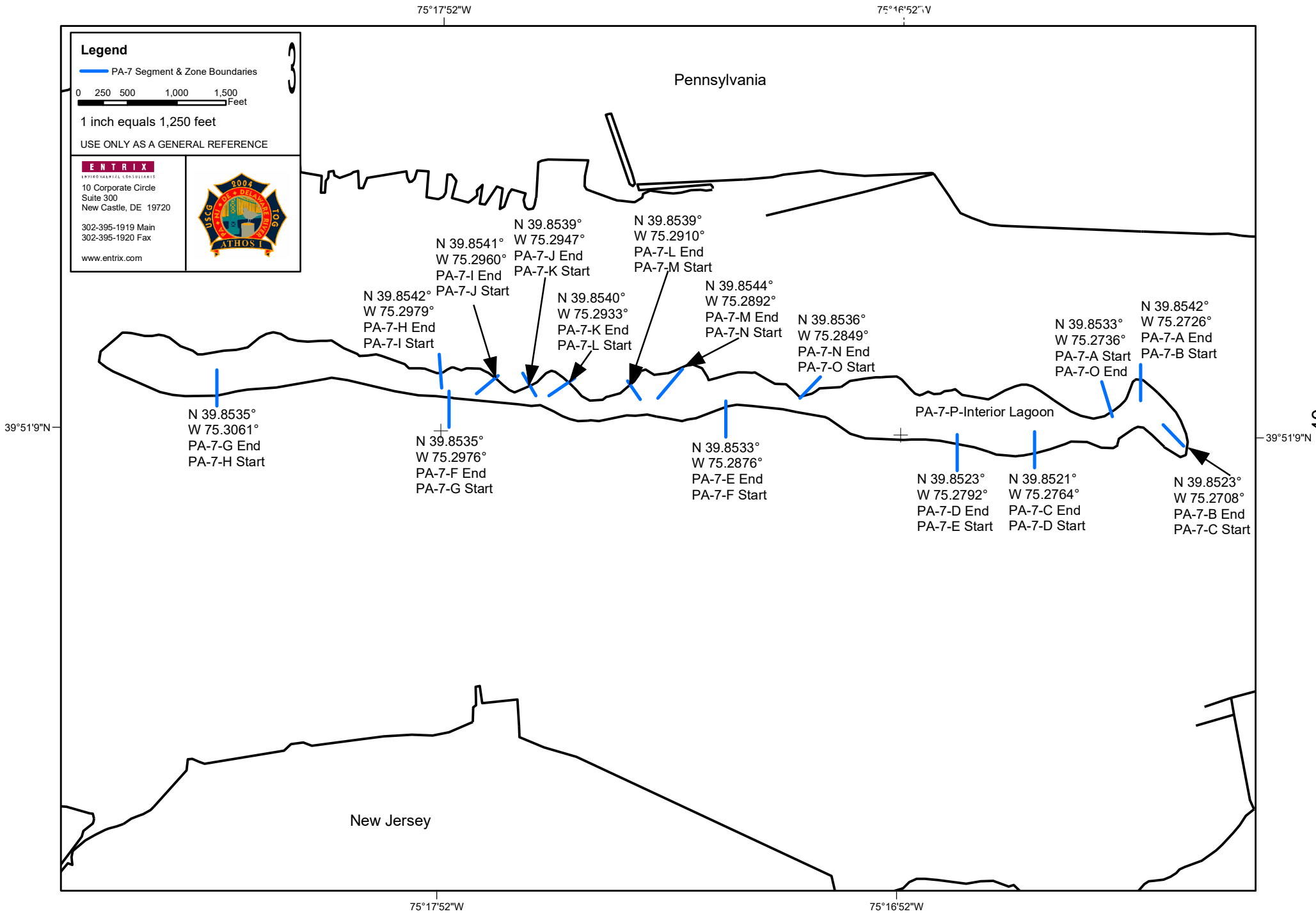
T/V Athos I Oil Spill

SCAT Map PA-7

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	New Jersey
Prepared By Signature:		**Task Force:**	Task Force #6
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	I. Will		952-250-3161	
Task Force Supervisor - USCG	CPO Eckard		TBD	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #6	Barge: Inland	Barge	1 each	
Task Force #6	Manpower: Responder	Responders	32 each	
Task Force #6	Manpower: Supervisor	Supervisors	4 each	
Task Force #6	Pressure Washers / Wash	Pressure Washers	15 each	
Task Force #6	Pumps	Pumps	4 each	
Task Force #6	Vehicle	Vehicles	8 each	
Task Force #6	Vessel	Vessels	9 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #6					
TOG	Equipment: Heavy	2958 John Deere	1 each		Assigned
Unknown	Pressure Washers / Wa	1367 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1635 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1637 Hotsie	1 each		Out-of-Service
Environmental Restoration	Pressure Washers / Wa	2351 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3040 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3041 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3096 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3227 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3234 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3255 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1667 Pump	1 each	2 inch(es)	Assigned
Clean Harbors Environmenta	Pumps	2305 Wash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3055 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3062 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3068 Trash Pump	1 each	2 inch(es)	Assigned
Clean Harbors Environmenta	Skimmer	0480 Marco Skimme	1 each		Assigned
TOG	Storage: Solid	2336 Container	1 each	20 feet	Assigned
TOG	Storage: Solid	2337 Container	1 each	20 feet	Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
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Prepared By Signature:		**Task Force:**	Task Force #6
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #6					
Clean Harbors Environmenta	Trailer	0465 Load Rite	1 each	21 feet	Assigned
Clean Harbors Environmenta	Trailer	0471 Sea Lion	1 each	24 feet	Assigned
Clean Harbors Environmenta	Trailer	0473 Trailer	1 each	26 feet	Assigned
Clean Harbors Environmenta	Trailer	0477 Magic Tilt	1 each	26 feet	Assigned
Clean Harbors Environmenta	Trailer	0485 Sport Man	1 each	24 feet	Assigned
Clean Harbors Environmenta	Trailer	0487 Easy Load	1 each	24 feet	Assigned
Clean Harbors Environmenta	Trailer	1769 Utility	1 each	16 feet	Assigned
Clean Harbors Environmenta	Trailer	2383 Magic Trail	1 each	30 feet	Assigned
Clean Harbors Environmenta	Vessel	0466 Vessel < 21 Po	1 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	0470 Vessel < 21 Po	1 each	20 feet	Assigned
Clean Harbors Environmenta	Vessel	0472 Vessel >21 Hai	1 each	26 feet	Assigned
Clean Harbors Environmenta	Vessel	0474 Vessel >21 Cal	1 each	24 feet	Assigned
Clean Harbors Environmenta	Vessel	0476 Vessel >21 Hai	1 each	26 feet	Assigned
Clean Harbors Environmenta	Vessel	0492 Vessel <21 - G	1 each	18 feet	Assigned
Clean Harbors Environmenta	Vessel	2953 John Boat	1 each	2 inch(es)	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #6					
Clean Harbors Environmenta	Manpower: Responder	Spill Tech	8 each		Assigned
Moran	Manpower: Responder	Spill Tech	19 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
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Prepared By Signature:		**Task Force:**	Task Force #6
Approved By Signature:			

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- NJ-2A:
  Complete by 4/30/2005.
  Continue shoreline clean up of area adjacent to Gloucester City Marina in NJ 2-A. Complete by 4/30/2005.

- NJ-2C:
  Complete by 4/30/2005.
  Hotsie from BF bridge south as needed
  Concentrate on high public use areas at Campbell field, Tweeter Center
  Battleship NJ
  Hotsie north side of BF bridge piers.
  Remove possible pavement south of Camden Refrigeration
  Hotsie concrete wall by cement company
  Remove mat from north bank of Newton Creek
  Hotsie both walls of Newton Creek
  Hotsie Koch Marine Terminal seawall

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging 1/Lagoon for redeployment.

Special Environmental Considerations

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Incident:	MT Athos I	**Branch:**	
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Prepared By Signature:		**Task Force:**	Task Force #6
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Please review attached protocol for handling oiled wildlife.

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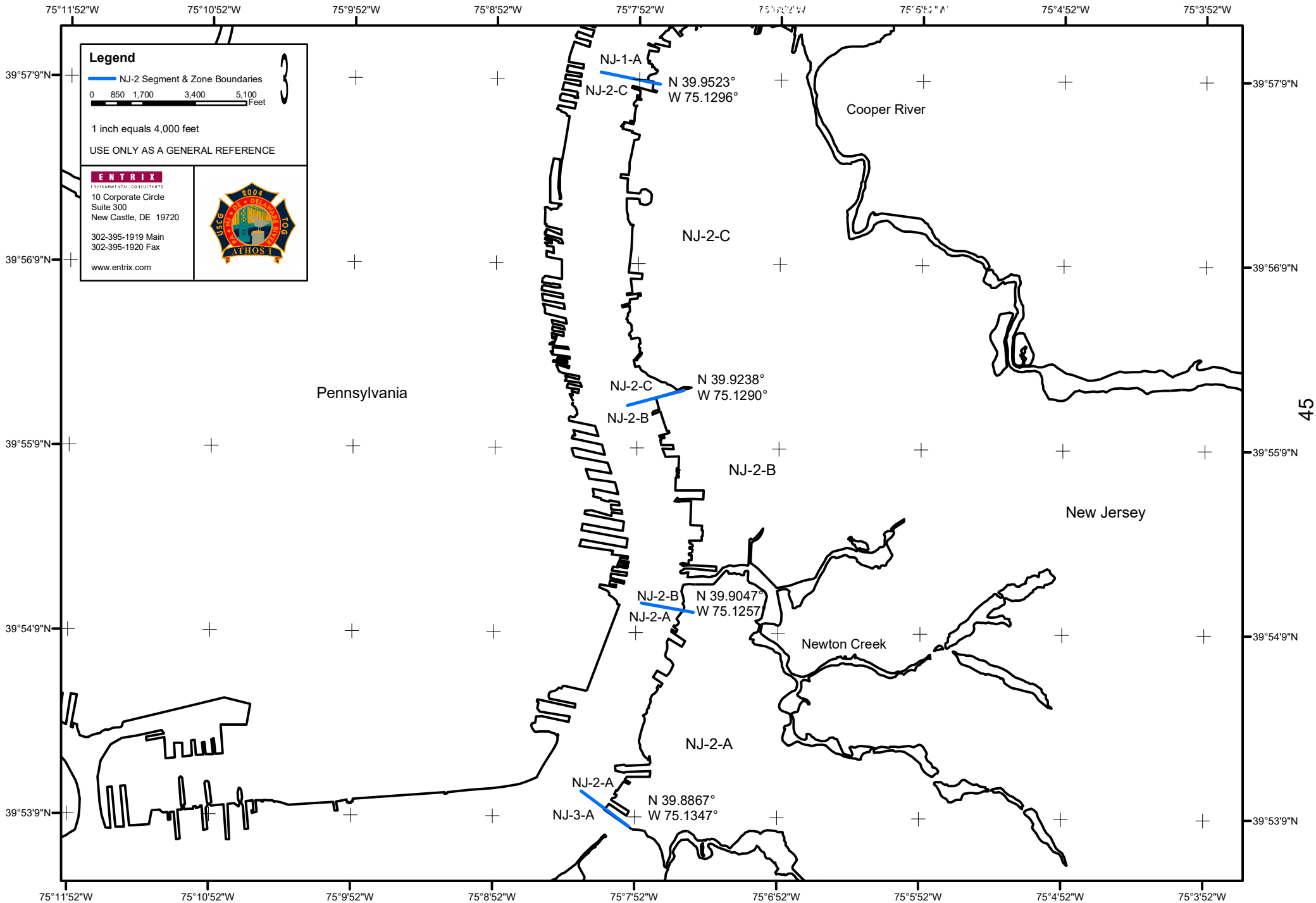
T/V Athos I Oil Spill

SCAT Map NJ-2

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	New Jersey
Prepared By Signature:		**Task Force:**	Task Force #7
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	P. Parker		270-559-2735	
Task Force Supervisor - USCG	HS2 Gray		609-439-3221	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #7	Manpower: Responder	Responders	53 each	
Task Force #7	Manpower: Supervisor	Supervisors	6 each	
Task Force #7	Pressure Washers / Wash	Pressure Washers	8 each	
Task Force #7	Pumps	Pumps	4 each	
Task Force #7	Vehicle	Vehicles	11 each	
Task Force #7	Vessel	Boats < 21'	3 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #7					
Fleet Environmental Service	Generator	2522 DCA 25SSIU	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	0741 Hotsie	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2513 Mighty TM	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2514 Honda	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2515 Hotsie	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2516 Hotsie	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2531 Hotsie	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2541 Might M	1 each		Assigned
Fleet Environmental Service	Pressure Washers / Wa	2543 Hotsie	1 each		Assigned
Fleet Environmental Service	Pumps	2518 Honda	1 each	3 inch(es)	Assigned
Fleet Environmental Service	Pumps	2519 Tsunami	1 each	3 inch(es)	Assigned
Fleet Environmental Service	Pumps	2520 Tsunami	1 each	3 inch(es)	Assigned
Fleet Environmental Service	Trailer	2521 Scottsman	1 each	36 feet	Assigned
Fleet Environmental Service	Vehicle	2502 Rack Body	1 each		Assigned
Fleet Environmental Service	Vehicle	2503 Mitsubishi Racl	1 each		Assigned
Fleet Environmental Service	Vehicle	2504 Isuzu Rodeo	1 each		Assigned
Fleet Environmental Service	Vehicle	2505 Dodge	1 each		Assigned
Fleet Environmental Service	Vehicle	2506 GMC	1 each		Assigned
Fleet Environmental Service	Vehicle	2507 Plymouth Voya	1 each		Assigned
Fleet Environmental Service	Vehicle	2508 F-350 Van	1 each		Assigned

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Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	New Jersey
Prepared By Signature:		**Task Force:**	Task Force #7
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #7					
Fleet Environmental Service	Vehicle	2509 Ford Club	1 each		Assigned
Fleet Environmental Service	Vehicle	2510 Nissan Titan - l	1 each		Assigned
Fleet Environmental Service	Vehicle	2511 F-350 - Utility T	1 each		Assigned
Fleet Environmental Service	Vehicle	2512 Ford Van	1 each		Assigned
Fleet Environmental Service	Vessel	2501 Vessel > 21 LC	1 each	24 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #7					
Clean Harbors Environmenta	Manpower: Responder	Spill Tech	4 each		Assigned
Fleet Environmental Service	Manpower: Responder	Spill Tech	49 each		Assigned

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ICS 204 - Assignment List

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Prepared By Signature:		**Task Force:**	Task Force #7
Approved By Signature:			

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Continue working with assigned complement in NJ 5 A-G.
Continue work in NJ 3 J-L.

- NJ3A-F:
  Complete by 4/20/2005
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Mechanical raking /or manual turn over of cobble or small boulders - high volume water flush or hotsie
  Remove buried oil/tar mats

- NJ3G:
  Complete by 4/20/2005
  South to Ferry Dock
    Hotsie or scrape oiled woody debris greater than 6 inches in diameter
    Remove oiled woody debris less than 6 inches in diameter
    Manual removal utilizing mechanical hauling of fine gravel and pebbles
    Manual or mechanical removal of oil coated cobble and mechanical hauling
    Mechanical raking /or manual turn over of cobble or small boulders - high volume water flush or hotsie
    Hotsie rock around West Deptford Boat Ramp
    Remove buried oil just downstream of W Deptford Boat Ramp (1-2' below surface)
    Cold water pressure wash all oiled live trees

- Ferry Dock to NJ3H :
  Complete by 5/3/2005.
  Sand/small cobble beach
  Remove any tar mats
  Mechanical removal oil coated pebbles and cobble
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Manual removal of oily debris as necessary
  Cold water pressure wash all oiled live trees
  Manual removal of tar mats
  Manually locate and identify all buried oil areas and manual removal with the use of machinery
  Note: High public use

- NJ3H:
  Complete by 5/10/2005.
  Remove any tar mats
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Small cobble, manual removal (possible mechanized hauling)
  National Park down to Woodbury creek
  Coarse grain sandy beach /riprap
  Hotsie riprap/consider high volume warm water
  Move cobble, remove tar, remove tar mats, hotsy cobble

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Manually remove small cobble - use mechanized hauling
Note: High public use area

- NJ3I:
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Cold water pressure wash all oiled live trees

- NJ3J:
Continue oiled phragmites removal adjacent to Riverwinds in NJ 3-J. Complete by 4/8/2005.
Cut oiled phragmites at oiled line.
Removed oiled mat from southern side cover
Remove oiled (drag) woody debris - drag from high public area and hotsie
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Move cobble, remove tar, remove tar mats, hotsie cobble
Cold water pressure wash all oiled live trees
Note: High public use area

- NJ3K:
Complete by 4/23/2005.
Manual removal of oiled gravel/patties
Cut non-woody vegetation/branches at oiled line.
Cold-water pressure wash oiled live trees
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody debris less than 6 inches in diameter
Hotsie boulders

Special Instructions for Division / Group

- NJ3L:
Complete by 4/23/2005.
Citgo Beach
Sand cobble /boulders
Move cobble, remove tar mats/asphalt; hotsie cobble
Hotsie or scrape oiled woody debris greater than 6 inches in diameter
Remove oiled woody

- Tanner Island:
Complete by 4/27/2005.
Remove pavement in mid-lower intertidal zone - partially buried under gravel.
39° 52.508' N, 75° 11.589' W (approx. 50' x 20') - hand removal.
Scrape oiled roots on northwest side.
Check lower intertidal zone for buried pavement during cleanup.

- Chester Island:
Complete by 4/27/2005.
Some oiled phrag, a couple pattie areas, and some oiled trash and woody debris on PA half of island.
Cut oiled phrag and scrape oiled phrag hummocks at 2 spots:
a) 39° 50.431' N, 75° 20.207' W
b) 39° 50.179' N, 75° 20.795'
Remove small pavement spot (1 bag worth)
39° 50.443' N, 75° 20.329'
Maintain debris, patties; scrape large woody debris as needed.

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	New Jersey
Prepared By Signature:		**Task Force:**	Task Force #7
Approved By Signature:			

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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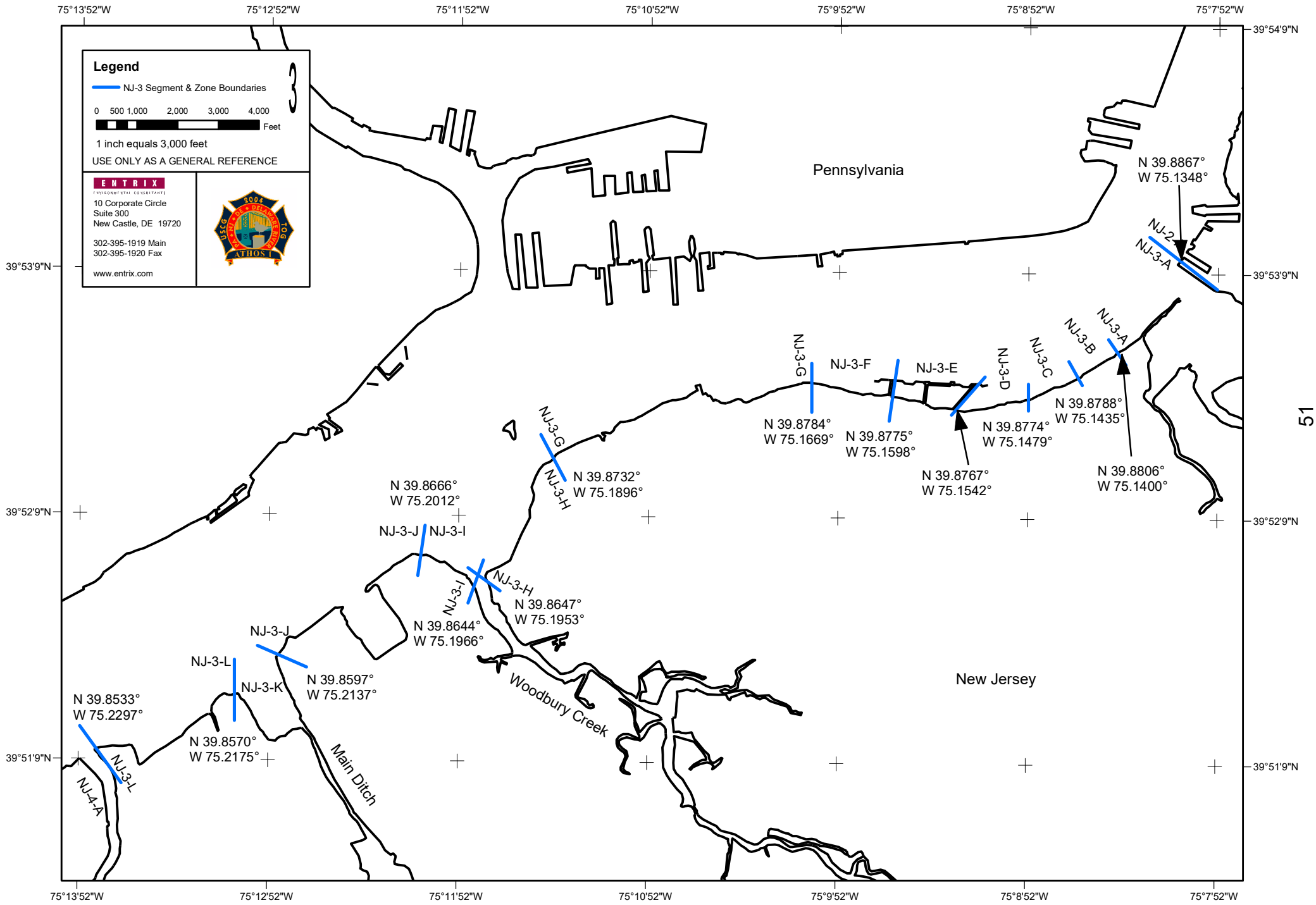
T/V Athos I Oil Spill

SCAT Map NJ-3

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #8
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	P. Richie		612-210-9051	
Task Force Supervisor - USCG	DC2 Rode		415-286-1665	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #8	Manpower: Responder	Spill Techs	65 each	
Task Force #8	Pressure Washers / Wash	Hotsie	8 each	
Task Force #8	Pumps	Pump	5 each	
Task Force #8	Vessel	Vessel	2 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #8					
TOG	Generator	0571 Coleman 3750	1 each		Assigned
TOG	Generator	1737 Coleman 6250	1 each		Assigned
TOG	Generator	1909 Powermate	1 each		Assigned
TOG	Generator	3018 Powermate	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1222 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1313 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1627 Hotsie, Yanmai	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2517 Mighty TM	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2701 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2703 Hotsie DH4030	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2705 Hotsie DH4030	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2709 Hotsie 440SF	1 each		Assigned
USES	Pressure Washers / Wa	3001 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3004 Hotsie Karoher	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3006 Hotsie All Amei	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3007 Hotsie ALK TA	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3008 Hotsie All Amei	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3010 Hotsie All Amei	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3012 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3046 All American	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3052 All American	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3098 Trash Pump	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #8
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #8					
Environmental Restoration	Pressure Washers / Wa	3099 Trash Pump	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3100 Trash Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3218 Hotsie	1 each		Assigned
TOG	Pumps	1211 Pump	1 each	2 inch(es)	Assigned
Kens Marine Service	Pumps	1213 Trash Pump	1 each	2 inch(es)	Assigned
Clean Harbors Environmenta	Pumps	1214 Trash Pump	1 each	2 inch(es)	Assigned
USES	Pumps	1662 Trash Pump	1 each		Out-of-Service
Environmental Restoration	Pumps	3065 Honda 5.0 Pur	1 each		Assigned
Kens Marine Service	Storage: Liquid	3104 Bucket	1 each	300 gallon	Assigned
Kens Marine Service	Storage: Liquid	3105 Bucket	1 each	300 gallon	Assigned
Kens Marine Service	Storage: Liquid	3106 Bucket	1 each	300 gallon	Assigned
USES	Trailer	1255 Utility	1 each	8 feet	Assigned
Environmental Restoration	Vehicle	1083 Chevy 3500 Va	1 each		Assigned
USES	Vehicle	1448 Honda Ranche	1 each		Assigned
TOG	Vehicle	3322 ATV	1 each		Assigned
Environmental Restoration	Vehicle	545096 Chevy Picku	1 each		Assigned
Environmental Restoration	Vehicle	664-370002 Water T	1 each		Assigned
SWS Environmental First Re	Vehicle	AFH1235 PO Chevy	1 each		Assigned
USES	Vehicle	FTY2375 Chevy Trai	1 each		Assigned
USES	Vehicle	FWG9214 Ford Expe	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #8					
SWS Environmental First Re	Manpower: Responder	Spill Tech	40 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #8
Approved By Signature:			

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Consolidate work into PA 4-F - PA 4-H.
Continue ops with current force strength.

- PA-4G:
  Complete PA 4-G by 4/23/2005
  Downstream of Sunoco (Ft. Mifflin) to where rip rap ends
  Rip rap/large cobble beach/pylons
  Hotsie rip rap as needed
  Hotsie or scrape old wooden pier supports
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Cut oiled branches from live tree at oiled line.
  Manually remove matting/pavement
  Remove asphalt and heavy oiled sediment from around and beneath cobbles; hotsie cobbles;
  PWCW or scrape the trunks and roots of oiled live trees throughout this segment
  (notes: canal behind beach feeds moat; do not remove snare and sausage boom here)
  Refer to general notes below

- PA-4H:
  Complete PA 4 F&H by 5/5/2005
  Area from end of rip rap downstream to fire department building/boat ramp
  Sandy beach/old wooden pilings/concrete piers
  Hotsie concrete piers
  Hotsie or scrape old wooden pier supports
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Remove asphalt and heavy oiled sediment from around and beneath cobbles; hotsie cobbles;
  Cut oiled branches from live tree at oiled line.
  Pressure wash or scrape the trunks and roots of oiled live trees throughout this segment
  Refer to general notes below

- PA-4J1:
  Complete by 5/15/2005.
  Large cove just south of Sunoco Hog Island
  Sand/cobble beach/old seawall/pylons
  Hotsie or scrape old wooden piers and bulkheads
  Hotsie rip rap as needed
  Hotsie or scrape oiled woody debris greater than 6 inches in diameter
  Remove oiled woody debris less than 6 inches in diameter
  Remove asphalt mats on beach
  Refer to general notes below

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Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #8
Approved By Signature:			

- PA-4J2:
  Complete by 5/15/2005.
  Area from cove downstream to the seawall
  Sand beach/sand flat
    Hotsie or scrape oiled woody debris greater than 6 inches in diameter
    Remove oiled woody debris less than 6 inches in diameter
    Hotsie rock piles and redistribute rocks
    Manually remove tar mats and small tar patties
    (notes: be careful not to drive oil into sediment, place black matting underneath the debris and rocks during large hotsie operations such as piles of rocks or woody debris).
    Refer to general notes below

Special Instructions for Division / Group

- PA-4J3:
  Rock wall/small cove
  Remove small tar patties from sand flat
    Pressure wash live tree roots or trunk - cold water
    Hotsie upstream quarter of wall, focus on cracks to mobilize and collect released oil. (try land and water sides)
    Hotsie or scrape oiled woody debris greater than 6 inches in diameter
    Remove oiled woody debris less than 6 inches in diameter
    Monitor rock wall for seepage, place snare to collect floating oil if observed
    Refer to general notes below

- PA-4J4:
  Western end of rock wall downstream to the border or PA-4/PA-5
  Rip rap/sandy beach
    Hotsie rip rap as needed
    Remove patties from sand flat
    Pressure wash live tree roots – cold wash
    Hotsie or scrape oiled woody debris

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #8
Approved By Signature:			

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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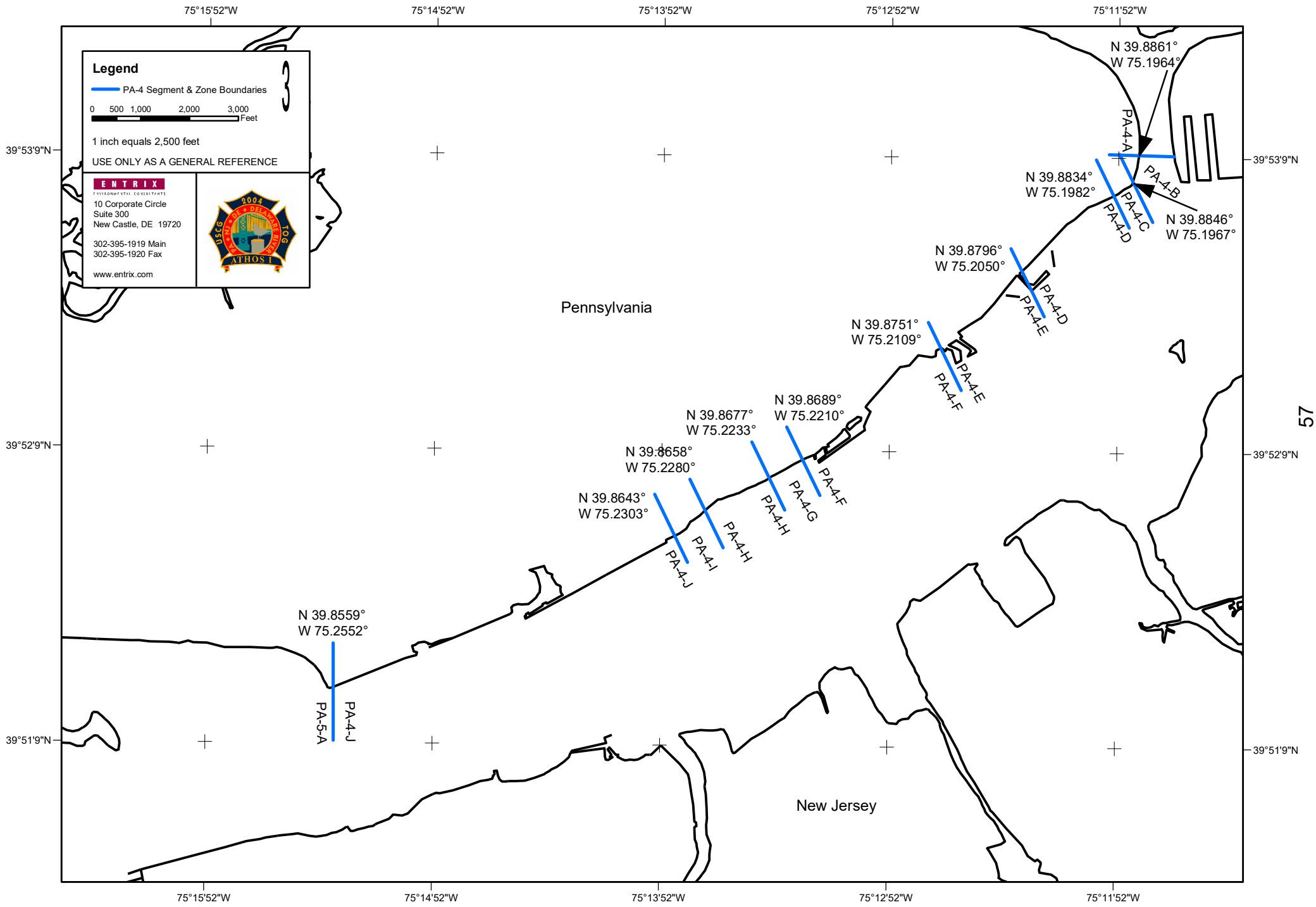
T/V Athos I Oil Spill

SCAT Map PA-4

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #9
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	S. Smith		504-382-8351	
Task Force Supervisor - USCG	MK2 Kruk		251-680-9027	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #9	Manpower: Responder	Responders	64 each	
Task Force #9	Manpower: Supervisor	Supervisors	7 each	
Task Force #9	Pressure Washers / Wash	Pressure Washers	9 each	
Task Force #9	Vehicle	Vehicles	24 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
TOG	Generator	0707 Honda 5.0	1 each		Assigned
TOG	Generator	1089 Coleman 6250	1 each		Assigned
TOG	Generator	1515 Powermate 375	1 each		Assigned
TOG	Generator	2012 Coleman 3750	1 each		Assigned
TOG	Generator	3019 Coleman 6250	1 each		Assigned
TOG	Generator	94611094 Coleman	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	0896 Alkota Pressure	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1618 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1619 Pressure Wash	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1644 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1671 Hotsie - Tuff	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3043 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3047 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3093 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3094 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3209 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3215 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3220 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3242 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3256 Hotsie	1 each		Assigned
TOG	Pumps	0847 Honda 5.0 Pum	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	0897 Honda Pump	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #9
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
Industrial Cleanup, Inc. - ICI	Pumps	1651 Trash Pump	1 each		Assigned
Environmental Restoration	Pumps	1692 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2704 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2710 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	2712 Trash Pump	1 each	2 inch(es)	Assigned
USES	Pumps	3016 Trash Pump Hc	1 each		Assigned
USES	Pumps	3061 Trash Pump Hc	1 each		Assigned
Environmental Restoration	Pumps	3063 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3064 Honda Pump	1 each		Assigned
Environmental Restoration	Pumps	3067 Honda 5.0 Pur	1 each		Assigned
USES	Trailer	1257 Trailer	1 each	8 feet	Assigned
USES	Trailer	1449 Trailer	1 each	8 feet	Assigned
USES	Vehicle	1251 F-250	1 each		Assigned
USES	Vehicle	1253 16 Passanger \	1 each		Assigned
USES	Vehicle	1254 Honda Forman	1 each		Assigned
USES	Vehicle	1256 Honda Ranche	1 each		Assigned
USES	Vehicle	1258 Honda Forman	1 each		Assigned
USES	Vehicle	1399 Dodge Ram 35	1 each		Assigned
USES	Vehicle	1435 F-350 Super Du	1 each		Assigned
USES	Vehicle	1439 16 Passanger \	1 each		Assigned
USES	Vehicle	PA402 Toyota 4 Run	1 each		Assigned
SWS Environmental First Re	Vehicle	PSF-7884 POV GMC	1 each		Assigned
USES	Vehicle	RMR84M 16 Passan	1 each		Assigned
SWS Environmental First Re	Vehicle	SSX-5348 POV Cam	1 each		Assigned
SWS Environmental First Re	Vehicle	SSX6671 POV Nissa	1 each		Assigned
SWS Environmental First Re	Vehicle	TRX-4853 POV Toyc	1 each		Assigned
SWS Environmental First Re	Vehicle	TSB4116 POV Chev	1 each		Assigned
SWS Environmental First Re	Vehicle	WL16EB POV Toyot	1 each		Assigned
SWS Environmental First Re	Vehicle	WL19EB POV Pontia	1 each		Assigned
Environmental Restoration	Vessel	0328 Vessel > 21 Tw	1 each	24 feet	Assigned
Environmental Restoration	Vessel	0843 Boat < 21'	1 each	20 feet	Assigned
Environmental Restoration	Vessel	1420 Vessel > 21	1 each	28 feet	Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
SWS Environmental First Re	Manpower: Responder	Spill Tech	13 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #9
Approved By Signature:			

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Task Force #9					
USES	Manpower: Responder	Spill Tech	55 each		Assigned

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

Consolidate work into PA4-A - PA4-E.
Complete work in PA 4-E by 4/28/2005 with addition of hot water flush.

- PA-4A:
  Complete by 4/30/2005.
  I95 Bridge on Schuylkill River south to start of wooden bulkhead
  Rip rap/mudflat/small cove at southern end of zone
  Hotsie oiled riprap throughout the entire zone
  Cut the branches from live oiled vegetation at oiled line.
  High Pressure Cold Water wash (HPCW) the trunks and roots of oiled live trees throughout this segment
  (notes: hotsie from land – 50-75' of mudflats @ low tide, access difficult – two levels of reeds and steep hill to rip rap, se general notes below)

- PA-4C:
  Mouth of the Schuylkill River to 500 feet downstream

- PA- 4D:
  Complete work in PA 4-D by 5/12/2005.
  Provide crews for debris sweeps of PA 4 A&C as available.
  Shoreline from PA-4C to the old Army Corps of Engineers (ACOE) Dock
  Hotsie oiled riprap throughout the entire zone
  Cut the branches from live oiled vegetation at oiled line.
  Pressure wash or scrape the trunks and roots of oiled live trees throughout this segment
  (notes: access to area is difficult but not as difficult as PA-4A or PA-4B)
  Old ACOE Dock and Breakwater
  Hotsie old dock and breakwater
  Cut the branches from live oiled vegetation at oiled line.
  Old ACOE dock downstream to new ACOE dock
  Hotsie rip rap as needed
  Complete hotsie of ACOE dock from barge (dock should be complete)
  Cut the branches from live oiled vegetation at oiled line.
  (notes: access to the upstream ½ of this segment is difficult)

  Old Fort Mifflin Dock
  Hotsie dock and remove debris/tar patties from cove

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Delaware / Pennsylvania
Prepared By Signature:		**Task Force:**	Task Force #9
Approved By Signature:			

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

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Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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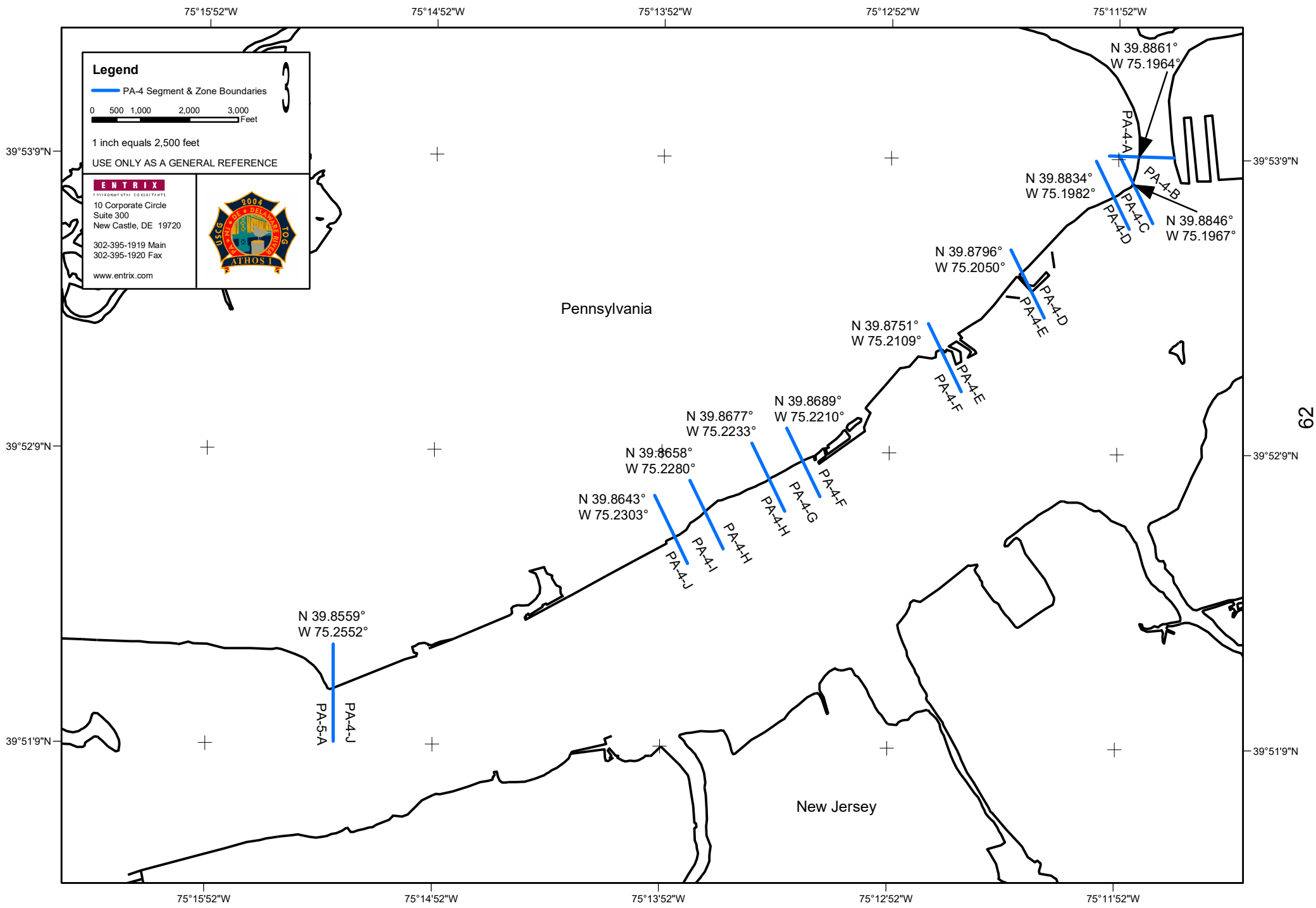
T/V Athos I Oil Spill

SCAT Map PA-4

Spring 2005 SCAT



ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	New Jersey
Prepared By Signature:		**Task Force:**	Task Force #10
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	S. Linsky		609-351-7144	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	E. Macabeo		415-720-4130	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	R. Anzalone		713-569-7237	
Task Force Supervisor - USCG	BM1 Snyder		251-680-9675	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Task Force #10	Manpower: Responder	Spill Tech	50 each	
Task Force #10	Pressure Washers / Wash	Hotsie	20 each	
Task Force #10	Pumps	Pump	10 each	

Assignments

*** General cleanup notes:
*** Remove any abandoned boom or snare
*** Collect released oil in snare for all hotsie activities.
*** Do not strip bark from tree during hotsie activities
*** Refer to cleanup endpoints and methods sheet for guidance on how clean is clean.
*** Call the Environmental Unit (Lyle Trumbull, 610-710-1919) for cleanup endpoint guidance or if your crew is close to completing an area.
*** For cleaning bark-trees: use cold water pressure wash.

- PA-8:
  Complete PA 8 by 5/3/2005
  Cut oiled phragmites and branches at oiled line.
  Hotsie riprap, docks, and seawalls

- PA-8C:
  Remove tar balls and oiled debris

- PA-8E:
  Downstream cove: Hotsie riprap
  Remove tar patties and oiled debris
  Cut oiled phragmites at oiled line.

- PA-8F:
  Sunoco Marcus Hook - Hotsie pier and mooring platforms to remove crusty oil residue.

- DE-1:
  Complete by 5/3/2005.
  Hotsie riprap, docks, and seawalls.
  Remove tarballs and oiled debris.

- DE-2:
  Complete by 5/3/2005.
  Hotsie riprap, docks, and seawalls.
  Remove tarballs and oiled debris.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	New Jersey
Prepared By Signature:		**Task Force:**	Task Force #10
Approved By Signature:			

Special Equipment / Supplies Needed for Assignment

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan (Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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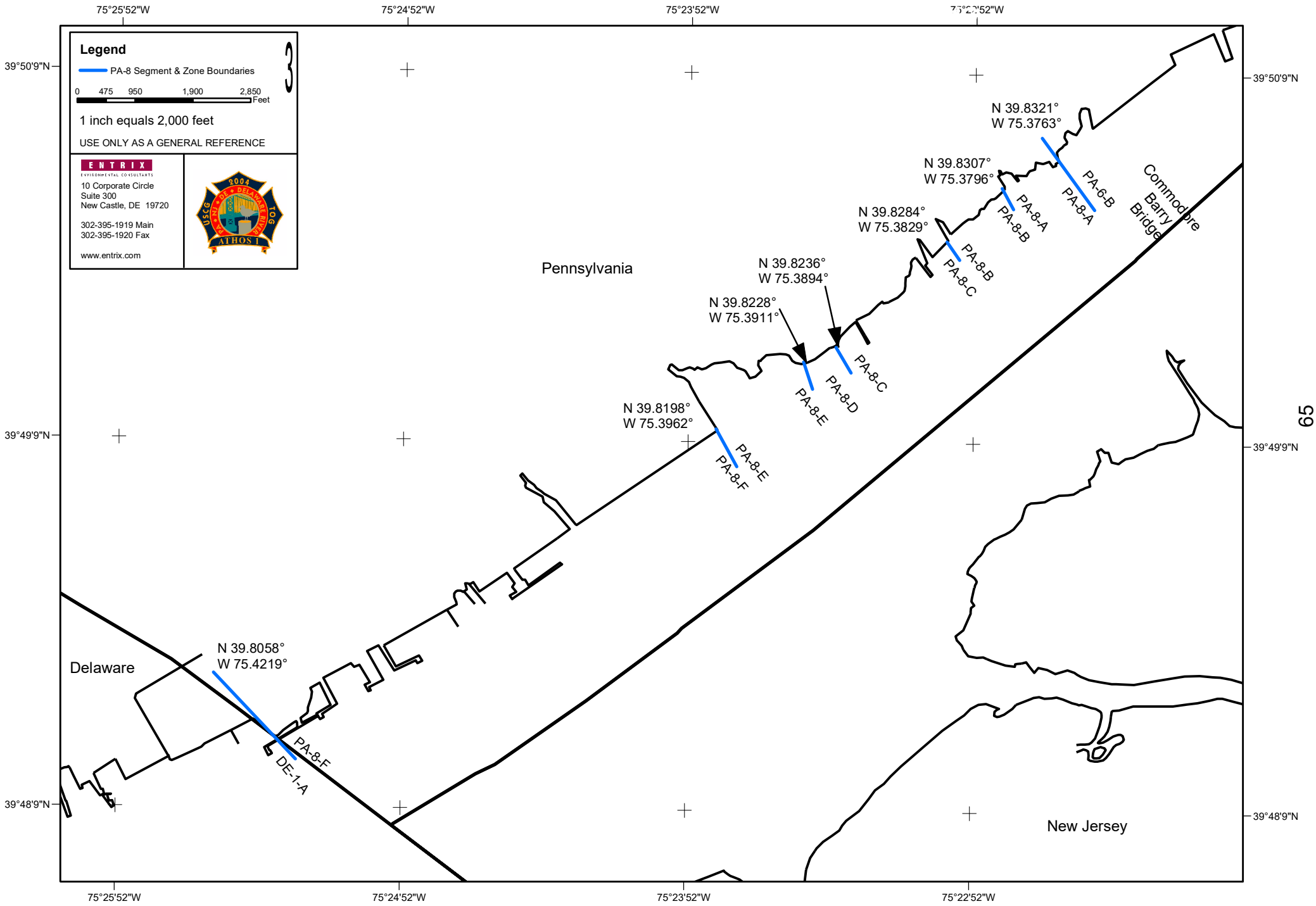
T/V Athos I Oil Spill

SCAT Map PA-8

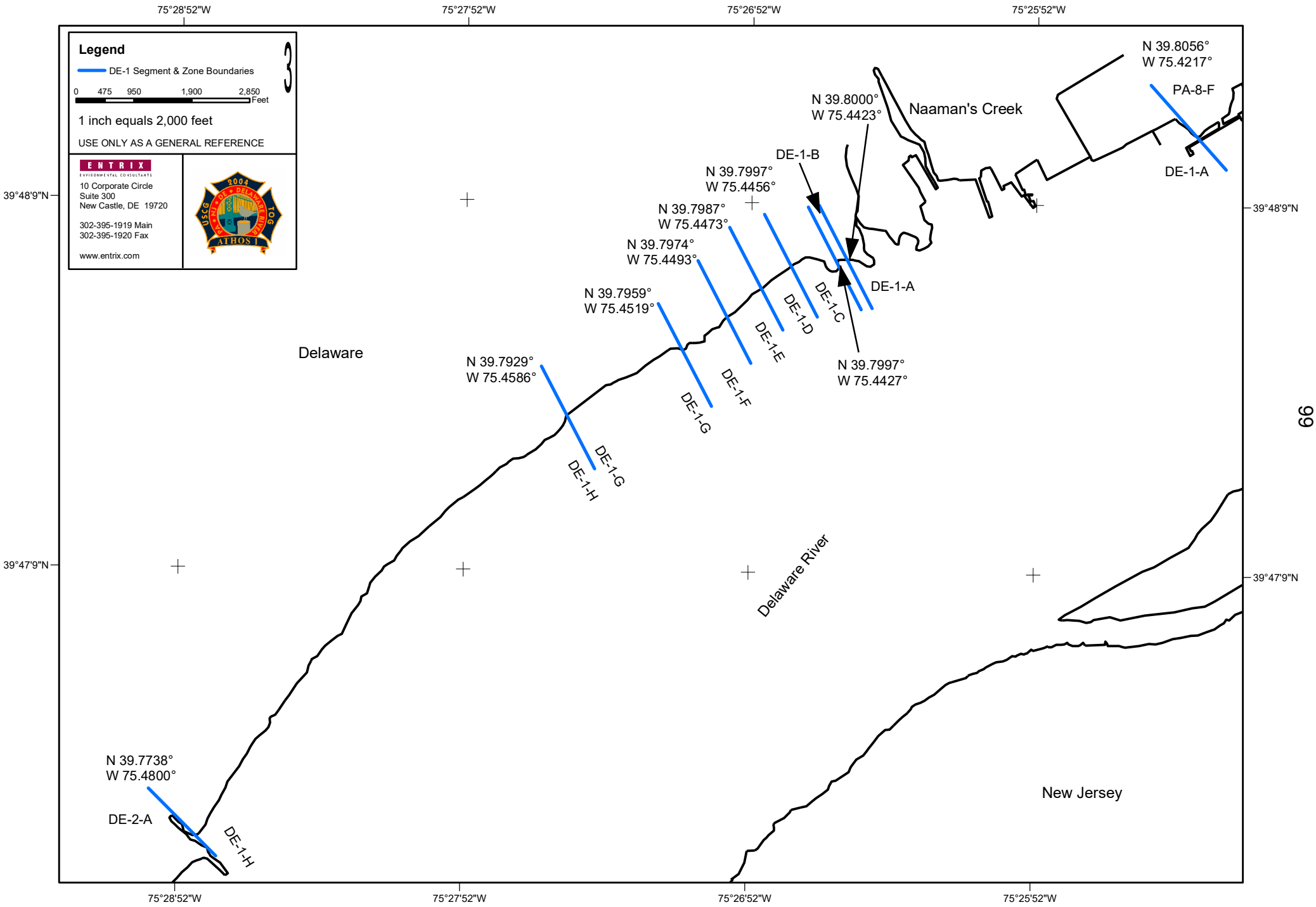
Spring 2005 SCAT

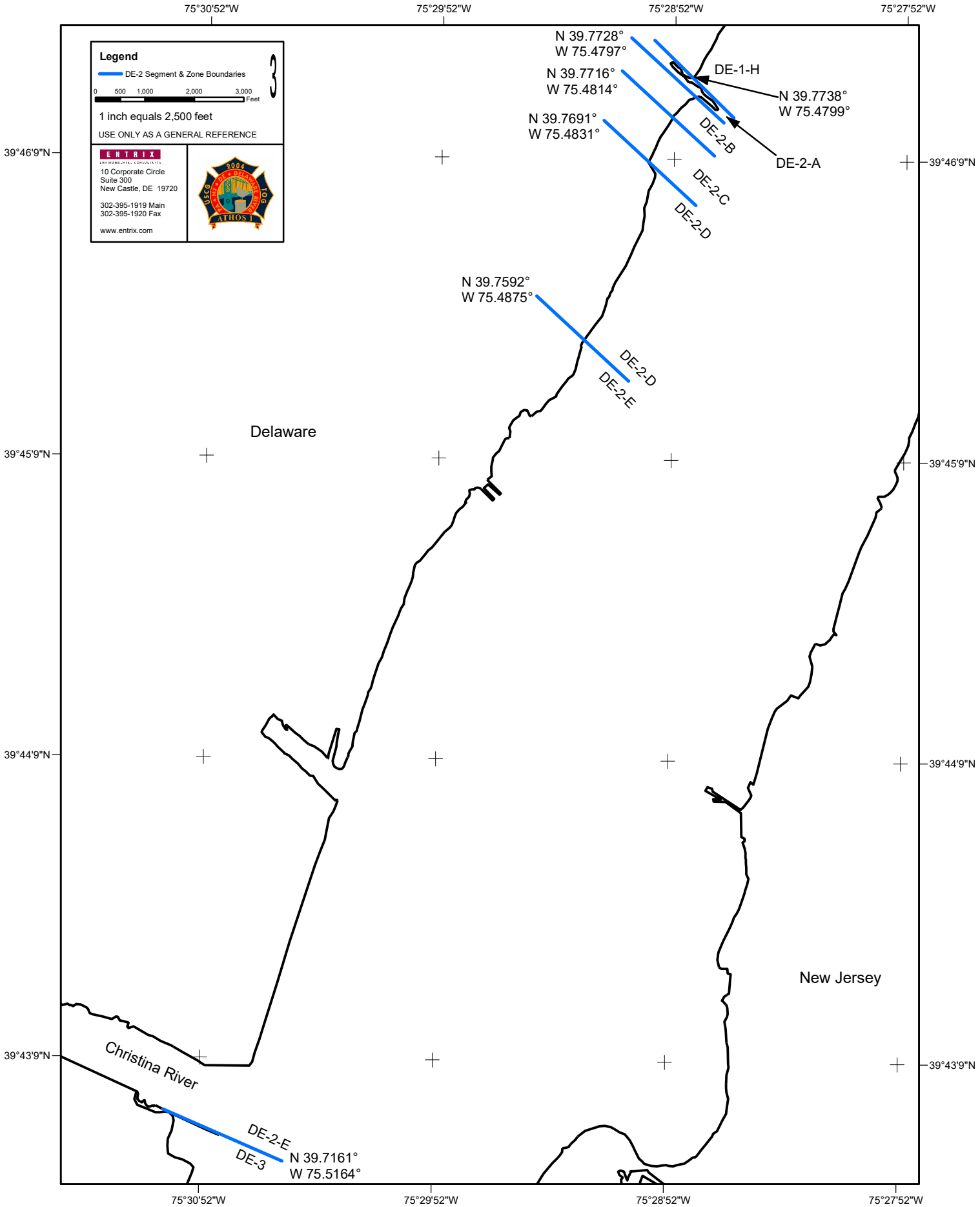


T/V Athos I Oil Spill

SCAT Map DE-1

Spring 2005 SCAT




75°30'52"W
75°29'52"W
75°28'52"W
75°27'52"W
39°46'9"N
39°45'9"N
39°44'9"N
39°43'9"N
Legend
DE-2 Segment & Zone Boundaries
0 500 1,000 2,000 3,000 Feet
1 inch equals 2,500 feet
USE ONLY AS A GENERAL REFERENCE
ENTRIX
10 Corporate Circle
Suite 300
New Castle, DE 19720
302-395-1919 Main
302-395-1920 Fax
www.entrix.com
ATHOS I
N 39.7728°
W 75.4797°
DE-1-H
N 39.7716°
W 75.4814°
N 39.7738°
W 75.4799°
N 39.7691°
W 75.4831°
DE-2-B
DE-2-A
DE-2-C
DE-2-D
N 39.7592°
W 75.4875°
DE-2-D
DE-2-E
Delaware
New Jersey
Christina River
DE-2-E
DE-3
N 39.7161°
W 75.5164°

ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Staging Areas
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Staging #1
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy Recovery - TOG	J. Tanner		251-454-6397	
Ops Section Deputy Recovery - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	B. Barker		985-381-0697	
Task Force Supervisor - USCG	MK2 Sierra		609-351-8521	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Staging #1	Manpower: Responder	Responders	23 each	
Staging #1	Manpower: Supervisor	Supervisors	1 each	
Staging #1	Vehicle	Vehicles	4 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Staging #1					
TOG	Boom	Boom	63000 feet	18 inch(es)	At Staging
Environmental Restoration	Equipment: Heavy	0502 Bobcat	1 each		Assigned
Environmental Restoration	Equipment: Heavy	0503 Bucket	1 each		Assigned
Environmental Restoration	Equipment: Heavy	0505 Front End Loac	1 each		Assigned
Environmental Restoration	Equipment: Heavy	0508 Forks	1 each		Assigned
Herman's Trailers	Equipment: Heavy	0605 Tractor (Semi)	1 each	42 feet	Assigned
Herman's Trailers	Equipment: Heavy	0621 Tractor (Semi)	1 each	42 feet	Assigned
Environmental Restoration	Equipment: Heavy	0633 All-Terrain	1 each	8000 poun	Assigned
Herman's Trailers	Equipment: Heavy	0635 Tractor (Semi)	1 each	42 feet	Assigned
Herman's Trailers	Equipment: Heavy	0637 Tractor (Semi)	1 each	42 feet	Assigned
Environmental Restoration	Lighting	2120 Light Tower	1 each		Assigned
Weaver Oil	Pumps	0523 Fuel Tank - Ga	1 each		Assigned
Weaver Oil	Pumps	0524 Fuel Pump	1 each		Assigned
Weaver Oil	Pumps	0525 Fuel Tank - Die	1 each		Assigned
Weaver Oil	Pumps	0526 Fuel Pump	1 each		Assigned
Weaver Oil	Pumps	0527 Fuel Tank - Ga	1 each		Assigned
Weaver Oil	Pumps	0528 Fuel Pump	1 each		Assigned
Weaver Oil	Pumps	0529 Fuel Tank - Die	1 each		Assigned
Weaver Oil	Pumps	0530 Fuel Pump	1 each		Assigned
Herman's Trailers	Storage: Solid	0603 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0604 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0606 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0607 Conex Box	1 each	40 feet	Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Staging Areas
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Staging #1
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Staging #1					
Herman's Trailers	Storage: Solid	0608 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0609 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0610 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0611 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0612 Conex Box	1 each	20 feet	Assigned
Herman's Trailers	Storage: Solid	0613 Conex Box	1 each	20 feet	Assigned
Herman's Trailers	Storage: Solid	0614 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0615 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0616 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0617 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0618 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0619 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0620 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0632 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0639 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0699 Conex Box	1 each	40 feet	Assigned
Herman's Trailers	Storage: Solid	0700 Conex Box	1 each	40 feet	Assigned
TOG	Storage: Solid	6011 Conex Box	1 each	40 feet	Assigned
TOG	Storage: Solid	6020 Conex Box	1 each	40 feet	Assigned

Assignments

Support field operations.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Deputy Operations Section
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Staging #2
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Operations Section Chief - TOG	M. Ploen		612-963-5222	
Operations Section Chief - USCG	R. Campbell		609-351-7143	
Ops Section Deputy - TOG	J. Tanner		251-454-6397	
Ops Section Deputy - FOSCR	BM1 McNeilly		609-351-8516	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	
Task Force Supervisor - TOG	M. Kearney		610-517-6492	
Task Force Supervisor - USCG	BM1 McNeilly		609-351-8516	

Resources Required

Area of Operation	Resource Type	Description	Quantity	Size
Lagoon	Manpower: Responder	Responders	10 each	
Lagoon	Manpower: Supervisor	Supervisors	5 each	
Lagoon	Pressure Washers / Wash	Pressure Washers	2 each	
Lagoon	Vehicle	Vehicles	8 each	
Lagoon	Vessel	Vessels	1 each	
Recreational Boat Cleaning	Manpower: Responder	Responders	35 each	
Recreational Boat Cleaning	Manpower: Supervisor	Supervisors	1 each	
Recreational Boat Cleaning	Vehicle	Vehicles	7 each	

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
TOG	Boom	Boom	6100 feet	18 inch(es)	Assigned
TOG	Crane	2137 Crane	1 each	35 ton(s)	Assigned
TOG	Equipment: Heavy	1559 Volvo	1 each		Assigned
TOG	Equipment: Heavy	2119 Fork Lift	1 each		Assigned
TOG	Equipment: Heavy	2134 Sweeper	1 each		Assigned
TOG	Generator	0631 Coleman 1850	1 each		Assigned
TOG	Generator	0634 Coleman 1850	1 each		Assigned
TOG	Generator	1474 Coleman 1850	1 each		Assigned
TOG	Generator	1475 Coleman 1850	1 each		Assigned
TOG	Generator	1703 Honda 5.0	1 each		Assigned
Environmental Restoration	Portable Toilets	3095 Hotsie	1 each		Out-of-Service
North Star/Sea Tow	Pressure Washers / Wa	0793 Hotsie	1 each		Assigned
Global Remediation Services	Pressure Washers / Wa	1043 Shark Hotsie	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1203 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1216 Hotsie	1 each		Assigned
Global Remediation Services	Pressure Washers / Wa	1249 Shark Hotsie	1 each	2 inch(es)	Assigned
SWS Environmental First Re	Pressure Washers / Wa	1265 Pressure Wash	1 each		Out-of-Service
SWS Environmental First Re	Pressure Washers / Wa	1412 Hotsie	1 each		Out-of-Service

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Deputy Operations Section
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Staging #2
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
SWS Environmental First Re	Pressure Washers / Wa	1413 Hotsie	1 each		Assigned
SWS Environmental First Re	Pressure Washers / Wa	1415 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1428 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1540 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	1550 Hotsie	1 each		Out-of-Service
SWS Environmental First Re	Pressure Washers / Wa	1599 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1611 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1614 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1617 Yanmar Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1623 Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1625 Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1636 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1641 Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	1670 Hotsie	1 each	2 inch(es)	Out-of-Service
TOG	Pressure Washers / Wa	1672 Hotsie	1 each		Out-of-Service
Fleet Environmental Service	Pressure Washers / Wa	1677 Hotsie	1 each		Assigned
Kens Marine Service	Pressure Washers / Wa	2395 Shark Hotsie S	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2532 Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	2534 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	2711 Hotsie 3004	1 each		Out-of-Service
Environmental Restoration	Pressure Washers / Wa	3042 Pressure Wash	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3048 Yanmar	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3072 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3079 Yanmar Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3081 Yanmar Hotsie	1 each		Out-of-Service
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3085 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3086 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3087 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3089 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3090 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3207 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3208 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3211 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3212 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3214 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3216 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3219 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3224 Hotsie	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Deputy Operations Section
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Staging #2
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3225 Hotsie	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pressure Washers / Wa	3226 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3239 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3246 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3251 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3252 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3253 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3254 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3257 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3259 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3260 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3261 Hotsie	1 each		Assigned
Environmental Restoration	Pressure Washers / Wa	3263 Hotsie	1 each		Assigned
Environmental Restoration	Pumps	1592 Trash Pump	1 each	2 inch(es)	Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1656 Yanmar Pump	1 each	2 inch(es)	Out-of-Service
Industrial Cleanup, Inc. - ICI	Pumps	1663 Pump	1 each		Assigned
Industrial Cleanup, Inc. - ICI	Pumps	1665 Trash Pump	1 each	2 inch(es)	Assigned
Global Remediation Services	Pumps	1676 Pump	1 each		Assigned
TOG	Pumps	1679 Pump	1 each	2 inch(es)	Assigned
Fleet Environmental Services	Pumps	2536 Pump	1 each		Assigned
Environmental Restoration	Pumps	2702 Trash Pump	1 each	2 inch(es)	Out-of-Service
Environmental Restoration	Pumps	2706 Trash Pump	1 each	2 inch(es)	Out-of-Service
Industrial Cleanup, Inc. - ICI	Pumps	3022 Trash Pump	1 each	2 inch(es)	Assigned
Environmental Restoration	Pumps	3247 Trash Pump	1 each		Assigned
Environmental Restoration	Pumps	3248 Trash Pump	1 each		Assigned
Environmental Restoration	Pumps	3249 Trash Pump	1 each		Assigned
Environmental Restoration	Pumps	3250 Trash Pump	1 each		Assigned
Environmental Restoration	Pumps	3267 Trash Pump	1 each		Assigned
TOG	Storage: Solid	1031 Sea Can	1 each	40 feet	Assigned
TOG	Storage: Solid	1032 Sea Can	1 each	40 feet	Assigned
TOG	Storage: Solid	1033 Sea Can	1 each	40 feet	Assigned
TOG	Storage: Solid	1034 Sea Can	1 each	40 feet	Assigned
NRC - National Response C	Trailer	2185 Barge Trailer	1 each		Assigned
NRC - National Response C	Trailer	2186 Barge Trailer	1 each		Assigned
NRC - National Response C	Trailer	2187 Barge Trailer	1 each		Assigned
Clean Harbors Environmenta	Vehicle	1558 Flatbed	1 each		Assigned
Clean Venture, Inc.	Vehicle	1695 Quad	1 each		Out-of-Service
Clean Harbors Environmenta	Vehicle	2111 F-250	1 each		Assigned

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Deputy Operations Section
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	Staging #2
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Incident Resources - Equipment

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
Clean Harbors Environmenta	Vehicle	2123 F-450	1 each		Assigned
Clean Harbors Environmenta	Vehicle	2196 Ford Pickup F-:	1 each		Assigned

Incident Resources - Manpower

Supplier	Resource Type	Description	Quantity	Size	Status
Lagoon					
Industrial Cleanup, Inc. - ICI	Vacuum Unit	1657 Vac Unit	1 each		Assigned

Assignments

Decontaminate response equipment.
Continue to clean recreational boats in-place, at pier 24, or at the Lagoon.
Provide on site mechanic service for field equipment support.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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ICS 204 - Assignment List

Incident:	MT Athos I	**Branch:**	Method Assessment Team
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Division/Group:**	
Prepared By Signature:		**Task Force:**	
Approved By Signature:			

Operations Personnel

Title	Person	Radio	Phone	Pager
Planning Section Chief	C. Bukosky		609-510-7719	
Environmental Unit	L. Trumbull		610-710-1919	
Safety Officer	E. Doyle/A. Gresham		302-293-8959/8960	

Assignments

MAT will assess and compile cleanup data and identify areas requiring additional cleanup resources. Conduct shoreline surveys according to MAT plan. Report information to Planning for coordination of response resources.

Description of Work

On standy to assess newly reported areas requiring cleanup resources. Compile list of areas worked and conduct targeted site visit to assess completeness.

Location of Work

Teams will be deployed by EUL as necessary.

Work Assignment Special Instructions

All reports will reference Areas as noted on attached maps.

Special Equipment / Supplies Needed for Assignment

Additional equipment will be made available from staging as per operational needs.

All unused equipment should be immediately returned to Staging for redeployment.

Special Environmental Considerations

Due to the wildlife concerns, operational activities are prohibited in the following locations: all of Monds Island, the NJ side of Petty Island. a 500ft. restricted zone has been established surrounding these areas. No on-water operations are permitted in this zone without first notifying EU.

Special Site-Specific Safety Considerations

Review Site Safety Plan(Contractors) With Special Attention To PPE, Slips, and Trips & Falls. All Personnel Are Required To Follow Decon Procedures In Site Safety Plan.

All on-water operations should be guided by the 3/21/05 "Temporary Safety Zone" established by the COTP-Philadelphia requiring minimal wake in the response area. Special safety precautions should be exercised as hot weather approaches. Response personnel should be alert to their surroundings and aware of the safety of those working with them.

Additional Information

Report situation status and resource changes each day at 1700, call 267-765-3447 or fax 215-923-4476. This is critical to allow us to plan properly and ensure you will have the resources you need to do your job tomorrow.

Fax all equipment and personnel Check-In sheets to 215-923-4476 with an attention line to "Resource Unit"

Please review attached protocol for handling oiled wildlife.

Wake incidents should be reported to the Waterways Management Branch at 215-271-4889 (7:30am to 4:00pm) or 215-271-4807 (After 4:00pm).

Ensure that all your equipment is barcoded, and that the Resource Unit has a list of your barcoded equipment.

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ICS 205 - Communications Plan

Incident:	MT Athos I	**Prepared By:**	Section, Planning	**at** 4/16/2005 13:00
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Unified Command Staff	267-765-3469		-	-	○ Yes ● No
Safety Hotline			-	-	○ Yes ● No
Safety	267-765-3455		-	-	○ Yes ● No
Operations	267-765-3439		-	-	○ Yes ● No
Operations	267-765-3445		-	-	○ Yes ● No
Operations	267-765-3448		-	-	○ Yes ● No
Operations	267-765-3452		-	-	○ Yes ● No
Operations WWM/Wake Notification	267-765-4889		-	-	○ Yes ● No
Operations Vessel Movement	215-271-4889		-	-	○ Yes ● No
Operations Vessel Movement	215-778-5841		-	-	○ Yes ● No
Planning	267-765-3440		-	-	○ Yes ● No
Planning	267-765-3443		-	-	○ Yes ● No
Planning Waste	267-765-3444		-	-	○ Yes ● No
Planning Resource/Situation	267-765-3447		-	-	○ Yes ● No
Planning Oiled Wildlife	302-737-9543		-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MT Athos I	**Prepared By:**	Section, Planning	**at** 4/16/2005 13:00
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Rec Boat Hotline (Renfro)	267-765-3450		-	-	○ Yes ● No
Logistics	267-765-3432		-	-	○ Yes ● No
Logistics	267-765-3453		-	-	○ Yes ● No
Logistics	267-765-3454		-	-	○ Yes ● No
Logistics	267-765-3471		-	-	○ Yes ● No
National Pollution Funds Center Claims Branch	202-493-6845		-	-	○ Yes ● No
Finance	215-923-4633x335	267-765-3490	-	-	○ Yes ● No
Finance USCG	267-765-3437		-	-	○ Yes ● No
Command Post Fax Incoming		215-923-4476	-	-	○ Yes ● No
Command Post Fax Outgoing		267-765-3456	-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-2479		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)	610-521-3004		-	-	○ Yes ● No
Forward Command Post (Lagoon) The O'Briens Group (Trailer 1)		610-521-2851	-	-	○ Yes ● No
Forward Command Post (Lagoon) Staging 2	610-521-8914	610-521-8913	-	-	○ Yes ● No
Staging Area #1	856-686-0037	856-686-1521	-	-	○ Yes ● No

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ICS 205 - Communications Plan

Incident:	MT Athos I	**Prepared By:**	Section, Planning	**at** 4/16/2005 13:00
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Version Name:**	Communication Plan	

Phone Listing

Name	Main Phone	Fax	Other Number - Desc.	Other Number - Desc.	Radio?
Forward Command Post Safety	610-521-8916	610-521-8915	-	-	○ Yes ● No

Radio Utilization

System	Channel	Function	Frequency	Assignment	Notes
VHF-FM	16	Hail/Distress	156.8 MHZ	All	Group continuous guard. Other unit while u/w or deployed as required
VHF-FM	81A Primary	Tactical	157.175 MHZ	Safety Zone Enforcement Group	On-scene tactical working frequency for the safety zone enforcement around M/V ATHOS
VHF-FM	81A	Tactical	157.175 MHZ	MSO/Group Philly	Group/MSO working frequency
VHF-FM	18A	Vessel Dispatch	156.900 MHZ	Near/On shore recovery	All Near/On shore secondary freq.
VHF-FM	13	Navigation Safety	156.650 MHZ	Bridge to Bridge	Ship to Ship navigation safety

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ICS 206 - Medical Plan

Incident:	MT Athos I	**Prepared By:**	Medical Unit Leader **at** 4/16/2005 13:00
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Version Name:**	Medical Plan - Period 32

Medical Aid Stations

Name	Location	Paramedics (On-Site)	Phone	Radio
Safety Officer - Lagoon	Essington	Yes	(610) 521-8916	

Transportation (Ground and/or Ambulances Services)

Name	Location	Paramedics	Phone	Radio
Delaware County, PA	911	Yes	911	
Thomas Jefferson University Hospital	911	Yes	911	
Philadelphia County, PA	911	Yes	911	

Hospitals

Name	Location	Helipad	Burn Center	Phone	Radio
Thomas Jefferson University Hospital	Philadelphia, PA - United	Yes	No	(215) 955-6000	
Pennsylvania Hospital	Philadelphia, PA - United	No	No	(215) 829-3000	
Methodist HospitalDiv, Thomas Jeffe	Philadelphia, PA - United	Yes	No	(215) 952-9000	
Hahnemann	Philadelphia, PA - United	No	No	(215) 762-7000	
University of Pennsylvania Hospital	Philadelphia, PA - United	Yes	No	(215) 662-3920	
Crozer Medical Center	Upland, PA	Yes	Yes	(610)447-2000	ER (610)4
Cooper Hostipal University Medical C	Camden, NJ - United Sta	Yes	No	(856) 342-2345	
Christiana Medical Center	Wilmington, DE - United S	Yes	No	(302) 733-1000	
St. Francis Hospital	Wilmington, DE - United S	Yes	No	(302) 421-4590	
Memorial Hospital of Salem County	Salem, NJ - United State	Yes	No	(856) 425-3288	
Temple University Hospital	Philadelphia, PA - United	Yes	Yes	(215) 707-2876	
Underwood Memorial Hospital	Woodbury, NJ - United S	Yes	No	(856) 845-0100	

Special Medical Emergency Procedures

Document all incident related injuries/illnesses. Submit written report to Safety officer or representative. Safety Officer: (610) 521-8916.
Communicate any and all loss of degradation of medical services/resources to the Incident Commander (IC)
For EMS services on the NJ side, we have established direct contact numbers to EMS dispatchers in each county.
Camden County (NJ 1&2) - 856-757-7502
Gloucester County (NJ 3&4) - 856-589-0911
Salem County (NJ 5,6,7,8,9,10&11) - 856-769-2959
Hyperbaric Chamber is located at University of Pennsylvania Hospital.

Urgent Care, sick visits; Occupational Health:

Park Care at Taylor Hospital	Ridley Park, PA	(610) 595-6811	(610) 595-6812(fax)
Monday-Friday 8am-5pm			

Occupational Health Services (Minor Injuries/Illnesses):

Nova Care	Lester, PA	(610) 521-6880	(610) 521-5531(fax)
Nova Care	South Philadelphia	(215) 467-5800	
Nova Care @ Hahnmann University	Philadelphia, PA	(215) 762-8525	

*All minor injuries/illnesses during working hours are recommended to be seen at a Nova Care Facility.

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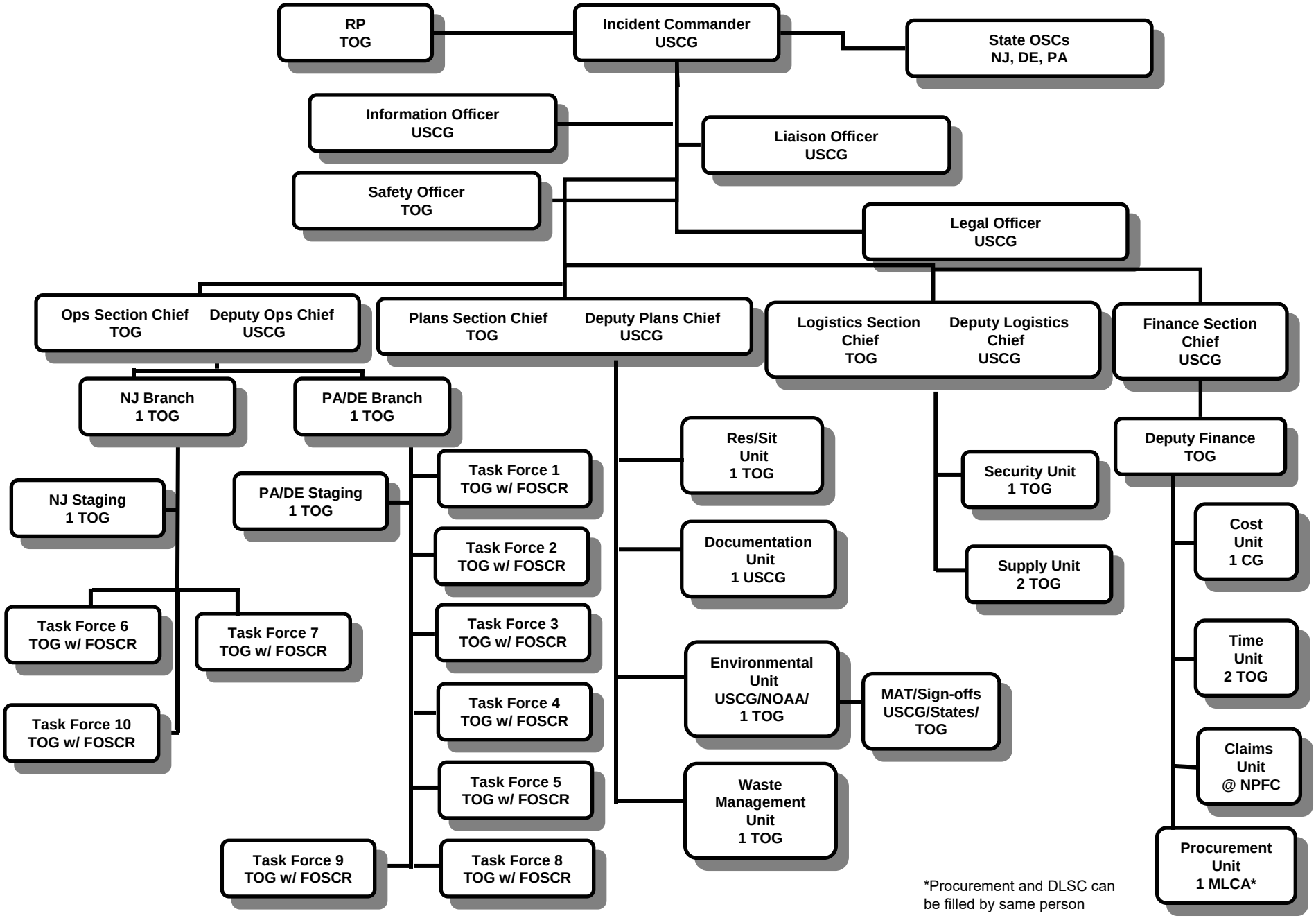
M/V ATHOS I - ICS-207 FOR FEDERALIZED RESPONSE – 4/19/05 - 5/3/05



*Procurement and DLSC can be filled by same person

Incident Name: M/T ATHOS I	Location: Philadelphia, PA

Health & Safety Message for IAP for Period 32 (4/19/05 thru 5/3/05)

TO: ALL PERSONNEL

- **All safety rules are to be followed.**
- **Look out for your fellow responders.**
- **Use Common Sense.**
- **Do Not Take Chances.**
- **If unsafe, STOP and talk to your supervisor.**
- **ZERO Injuries is our goal.**

Site Description: On-Water & Beach Cleanup Activities

Potential Hazards: Slippery and uneven surfaces; exposure to weathered oil; cold/heat exposure; slips, trips, and falls; wave and wake concerns while conducting boat operations.

To report Wake Incidents to the Waterway Management Unit of the USCG during the day (0730 to 1600) call 215-271-4889. After hours and on week-ends call 215-271-4807.

GENERAL SAFETY CONCERNS

ADHERENCE TO ALL PPE REQUIREMENTS

Level D (modified)

- **Tyvek-type and /or rain gear (see Protective Clothing Matrix).**
- **Hard hat when overhead hazards exist (also Hogg Island area)**
- **Safety glasses with side shields (ANSI approved) /goggles/face shield**
- **Work shoes**
- **Disposable boots**
- **Chemical resistant gloves**
- **Hearing protection**

NOTE: Eye Protection is NOT OPTIONAL. ANSI Approved Safety Eye Wear with Side Shields is the minimum eye protection requirement for all activities.

Personal Flotation Equipment (PFDs) are required to be worn properly—fully secured—when working on or near the waters edge. UNSECURED PFDs MEANS NO PFDs!

Gloves and sleeve area and boot and pant leg area should be taped to prevent contact with product.

Use of tobacco products of any kind and eating/drinking is restricted to designated areas only and only following proper personal decontamination. Contractors should clearly designate break/rest areas. Otherwise such activity is prohibited.

Special notes:

- **In the event clean up activities involve entry to industrial/commercial facilities, safety and security rules of the facility will apply as long as the safety rules do not contradict the Site Safety Plan.**
- **ALL INJURIES REGARDLESS OF SEVERITY MUST BE REPORTED TO THE OPERATIONS CENTER AND SAFETY IMMEDIATELY AND A INCIDENT REPORT MUST BE FORWARDED TO THE FIELD SAFETY REPRESENTATIVE**
- **ALL PERSONNEL VISITING FIELD WORK AREAS MUST BE WEARING THE APPROPRIATE PPE.**
- **Handling of distressed or dead animals is restricted to regulatory agency personnel. If found, report to the area supervisor who will notify the appropriate person.**

SAFETY FACTS

We have recently experienced 6 serious injuries:

- a hotsy fire and burns to a responder,
- a back injury from a slip on the rocks,
- a foot injury from a slip and being hit with a hotsy spray,
- a hand burn while working on a hotsy,
- a cut to the hand from a sharp object and
- a bee sting.

All of these injuries have one thing in common: **All those injured have been on the job less than three weeks—in most cases only two weeks.**

Two of those injured had been on the response before and just returned within the past two weeks.

To help avoid these injuries in the future we need to make sure all responders—those returning to the project and those new to the project—are being given instructions on safety.

They all need to understand that safety is a basic part of their job. Safety goes hand-in-hand with what they are doing in the field—whether it is operating a boat, using a hotsy, standing a safety watch, or driving a vehicle.

Please reinforce the safety responsibilities all responders have to themselves and to their fellow workers.

SAFETY BULLETIN

As of Sunday, April 17th, and until further notice, mustang suit wear will be optional.

Those presently wearing mustang suits (listed below) now have the option of NOT WEARING Mustang suits:

- Boat Operators and crew members,
- SCAT Teams,
- Boom deployment or boom tending teams

As a note, water temperatures are now ranging from 53-56°. Survival time in water 50° - 60° is between 1-6 hours depending upon certain factors.

Please remember, relaxing the mustang wear policy does not signal the relaxing of the vessel safety rules, especially…

- Operators are still responsible for their boat, crew, passengers and equipment.
- All personnel in a boat as well as those working on, near, or over the water are required to wear PFD's.

Please operate your boats as you have over the last few months: **safely and orderly.**

Please keep your mustang suits until further notice. You will be asked to take all mustang suits to Staging 1 once we are assured the air and water temperatures are at the level where all mustang suit wear will be Completely eliminated, hopefully, within a week or so.

We have not experienced any injuries related to overexpose to cold water or hypothermia in the past three and a half months. Thank you for your past compliance and your continued cooperation with the mustang policy.

WARM WEATHER SAFETY

THE HEAT EQUATION: High Temperature + High Humidity + Physical Work = Heat Illness

When the body is unable to cool itself through sweating, serious heat illnesses may occur. The most severe heat induced illnesses are heat exhaustion and heat stroke. If left untreated, heat exhaustion could progress to heat stroke and possible death.

Heat Exhaustion: What are the symptoms?

- **Headaches**
- **Dizziness or lightheadedness**
- **Weakness**
- **Mood changes such as irritability**
- **Confusion, or the inability to think straight**
- **Upset stomach**
- **Vomiting**
- **Decreased or dark colored urine**
- **Fainting or passing out**
- **Pale, clammy skin**

What should you do?

- **Act immediately. If not treated, heat exhaustion may advance to heat stroke or death.**
- **Move the victim to a cool, shaded area to rest. Don't leave the person alone. If symptoms include dizziness or lightheadedness, lay the victim on his or her back and raise the legs 6 to 8 inches. If symptoms include nausea or upset stomach, lay the victim on his or her side.**
- **Loosen and remove any heavy clothing.**
- **Have the person drink cool water (about a cup every15 minutes) unless sick to the stomach.**

- **Cool the person's body by fanning and spraying with a cool mist of water or applying a wet cloth to the person's skin.**
- **Call 911 for emergency help if the person does not feel better in a few minutes.**

HEAT STROKE — MEDICAL EMERGENCY: What are the symptoms?

- **Dry, pale skin with no sweating**
- **Hot, red skin that looks sunburned**
- **Mood changes such as irritability, confusion, or the inability to think straight**
- **Seizures or fits**
- **Unconsciousness with no response**

What should you do?

- **Call 911 for emergency help immediately.**
- **Move the victim to a cool, shaded area. Don't leave the person alone. Lay the victim on his or her back.**
  - **Move any nearby objects away from the person if symptoms include seizures or fits.**
  - **If symptoms include nausea or upset stomach, lay the victim on his or her side.**
- **Loosen and remove any heavy clothing.**
- **Have the person drink cool water (about a cup every 15 minutes) if alert enough to drink something, unless sick to the stomach.**
- **Cool the person's body by fanning and spraying with a cool mist of water or wiping the victim with a wet cloth or covering him or her with a wet sheet.**
- **Place ice packs under the armpits and groin area.**

How Can You Protect Yourself and Your Co-Workers?

- **Learn the signs and symptoms of heat-induced illnesses and how to respond.**
- **Train your workforce about heat-induced illnesses.**
- **Perform the heaviest work during the coolest part of the day.**
- **Build up tolerance to the heat and the work activity slowly. This usually takes about 2 weeks.**
- **Use the buddy system, with people working in pairs.**
- **Drink plenty of cool water, about a cup every 15 to 20 minutes.**
- **Wear light, loose-fitting, breathable clothing, such as cotton.**
- **Take frequent, short breaks in cool, shaded areas to allow the body to cool down.**
- **Avoid eating large meals before working in hot environments.**
- **Avoid alcohol or beverages with caffeine. These make the body lose water and increase the risk for heat illnesses.**

What Factors Put You at Increase Risk?

- **Taking certain medications. Check with your health-care provider or pharmacist to see if any medicines you are taking affect you when working in hot environments.**
- **Having a previous heat-induced illness.**
- **Wearing personal protective equipment such as a respirator or protective suit.**

ICS 230 - Daily Meeting Schedule

Incident:	MT Athos I	**Prepared By:**	Section, Planning	**at** 4/16/2005 13:00
Period:	Period 32 (4/19/2005 06:00 - 5/3/2005 06:00)	**Version Name:**	Period 32	

Meeting Name & Date/Time	Purpose	Attendees	Location
Unified Command Conference Call 4/20/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Command Center
Command & General Staff Meeting 4/25/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Penn Room
Science Meeting 4/27/2005 09:30	Review and assess shoreline cleanup methods and progress	PSC, EU, STATE & FEDERAL REPS	Penn Room
Unified Command Conference Call 4/28/2005 09:00	Situation Brief; Coordinate Command Staff functions, responsibilities and objectives	GENERAL STAFF MEMBERS	Command Center
UC Objectives Meeting 5/2/2005 09:00	Review/Identify and prioritize objectives for the next operational period.	UC MEMBERS	Penn Room
Command & General Staff Meeting 5/2/2005 09:00	Coordinate Command Staff functions, responsiblities and objectives.	UC AND GENERAL STAFF	Penn Room
Tactics Meeting 5/2/2005 10:30	Develop primary and alternate strategies to meet incident objectives for the next operational period	PSC, OPS, LSC, EUL, RUL, SUL, & SCRIBE	To Be Determined
Planning Meeting 5/2/2005 14:00	Define/Review incident objectives, strategies, and tactics and identifies resource needs for the next operational period.	UNIFIED COMMAND, COMMAND STAFF, OPC, LSC, FSC, RUL, SUL, EUL, DUL, COMMS UNIT, & TECHNICAL SPECIALIST	Penn Room

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Conference Call Procedure
MV Athos I

From time to time, the Unified Command will have a need to convene via conference call. Their needs could range from situational updates to critical information requiring Unified Command decisions.

The Unified Command will initiate conference calls by contacting the Planning Section Chief. The Planning Section Chief will require a list of persons that should be invited to participate in the Conference Call, the preferred time of the call, ask whether or not a scribe is required and a suggested agenda.

The Planning Section Chief will call ConferencePlus and schedule the call. The Planning Section Chief will then send an email to all invited conference call participants, which gives the call-in particulars and the agenda.

The Situation Unit and Operations and Planning must have a representative on the call to present information according to agenda.

WEEKLY UNIFIED COMMAND CONFERENCE CALL IN NUMBER:
Dial-In Number: 1 (888) 287-5343 (to join the audio conference call)
Alternate Dial-In: 1 (847) 619-6483
Pass code: 9285423# - If you call in before the moderator, you will be placed on hold with music background until the moderator

MODERATOR CALL IN ADDITIONAL NUMBER: 5233443

Agenda - Unified Command Meetings
Thursdays -- 0900hrs

1.	Introductions – UC reps self-introductions	All participants
2.	Situation Brief	Situation Unit Leader
3.	Planned Actions	Planning/Ops Chief
4.	Critical Issues/Needs	Operations Chief
5.	Review of Open Action Items	Situation Unit Leader
6.	Long Range Plan	Steve Kegelman
7.	New Jersey comments	NJ UC Rep
8.	Pennsylvania comments	PA UC Rep
9.	Delaware comments	DE UC Rep
10.	FOSC comments	FOSC
11.	Announce any necessary additional UC Meetings (other than Mondays)	RP
12.	Final remarks	RP
13.	*This concludes the Command and General Staff Meeting. Unified Command Members only from this point on.*	

1/5/05

D.M. Sobieski
The O'Brien's Group
February 7, 2005

Unified Command Long Term Incident Action Plan Conference Call Notifications Sheet

Name	Title	Agency	Phone	Cell	Fax	Email
Capt Jonathan Sarubbi	COTP	USCG	215-271-4803	215-778-4072	215-271-4903	jsarubbi@msogruphila.uscg.mil
Steve Kegelman		TOG	732-774-7895	732-245-4703	732-774-7896	steve.kegelman@theobriensgroup.com
Bob VanFossen	Asst. Director	NJ DEP	609-633-2168	609-780-6899	609-777-0985	robert.vanfossen@dep.state.nj.us
David Sweeney	Bureau Chief	NJDEP ER	609-292-1075	609-309-1748	609-777-0985	David.sweeney@dep.state.nj.us
Gary Pearson		NJDEP	973-609-3997	201-697-6794		gpearson@dep.state.nj.us
Glenn Gillespie	Deputy Director	DEMA	302-659-2234	382-222-8400	302-659-6855	glenn.gillespie@state.de.us
James Turner, III	Director	DEMA	302-659-2240	302-222-8402	302-659-6855	jamie.turner@state.de.us
Jamie Bethard	Envtl Scientist III	DNREC	302-739-3694	302-632-0264	302-739-5060	jamie.bethard@state.de.us
Ronald Drake	Emergency Response Mgr.	PADEP	484-250-5100	484-645-5981	484-250-5943	rdrake@state.pa.us
Bennett Anderson	Envtl Sci/SSC	DNREC	302-739-4590	302-382-0341	302-739-6140	bennett.anderson@state.de.us
Cdr Vickie Huyck	Ops -MSO Group Philadelphia	USCG	215-271-4952	215-778-5483	215-271-4967	vhuyck@msogruphila.uscg.mil
Cdr Roger Laferriere	CO- AST	USCG	609-724-008	609-351-7142	609-724-0232	rlaferriere@ast.uscg.mil
Robert Bauer (Bob)	Water Qual Spec Spvsr	PADEP	484-250-5132	484-645-5984		rbauer@state.pa.us
Daniel M. Sobieski		TOG	714-577-2113	714-342-6358	714-577-2118	dan.sobieski@theobriensgroup.com
Chris Gregory		TOG	714-577-2111	714-273-8036	714-577-2118	chris.gregory@theobriensgroup.com
Melanie Jarrell			337-984-7808	904-537-3507	337-984-4776	Melanie.Jarrell@att.net
Dave Hake		DEMA		302-222-6566		Dave.hake@state.de.us
Jim Strickland		DEMA		302-222-6578		Jim.Strickland@state.de.us
Mark Claveloux		DEMA		302-222-6656		Mark.Claveloux@state.de.us
Kurt Reuther	Enf Chief	DNREC	302-739-5072	302-270-9369	302-739-5060	Kurt.reuther@state.de.us

D.M. Sobieski
The O'Brien's Group
December 21, 2004

Annex XX

Historic Properties - Section 106

Protection of Historic Properties

Emergency Phase Checklist

9711 Protection of Historic Properties: Oil Discharge and Hazardous Materials Release Emergency Response Phase Checklist

When considering the protection of historic property always operate under the assumption that any oil discharge or hazardous substance release may impact or has already impacted historic properties, unless the release impacts one of the excluded areas.

Excluded areas may be specific geographic areas or types of areas where, should a release or spill occur, historic properties are unlikely to be affected.

Spills or Releases Categorically Excluded from Additional National Historic Preservation Act Section 106 Compliance include:

Spills or releases which occur on and stay on:

- ❑ Gravel pads
- ❑ Roads (gravel or paved, not including the undeveloped right-of-way)
- ❑ Parking areas (graded or paved)
- ❑ Dock staging areas less than 50 years old
- ❑ Gravel causeways
- ❑ Artificial gravel islands
- ❑ Drilling mats, pads, and/or berms
- ❑ Airport runways (improved gravel strips and/or paved runways)

Spills or releases into and that stay in:

- ❑ Lined pits; *e.g.,* drilling mud pits and reserve pits
- ❑ Water bodies where the spill or release
  - o Will not reach land or submerged land
    and
  - o Will not include emergency response activities with land or submerged land-disturbing components
- ❑ Borrow pits
- ❑ Concrete containment areas

Releases of:

- ❑ Gases (*e.g.,* chlorine gas)

If the incident affects only excluded areas, no further actions are necessary unless:

- Previously unidentified historic properties are discovered during the response
- The State Historic Preservation Officer or appropriate Federal or Indian organization notifies the Federal On-scene Coordinator that a CATEGORICALLY EXCLUDED spill or release may have the potential to affect a historic property
- The FOSC is not sure whether a spill or release fits into one of the categories listed above
- At any time the specifics of a spill or release change so it no longer fits into one of the categories above
- The spill or release is greater than 100,000 gallons

If the area where a spill or release occurs has not been excluded, then

- Activate the agreed-upon mechanism for addressing historic properties
  - Contact the Historic Properties Specialist
    - Pennsylvania: Jean Cutler, PA Bureau of Historic Preservation 717-705-4035
    - New Jersey: Mike Gregg, NJ Historic Preservation Office 609-633-2395
    - Delaware: Gwen Davis, DE State Historic Preservation Office 302-739-5685
  - Provide them with the information listed in Section 9714, Information to be provided to the FOSC's Historic Properties Specialist Upon Activation [Link to 9714]

Whenever the FOSC determines the requirements of the Programmatic Agreement (PA) cannot be satisfied concurrently with the paramount requirement of protecting public health and the environment, the determination shall be documented in writing including:

- The name and title of the person who made the determination
- The date of determination
- A brief description of the competing values between public health and safety and carrying on the provisions of the PA
- Provide the State Historic Preservation Officer or appropriate Federal or Indian organizations and/or public the information listed in Section 9713, Documentation of Actions Taken That Resulted In the Unavoidable Injury to Historic Properties [Link to 9713]

Documentation of Actions

But There is Injury to Historic Property

9713 Documentation of Actions Taken That Resulted In Unavoidable Injury To Historic Properties [1]

This form should be completed and submitted, along with any additional supporting documentation, in a reasonable and timely manner to the appropriate entities listed below:

Name of incident:

Date/time of incident:

Location of incident:

Brief description of response action approved (including the date) by the Federal On-Scene Coordinator (OSC) where protecting public health and safety was in conflict with protecting historic properties:

Brief description of why protecting public health and safety could not be accomplished while also protecting historic properties:

Federal OSC Name and Title:

Federal OSC Signature:

Date of Signature:

Faxed to:

- ☐ SHPO
- ☐ (Name and fax number of potentially-affected resource managers/trustees):
- ☐ (Name and fax number of potentially-affected resource managers/trustees):
- ☐ (Name and fax number of potentially-affected resource managers/trustees):

[1] Original Form can be found in Appendix 6 to the *Programmatic Agreement on Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan (PA*)

Information to Give

State Historic Preservation Officer (SHPO)

Upon Activation

9714 Information to Be Provided To The FOSC's Historic Properties Specialists Upon Activation[1]

Name of Incident:

_____

Date/time of incident:

_____

Spill/release location: land_____; water_____;

land/water_____

If on land, estimate number of acres contaminated_____

Spill/release coordinates: _____latitude; _____longitude.

If on land, _____township; _____range; _____section

Distance to nearest water body, if on land: _____km/mi

Distance to nearest land, if in water: _____km/mi

Product released: _____

Estimated volume of product released: _____gals/bbls

Release status: Stopped_____; Continuing_____; Unknown_____

Is spill/release: Contained_____; Spreading_____; Unknown_____

Estimated volume of product potentially released: _____gals/bbls/other measure

Have Regional Response Strategies been approved for the area affected or potentially-affected by the spill/release? Yes_____; No_____

Describe any response actions proposed or taken that include ground-disturbing activities:

‘

[1] Original Form can be found in Appendix 4 to the *Programmatic Agreement on Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan (PA*)

Programmatic Agreement to Protect Historic Properties

9715 Protection of Historic Properties

Programmatic Agreement on Protection of Historic Properties During Emergency Response Under the National Oil and Hazardous Substances Pollution Contingency Plan

Table of Contents

I. Purpose
II. Legal Authorities Protecting Historic Properties
III. Definition of "Historic Property"
IV. Responsibility for Historic Properties Consideration
V. Pre-Incident Planning
VI. Federal Lead Emergency Response
VII. Regional PAs
VIII. Authority, Effective Date, Withdrawal, Amendment

Appendix I: Categorical Exclusion List—Releases or Spills Categorically Excluded from Additional National Historic Preservation Act Section 106 Compliance

Appendix II: Secretary of the Interior's Standards for Archeology and Historic Preservation

I. **PURPOSE**

A. The signatory Federal Departments and Agencies enter into this Programmatic Agreement (PA) to ensure that historic properties are taken into account in their planning for and conduct of the emergency response under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). 40 CFR Section Part 300. The National Conference of State Historic Preservation Officers (NCSHPO) is also a signatory, on behalf of State Historic Preservation Officers (SHPOs), to facilitate Federal agency ability to develop and execute a uniform nationwide approach for considering and treating historic properties before and during emergency response. In the event an individual SHPO is unable to respond, the Agency or Department may contact the NCSHPO or the Advisory Council on Historic Preservation (ACHP) to consider alternatives and receive assistance. The signatories agree that their Departments/Agencies will follow this PA or, to meet regional needs, develop regional PAs that are not inconsistent with this PA and the National Historic Preservation Act of 1966, as amended (NHPA), P.L. 89-665, 16 U.S.C. Section 470 *et seq.,* and the regulations promulgated thereto.

B. The NCP does not provide specific guidance for taking historic

properties into account during emergency response to an actual or threatened release of a hazardous substance, pollutant or contaminant or the discharge of oil or other pollutants (hereinafter, a release or spill). Also, emergency provisions contained in the regulations implementing Section 106 of the NHPA do not directly address requirements for such emergency responses. Accordingly, for the purpose of this PA, an "emergency" shall be deemed to exist whenever circumstances dictate that a response action to a release or spill must be taken so expeditiously that normal consideration of the Section 106 process is not reasonably practicable.

C. The purpose of this PA is to provide an alternative process to ensure appropriate consideration of historic properties within the meaning of the NHPA during emergency response to a release or spill. This PA does not address the consultation procedures under Section 106 of the NHPA once that phase of the response action has ended.

D. In carrying out duties under the NCP, including the priorities of protecting public health and safety, the Federal On-Scene Coordinator (OSC) may have to make emergency response decisions that adversely affect historic properties. By following this PA, however, the Federal OSC will be making an informed decision that takes historic property information into account prior to authorizing actions that might affect such property.

E. The responsibility of the Federal OSC in protecting public health and safety is paramount. That mission is a difficult one involving problems that cannot be anticipated and calling for judgment on the part of the Federal OSC. Nothing in this PA changes the national response priorities, nor does it change the effect of existing law.

F. 36 CFR Section 800.13 provides, *inter alia,* that:

> An Agency Official may elect to fulfill an agency's Section 106 responsibilities for a particular program, a large or complex project, or a class of undertakings...through a Programmatic Agreement.

36 CFR Section 800.13(e) provides that:

> An approved Programmatic Agreement satisfies the Agency's Section 106 responsibilities for all individual undertakings carried out in accordance with the agreement until it expires or is terminated.

During such time as the ACHP and the NCSHPO are signatories, compliance with this PA by a Federal OSC will be deemed to constitute compliance with Section 106 of the NHPA during pre-incident planning and emergency response activities.

II. LEGAL AUTHORITIES PROTECTING HISTORIC PROPERTIES

A. National Historic Preservation Act

1. In 1966, Congress instituted a policy to preserve the Nation's

cultural and historic heritage by enacting the NHPA. The NHPA implementing regulations most pertinent to actual or threatened releases of hazardous substances, pollutants or contaminants or oil spills are those of: 1) the ACHP, an independent Federal agency that administers Section 106 of the NHPA through procedures specified in 36 CFR Part 800, "Protection of Historic Properties," and 2) the Department of the Interior (DOI) regulations at 36 CFR Part 60, National Register of Historic Places.

2. Section 106 of the NHPA provides that Federal agencies are to take into account the effects of "Federal or federally assisted undertakings" on historic properties that are listed in or eligible for inclusion in the National Register of Historic Places. It further affords the ACHP an opportunity to comment on the undertaking.[(1)]

B. This PA does not address other Federal laws defining and protecting historic properties, such as:

1. The Archaeological Resources Protection Act (ARPA), 16 U.S.C. Section 470aa *et seq.,* which provides for the protection of archeological sites and other resources. ARPA establishes criminal and civil penalties for actual or attempted illegal excavation or removal of or damage to archeological resources; illegal trafficking in archeological resources; and knowingly causing another to commit an ARPA violation;
2. The Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. Section 3001 *et seq.,* which provides for the protection of Native American human remains and other defined classes of cultural items. NAGPRA also establishes criminal penalties for illegal trafficking in these cultural items. 18 U.S.C. Section 1170;
3. The Antiquities Act of 1906, 16 U.S.C. Section 433 *et seq.,* which establishes criminal penalties for non-permitted appropriation, excavation, injury, or destruction of any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Federal Government; and
4. The National Marine Sanctuaries Act (also known as Title III of the Marine Protection, Research and Sanctuaries Act, 16 U.S.C. Section 1431, *et seq.,* which establishes civil penalties for destruction of, loss of, or injury to a sanctuary resource, including historic properties. In addition to fines, parties can also be held responsible for response costs; damages including replacement cost, restoration cost, or acquisition of an equivalent sanctuary resource, and lost-use value of that resource and interest.

C. Many States also have laws defining and protecting historic properties. Regional PAs may consider State laws relevant to the historic properties in the region, to the extent they are not inconsistent with Federal law.

III. DEFINITION OF "HISTORIC PROPERTY"

A. The term "historic property" is defined in the NHPA as: "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register"; such term includes artifacts, records, and remains which are related to such district, site, building, structure, or object. 16 U.S.C. Section 470(w)(5).

B. Criteria for listing a property in the National Register of Historic Places are found at 36 CFR Part 60. The statutory definition of historic properties and the established criteria determine whether a historic property needs to be considered during emergency response. A historic property need not be formally listed on the National Register to receive NHPA protection, it need only meet the National Register criteria (i.e., be eligible for listing in the National Register). Section VI.C.2, below, discusses determining the National Register eligibility of historic properties during emergency response.

IV. RESPONSIBILITY FOR HISTORIC PROPERTIES CONSIDERATION

A. For the purpose of this PA, the Federal OSC, as the Federal official designated to coordinate and direct response actions, is responsible for ensuring that historic properties are appropriately considered in planning and during emergency response.

B. Planning Support/Coordination

1. The NCP, at 40 CFR Section 300.210(c), provides that Area Contingency Plans (ACPs) are to be developed under the direction of a Federal OSC. The Federal OSC shall ensure that ACPs include the information on consideration of historic properties and are developed in consultation with the parties specified in Section V of this agreement.
2. Federal agencies with expertise in protection of historic properties available to assist the Federal OSC during preparedness planning include the Department of the Interior,[(2)] the ACHP, and other Federal land-managing agencies for properties on their lands. The primary source of information on historic properties in an area, particularly properties not on Federal lands, is the SHPO, who is the official appointed by the Governor as part of the State's participation in NHPA programs. Other parties that may assist are listed in V.A. of this PA.
3. The National Program Center (NPC) of the National Park Service, consistent with its authority and responsibilities, will provide coordination of appropriate expertise to Area

Cornmittees and Regional Response Teams (RRTs) for pre-incident planning activities through the United States Coast Guard (Coast Guard) and the United States Environmental Protection Agency (EPA). The NPC will coordinate through the Commandant of the Coast Guard and the Office of Emergency and Remedial Response of EPA.

4. Prior to finalizing or subsequently revising ACPs, the Federal OSC will provide a draft of sections addressing historic properties identification and protection to the parties identified in Section V.A. of this PA. Each party shall have 30 calendar days from receipt to review the draft and provide comments to the Federal OSC. Should any reviewing party file a timely objection to the draft or any portion thereof, the Federal OSC will consult with the objecting party to resolve the objection. If the objection cannot be resolved, the Federal OSC will provide documentation of the dispute to the ACHP and request their comments. The ACHP comments will be taken into account by the Federal OSC in finalizing or revising ACPs.

C. Emergency Response Support/Coordination

1. To ensure historic properties are considered during emergency response, the Federal OSC must have access to reliable and timely expertise and support in order to make timely and informed decisions about historic properties.
2. A Federal OSC may obtain historic properties expertise and support m any one of several ways. These include implementing an agreement with State or Federal agencies that have historic properties specialists on staff (*see* IV.B.2), executing a contract with experts identified in ACPs or hiring historic properties specialists on staff. Historic properties specialists made available under contract or hired must:
    a. Meet the qualifications listed in the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation,* 48 *Federal Register* 44738-39 (September 29, 1983); *see* Appendix II; and
    b. Be available to assist the Federal OSC whenever needed.

V. PRE-INCIDENT PLANNING

A. As part of pre-incident planning activities, Federal OSCs (or the OSC's management) shall consult with the SHPO, Federal land-managing agencies, appropriate Indian tribes and appropriate Native Hawaiian organizations, as defined in Section 301 of the NHPA, and the other interested parties identified during pre-incident planning, as described in Section IV.B of this PA, to:

1. Identify historic properties.
    a. Identify: 1) historic properties that have been listed in

or determined eligible for inclusion in the National Register of Historic Places that might be affected by response to a release or spill; and 2) unsurveyed areas where there is a high potential for the presence of historic properties.

b. Identify exclusions. These may be specific geographic areas or types of areas where, should a release or spill occur, historic properties are unlikely to be affected. This includes the specifics listed in Appendix I and any additional exclusions agreed on by the signatories to this or a regional PA. Incidents in areas covered by exclusions would not require consideration for protection of historic properties, except as provided in Section VI.A.1.[(3)]

2. Develop a list of parties that are to be notified in the event of an incident in a non-excluded area. This list should include the SHPO for the State in which the incident occurred, Federal and Indian tribal land owners or land managers and Hawaiian Native organizations in the area where the incident occurred, if any.

3. Develop emergency response strategies that can be reasonably anticipated to protect historic properties. The Federal OSC shall ensure that response strategies, including personnel and equipment needed, are developed to protect or help protect historic properties at risk. This includes consideration of the sensitivity of historic properties to emergency response measures proposed in ACPs or other response plans, including chemical countermeasures and *in situ* burning.

B. The Federal OSC shall ensure that historic properties protection strategies can be carried out by:

1. Identifying who will be responsible for providing expertise on historic properties matters to the Federal OSC during emergency response. Depending on the size and complexity of the incident, a Federal OSC historic properties specialist or a historic properties technical advisory group convened by the specialist may be the most effective mechanism;

2. Providing information on availability of appropriate training for historic property specialists to participate in emergency response, ~g., Hazardous Waste Operations and Emergency Response (HAZWOPER) training, familiarity with all relevant contingency plans and response management systems, etc.; and

3. Working with the parties listed in section V.A. to obtain information for response personnel on laws protecting and activities that may potentially affect historic properties.

VI. FEDERAL LEAD EMERGENCY RESPONSE

A. The Federal OSC shall determine whether the exclusions described in section V.A.l.b. apply.
   1. If the incident affects only excluded areas, no further actions are necessary under this PA, unless:
      a. Previously unidentified historic properties are discovered during emergency response; or
      b. The SHPO (or appropriate Federal, Indian, or Hawaiian Native organizations) notifies the Federal OSC that a categorically excluded release or spill may have the potential to affect a significant historic property.
   2. If the area where a release or spill occurs has not been excluded, in the cases specified in Section VI.A. l .a or b, if the Federal OSC is unsure whether an exclusion applies, or if the specifics of the incident change so that it no longer fits into one of the exclusions, the remaining steps in this Section shall be followed.

B. Activate the agreed-upon mechanism for addressing historic properties, including notification of the parties identified pursuant to Section V.A.2., and consultation with these parties concerning the identification of historic properties that may be affected, assessing the potential effects of the emergency response, and developing and implementing emergency response activities. These requirements for notification and consultation shall be satisfied if the Federal OSC makes reasonable and timely efforts to notify and consult the parties listed in this Section. Thereafter there shall be additional consultation to the extent practicable.

C. Verify identification of historic properties.
   1. Consult with the SHPO, land owners and/or land managers, appropriate Indian tribes and Native Hawaiian organizations, and other interested parties identified in pre-incident planning to verify the location of historic properties identified during the planning process and determine if other historic properties exist in areas identified in V .A. l .a.2. that might be affected by the incident or the emergency response.
   2. If newly discovered or unanticipated potential historic properties are encountered during emergency response actions, the Federal OSC shall either: 1) consult with the SHPO (or appropriate Federal, Indian, or Hawaiian Native organizations) to determine if the properties are eligible for inclusion in the National Register, or 2) treat the properties as eligible.

D. Assess potential effects of emergency response strategies on historic properties. Such assessment shall be done in consultation with the parties listed in Section V A.

1. The potential adverse effects of releases or spills and of emergency response on historic properties may include, but are not limited to:
    a. Physical destruction, damage, or alteration of all or part of the historic property;
    b. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register; and
    c. Introduction of visual, audible, or atmospheric conditions that are out of character with the property or alter its setting.
2. Emergency response actions that may have adverse effects on historic properties include, but are not limited to:
    a. The placement of physical barriers to deter the spread of released or spilled substances and the excavation of trenches to stop the spread of the released or spilled substances; and
    b. Establishing camps for personnel, constructing materials storage and staging yards, excavating borrow pits for fill materials, and constructing alignments for road access.
3. Direct physical contact of historic properties with released or spilled substances may result in one or more of the following: 1) inability to radiocarbon date the contaminated resources; 2) acceleration of deterioration of an object or structure; or 3) prevention of identification of historic properties in the field. As a result, important scientific, historic, and cultural information may be lost.

E. Make and implement decisions about appropriate actions. The Federal OSC shall take into account professional comments received from the parties listed in Section V.A. in making decisions that might affect historic properties.
1. Emergency response strategies delineated in plans may need to be reviewed based on information available at the time of an actual incident. The purpose of this review is to evaluate whether implementation of the strategies in the plan might, for the emergency response action that is underway, adversely affect historic properties and, if so, how such effects might be avoided or reduced.
2. Make arrangements for suspected artifact theft to be reported to the SHPO, law enforcement officials, and the land owner/manager.
3. Arrange for disposition of records and collected materials.
4. Ensure the confidentiality of historic property site location information, consistent with applicable laws, so as to

minimize opportunities for vandalism or theft.

F. Whenever the Federal OSC determines the requirements of this Section cannot be satisfied concurrently with the paramount requirement of protecting public health and safety, the determination shall be documented in a writing including the name and title of the person who made the determination; the date of determination; and a brief description of the competing values between public health and safety and carrying on the provisions of this Section. Notwithstanding such a determination, if conditions subsequently permit, the Federal OSC shall endeavor to comply with the requirements of this Section to the extent reasonably practicable.

VII. **REGIONAL PAs**

A. Regional PAs may be developed as provided in I.A. as an alternative to this national PA. Regional PAs are to include the provisions of this PA and may include appropriate additional provisions responsive to regional concerns.

B. A regional PA should be signed by appropriate regional-level Federal officials, State agencies, tribal officials and the ACHP.

C. Either this PA or a PA developed at a regional level may be adopted by the RRT and incorporated or referenced in Regional Contingency Plans (RCPs), 36 CFR Section 300.210(b), and ACPs in the region.

VIII. **AUTHORITY, EFFECTIVE DATE, WITHDRAWAL, AMENDMENT**

A. The signatories below are authorized to sign the PA on behalf of their respective Department, Agency or organization. This PA may be signed in counterparts.

B. In order to allow sufficient time for pre-incident planning and other preparedness activities, this PA shall not be become effective with respect to a signatory Department or Agency until ninety (90) days after it has been signed on the Department's or Agency's behalf.

C. Any signatory may withdraw from this PA by sending, through an official authorized to act in this matter, written notice to all current signatories at least thirty (30) days in advance of the effective date of withdrawal. The requirements contained in this PA will remain in full force and effect with respect to remaining signatories.

D. Nothing herein prevents the signatories from agreeing to amend this PA.

SIGNATORIES

Advisory Council on Historic Preservation
Chairman
June 4, 1997

National Conference of State Historic Preservation Officers
President
May 13, 1997

U.S. Environmental Protection Agency
Acting Deputy Director, Office of Emergency and Remedial Response
May 23, 1997

U.S. Department of the Interior
Director, Office of Environmental Policy and Compliance
June 4, 1997

U.S. Department of Transportation, Coast Guard
Assistant Commandant for Marine Safety and Environmental Protection
May 13, 1997

National Park Service
Acting Deputy Director
August 7, 1997

U.S. Department of Commerce, National Oceanic and Atmospheric Administration
Assistant Administrator for Ocean Services and Coastal Zone Management
July 3, 1997

U.S. Department of Energy
Deputy Director
November 7, 1997

U.S. Department of Defense
Deputy Under Secretary of Defense (Environmental Security)
November 3, 1997

U.S. Department of Agriculture
Under Secretary of Defense for Natural Resources and Environment
August 28, 1998

ENDNOTES

1) Section 106 of the NHPA provides, *inter alia,* as follows:

Effect of Federal undertakings upon property listed in National Register; comments by Advisory Council on Historic Preservation

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency

with regard to such undertaking.

16 U.S.C. Section 470f.

2) 40 CFR Section 300 175(b)(9) reads, in pertinent part, as follows:

DOI may be contacted through Regional Environmental Officers (REOs), who are the designated members of RRTs.... [B]ureaus and offices have relevant expertise as follows:
...(viii) National Park Service: General biological, natural, and cultural resource managers to evaluate, measure, monitor and contain threats to park system lands and resources; archaeological and historical expertise in protection, preservation, evaluation, impact mitigation, and restoration of cultural resources....

3) Response to spills or releases that involve non-excluded areas should be considered to have the potential to adversely affect historic properties that are listed in or eligible for inclusion in the National Register.

APPENDIX I.—CATEGORICAL EXCLUSION LIST

Releases or Spills Categorically Excluded from Additional National Historic Preservation Act Section 106 Compliance

Releases/Spills onto (which stay on):

- Gravel pads
- Roads (gravel or paved, not including the undeveloped right-of-way)
- Parking areas (graded or paved)
- Dock staging areas less than 50 years old
- Gravel causeways
- Artificial gravel islands
- Drilling mats, pads, and/or berms
- Airport runways (improved gravel strips and/or paved runways)

Releases/Spills into (that stay in):

- Lined pits; *e.g.,* drilling mud pits and reserve pits
- Water bodies where the release/spill will not: 1) reach land/submerged land; and 2) include
- emergency response activities with land/submerged land-disturbing components
- Borrow pits
- Concrete containment areas

Releases/Spills of:

- Gases (*e.g.,* chlorine gas)

IMPORTANT NOTE TO FEDERAL OSC:

1) IF YOU ARE NOT SURE WHETHER A RELEASE OR SPILL FITS INTO ONE OF THE CATEGORIES LISTED ABOVE;

2) IF AT ANY TIME, THE SPECIFICS OF A RELEASE OR SPILL CHANGE SO IT NO LONGER FITS INTO ONE OF THE CATEGORIES LISTED ABOVE;

3) IF THE SPILL IS GREATER THAN 100,000 GALLONS; AND/OR

4) IF THE STATE HISTORIC PRESERVATION OFFICER NOTIFIES YOU THAT A CATEGORICALLY EXCLUDED RELEASE OR SPILL MAY HAVE THE POTENTIAL TO AFFECT A HISTORIC PROPERTY

YOU OR YOUR REPRESENTATIVE MUST FOLLOW THE SECTION VI OF THIS PA.

APPENDIX II.—SECRETARY OF THE INTERIOR'S STANDARDS for Archeology and Historic Preservation

48 *Federal Register* 44738-39 (September 29, 1983)

Professional Qualifications Standards

The following requirements are those used by the National Park Service and have been previously published in the Code of Federal Regulations 36 CFR Part 61. The qualifications define minimum education and experience required to perform identification, evaluation, registration, and treatment activities. In some cases, additional areas or levels of expertise may be needed depending on the complexity of the task and the nature of the historic properties involved. In the following definitions, a year of full-time professional experience need not consist of a continuous year of full-time work but may be made up of discontinuous periods of full-time or part-time work adding up to the equivalent of a year of full-time experience.

- **History**

  The minimum professional qualifications in history are a graduate degree in history or closely related field; or a bachelor's degree in history or closely related field plus one of the following:

1. At least two years of full time experience in research, writing, teaching, interpretation, or the demonstrable professional activity with an academic institution, historic organization or agency, museum, or other professional institution; or
2. Substantial contribution through research and publication to the body of scholarly knowledge in the field of history.

- **Archeology**

  The minimum professional qualifications in archeology are a graduate degree in archeology, anthropology, or closely related field plus:

  1. At least one year of full-time professional experience or equivalent specialized training in archeological research, administration or management;
  2. At least four months of supervised field and analytic experience in general North American archeology; and
  3. Demonstrated ability to carry research to completion.

  In addition to these minimum qualifications, a professional in prehistoric archeology shall have at least one year of full-time professional experience at a supervisory level in the study of archeological resources of the prehistoric period. A professional in historic archeology shall have at least one year of full-time professional experience at a supervisory level in the study of archeological resources of the historic period.

- **Architectural History**

  The minimum professional qualifications in architectural history are a graduate degree in architectural history, art history, historic preservation, or closely related field, with course work in American architectural history; or a bachelor's degree in architectural history, art history, historic preservation or closely related field plus one of the following:

  1. At least two year of full-time experience in research, writing, or teaching in American architectural history or restoration architecture with an academic institution, historical organization or agency, museum. or other professional institution; or
  2. Substantial contribution through research and publication to the body of scholarly knowledge in the field of American architectural history.

- **Architecture**

  The minimum professional qualifications in architecture are a professional degree in architecture plus at least two years of full-time experience in

architecture; or State license to practice architecture.

- **Historic Architecture**

  The minimum professional qualifications historic in architecture are a professional degree in architecture or a State license to practice architecture, plus one of the following:

  1. At least one year of graduate study in architectural preservation, American architectural history, preservation planning, or closely related field; or
  2. At least one year of full-time professional experience on historic preservation projects.

  Such graduate study or experience shall include detailed investigations of historic structures, preparation of historic structure research reports, and preparation of plans and specifications for preservation projects.

Updated April 30, 2002

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Annex YY

InSitu Burning Within

SecDelBay AOR

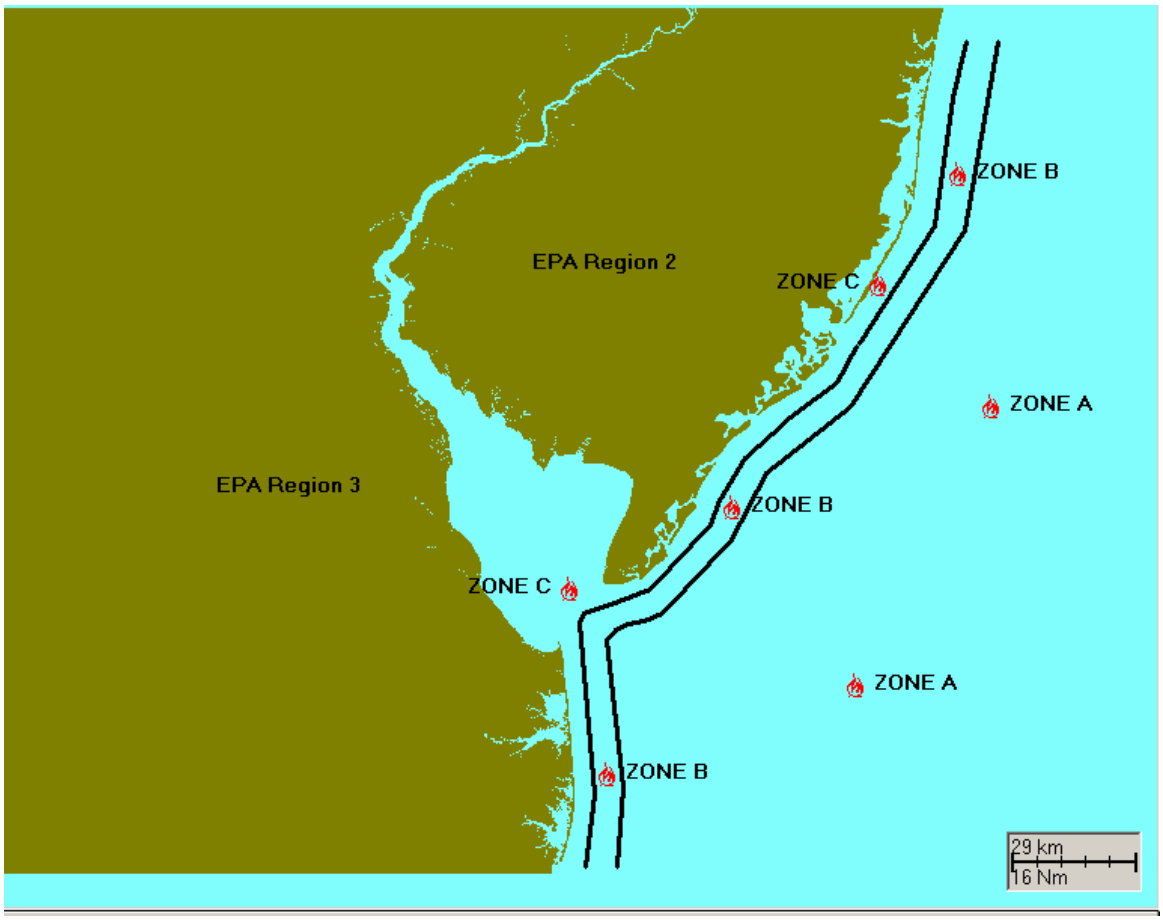
9718 Use of In-Situ Burn within Sector Delaware Bay

In-situ burn (ISB) is a response technique where operations are conducted to remove oil by burning, it is used when the physical removal of oil is unfeasible or inadequate. ISB may be conducted on the open ocean, on land, or on a ship. While this technique requires specialized equipment, it requires less labor than most other response techniques and be applied in areas where other methods cannot be used. Burning can quickly remove large quantities of oil, and the need for recovery and storage is minimized.

The Federal On-scene Coordinator can use In-situ burn within the following set of guidelines:

- Prevent or substantially reduce a hazard to human life
- Minimize the environmental impact of the spilled oil
- Reduce or eliminate economic or aesthetic losses which would otherwise presumably occur without the use of this technique.

In-Situ Burning Authorization Zones



Zone A
Open-water burning

Pre-authorized

Zone A includes any area falling exclusively under federal jurisdiction, which is at least 3 miles seaward from any state coastline; and seaward of any state waters, or as designated by separate Letter of Agreement with each individual state, the Coast Guard (USCG), Environmental Protection Agency (EPA), Department of Interior (DOI), and Department of Commerce (DOC).

The FOSC is pre-authorized to use ISB within Zone A. The USCG, EPA, DOC, DOI and the state(s) agree that the decision to use ISB rests solely with the pre-designated USCG FOSC, and no further approval, concurrence or consultation on the part of the USCG is required.

The Federal On-Scene Coordinator will immediately notify the following entities of the decision to conduct burning within Zone A via the appropriate Regional Response Team representatives.

- Environmental Protection Agency
- Affected State(s)
- Department of Commerce
- Department of Interior

Zone B

Requires Case by Case Approval
Zone B includes:

- Anywhere within state waters
- Waters designated as a marine reserve
- National Marine Sanctuary
- National or State Wildlife Refuge
- Unit of the National Park Service
- Proposed or designated Critical Habitats
- Coastal wetlands including aquatic vegetation and algal beds

To use In-situ Burn in Zone B the FOSC must:

- Request authorization from the Regional Response Team and the affected state(s)

- Receive consent from the Environmental Protection Agency and affected state(s)
- Receive concurrence from Department of Interior
- Consult with the Department of Commerce

Designated agency representatives must respond within (4) hours from the time the FOSC establishes deliberative communication. **If there is no response, the FOSC may proceed with ISB operations.**

Zone C (no preauthorization)

RRT II approval needed on a case-by-case basis.

Zone R (Exclusion Zones)

No ISB operations will be conducted in Zone R unless ISB is necessary to prevent or mitigate a risk to human health and safety.

Burning in Herbaceous Wetlands

FOSC can use ISB as a response countermeasure in herbaceous wetlands under the following conditions:

- Obtain concurrence from the Regional Response Team
- Approval from the Environmental Protection Agency and affected State(s)
- Concurrence from the Department of Interior
- Consult with the Department of Commerce and, if applicable, Native American Community officials
- The Wetland In-Situ Burn Evaluation Checklist from RRT III's Regional Contingency Plan must be used prior to ISB operations (http://www.uscg.mil/lantarea/rrt/rcp/Policy/BURNindex.html)

Action to be taken prior to conducting In-situ Burn operations

- Consult the In-situ burn Decision Flow Chart and Evaluation Checklist [Link to Section 9788]
- Ensure authorization to burn is approved
- Notify appropriate agencies and the states of New Jersey, Pennsylvania and Delaware
- Ensure the Atlantic Strike Team and National Oceanic Atmospheric Administration (NOAA) Scientific Support Coordinator are prepared to support burning operations
- Implement the Special Monitoring of Advanced Response Technologies (SMART) for conducting real time on-scene air monitoring and analysis

- Ensure Safety Officer addresses the specific hazards of an In-situ burn operation in the Site Safety Plan
- Ensure that In-situ burn is conducted in accordance with any consultations approved by the U.S. Fish and Wildlife Service and National Marine Fisheries Service, under Section 7 of the Endangered Species Act
- Prior to In-situ burn, a survey will be conducted to determine if any threatened or endangered species are present in the burn area or otherwise at risk from any burn operations
- Ensure measures are taken to prevent risk of injury to any wildlife, especially endangered and threatened species

Conducting the In-situ burn

Burning will be conducted in a way that allows for effective control of the burn, including the ability to rapidly stop the burn if necessary. Contained and controlled burning is the preferred method of burning using fire-resistant boom.

Mechanical recovery equipment shall be mobilized on-scene, when feasible, for backup and complimentary response capability. Provisions must be made for collection of burn residue following the burn.

Post-Incident Report

Any use of ISB requires that a post-incident report be provided by the FOSC to the RRT within 45-days of the operation.

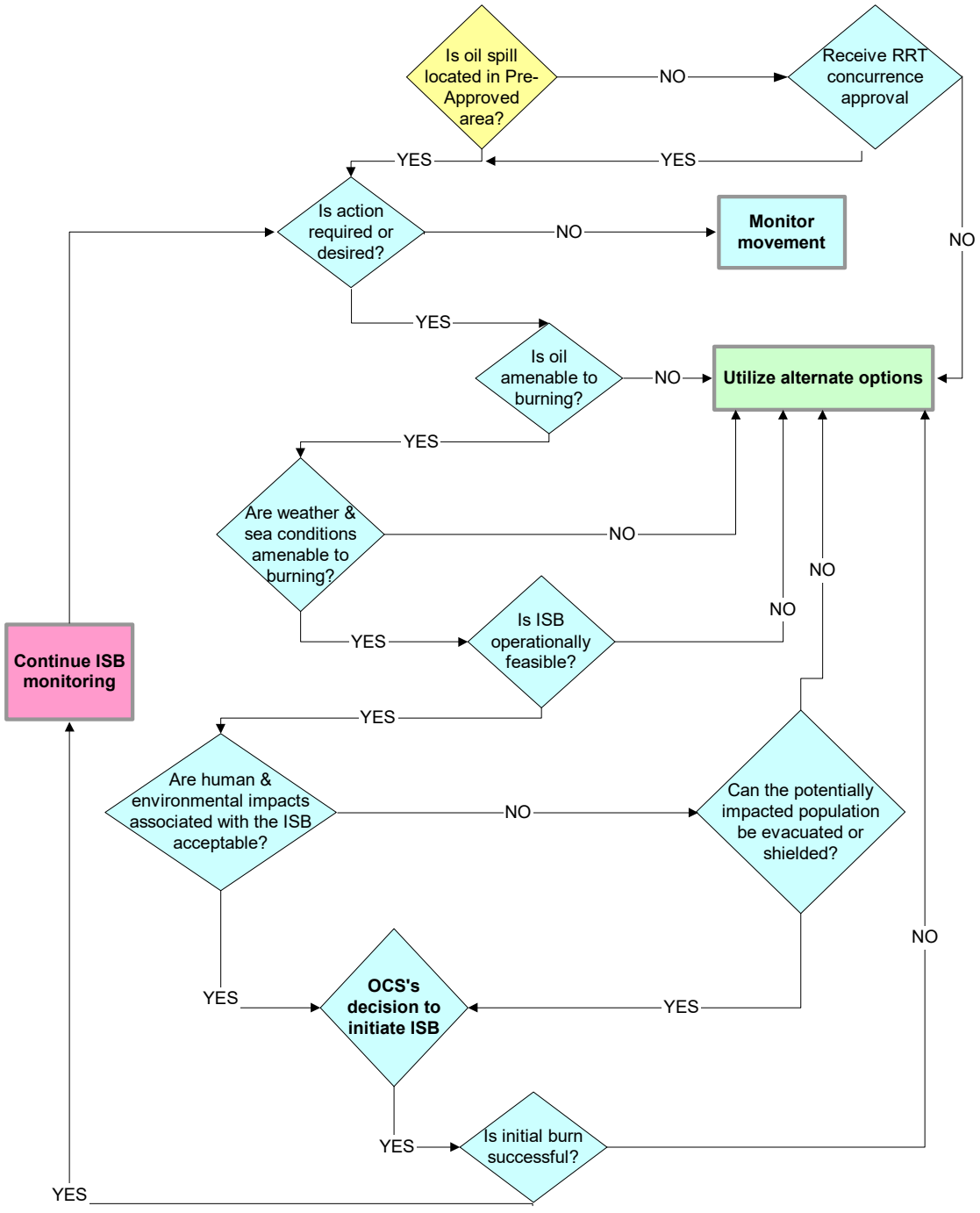
InSitu Burning

Decision Flow Chart

9788 In-Situ Burning Decision Flow Chart and Evaluation Checklist

To assist the Federal On-scene Coordinator and the Unified Command with planning for the use of in-situ burning in response to an oil spill in Sector Delaware Bay the following flow chart and checklist should be consulted.

ISB Decision Flow Chart[1]



[1] In-situ flow chart was taken from Regional Response Team III's Regional Contingency Plan

9788 In-Situ Burning Decision Flow Chart and Evaluation Checklist

ISB Evaluation Checklist

For in-situ burning to be successful the Unified Command team needs to assess both the technical and political feasibility of its use. The information contained in Section 9718, Use of In-Situ Burn within Sector Delaware Bay, and this worksheet are intended to assist the Unified Command in determining both the technical viability of conducting an in-situ burn documenting concurrence from stakeholders.

In Situ Burn Decision

Federal On-Scene Coordinator	Approval signature:
Regional Response Team (if appropriate)	
New Jersey On-scene Coordinator	Concur signature:
Delaware On-scene Coordinator	Concur signature:
Pennsylvania On-scene Coordinator	Concur signature:
Responsible Party	Concur signature:

Consultations/Concurrence based on location of approval area of burn

(consult Section 9718, Use of In-Situ Burn within Sector Delaware Bay to determine pre-approval areas and those requiring approval)

Agency	**Concurrence or Consult**	**Time and Date**	**Method** (verbal or written)
Regional Response Team			
Environmental Protection Agency			
Department of Commerce			
Department of Interior			
Others			

Incident information

- Incident Name
- Current date/time
- Anticipated burn date/time
- Location of spill (descriptive)
- Location of burn (descriptive)

Spill Location/Trajectory

Trajectory (Graphic Attached)	YES		NO		Text
Overflight Map (Graphic Attached)	YES		NO		Text

9788 In-Situ Burning Decision Flow Chart and Evaluation Checklist

Oil Burnability

Is the oil burnable?	YES	NO

Attach any supporting documentation

Weather and Sea Conditions Optimal/Sub-Optimal

- Weather forecast precipitation-free (affects ignition)?
- Winds/forecast winds less than 25 knots?
- Visibility sufficient for burn operations/observations (greater than 500 feet vertical, 1/2 mile horizontal)?
- Wave heights/predicted wave heights less than 2-3 feet?
- Attachments/Additional Information:

Operational Feasibility Yes or Probable No or Unlikely

- Is an operational plan written or in process? (if available, attach)
- Is needed air support available?
- Are personnel properly trained, equipped with safety gear, and covered by a site safety plan?
- Are all necessary communications possible (i.e. between aircraft, vessels, and control base in an open water burn)?
- Can all necessary equipment be mobilized during window of opportunity (i.e. fire boom, igniter, tow boats, residue collection equipment)?
- Can undesirable secondary fires be avoided?
- Can burn be safely extinguished or controlled?
- Can aircraft pilots and mariners be adequately notified, as necessary?
- Are equipment and personnel available for residue recovery?
- If ignition from a helicopter, FAA approved equipment?
- Attachments/Additional Information:

Human and Environmental Impacts Yes or Probable No or Unlikely

- Public exposure to PM-10 (particulates <10μm) not expected to exceed 150 μg/m3 averaged over 1 hour as a result of burn? (current NRT planning guideline)
- Can burning be conduced at a safe distance from other response operations, and public, recreational and commercial activities?
- Is particulate (hour-averaged PM-10) monitoring available?
- Can public be adequately notified of burn?
- Trustees consulted if endangered species in immediate burn area?
- Attachments/Additional Information

9788 In-Situ Burning Decision Flow Chart and Evaluation Checklist

Public Health/Plume Worksheet

- Distance / direction to nearest population relative to burn: _____ miles to the _____ (direction)
- Distance / direction to nearest downwind population: _____ miles to the _____ (direction)
- Forecast wind speed / direction (24 hour): _____ mph from the _____ (direction)
- Forecast wind speed / direction (48 hour): _____ mph from the _____ (direction)

Estimated plume trajectory (text or attached graphic): _____

Points of Contact

Agency	Name	Phone number
Coast Guard		
Department of Interior		
New Jersey On-scene Coordinator		
Delaware On-scene Coordinator		
Pennsylvania On-scene Coordinator		
Responsible Party		
NOAA Scientific Support Coordinator		
Others		

Other comments/issues: _____

RRT2 InSitu Burning MOU

Memorandum Of Understanding

Among
U.S. Coast Guard District 1 (USCGD1)
and
U.S. Coast Guard District 5 (USCGD5)
and
U.S. Environmental Protection Agency Region II (EPA)
and
U.S. Department of the Interior (DOI)
and
U.S. Department of Commerce /
National Oceanic and Atmospheric Administration (DOC/NOAA)
and
State of New Jersey Department of Environmental Protection (NJ DEP)
and
New York State Department of Environmental Conservation (NYS DEC)

PURPOSE

This Memorandum of Understanding (MOU) is designed to implement sections of Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and the requirements of 33 CFR 1321 (j) (4) (C) (v), the Federal Water Pollution Control Act (FWPCA), as amended by the Oil Pollution Act (OPA) of 1990. This MOU provides pre-authorization for use of in-situ burning by the USCG Federal On-Scene Coordinator (OSC) in response to coastal oil discharges within the jurisdiction of the Region II Regional Response Team (RRT).

This MOU will be incorporated into Subpart J of the Regional Contingency Plan (RCP).

AUTHORITY

Subpart J of the NCP specifies that RRT's shall address, as part of their planning activities, the desirability of using appropriate burning agents, and that Regional Contingency Plans shall, as appropriate, include applicable pre-authorization plans and address the specific contexts in which such products should and should not be used.

Subpart J also provides that the OSC, with the concurrence of the EPA representative to the RRT, and the States with jurisdiction over the navigable waters threatened by the oil discharge, and in consultation with the DOC and DOI natural resource trustees, may authorize the use of burning agents on a case-by-case basis.

Commandant, United States Coast Guard, has pre-designated the USCG Captains Of The Port (COTPs) as the OSCs for coastal oil discharges (as defined in 33 CFR Part 3 and subject to joint response boundary agreements with EPA), and has delegated to the COTP the authority and responsibility for compliance with the FWPCA and its amendments.

The Governor of the State of New Jersey has designated the Commissioner of the Department of Environmental Protection (NJ DEP) the authority and responsibility to approve for the use of in-situ burning for the control of oil spills.

The Governor of the State of New York has designated the Commissioner of the Department of Environmental Conservation (NYS DEC) the authority and responsibility to approve for the use of in-situ burning for the control of oil spills.

The DOI and DOC/NOAA are designated Federal trustees of certain natural resources under Subpart G of the NCP and are to be consulted regarding the determination to burn oil in-situ in United States waters.

This MOU constitutes pre-concurrence for USCG, EPA, NYS DEC, NJ DEP, DOC/NOAA, and DOI for the use of in-situ burning in the pre-approved area ("A" zone), and in the conditionally pre-approved area ("B" zone) when wind conditions are favorable.

SCOPE

The USCG, EPA, DOI, DOC/NOAA and the states of New Jersey and New York agree that the primary method of controlling discharged oil shall be the physical removal of the oil from the environment. These agencies recognize that in certain circumstances timely effective physical containment, collection, and removal of the oil may not be possible, and that the utilization of in-situ burning, alone or in conjunction with mechanical removal methods and/or chemical countermeasures, may be considered as a means to minimize substantial threat to public health or welfare, or minimize serious environmental damages.

This MOU establishes the pre-authorized plans for in-situ burning to be used by the OSC in certain waters under the jurisdiction of RRT II. These waters include the Areas of Responsibility (AORs) for the COTPs for Long Island Sound (COTP-LIS), New York (ACT-NY), and Philadelphia (COTP-PHIL). The geographic areas and conditions are as follows (see Figure 1):

1) "A" Zones - Pre-authorization for Open-Water Burning

Geographic Scope:

Zone "A" is defined as waters under the jurisdiction of RRT II and not classified as "B", "C", or "E" zones, that lie 6 nautical miles (nm) and seaward of the Territorial Sea Baseline (as defined in 33 CFR 2.05-10) along the coast of New Jersey (north of the demarcation between Federal Region II and Region III) and along the south shore of Long Island (New York) west of a line from Montauk Point Light bearing 132 degrees True to the outermost extent of the Exclusive Economic Zone (EEZ).

Advance Approval for Zone "A":

Within Zone "A", the decision to use in-situ burning rests solely with the OSC. No further concurrence or consultation on the part of the OSC is required with EPA, DOC/NOAA, DOI, or the states of New York or New Jersey. However, if threatened or endangered species are present in the burn area, then the trustee agency must be consulted prior to initiating burning operations.

The USCG will immediately notify EPA, DOC/NOAA, DOI, and the states of New York and/or New Jersey of a decision to conduct burning within the "A" zone via each agency's respective RRT representative.

2) "B" Zones - Pre-authorization with Favorable Wind Conditions

Geographic Scope:

Zone "B" is defined as waters under the jurisdiction of RRT II and not classified as "A", "C", or "E" zones, that lie between 3 nm and 6 nm from the Territorial Sea Baseline along the coast of New Jersey (north of the demarcation between Federal Region II and Region III) and along the south shore of Long Island (New York) west of a line from Montauk Point Light bearing 132 degrees True.

Advance Approval for Zone "B":

Within Zone "B", the decision to use in-situ burning rests solely with the OSC if and only if the prevailing wind direction is decidedly seaward and is expected to remain in the seaward direction throughout the duration of the planned in-situ burning operations. If this is the case, no further concurrence or consultation on the part of the OSC is required with EPA, DOC/NOAA, DOI, or the states of New York or New Jersey. If the prevailing wind direction is not decidedly seaward, the OSC is required to follow standard consultation and concurrence procedures. In either case, if threatened or endangered species are present in the burn area, then the trustee agency must be consulted prior to initiating burning operations (see Figure 2).

The USCG will immediately notify EPA, DOC/NOAA, DOI, and the states of New York and/or New Jersey of a decision to conduct burning within the "B" zone via RRT representatives.

3) "C" Zones - Waters Requiring Case-by-Case Approval

Geographic Scope:

Zone "C" is defined as waters under the jurisdiction of RRT II and not classified as "A", "B", or "E" zones, that 1) lie within state territorial boundaries, 2) are designated as marine reserves, National Marine Sanctuaries, National or State Wildlife Refuges, units of the National Park Service, or proposed or designated Critical Habitats, or 3) are considered coastal wetlands, including submerged algal beds and submerged seagrass beds.

If the OSC feels that in-situ burning within the "C" zone would be beneficial, a request for authorization must be submitted to EPA, USCG, DOC/NOAA, DOI, and the states of New York and/or New Jersey, along with the information specified in the checklist in Appendix II. The OSC is granted authority to conduct in-situ burning in "C" zones only after consultation with DOC/NOAA and DOI, and only after concurrence is given by EPA and the affected states. The EPA, USCG, DOC/NOAA, DOI and the affected state(s) will respond to the OSC's request for burning in Zone "C" within four hours of receipt of the information specified in the checklist in Appendix II.

The USCG will immediately notify EPA, DOC/NOAA, DOI, and the states of New York and/or New Jersey of a decision to initiate an approved burn within the "C" zone via each agency's respective RRT representatives.

4) "E" Zones - Exclusion Zones

Geographic Scope:

An "E" zone is defined as an area under the jurisdiction of RRT II and not classified as an "A", "B", or "C" zone, that has been designated by the USCG, EPA, DOC/NOAA, DOI and the states of New York and New Jersey, or the Area Committees as an exclusion zone. These areas will be identified and listed in the appropriate Area Contingency Plans and as attachments to this MOU in the Regional Contingency Plan.

No in-situ burning operations will be conducted in an "E" zone unless 1) in-situ burning is necessary to prevent a clear, immediate, and extreme risk to human health or safety, or 2) an emergency modification of this agreement is made on an incident-specific basis.

PROTOCOLS

As attested by the signatures set forth at the end of this document, the USCG, EPA, DOI, DOC/NOAA, NJ DEP , and NYS DEC agree that the predesignated OSC has the authority and may order the use of in-situ burning on oil discharges using the guidelines found in Subpart J and Appendix M of the Region II RCP and Annex G of the COTP-LIS, ACT-NY, and COTP-PHIL Area Contingency Plans (ACPs) subject to the following conditions:

1. The decision to use in-situ burning on a discharge of oil in accordance with this Agreement rests solely with the pre-designated OSC. This responsibility may not be delegated.

2. The OSC may authorize the use of in-situ burning on a discharge of oil to prevent or substantially reduce the hazard to human life without obtaining concurrence from EPA or the affected states, without following protocols established in this MOU, and without following the guidelines in the RCP and ACPs. If in-situ burning is used in this manner, notification of EPA, USCG, DOC/NOAA, DOI and the affected state(s) shall be made as soon as practicable. Once the risk to human life has subsided, these exceptions no longer apply.

The following protocols assume that risk to human life is not a factor:

3. Prior to any in-situ burn operations, the OSC will review the decision diagram contained in Appendix I.

4. The USCG agrees with EPA, DOI, DOC/NOAA, and the states that if a decision has been made to use in-situ burning under the provisions of this agreement, the OSC will immediately notify EPA, DOI, DOC/NOAA and the states of that decision. This initial notification will include, but is not limited to, the following information to the extent available:

Type and amount of oil discharged
Area affected
The projected area of impact of the oil if not burned
Reasons why in-situ burning has been selected as a mitigation technique
On-scene weather

5. The checklist form in Appendix II shall be completed for all burns and provided to EPA, USCG, DOC/NOAA, DOI, and the affected state(s) in a timely manner for documentation and informational purposes. If the Responsible Party (RP) requests the use of in-situ burning, members of this organization will be responsible for completing the checklist in Appendix II. If the RP is unknown and the request to burn is made by another party, the OSC will be responsible for completing this checklist.

6. Burning will be conducted by trained professionals using recognized techniques and technology. Burning will be conducted in a way that allows for safe and effective control of the burn to the maximum extent feasible, including the ability to rapidly stop the burn if necessary. Containment and control using fire-resistant boom is recognized as the preferred method of burning. All practical efforts to limit the potential for igniting the source or adjacent, uncontained, or uncontrollable slicks will be made.

7. In-situ burning is advised only when the meteorological and sea conditions are operationally favorable for a successful burn. The OSC will give due consideration to the direction of the wind and the possibility of the wind blowing precipitate over population centers or sensitive resources onshore. A safety margin of 45 degrees of arc on either side of predicted wind vectors should be considered for shifts in wind direction (see Figure 2 for Zone "B" requirements). If conditions change to exceed the safety margins during a burn in Zone B the burn will be extinguished.

8. Health and Safety Concerns -

(a) OPERATORS: Assuring workers' health and safety is the responsibility of employers and the OSC who must comply with all Occupational Health and Safety Administration (OSHA) regulations. Prior to any in-situ burn operations, a site safety plan must be prepared.

(b) PUBLIC: Burning should be stopped if it becomes an unacceptable health risk to the general public. If at any time during burning operations exposure limits are observed to exceed federal air quality standards in nearby populated areas, the OSC will require the operations to be immediately cease. The Level of Concern (LOC) for particulates for the general public in Region II is 150 ug/m3 (PM-10) averaged over one hour. Public advisories may be required prior to initiating a burn.

9. In-situ burning will be conducted in accordance with any consultations approved by the U.S. Fish and Wildlife Service and the NOAA National Marine Fisheries Service under Section 7 of the Endangered Species Act. If threatened or endangered species are present in the burn area, then the trustee agency must be consulted prior to initiating burning operations. Measures will be taken to prevent risk to any wildlife, especially endangered or threatened species. Examples of potential protection methods may include moving the location of the burn to an area where listed species are not present, temporary employment of hazing techniques, if effective, and physical removal of listed species individuals under the authority of the trustee agency. If the risk to endangered or threatened species cannot be eliminated or reduced sufficiently, the burn will not be conducted unless a threat to human life exists.

10. The OSC will make every reasonable effort to continuously evaluate the decision to burn, and allow RRT agencies and the affected states the opportunity for comment. Cognizant representatives from trustee agencies, the potentially impacted state(s), and EPA, will have the responsibility and authority to decide when a burn should be discontinued. Those cognizant representatives, who should be identified by their respective agencies prior to commencement of a burn, must have the verbal authority to call for the burn to be discontinued, since production of a written request in the midst of an operational burn would most likely be impractical. The reason and justification for their request, however, should be subsequently documented and submitted to the OSC for the record. Requests to discontinue a burn, when submitted by agencies with trustee authority, will be immediate grounds for discontinuance of burn operations.

11. Monitors representing the USCG, EPA, federal trustee agencies, the affected states, OSHA, and the responsible party will have the opportunity to monitor in-situ burning operations, when feasible:

(a) Monitoring to establish "continue / discontinue" data for input to the OSC will be conducted in accordance with protocols outlined in Appendix III. Unless smoke plumes are predicted to cross over populated or environmentally sensitive areas, an inability to conduct monitoring operations will not be automatic grounds for discontinuing or prohibiting in-situ burn operations. Real-time PM-10 monitoring will be initiated when trajectories indicate potential movement toward populated or environmentally sensitive areas, and will be in place prior to the start of burn operations to gather baseline data.

(b) All burns must incorporate constant visual observations to monitor smoke plume behavior. A trial burn may be conducted to better estimate plume behavior prior to operational burning. The OSC, EPA, DOC/NOAA, DOI, and the affected state(s) should determine under what conditions the burn should be stopped if the plume contacts or threatens to contact the ground in populated or environmentally sensitive areas.

12. Mechanical recovery equipment shall be mobilized on-scene when feasible for backup and complimentary response capability. Provisions should be made for collection of burn residue following the burn(s).

13. If in-situ burning is used, a post incident debriefing will take place within 45 days to gather information concerning its effectiveness and to determine whether any changes to this agreement are necessary. The debriefing will be chaired by the OSC by arranging the time, place, and date of the debrief. The results of the debrief will be included in the OSC report.

AMENDMENTS

This Memorandum of Understanding may be amended in writing in whole or in part as is mutually agreeable to all parties thereto.

Area Committees may submit further defined areas for use/non-use of in-situ burning for consideration and approval by the USCG, EPA, DOC/NOAA, DOI and the states of New York and New Jersey. Approved amendments shall be found in Appendix I of this MOU.

CANCELLATION

This Memorandum of Understanding may be canceled in whole or in part by any party thereto. Cancellation will take place 30 days following delivery of written notification to each of the agencies participating in this Memorandum of Understanding.

APPENDICES

I. OSC ISB Decision Diagram
II. ISB Evaluation Checklist
III. ISB Monitoring Protocols

SIGNATURES

Eric J. Williams III — Sep 17, 1996

Captain Eric J. Williams III, USCG
Division Chief
Marine Safety Division
First Coast Guard District
RRT 2 Co-Chair

Date

Anthony Regalbuto — Sep 13 1996

Captain Anthony Regalbuto, USCG
Division Chief
Marine Safety Division
Area/Fifth Coast Guard District
RRT 3 Co-Chair

Date

Oct 8, 1996

Captain Peter K. Mitchell, USCG
Captain Of The Port Long Island Sound
Federal On-Scene Coordinator

Date

Richard C. Vlaun — Sept 30, 1996

Captain Richard Vlaun, USCG
Captain Of The Port New York
Federal On-Scene Coordinator

Date

John E Veentjer — Sep 18, 1996

Captain John Veentjer, USCG
Captain Of The Port Philadelphia
Federal On-Scene Coordinator

Date

Mr. Bruce Sprague
Response and Prevention Branch
U.S. Environmental Protection Agency, Region II
RRT 2 Co-Chair

9/27/96
Date

Mr. Andrew Raddant
Regional Environmental Officer / Northeast
U.S. Department of Interior
RRT Representative

9/6/96
Date

Cdr. Gerry Wheaton
DOC / NOAA
U.S. Department of Commerce
RRT Representative

9/19/96
Date

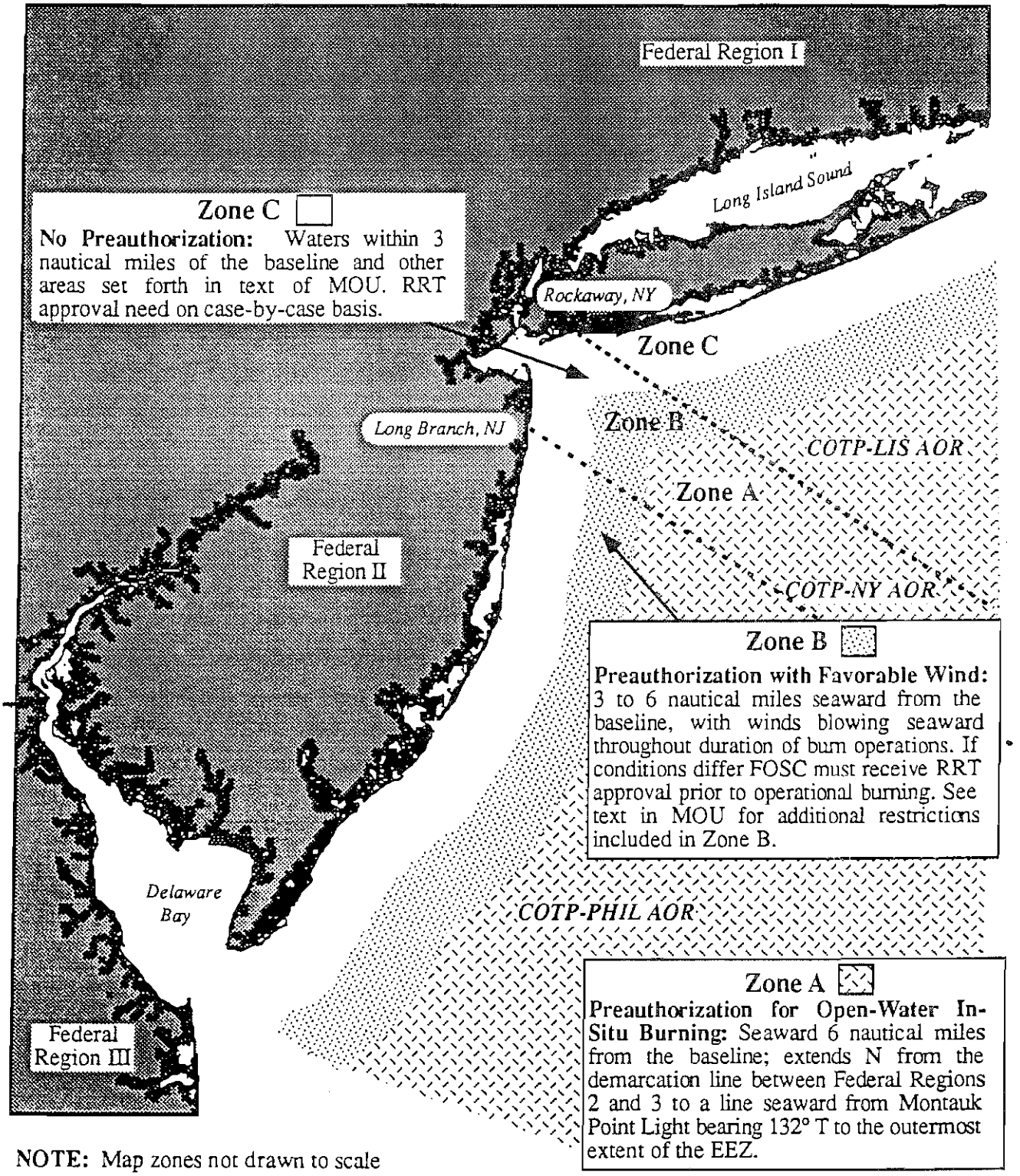
Mr. Richard Gimello
Assistant Commissioner, Site Remediation
Emergency Response Coordinator
Department of Environmental Protection
State of New Jersey

9/11/96
Date

Mr. Thomas Quinn
Director, Division of Spills Management
Department of Environmental Conservation
State of New York

9 Oct 96
Date

Region II In-Situ Burning Authorization Zones



NOTE: Map zones not drawn to scale

Figure 1

Memorandum of Understanding concerning Preauthorization of In-Situ Burning in federal Region II.

Schematic Illustration of Zone B In-Situ Burn Requirements

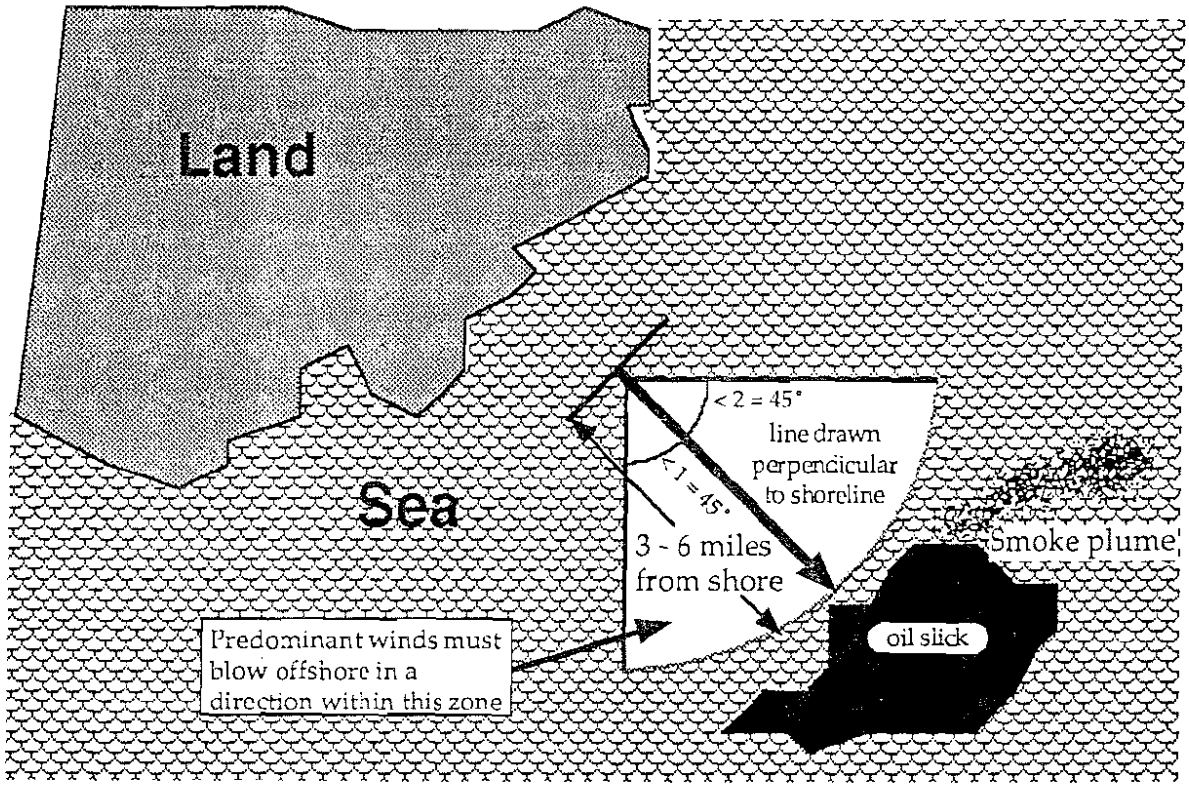


Figure 2

In-Situ Burn Unified Command Decision Verification Checklist

Purpose and Summary:

The following checklist, created with input from the Region II RRT, provides a summary of important information to be considered by the Unified Command, consisting of the federal On-Scene Coordinator (OSC), state On-Scene Coordinator (SOSC), and responsible party representative (RP) when planning for the use of in-situ burning in response to an oil spill in marine waters of Region II. The document is intended to allow Unified Command verification of a decision, rather than an information distribution sheet or an approval form.

Each section of the checklist provides a series of "limiting factors" questions for each of the decision points on the Region II In-Situ Burning Decision Flowchart. Some sections also contain a "worksheet" for important information that may be necessary to answer limiting factor questions; the user is encouraged to attach forms that already contain this information if they are readily available.

Questions in the limiting factors section that are answered with a "Yes/Optimal" support the decision to conduct an in-situ burn. However, spill response involves numerous tradeoffs, and any less-than-ideal conditions that are represented by a "No/Sub-Optimal" answer may be balanced by other benefits of in-situ burning in a given situation. Not every question of the worksheet must be answered. It is acceptable for the Unified Command to make a decision based on incomplete information, provided the information gaps are understood and considered.

In Situ Burn Decision:

Federal On-Scene Coordinator Decision: Approve Signature:_____

State On-Scene Coordinator Decision: _Concur Signature: _____

Responsible Party Decision: _Concur Signature: _____

Under Region II MOU, additional consultation or concurrence is required in Zone C (or Zone B if winds are not from the pre-approved directions).

Agency/Contact	Concurrence/consultation	Time/Date	Method(verbal, written)

Points of Contact for checklist:	**Name**	**Position**	**Telephone**
Federal			
State:			
Responsible Party:			
Scientific team:			
Other:	Other:		
	Other:		

FIELDS MAY BE LEFT BLANK, LIMITING FACTORS DO NOT PRECLUDE BURNING. PLEASE REFER TO DOCUMENT SUMMARY AND PURPOSE.

Incident information *(To be completed by Requesting Party)*

Incident Name	
Current date/time	
Anticipated burn date/time	
Location of spill (descriptive)	
Location of burn (descriptive)	

Spill Location/Trajectory *(To be completed by Scientific Support Team)*

Trajectory (Graphic Attached)	__ Yes No
-or- Text:	
Overflight Map (Graphic Attached)	__ Yes No
-or- Text:	

To be completed by OSC representative:

Consultations/Concurrence based on location of approval area of burn		Yes	No	Comments
Zone A – 6 miles offshore:	FOSC approval of burn?			
Zone B – 3 to 6 miles offshore with decidedly offshore wind:	FOSC approval of burn?			
Zone C – Less than 3 miles offshore:	FOSC approval of burn?			
	EPA RRT co-chair concur with burn?			
	State(s) RRT representative concur with burn?			
	Consultation with DOI RRT representative?			
	Consultation with NOAA RRT representative?			
	Region I/III consultation/concurrence if burn to impact neighboring Region?			
Notifications planned as described in MOU (EPA, DOI, NOAA, State(s))?				
Attachments/Additional Information:				

FIELDS MAY BE LEFT BLANK, LIMITING FACTORS DO NOT PRECLUDE BURNING. PLEASE REFER TO DOCUMENT SUMMARY AND PURPOSE.

To be completed by Scientific Support Team:

Oil Burnability	Optimal Condition: Yes or Probable	Sub-Optimal Condition: No or Unlikely	Comments
Anticipate oil to remain ignitable (fresh, not highly emulsified)?			
Attachments/Additional Information:			

To be completed by Scientific Support Team:

Weather/Sea Conditions	Optimal Condition: Yes or Probable	Sub-Optimal Condition: No or Unlikely	Comments
Weather forecast precipitation-free (affects ignition)?			
Winds/forecast winds less than 25 knots?			
Visibility sufficient for burn operations/observations (greater than 500 feet vertical, 1/2 mile horizontal)?			
Wave heights/predicted wave heights less than 2-3 feet?			
Attachments/Additional Information:			

To be completed by Requesting Party:

Operational feasibility	Optimal Condition: Yes or Probable	Sub-Optimal Condition: No or Unlikely	Comments
Is an operational plan written or in process? (if available, attach)			
Is needed air support available?			
Are personnel properly trained, equipped with safety gear, and covered by a site safety plan?			
Are all necessary communications possible (i.e. between aircraft, vessels, and control base in an open water burn)?			
Can all necessary equipment be mobilized during window of opportunity (i.e. fire boom, igniter, tow boats, residue collection equipment)?			
Can undesirable secondary fires be avoided?			
Can burn be safely extinguished or controlled?			
Can aircraft pilots and mariners be adequately notified, as necessary?			
Is equipment and personnel available for residue recovery?			
If ignition from a helicopter, FAA approved equipment?			
Attachments/Additional Information:			

FIELDS MAY BE LEFT BLANK, LIMITING FACTORS DO NOT PRECLUDE BURNING. PLEASE REFER TO DOCUMENT SUMMARY AND PURPOSE.

To be completed by OSC/SOSC staff in consultation with meteorologists/modelers as appropriate:	Optimal Condition	Sub-Optimal Condition	
Human and Environmental Impacts	Yes or Probable	No or Unlikely	Comments
Public exposure to PM-10 (particulates <10μm) not expected to exceed 150 μg/m3 averaged over 1 hour as a result of burn? (current NRT planning **guideline**)			
Can burning be conduced at a safe distance from other response operations, and public, recreational and commercial activities?			
Is particulate (hour-averaged PM-10) monitoring available?			
Can public be adequately notified of burn?			
Trustees consulted if endangered species in immediate burn area?			
Attachments/Additional Information:			

Public Health/Plume Worksheet (Open Water and Inshore):

Distance / direction to nearest population relative to burn: _____miles to the_____(direction)
Distance / direction to nearest downwind population: _____miles to the_____(direction)
Forecast wind speed / direction (24 hour): _____mph from the_____(direction)
Forecast wind speed / direction (48 hour): _____mph from the_____(direction)

Estimated plume trajectory (text or attached graphic): _____

Other comments/issues: _____

FIELDS MAY BE LEFT BLANK, LIMITING FACTORS DO NOT PRECLUDE BURNING. PLEASE REFER TO DOCUMENT SUMMARY AND PURPOSE.

faxed 4/5/96

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

April 5, 1996

Mr. Ed Levine
Scientific Support Coordinator
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Building 110, Box 2
Governors Island, NY 10004-5000

Dear Mr. Levine:

The U.S. Fish and Wildlife Service (Service) has reviewed the draft Biological Assessment (BA) of Effects on Listed Species of Regional Response Team II Memorandum of Understanding (MOU) for Preauthorization of In-Situ Burning of Oil Spills, dated December 4, 1995. The geographic area addressed in the MOU covers four zones located along and offshore from the south shore of Long Island and the coast of New Jersey as described in the draft BA.

Based on our review of the information provided, we concur with the determination that the proposed MOU preauthorizing in-situ burning as an oil spill response technique in designated zones is not likely to adversely affect Federally listed species under our jurisdiction. As described in the draft BA, the proposed MOU provides for further consultation with the Service under specified circumstances prior to conducting in-situ burning. Therefore, except as prescribed in the draft BA and MOU, no further Section 7 consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required with the Service. Should the proposed action change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

The above comments pertaining to endangered species under our jurisdiction are provided pursuant to the Endangered Species Act.

If you have any questions regarding these comments, please contact Mark Clough at (607) 753-9334.

Sincerely,

Sherry W. Morgan

Sherry W. Morgan
Field Supervisor

cc: REO, Boston, MA
NJFO
LIFO

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930

SEP 10 1996

Captain Eric Williams, USCG
Co-Chair Area II Regional Response Team
1st US Coast Guard District
Commander (M)
408 Atlantic Avenue
Boston, MA 02210-2209

Dear Captain Williams:

The Area II Regional Response Team has drafted a Memorandum of Understanding (MOU) for expedited procedures for using in-situ burning as an oil spill countermeasure within marine waters roughly from Montauk, New York to Cape May, New Jersey. Because several species listed as endangered or threatened under the Endangered Species Act (ESA) may occur in the waters described by the MOU, you and the NOAA Scientific Support Coordinator have initiated consultation with the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the ESA, regarding the MOU and potential effects on the listed species. Consultation has included informal talks with NMFS staff, as well as the submission of a biological assessment. Based upon this previous correspondence and the discussion that follows, NMFS concurs that in-situ burning: 1) may mitigate many of the potential adverse effects of spilled oil and 2) is not likely to worsen any of the adverse effects of exposure to the oil and oil fractions. Therefore, NMFS concludes that the MOU and the expedited procedures authorized under the MOU are not likely to adversely affect the ESA-listed species under NMFS jurisdiction.

The following species listed as endangered or threatened under the ESA may occur in the waters described by the MOU:

Species	Listing Status
Blue whale (*Balaenoptera musculus*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Humpback whale (*Megaptera novaengliae*)	Endangered
Northern right whale (*Eubalaena glacialis*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Loggerhead sea turtle (*Caretta caretta*)	Threatened
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered

Also, bottlenose dolphin (*Tursiops truncatus*) and harbor porpoise (*Phocoena phocoena*), which are common in the area, have been proposed for listing under the ESA.

The decision of whether or not to conduct in-situ burning presupposes that oil has been spilled in the marine environment. Noting the statement in the biological assessment that "mechanical removal [of spilled oil] will remain the predominant response tool," NMFS acknowledges that under some conditions collection and removal of oil may not be sufficiently effective or timely to protect marine resources, and responders must rely on innovative countermeasures. In-situ burning can effectively and quickly remove spilled oil from the surface of the water and thereby reduce the potential of listed species directly contacting the oil. Burning would take place only within a fireproof boom, and therefore marine effects are likely to be local. In-situ burning can eliminate most of the volatile fractions of the oil which would be toxic if inhaled by mammals and sea turtles. Most of heat generated by a burn will go up into the atmosphere and only the top few centimeters of the water column will be warmed above the ambient water temperature. Burn residue generally floats and can be retrieved. Listed species may come in contact with residue which is not retrieved. The effects of the contact are unknown; however, since the volume of oil product in the water is so greatly reduced by the burn, the potential for exposure is likewise substantially reduced.

Though this consultation fulfills your responsibilities pursuant to Section 7 of the ESA, the MOU states that spill responders will consult with NMFS should ESA-listed species be observed in the immediate area where a burn will be conducted. NMFS supports that provision (paragraph 9) of the MOU and insists that you contact the agency should ESA-listed species under NMFS jurisdiction be observed. Also, spill responders should be advised that members of the Northeast Marine Mammal Stranding Network are authorized by NMFS to deter, handle, and remove listed species that have become oiled or are at risk of entering the spill and burn area. The enclosed list of contacts for the stranding network may be added to Area Contingency Plans.

In summary, NMFS concurs with the biological assessment's conclusion that the MOU for in-situ burning of spilled oil and the procedures authorized under the MOU are not likely to adversely affect endangered and threatened species under the jurisdiction of NMFS that may occur in the area. Should a need to change the MOU arise or should new information become available that changes the basis for this determination, this consultation should be reinitiated. If you have any questions about this consultation or about the protected species in the region, please contact Daniel Morris or Doug Beach at (508) 281-9328.

Sincerely,

Dr. Andrew A. Rosenberg
Regional Administrator

Enclosure

cc: F/PR -- Ziobro
SSC -- Levine
SSC -- Lehmann

File: 1514-05(A) USCG-Oil-RRTII

Northeast Marine Mammal Stranding Network
*Letterholders and Affiliates, January 18, 1996

MAINE:
Tom Fernald
*College of the Atlantic
Bar Harbor, ME 04609
TEL: (207) 288-5644, -5015
FAX: (207) 288-4126

MASSACHUSETTS, NEW HAMPSHIRE & MAINE:
Greg Early
*New England Aquarium
Central Wharf, Boston, MA 02110
TEL: (617) 973-5246, -6551
FAX: (617) 723-4596
Hotline: (617) 973-5247

CONNECTICUT & RHODE ISLAND:
Rob Nawojchik, David St. Aubin
*Mystic Marinelife Aquarium
55 Coogan Blvd.
Mystic, CT 06355-1997
TEL: (860) 536-9631, ext. 107
FAX: (860) 572-5969

NEW YORK:
Sam Sadove, Kim Durham
*Okeanos Ocean Research Foundation
431 East Main Street
Riverhead, NY 11901
TEL: (516) 369-9840
FAX: (516) 369-9826
Hotline: (516) 369-9829

NEW JERSEY:
Bob Schoelkopf
*Marine Mammal Stranding Center
P.O. Box 773
Brigantine, NJ 08203
TEL: (609) 266-0538
FAX: (609) 266-6300

DELAWARE:
Leon Spence
Delaware Division of Fish & Wildlife
P.O. Box 1401
Dover, DE 19903
TEL: (302) 739-4782
FAX: (302) 653-3431

MARYLAND:
Joyce Evans
Maryland Dept. of Natural Resources
Oxford Cooperative Laboratory
904 South Morris Street
Oxford, MD 21654
(410) 226-5901, (800) 628-9944
FAX: (410) 226-5925

Dr. Brent Whitaker, David Schofield
*National Aquarium in Baltimore
Pier 3, 501 East Pratt Street
Baltimore, MD 21202
TEL: (410) 576-3853, -1098(DS)
Beepers:(410) 450-3852,-4284, 408-6633
FAX: (410) 576-1080

WASHINGTON, D.C. AREA:
Jim Mead, Charley Potter
*Smithsonian Institute
National Museum of Natural History
Division of Mammals
Washington, DC 20560
TEL: (202) 357-1923,786-2497
FAX: (202) 357-1896

VIRGINIA:
Jack Musick
*Virginia Institute of Marine Science
College of William and Mary
Gloucester Point, VA 23062
TEL: (804) 642-7313, -7097
FAX: (804) 642-7097

Mark Swingle
*Virginia Marine Science Museum
717 General Booth Boulevard
Virginia Beach, VA 23451
TEL: (804) 437-4949
FAX: (804) 437-4976

Annex ZZ

Dispersant Use

Annex ZZ

Use of Dispersants Within Sector Delaware Bay Area of Responsibility

9720 Use of Dispersant within Sector Delaware Bay

[Link to Documentation and Application Form for Dispersant use Section 9724]

The critical scientific issue behind dispersant deployment is whether the environmental effects associated with dispersed oil are preferable to those associated with un-dispersed oil. Dispersing spilled oil does not remove it from the environment and should not preclude the use of other clean-up methods.

Important factors to be considered before reaching a final decision on dispersant use include:

- Is the oil dispersible?
- Are chemical countermeasures necessary and appropriate?
- What are the resources at risk?
  - Where are they located?
  - How will they be affected if chemical countermeasures are used?
  - How will they be affected if chemical countermeasures are not used?
- Are the appropriate dispersants available?
- Is dispersant application equipment available?
- Are weather conditions appropriate for dispersant use?

It is critical to decide whether or not to use dispersants early in the spill response. Dispersants generally need to be applied within 24-hours to be effective. As the oil weathers and the slick spreads, mousse and tarballs form, volatile components evaporate, and dispersant use becomes less effective.

Trial Application

In cases where it is difficult to predict if a dispersant will be effective, it may be advisable to conduct a field trial, prior to requesting approval for a full-scale dispersant operation.

Conditions under which a field trial may be desirable include:

- The oil has weathered and present viscosity and pour point may have become too high to permit efficient dispersion of oil
- The properties of the oil which has been spilled are not known and it is suspected that the oil may be difficult to disperse
- The dispersant which is available has not been used sufficiently or tested adequately to assure that it will disperse the spilled oil effectively
- The spilled oil is likely to impact sensitive resources but such impact is not imminent. That is, sufficient time is available for testing before shoreline impact.

Trial application will only take place on an area of the spill covered by **50 barrels or less** to determine the product's effect on the specific oil under the current set of environmental

and meteorological conditions. Trial application may begin prior to the initial request of the appropriate Regional Response Team (RRT) for operational use of the chemical countermeasures on a greater portion of the spill. Monitoring protocol is waived for trial use applications; however, it must be supervised by a trained observer (i.e. Strike Team or NOAA SSC) and be reported as a qualitative visual observation (pass/fail) and reported to the RRT.

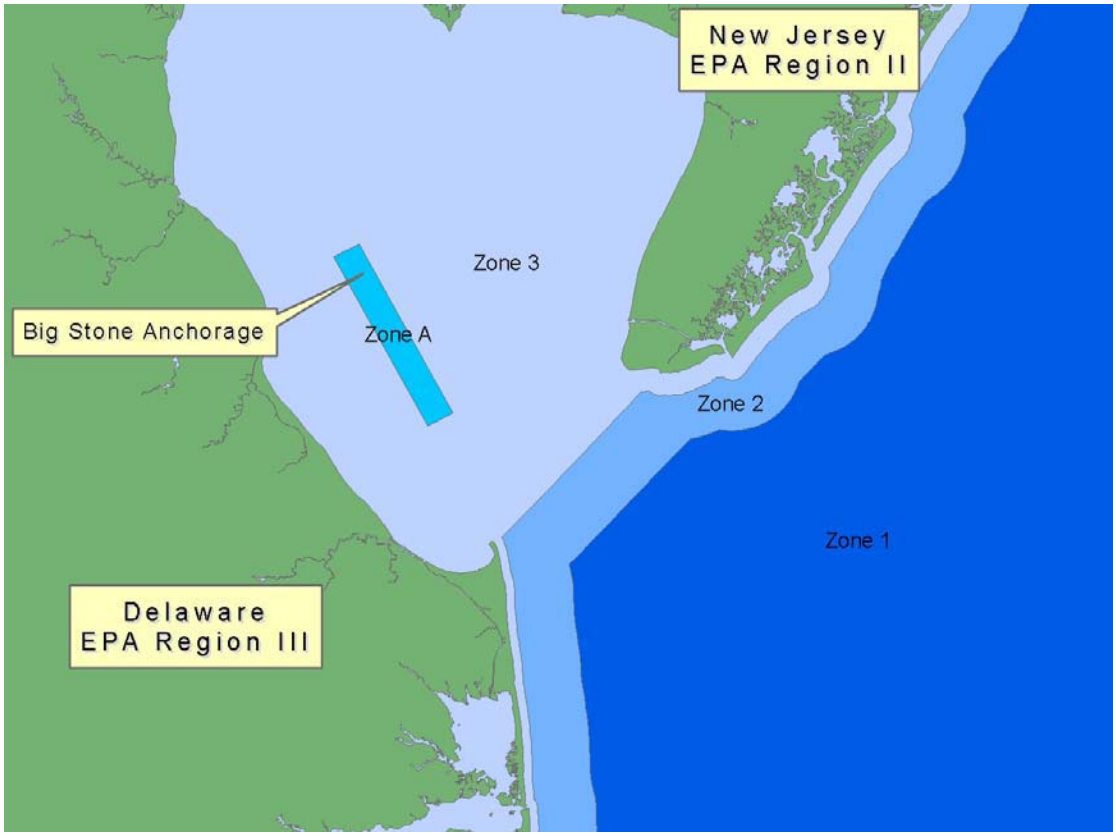
Dispersant Monitoring

The Coast Guard Strike Team should monitor dispersant application operations. The monitoring has two main objectives:

- ❑ To determine the effectiveness of the dispersant
- ❑ To determine the environmental effect of the dispersant.

Dispersant Use Pre-Authorization and Application Zones

Dispersants listed in the NCP Product Schedule may be used in spill response in accordance with the special conditions listed below:



Big Stone Anchorage (Zone A) in the Delaware Bay

Limited Preauthorization

The effects of the circular Delaware Bay current patters in the Big Stone Beach Anchorage toward the channel side of the 15-meter contour are conductive to chemical agent use on spills of **50 barrels or less**.

The use of chemical countermeasures on spills of 50 barrels or less, or 50 barrel or less portions of larger spills, is approved, provided the former is a spill of opportunity and the latter is for trial use only.

The Federal On-scene Coordinator (FOSC) shall notify State and Federal trustees of the decision to deploy dispersants, and prepare and provide a written report detailing the results of the deployment within 60-days of termination of the response.

COTP Sector Delaware Bay Sub-regional Area (Zone 1) - the offshore boundary of the Sector Delaware Bay COTP Zone **more than three miles offshore**, as defined in 33 CFR 3.25(b).

Advanced Preauthorization

The water depth and surrounding topography of this area are suitable for the use of chemical agents. Preauthorization is granted with respect to spills of any size.

Coastal Waters within the COTP Sector Delaware Bay Sub-Regional Area (Zone 2) – Greater than 0.5 miles from shore and water depth greater than 40 feet (12.2 meters)

Concurrence/Consultation Required for Operational Use

Chemical countermeasures may be used in waters that are at least 0.5 nautical miles from any shoreline and where the water depth is greater than 40 feet (12.2 meters)

Before authorizing operational use of dispersants, the FOSC must establish communication with the following for concurrence

- Environmental Protection Agency
- Affected State(s)
- Department of Commerce in Region III
- Department of Interior in Region III

The FOSC may establish a time frame, not less than four hours, in which a non-concurrence position must be communicated.

FOSC must communicate with the following for consultation

- Department of Commerce in Region II
- Department of Interior in Region II

Nearshore Waters within the COTP Sector Delaware Bay Sub-region (Zone 3) – Less than 0.5 miles from shore or water depth less than 40 feet (12.2 meters), beyond the inland waters demarcation line.

Concurrence/Consultation Required for Operational Use

Dispersants are not a primary response tool in this zone, but their use maybe necessary to protect sensitive areas. Before authorizing dispersant use in Zone 3, the FOSC must establish deliberative communication with the following for concurrence

- Environmental Protection Agency
- Affected State(s)
- Department of Commerce in Region III
- Department of Interior in Region III

The FOSC may establish a time frame, not less than four hours, in which a non-concurrence position must be communicated.

FOSC must communicate with the following for consultation

- Department of Commerce in Region II
- Department of Interior in Region II

Notification

If the FOSC decides the use of dispersants is necessary, RRT members representing the EPA, DOI, DOC and affected State(s) will be notified. Notification will include

- Material Safety Data Sheet (MSDS) of the dispersant product chosen
- Date, time and location of the incident
- Type and amount of oil discharged
- Area affected
- The projected area of impact if the oil is not dispersed
- Reasons why mechanical or physical removal of the oil is not feasible, or will not on its own provide the optimal response method
- Dispersant to be used
- On-scene weather, wind and forecasted weather.

The FOSC will consider the advice of the EPA, DOI, DOC and affected State(s) and other information sources, which may be available. The use of dispersants will be discontinued if so requested by the RRT representative of the EPA, affected State(s), DOI or DOC. Such a request may be verbal followed by written documentation.

Only the FOSC can authorize the use of dispersants and it is the FOSC's responsibility to provide the trustees with all required documentation information.

Aerial Observation of Dispersants

Observing dispersant operations:

- Keep the sun behind you, holding the aircraft at an altitude of 500 to 1,000 feet (150 to 300 meters)
- Observe the slick at about a 30-degree angle
- For observers to achieve consensus use standard reporting criteria and be sure that **all observers have been trained to use a common set of guidelines**. Use NOAA's [Checklist for Dispersant Application Observation Section 9742] for reporting standards
- Report the presence of marine mammals, turtles and birds in the area of dispersant application. These species can be adversely affected by contact with dispersants
- The observer will not make operational decisions (where to apply, how much, etc.), these decisions are made by operational units

Identifying Dispersed Oil

- Suspended solids or algal blooms, can resemble dispersed oil.
- The appearance of oil slicks and subsurface plumes is affected by factors such as oil characteristics, time of day (different sun angles), weather, sea state, and the rate at which oil disperses.
- Once dispersant has been applied to a slick, color changes may occur in emulsions (mousse) , produced as the demulsifying action of the dispersant reduces the water content and viscosity of the emulsion. Demulsification also can produce changes in the shape and size of a slick: as demulsification pushes water out, the slick may appear to shrink in area.

Telling When Dispersion Has Occurred

- A visible subsurface plume of dispersed oil indicates that an application of dispersant is working.
- When no plume is visible in the water column, it is difficult to determine whether the dispersant is working, but does not definitively mean that the dispersant is not having an effect.
- Subsurface plumes of dispersed oil typically have a cloudy appearance, and can range in color from brown to white. Some are not visible. When dispersant is working, oil remaining on the water surface also may change color.

- In some cases, you may not be able to see a subsurface plume even when one is present. When the water is turbid, you may not be able to see a plume. Sometimes, remaining surface oil and sheen can mask oil dispersing under the slick, making it hard for you to see the plume.
- A subsurface plume may not form instantaneously once dispersant has been applied to a slick. In some cases, such as when oil is emulsified, it can take several hours for a plume to form. In other cases, a visible plume may not form (you then may wish to use sampling to learn whether dispersion has occurred).
- A change in the appearance of a treated slick, compared with an untreated slick, might indicate that the dispersant is working. A difference in appearance alone is not enough of an indication to be sure that the dispersant is having an effect.
- A clear stretch of water left in the wake of a dispersant application vessel can appear to represent successful dispersion of oil. Areas of clear water can be created as the vessel wave breaks a path through the oil, either physically parting the oil or mechanically dispersing it. Mechanically dispersed oil will recoalesce and float to the surface.
- When initially applied, dispersants sometimes have a herding effect on oil, making a slick appear to be shrinking when, in fact, the dispersant is "pushing" the oil together. This effect results from the surfactant action of dispersants, which exerts a horizontal spreading force on thin oil films. This effect can cause parts of an oil slick to seem to disappear from the sea surface for a short time.

Estimating Slick Thickness, Application Dose, and Dispersant Efficiency

- Dispersed oil plumes are often highly irregular in shape and variable in oil thickness. It can be difficult to accurately estimate dispersant efficiency.
- The appropriate dispersant application dose depends on the thickness of the oil in a slick.
- Slicks are generally not uniform in thickness, and it's not always possible to distinguish among thicker and thinner parts of the same slick.
- Under dosing a slick can cause a dispersant application to be unsuccessful
- Overdosing the slick adds to the expense of treatment and does little extra
- Because over- and under dosing lead to variations in the effectiveness of application, note these variations when observed them.

Documentation Form For Dispersant Use

9724 DOCUMENTATION/APPLICATION FORM FOR DISPERSANT USE

Name of spill incident_____

Responsible Party (if known) _____

Date and time of spill incident _____

I OIL TYPE

1. Spilled product name (if known):_____
2. Viscosity: _____
3. API Gravity:_____
4. Pour Point:_____
5. % Evaporation in 24 hours_____

   48 hours_____
6. Did oil emulsify within the operational period?_____

**Any information from visual overflights of the slick, including estimations of slick thickness, be included here. All additional availability information pertaining to physical of spilled oil should be included here.

II ENVIRONMENTAL CONDITIONS

1. Wind speed_____
2. Wind direction _____
3. Visibility_____
4. Ceiling_____

III DESCRIPTION OF SPILL INCIDENT AND SPILL SITE

Note all relevant details concerning the spill incident and the incident site. Be sure to note (list not inclusive):

- Circumstances (fire, collision, grounding, etc.)
- Time and Date
- Location
  - Including nearest major port
- Type of oil spilled
- Amount of oil spilled
  - Slick thickness
  - Area covered by the oil slick
- Total potential of the spill
- Type of release (intermittent, instantaneous, continuous, etc.)
- Stability of the vessel
- Amount of cargo remaining aboard the vessel
- Sensitive environmental conditions in the vicinity of the vessel
  - Shoreline habitat type in predicted areas of impact
  - Resources at Risk
  - Endangered/threatened species
  - Critical habitats for the above species
  - Marine animals
  - Waterfowl and other bird use
  - Shellfish
  - Finfish
  - Commercial use (aquaculture, water intakes, etc.)
  - Public use area (parks, beaches, marinas, etc.)
  - Areas of historical significance

IV DESCRIPTION OF AREA OVER WHICH DISPERSANTS ARE APPLIED

1. Distance from shoreline: _____
2. Depth of water:_____
3. Jurisdiction (i.e. federal or state):_____
4. Special management zone area _____

_____

5. Safety zone established in operational area:_____

_____

V. AVAILABILITY OF PERSONNEL AND EQUIPMENT

1. Availability of application and spotter aircraft_____
   Source:_____
   Point of contact:_____
   Type: _____
   Travel time to spill:_____
2. Type of aircraft used:_____
3. Aircraft's dispersant load capability:_____
4. Availability of qualified personnel:_____
   Source:_____
   Point of contact:_____
   Travel time to spill:_____
5. Time required for delivery to the aircraft staging area:_____

VI. INFORMATION ON DISPERSANT PRODUCT

1. Name of dispersant:_____
2. Manucturer:_____
3. Amount available:_____
4. Source:_____

** A Material Safety Data Sheet of the product should be attached here.

VII IMPLEMENTATION OF RECOMMENDED MONITORIING PROTOCOLS

1. Was the Atlantic Strike Team's Special Response Operations Program Team deployed?

_____

**A full report documenting the activities and results of any monitoring activities should be attached here.

VIII. SAFETY

1. For safe aerial operations, wind speed should be less than 25 knots, ceiling should be greater than or equal to 1000 feet and dispersant operations should take place during daylight hours

2. Ensure the Site Safety Plan includes the hazards associated with deployment of dispersants.

Guidance For

Aerial Observation of Spills

9740 Guidance for Aerial Observation of an Oil Spill

Aerial overflights of an oil spill provide the Incident Commander/Unified Command with critical information on which to develop initial incident objectives and subsequent objectives. To maximize the effectiveness of aerial observations trained observers or persons with experience evaluating the extent of an oil spill are recommended.

Prior to takeoff the observers should:

- Get a situational brief from the Situation Unit Leader
- Refer to the Oil Spill Observation Checklist for information to be gathered [Link to the Checklist Section 9741]
- Consult the Open-water Oil Identification Job Aid for Aerial Observation from NOAA's Office of Response and Restoration Branch [Link to Job Aid]

Actions once observations begin:

- Record observations
- Ensure that on-scene weather is recorded. To include:
  - Visibility
  - Surface wind speed and direction
  - The pilot can best estimate the surface wind speed and direction
  - Using the Beaufort Scale, an observer can estimate the wind speed from the sea state
  - Current direction can be estimated by comparing the water movement in relation to a stationary object such as a moored buoy, navigation light or, by using kelp or sea grass beds

Aerial Oil Spill

Observation Checklist

9741 Oil Spill Observation Checklist

Record your observations of spilled oil either in a notebook or directly on a chart of the area under observation. Here is a checklist for organizing your observations.

General Information

___ Date

___ Time

___ Case name

___ Observers' names

___ Observers' affiliations

___ Location of oil's source (if known)

___ Stage of tide (flood, ebb, slack)

___ On-scene weather (wind, sea state, visibility)

___ Platform (helicopter, fixed-wing aircraft, boat)

___ Flight path/track line

___ Altitude where observations taken

___ Areas not observed (e.g., foggy locations, restricted air spaces, shallow water areas)

Note: When following a flight path or track line, travel beyond known impacted areas to check for oil beyond these areas and to minimize the number of observations made while facing into the sun.

Note: Include the name and phone number of the person making the observations.

Oil Observations

___ Slick location(s)

___ Slick dimension(s)

___ Orientation of slick(s)

___ Distribution of oil (e.g., as windrows, streamers, pancakes, or patches)

___ Color and appearance (e.g., rainbow, dull or silver sheen, black, or brown in color, or mousse)

___ Percent coverage (see Percentage Coverage Chart)

___ Is oil recoverable (Y/N)? (examples of recoverable oil types include black oil, mousse, and heavy dull- or dark-colored sheens)

Note: Clearly describe the locations where oil is observed, as well as the areas where no oil has been seen.

Other Observations
Response Operations...

___ Skimmer deployment (general locations where skimmers are working. Are they working in the heaviest concentrations of oil?)

___ Boom deployment (general locations of boom(s). Does the boom contain oil? Is oil entraining under the boom?)

___ Source of oil (describe the status of the source. Is oil still being released?)

Environmental Observations...

___ Locations of convergence lines, rip tides, and sediment plumes

___ Locations of kelp beds, sea grass beds, and other features that could be mistaken for oil

___ Wildlife present in area (locations and approximate numbers of birds and marine mammals)

Revised: July 17, 2001
Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration

Checklist for

Dispersant Application Observation

9742 Checklist for Dispersant Application Observation

Names of observers (agency): _____

Platform: _____

Date of Application: ___/___/___

Time of application commencement/completion: _____

Weather conditions (air temperature, wind speed, direction): _____

_____

_____

Tide and current: _____

_____

Water temperature, depth, and sea state: _____

_____

Visibility: _____

Altitude (Observation and application platforms): _____

Application method (aerial/vessel) and rate: _____

_____

Type of oil: _____

Oil properties (specific gravity, viscosity, pour point, etc.): _____

_____

Name of dispersant: _____

Location/distance from shore/identified sensitive areas: _____

_____

Surface area of slick: _____

Operational constraints imposed by agencies: _____

_____

_____

Percent of slick treated: _____

Visual appearance of application: _____

_____

Re-coalescence (reappearance of oil): _____

Presence of wildlife (and any impacts, e.g., fish kill): _____

_____

Lessons learned: _____

_____

_____

Photographic documentation: _____

_____

Revised: June 29, 2001
Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration

Aerial

Dispersant Application

Companies

9746 Aerial Dispersant Application (Aircraft and Helicopter)

Airborne Support, Inc. (ASI)
3626 Thunderbird Road
Houma, LA 70363
Tel: (985) 851-6391
Fax: (985) 851-639

Resources:

- 2-Douglas DC-3
- Douglas DC-4
- Turbo-Commander

ASI keeps a reserve of over 50,000 Gallons of Dispersant on site.
Type employed:
Exxon-Nalco Corexit 9527 and Corexit 9500

Response time to Sector Delaware Bay:

- Approximately 10 hours to be on-scene, using Georgetown Airport, Delaware as the landing zone.
- Time assumes a full fuel load at take off and full load of dispersant and weather conditions

United States Air Force Reserve 910th Airlift Wing

Youngstown Air Reserve Station
3976 King Graves Rd., Unit 12
Vienna, Ohio 44473-5912

Resources:

- Four C-130H aircraft
- Equipped with **six** Modular Aerial Spray Systems (MASS)
- Each MASS has a 2,000 gallon capacity
- Flow rate are set at 232 gallons per minute.
- Aircraft flies at 200 knots Ground Speed at about 100 feet
- Covers a swath width of 100 feet for an average application rate of flow rate of 5 gallons/acre (variable 3-15 gallons/acre).
- Total spray-on time for 2,000 gallons lasts about 8 minutes and 30 seconds.

Response time to Sector Delaware Bay

- Worst – case scenario: 48 hours to take off (arrival in 50 hours
- Best – case scenario: 6 hours to take off (arrival in 8 hours)
- Flight time Youngstown, OH to Georgetown, DE approx. 2 hours depending upon WX, payload, etc.

To request 910th Airlift Wing's Assistance

- Contact 910th Airlift Wing: Capt Mark Breidenbaugh, 330-609-1965 or Maj Jeff Shaffer 330-609-1652 (after hours Command Post 330-609-1315) and provide details of spill (location amount, etc.)
- The 910th will provide unit with any specifics that are needed to make the official request for assistance
- Contact the HQ Air Force Air & Space Operations, Directorate of Operations, Training, Air Force National Security Emergency Preparedness (AFNSEP), Fort McPherson, GA
    - Telephone (800) 366 – 0051 Fax (404) 464 – 4282 General information e-mail: afnsep@afnsep.af.mil
- Provide AFNSEP with your request and required information provided by the 910th
- Contact HQ Air Force Reserve Command, Branch of Current Operations, Division of the Directorate of Operations (AFRC/DOOM) with request for assistance and related information
- Inform DOOM that the Coast Guard has contacted ANFSEP
    - SMSGT Mike Flores mike.flores@afrc.af.mil
        i. DSN 497-0176
        ii. COM 478-327-0176

Helicopter Applicators, Inc.
1670 York Road
Gettysburg, Pennsylvania 17325
PH: 717-337-1370 or 1-800-937-4424
FAX: 717-337-1527

Resources:

- Twelve helicopters
- Based in Gettysburg, Pennsylvania
- Hangar in Delaware

NOTE: Investigating aerial dispersant capability and certification for flying offshore missions.

RRT 3

Dispersant Employment Evaluation Form (DEEP)

1. INTRODUCTION AND PURPOSE

The Region III Regional Response Team (RRT) is guided by the Regional Contingency Plan (RCP), which strives to coordinate and integrate response to protect the environment from the damaging effects of oil pollution. The most effective response capability must include a wide array of oil spill containment and cleanup strategies and the personnel and equipment to implement those strategies successfully. The use of chemical dispersants as one potential response tool has been and continues to be a controversial topic. However controversial, the Region III RRT has accepted its responsibility to evaluate the existing knowledge about chemical dispersants in order to formulate an informed policy toward their potential use.

The purpose of the Dispersant Employment Evaluation Plan (DEEP) is to succinctly present the RRT's policy on the potential use of chemical dispersants and provide technical and procedural guidance when a decision on dispersant use is necessary. The DEEP is intended to be a guideline that assists decision makers in their evaluation of the complex and often difficult considerations of dispersant use. Another important aspect of the DEEP is the recognition that as our regional knowledge and experience associated with dispersants changes, the DEEP should be revised to reflect those changes.

The DEEP addresses considerations for dispersant use in marine and estuarine environments only. The potential use of dispersants in freshwater environments should be evaluated as a separate effort for reasons provided in Section 10 of this document.

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991

(1DEEPmain)

2. POLICY ON DISPERSANTS

A. RRT Policy

It is the policy of the Region III RRT that it is **preferable** to attempt to remove spilled oil from the environment rather than distribute it throughout the water column. Therefore, the potential use of dispersants in this region will be restricted as follows:

1. Offshore Marine Situations - dispersants may be considered as a response tool in offshore marine situations where significant diffusion is predicted to occur before the dispersed oil reaches areas of less than 40 feet of water. In these situations, the dispersant will not be the only response tool, but strategically employed in those areas where physical containment could not occur in time to protect a sensitive area of concern.

2. Nearshore and Estuarine Situations - in nearshore and estuarine situations, the use of dispersants will be reserved for those situations of **extreme risk*** such as: a) where physical containment could not be effected and dispersants would reduce an imminent threat to an important species or distinct population of fish, wildlife or other biota; or b) to reduce catastrophic economic impacts.

Where any of the above conditions exist, the OSC will consult the concurrence network as described in Section 4 of this document. In all cases of dispersant use, a consistent, logical program of monitoring dispersant effectiveness and effects is required. Monitoring requirements are discussed in Section 9 of this document.

* Where hazards to human life exist, the regulations in subpart J of the NCP apply and the **OSC may authorize dispersant use without regional concurrence network approval.**

B. Summaries of State Policies

The Region III RCP requires that the State(s) with jurisdiction over the affected waters must concur with proposals to use dispersants. The summaries of the dispersant use policies for the States in our region will be included as APPENDICES when made available by the states. A list of these appendices will be noted in this section in future updates of this document.

STATE APPENDIX #

1.
2.

NOTE: STATES MAY REQUIRE CONDITIONAL APPROVAL.

C. Policy Revisions

This policy will become effective upon promulgation by the RRT and it will be reviewed annually, or as necessary, for appropriate changes and updates.

NOTE: On August 1, 1990 - a proposal to incorporate the DEEP into the RCP was presented by the Workgroup and unanimously accepted by the RRT.

3. OPTIMAL SITUATIONS FOR USE

This information is intended to identify those situations where, if mechanical removal were infeasible and the conditions listed below were present, dispersant use probably would be one of the appropriate methods of environmental protection.

Assumptions:

- dispersants are not effective on all types of oil, and even those which are amenable when spilled become more resistant to dispersant treatment in about 24 hours
- the logistics of mounting a major dispersant operation are very complicated and require constant supervision and evaluation
- dispersants can be effective in mitigating environmental damage by reducing heavy oiling of shorelines and certain living resources
- dispersants do not remove the oil but redistribute it into the water column as fine droplets which can be readily diluted
- dispersants are not the preferred countermeasure strategy because they redistribute, not remove, oil from the environment; and because the long-term effects of the dispersant and dispersed oil on marine organisms are unclear and difficult to predict
- in common with all techniques, dispersants are not likely to be 100% effective in preventing shoreline impacts, but may be strategically employed to protect specific areas
- dispersants are one of many countermeasures strategies available to OSCs and they need to be considered along with other strategies, e.g., booms, skimmers, and shoreline cleanup, to optimally mitigate environmental damage

Optimal Conditions

If all or nearly all of these conditions exist, it is possible that dispersant use would be one of the best methods available to the OSC to protect the environment and mitigate damage.

1. offshore/coastal spill from a vessel
2. continuous spill/slow leak
3. oil with a viscosity of < 2,000 centistokes at ambient conditions (= med. fuel oil @ 50-68 degrees F or 10-20 degrees C) provided a rapid response can be implemented
4. spill where water temperature exceeds pour point of oil
5. sea state is about 2 (4' - 6'), that is, sufficiently high to enhance mixing the dispersants, sufficient depth and movement of water to ensure rapid dilution of dispersed oil
6. the likely onshore impacts include extensive marsh areas, wildlife refuges and/or other sensitive areas
7. the likely offshore/nearshore impacts include diving birds and/or other significant populations of other waterfowl, endangered species or other sensitive biota
8. the impacts of dispersed oil in the water column are likely to be short-term and unlikely to affect significant marine resources or endangered species
9. the spill could not be physically controlled in time to prevent significant onshore impacts
10. the dispersant operation can be effected within a few hours of the release (logistics issue - the appropriate type and quantity of dispersant, and suitable method of application can be obtained within the "window" of opportunity)

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(3OPTIMALmain)

4. USE DECISION GUIDANCE

A. Minimum Requirements Checklist to Support a Decision to Use Dispersants

This checklist is designed to assist decision makers when a proposal to use dispersants is made. Unless all of these requirements are satisfied, a decision to apply dispersants could be questioned. As indicated by the numerous references below, this checklist must be used in conjunction with other advice and guidance in the DEEP.

1. ____The spilled oil is compositionally and environmentally suited to dispersal, i.e. neither too viscous nor too volatile, water temperature is above the pour point, oil not too weathered. (See Section 7 for guidance)
2. ____The mixing action of the water body is sufficient to diffuse the dispersed oil. (Consult SSC)
3. ____An on-scene field test, which has been approved by the OSC with RRT concurrence, verified that the oil can be dispersed by the available dispersant. This can be accomplished through an actual trial application, which has been approved by the OSC with RRT concurrence, or by using a test kit. (See Section 7 for guidance)
4. ____Efforts to physically contain or remove the spilled oil will not sufficiently protect the primary resources of concern. (Use trajectory information and Section 5)
5. ____The primary resources for protection would be more adversely affected by undispersed oil rather than a mixture of dispersed oil and undispersed oil. (See Sections 5 and 6 for guidance)
6. ____The appropriate dispersant and application equipment can be mobilized efficiently so that the oil could be treated within approximately 24 hours of its exposure to weathering. (See Section 7 for guidance)
7. ____A monitoring plan will be implemented to collect information on dispersant effectiveness and effects. (See Section 9 for guidance)
8. ____The RCP concurrence procedure has been followed and the required approvals from responsible State and Federal authorities have been received. In Region III, concurrence is required from the affected State(s), DOI, DOC, and EPA.

NOTE: A STREAMLINED DISPERSANTS CHECKLIST (previously ANNEX XI of the Region III Regional Contingency Plan) is presented in the DEEP as APPENDIX 1 (5 pages) at the end of this document.

B. Decision Tree

The Decision Tree is a popular method of presenting the broad questions and answers involved in a dispersant use decision. The Decision Tree is not designed to be used in isolation, but instead must be used in conjunction with the other guidance and advisory information in the DEEP.

visual of decision tree in DEEP goes here

* Where hazards to human life exist, subpart J of the NCP allows the OSC to authorize dispersant use without concurrence network approval.

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(4DECISIONmain)

6. REGIONAL LIST

These lists are based on the recognized resources of concern in our region and our current knowledge of dispersant effects and effectiveness. It is assumed that dispersants would reduce the quantity of surface oil but not eliminate it entirely. The judgments on reducing adverse impacts are general because of the many incident specific factors that cannot be evaluated in advance. Discussions among the natural resource specialists will be necessary to reach a determination on which resources will be at risk during a given dispersant use decision.

Considerations for Use of Dispersants in RRT Region III and major resources of regional concern are presented in the following tables:

TABLE 6A - Ocean System (1 page)

TABLE 6B - Estuarine System (2 pages)

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(6LISTmain)

TABLE 6A - OCEAN

TABLE 6A

Considerations for Use of Dispersants in RRT Region III

Major Resources of Regional Concern

System: OCEAN

Primary Vulnerability(2)	Seasons to Non-Dispersed Could Dispersants(3)	Resource(1) of Concern oil Reduce Impacts
Beaches(4)	Sp-Su	High Yes
Barrier Bay Systems(4) (Wetlands, shellfish, etc.)	Sp-Su-F	High Yes
Shorebirds	Sp-Su-F	High Yes
Seabirds	Sp-F-W	High Yes
Waterfowl	F-W-Sp	High Yes
Ospreys/Peregrines/ Eagles	Sp-Su-F-W	Med Maybe
Finfish		
Spawning Areas	Sp-Su	High Maybe
Migratory Corridors	Sp-Su-F	Med Maybe
Blue Crabs		
Spawning Zones	Su-F	High Maybe
Adults	Sp-Su-F	Med * No
Overwintering	W	Low * No
Shellfish Beds	Sp-Su-F-W	Low * No

(Clams, Scallops,

Whelks, Lobsters)

Artificial Reefs Sp-Su-F-W Low * No

Marine Mammals Sp-Su-F Low Maybe

Sea Turtles Sp-Su-F Low Maybe

1. Consult resource maps and the SSC, Federal and State natural resource specialists for exact locations and seasons.
2. Vulnerability based on portion of the water column commonly used or feeding, nesting, or movement strategies.
3. Reduction of impacts assumes an application that would disperse oil before it reaches shoreline areas. "Maybe" indicates that local conditions should be evaluated and resource specialists consulted to determine efficacy of dispersants.
4. Do not apply dispersants directly to these areas if they are already oiled.

* Unless oil is sinking

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(6ATABLEmain)

TABLE 6B - ESTUARINE

TABLE 6B-1

Considerations for Use of Dispersants in RRT Region III

Major Resources of Regional Concern

System: ESTUARINE

Primary Vulnerability(2)

Seasons to Non-Dispersed Could Dispersants(3)

Resource(1) of Concern oil Reduce Impacts

Beaches(4) Sp-Su High Yes

Intertidal Flats(4) Sp-Su-F-W High Yes

Salt Marshes(4) Sp-Su-F-W High Yes

Tidal Freshwater(4)

Marshes Sp-Su-F-W High Yes

Tidal Wooded(4) Sp-Su-F-W Med Yes

Wetlands

Shorebirds Sp-Su-F High Yes

Wading Birds Sp-Su-F High Yes

Waterfowl F-W-Sp High Yes

Ospreys/Eagles/ Sp-Su-F-W Med Maybe

Peregrines

Anadromous Fish

Spawning Areas Sp High Maybe

Nursery Areas Sp-Su Med Maybe

Adults Sp-Su-F Med Maybe

Estuarine Fish

Spawning Areas Sp-Su High Maybe

Nursery Areas Sp-Su-F-W Med Maybe

Adults Sp-Su-F-W Med Maybe

Submerged Aquatic

Vegetation Sp-Su-F-W Med * No

1. Consult resource maps and the SSC, Federal and State natural resource specialists for exact locations and seasons.
2. Vulnerability based on portion of the water column commonly used or feeding, nesting, or movement strategies.
3. Reduction of impacts assumes an application that would disperse oil before it reaches shoreline areas. "Maybe" indicates that local conditions should be evaluated and resource specialists consulted to determine efficacy of dispersants.
4. Do not apply dispersants directly to these areas if they are already oiled.

* Unless oil is sinking

TABLE 6B-2

Considerations for Use of Dispersants in RRT Region III

Major Resources of Regional Concern

System: ESTUARINE

Primary Vulnerability(2)

Seasons to Non-Dispersed Could Dispersants(3)

Resource(1) of Concern oil Reduce Impacts

Blue Crabs

Larvae Su-F Med No

Adults Sp-Su-F-W Med No

Overwintering W Low No

Oyster Beds

Intertidal Sp-Su-F-W High Yes

Subtidal Sp-Su-F-W Med Maybe

Clam Beds Sp-Su-F-W Low * No

Bay Scallop Beds Sp-Su-F-W Med * No

Artificial Reefs Sp-Su-F-W Low * No

Marine Mammals Sp-Su-F Low Maybe

Furbearers Sp-Su-F-W Med Yes

(Beaver, otter,

mink, muskrat)

Sea Turtles Sp-Su-F Low Maybe

1. Consult resource maps and the SSC, Federal and State natural resource specialists for exact locations and seasons.
2. Vulnerability based on portion of the water column commonly used or feeding, nesting, or movement strategies.
3. Reduction of impacts assumes an application that would disperse oil before it reaches shoreline areas. "Maybe" indicates that local conditions should be evaluated and resource specialists consulted to determine efficacy of dispersants.
4. Do not apply dispersants directly to these areas if they are already oiled.

* Unless oil is sinking

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(6BTABLEmain)

7. DISPERSABILITIES PRODUCTS

One crucial factor in every dispersant use decision process is the dispersability of the petroleum product spilled. If the chemical and physical characteristics of the product make dispersant use ineffective or unnecessary, the decision process is quickly concluded. However, there is a large number of petroleum products, primarily crude oils, that can be dispersable under certain environmental conditions. The task of the response community is to rapidly determine if the spilled product is dispersable under the specific environmental conditions actually present at the spill location.

The information provided in this section is designated to speed the response community's evaluation of whether or not the spilled product is dispersable. It is NOT designed to provide a yes or no answer on whether or not a dispersant should be applied. This dispersability information must be combined with results of a field test and site specific environmental condition information before concluding that the spilled product is truly dispersable. The field test may be accomplished by using a field test kit or through a trial application on the spill itself (which has been approved by the OSC with RRT concurrence). Test kits may be commercially manufactured types or "homemade" versions as long as accepted testing procedures are carefully followed.

The dispersability factor definitions were taken from the American Petroleum Institute publication "U.S. Crude and Products Import - 1985" as were the dispersability factors for the finished products. The list of crude oils was developed by the DELBAY Cooperative and is considered representative of the many crude oils transported and stored in our region. If the spilled product in question is not listed, the product's API Gravity and pour point can be used to determine the product's dispersability using Table 7 - 7. (See page 24.)

NOTE: The following six tables of Dispersability Factors are arrranged in the order of NEED to be acted upon the fastest i.e., 3L, 3H, 2H, 2L, 4, 1.

Table 7-7 is a summary table of the previous 6 tables.

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(7ABILITYmain)

8. SOURCES OF DISPERSANTS

8. AVAILABLE SOURCES OF DISPERSANTS AND APPLICATION EQUIPMENT

A crucial factor in every dispersant use decision is the ability to deliver the selected dispersant product to the spill site quickly and then properly apply the product to achieve effective dispersal. The information provided in Appendices 2A and 2B is designed to assist the response community once a decision has been made to employ a dispersant as a response measure.

The information provided was assembled by the DELBAY Cooperative through their survey of response resources. The product and organization names are provided to assist response efforts and use of these names does not constitute RRT endorsement of products or services.

SEE:

APPENDIX 2-A - Dispersant Supplies

APPENDIX 2-B - Application Equipment

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(8SOURCEmain)

DEEP APPENDIX 2 SOURCES

APPENDIX 2-A

A. Dispersant Supplies

Dispersant Product Quantity Where Stockpiled

Corexit 9527 22 drums Delaware Bay and

River Co-op

Lewes, DE

(302) 645-7861

Phoned 3/21/91 - verify 22 drums (up from 12)

A PO is in process for an additional 8 drums.

Corexit 9527 25 drums Clean Harbors Co-op

Perth Amboy, NJ

(201) 738-2438

Phoned 3/21/91 - verify 25 drums

spoke with Manger, Mr. Wirkowski

Corexit 9527 500 drums Clean Caribbean Co-op

Ft. Lauderdale, FL

(419) 465-2541

Hotline # (419) 465-2545

Phoned 3/25/91 - Mr. Don Alberts (ALL POINTS

ASSOCIATES) verified 500 drums (down from 532)

and aerial dispersants equipment.

APPENDIX 2-B

B. Application Equipment

1. Aircraft

The following three companies have a known dispersant spraying capability. Note that only one

company is in the immediate area (Cordoba). Their involvement, interest, and capability grows out of the efforts of the New York Cooperative, Clean Harbors, to provide an aerial spraying capability. The other two companies each operate a fleet of large fixed wing aircraft and have extensive dispersant spraying experience. They are prepared to respond throughout the U.S. and abroad.

Company Location Phone

Cordoba Helicopter Hightstown, NJ (609) 448-0031

Bigert Aviation Chandler, AZ (602) 821-2400

One ADDS PACK and one 2,500 gallon system installed in a DC-4 aircraft.

Conair Aviation Abbotsford, BC (609) 853-1171

Ten DC-6 fitted for 3,000 U.S. gallon system, capable of delivering up to 20 gallons/acre. Fifteen 360 U.S. gallon systems for Bell 205 Helicopters and six 180 U.S. gallon systems for Bell 206 Helicopters. NOTE: Per phone conversation on 1/29/91 with Rod Boles of Conair, the two Fokker F-27 (not F-17) systems fitted for 7,000 U.S. gallons, were sold to France.

The only boat mounted spraying systems identified on the East Cost, north of Florida were those owned by the Delaware Bay and River Cooperative (one complete self contained system) and the Clean Harbors Cooperative in New York (one complete self contained system).

Similar system are held by other industry cooperatives at more distant locations. Clean Harbors and the Delaware Bay and River Cooperative have mutual assist agreements which allow for quick access to each others equipment.

Company Location Phone

Delaware Bay &

River Co-op Lewes, DE (302) 645-7861

Clean Harbors Co-op Perth Amboy, NJ (201) 738-2438

9. CRITERIA FOR MONITORING

9. CRITERIA FOR MONITORING DISPERSANT USE

Dispersant applications in Region III will be monitored as a general practice. The OSC is responsible for designating monitors. The Atlantic Strike Team will serve as monitors as available. There are two levels of criteria suggested: general and incident specific.

Dispersant use needs to be monitored for two reasons. First, the OSC needs to know how well an application worked to help decide whether to continue and if so, to refine future applications. Second, in the long-run, there is a great need for more field data on dispersants; each use constitutes an opportunity that should not be lost.

NOTE: The Region III MONITORING SUBGROUP of the DISPERSANTS WORKGROUP will be developing additional MONITORING REQUIREMENTS that will be incorporated into the DEEP as an APPENDIX when available.

GENERAL REQUIREMENTS

Records

1. Dispersant brand
2. Equipment and methods used in application
3. Dilution of dispersant prior to application, if any
4. Rate of application (gallons per acre, dispersant to oil ratio)
5. Times and area of application
6. Tracks of vessels or aircraft during application
7. Wind and wave conditions during application

Effectiveness

Visual and photographic documentation by qualified observers of:

1. Oil before and after dispersant application
2. Resurfacing of dispersed oil

Environmental Impacts

Visual and photographic surveys by qualified observers of:

1. The extent of shoreline impact by dispersed and undispersed oil
2. Mortality or abnormal behavior by fish, birds, or mammals

INCIDENT SPECIFIC REQUIREMENTS

Based upon variables such as the location of the spill relative to sensitive resources, the time period during which dispersants would be applied, and other factors, more specific monitoring requirements may be applied. The following are types of incident specific concerns for which detailed monitoring may be necessary.

Records

1. Dispersant brand
2. Equipment and methods used in application
3. Dilution of dispersant prior to application, if any
4. Rate of application (gallons per acre, dispersant to oil ratio)
5. Times and area of application
6. Tracks of vessels or aircraft during application
7. Wind and wave conditions during application

Effectiveness

Sampling of the water beneath the oil slick and the oil and dispersant combination to determine the level of petroleum hydrocarbons in the water. This sampling could include "in-situ" measurements or sample collection for later analysis.

Environmental Impacts

1. Comparison of shoreline areas impacted by oil and oil and dispersant mixtures
2. Analysis of oil concentrations in sediments under dispersed oil
3. Investigation of water column organisms for signs of adverse impact due to dispersed oil
4. Collection and analysis of birds and other wildlife (and perhaps vegetation) affected by dispersants or dispersant and oil mixtures

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(9CRITERIAmain)

10. POLICY DEVELOPMENT

10. POLICY DEVELOPMENT AND JUSTIFICATION

The highly industrialized character of our region, and the frequent transport, transfer and storage of petroleum products into the ports of Philadelphia, Baltimore and Norfolk, make the occurrence of oil spills inevitable. The question, therefore, is not "what if" but rather "where, how much and what kind" of oil is spilled. In 1987, the RRT identified the issue of dispersants as one deserving special attention in our region. Shortly thereafter, the Dispersants Workgroup was established to study the body of knowledge on dispersants with the intention of developing the appropriate guidance that the RRT and OSCs need to make and support a decision to employ or not employ dispersants. The justification for either decision took on added importance following the court decision on the French government's response to the Amoco Cadiz oil spill. In that 1988 decision, the court ruled that the French decision to ban the use of dispersants in waters shallower than 50 meters (164 feet), was "Without scientific justification" and "seriously interfered with the success of the dispersant method." This kind of precedent reminded us that the decision on dispersant use must be based upon sound reasoning and the best information available.

The Dispersants Workgroup initiated its efforts by reviewing the various existing regional approaches to dispersant use issues and outlining a strategy for our particular position on dispersant use. In general terms, the Workgroup listed a number of tasks to better identify the effects and effectiveness of dispersants prior to preparing appropriate guidance materials to be adopted as part of the RCP. The Workgroup also decided to focus its attention on the possible use of dispersants in marine and estuarine environments only. The use of dispersants in freshwater should also be investigated as there are significant differences between their use in those environments compared to freshwater environments. For example, in freshwater there are added concerns for impacts to drinking water, normally there is less volume of water for mixing, and there is a much smaller body of data available for decision making.

The Dispersants Workgroup reviewed a great deal of information on sensitive environmental resources, petroleum products routinely handled in our region, historical oil spill data, dispersants types and toxicities, and application techniques. The result of these reviews was the preparation of the Dispersant Employment Evaluation Plan (DEEP) which is composed of a collection of advisory and reference materials to be incorporated into the RCP. These materials serve to educate responders about dispersant use considerations and serve as guidelines to technical specialists who would be consulted during an actual spill response. As part of the DEEP, the Workgroup decided to include a statement of regional policy that would put the question of dispersant use into the broader context of how our region chooses to respond to oil spills.

It is acknowledged that first and foremost, our regional policy must assist the OSC to make decisions efficiently. In addition, this policy should be revised as necessary to recognize new, useful information on dispersant effects and effectiveness gained from research or experience from actual uses on oil spills. Through such an evolution, the regional policy should help the response community make the most effective use of dispersants as one possible oil spill response tool. It is presumed that any dispersant use would be in combination with other response methods, especially the physical containment and removal of the spilled oil.

It is the policy of the RRT that it is preferable to attempt to remove spilled oil from the water body rather than distribute it throughout the water column. The RRT considers that a decision to use dispersants is acceptance of a tradeoff in environmental impacts. In general terms, dispersants would reduce the amount of oil on the surface while increasing the amount of oil in the water column as well as adding dispersant to the water column. It is important to recognize that even under small-scale, controlled conditions, dispersants are nowhere near 100 percent effective. In the field studies presented in the National Academy of Sciences report, the average effectiveness of dispersants was 30 percent

with a range of 0 to 100 percent. The RRT acknowledges that there is no single oil spill response measure that is 100 percent effective. That is why employment of a variety of cleanup methods is usually necessary to achieve maximum success.

When dispersants are used, there will be both surface oil and dispersed oil impacts on the environment. The specific impact tradeoffs can only be identified if we have detailed field and laboratory data to quantify the effects of dispersed oil and undispersed oil on those organisms or habitats within our region. This need for detailed, region specific data is a significant factor in this Region's decision to restrict dispersant use at this time.

Based on the efforts of the Dispersants Workgroup, the RRT concludes that there is insufficient toxicity information about dispersant effects as related to our region's characteristics. In the absence of this information, the RRT does not believe that widespread dispersant use can be justified. The major points of concern regarding this information gap are presented below.

- The available toxicity information is based upon laboratory, not field, measurements;
- much of the toxicity testing on fish and shellfish has been done with crude oils rather than the refined products frequently shipped in our region;
- toxicity is usually reported as lethal concentrations or doses and there is much less information on the sublethal effects of dispersants; and,
- there is insufficient toxicity information for the species of most concern in our region.

Furthermore, after reviewing the description of how dispersants physically function in the environment, the Workgroup is concerned about the diffusion and mixing action (so vital to dispersant performance and dilution) characteristics of Region III's estuarine environments such as the Chesapeake and Delaware Bays. These areas comprise a significant portion of sensitive resources where, historically, most of the region's oil spills have occurred.

The RCP requires, in Subpart A Section II.(A), the effective and immediate action by government agencies to minimize damages from oil discharges. Without the better information on impacts of dispersed oil, and considering the diffusion and mixing action questions, it would not be prudent to recommend widespread use of dispersants in our region. In addition, we need sufficient margin of protection for those special situations where restricted dispersant use is recommended.

The Dispersants Workgroup identified several situations where dispersants might be used while compromising our policy of preferring oil removal to distribution into the water column. In recommending offshore use, the rationale is that there would be sufficient water depth and mixing action to reduce dispersed oil levels below sublethal concentrations quickly before it reached nearshore, sensitive resources. To ensure a sufficient margin of protection, offshore use should only be recommended where significant diffusion would occur before the dispersed oil reaches areas of less than 40 feet of water. The 40 foot depth is selected because studies show that sublethal concentrations do occur at depths of 10 meters (33 feet) and researchers recommend at least 10 meters of depth when using dispersants over sensitive resources such as coral reefs and sea grasses. While recognizing that our region does not have coral reefs, we believe that the region's shellfish resources deserve similar protection.

One potential nearshore, extreme risk situation for dispersant use would be a situation where a sensitive plant or animal population could be irreversibly harmed by large quantities of surface oil. A possible example would be surface oil impacts on the horseshoe crab eggs and shorebirds dependent on them in Delaware Bay during the peak shorebird migration period. At this critical time, significant portions of

the world's population of some shorebirds species may be exposed to the spilled oil, both through ingestion of oiled crab eggs and physical contact with the oil. If physical containment or mechanical removal was not possible or sufficiently effective, careful dispersant use might reduce the magnitude of the adverse impacts.

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(10POLICYmain)

11. SOURCES OF INFORMATION

11. SOURCES OF INFORMATION ON DISPERSANTS

Throughout the first two years [1988, 1989] of the Dispersant Workgroup's efforts in developing the DEEP, the members utilized the available literature and other information to take advantage of previous work on dispersants. Listed below are specific sources that were consulted which provided valuable information.

American Petroleum Institute, 1985, U.S. Crude and Product Import

Gundlach, Erich R., 1989 Amoco Cadiz Litigation: Summary of the1988 Court Decision

National Research Council, 1989, Using Oil Spill Dispersants on the Sea

Regional Response Teams, Region I - IV, VI, IX, and Alaska, Regional Contingency Plans

U.S. EPA, 1989, National Contingency Plan Product Schedule

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(10POLICYmain)

DEEP APPENDIX 1 CHECKLIST

APPENDIX 1

(Formerly Annex XI of the Regional Contingency Plan)

STREAMLINED DISPERSANTS CHECKLIST

I. COMPILATION OF DATA

A) Spill Data OSC

1. Circumstances (fire, grounding, collision, etc.)
2. Time/Date of incident:
3. Location of spill:
4. Type of oil product:
5. Volume of product released:
6. Total potential of release:
7. Type of release (instantaneous, continuous, intermittent, etc.):

B) Characteristics of the spilled oil OSC

1. Specific gravity:
2. Viscosity:

C) Weather and water conditions/forecasts SCC

1. Air temperature, wind speed, direction:
2. Tide and current information:
3. Sea conditions:
4. Water temperature and salinity:
5. Water depth and depth of the mixed layer:

D) Oil trajectory information SCC NRC

1. 48-hour surface oil trajectory forecast:
    - surface area of slick
    - expected areas of landfill
2. 48-hour dispersed oil trajectory forecast:
    - oil movement in water column
    - surface oil movement and expected land fall
    - concentration of the dispersant/oil mixture in The water column

E) Characteristics of available dispersants and application equipment

1. Characteristics of the dispersants:

- name
- manufacturer
- when available
- location(s)
- amount available

- type of containers
- characteristics:
    - i. toxicity
    - ii. effectiveness
    - iii. reactions
    - iv. applicability to spilled oil
    - v. other
- application methods
- misc.

2. Type of transportation and dispersing equipment:

Company one Company two Company three

- name
- location
- equipment available

F) Information about available dispersant and USCG EPA

dispersing equipment

1. Name of the proposed dispersant on EPA acceptance lists:
2. Location of the area to be treated:
3. Estimated time interval between dispersant application and contact with sensitive environment/resources.
4. Estimated distance between application of dispersants and sensitive environment/ resources.

G) Comparison of the effectiveness OSC

of conventional cleanup methods

vs. the use of dispersants

1. Containment at the source:
2. Shoreline protection strategies:
3. Shoreline cleanup strategies:
4. Time necessary to execute response:

H) Habitats and resources at risk SSC

Dispersant treated spill

Untreated spill

1. Shoreline habitat type and area of impact:
2. Resources:
    - endangered/threatened species (state and Federally designated)
    - critical habitats for the above species
    - marine animals (pupping, migration)

- waterfowl use (nesting, migration)
- shellfish (spawning, harvesting) ( ) indicates seasonal considerations
- finfish (spawning, release migration,harvest)
- commercial use (aquaculture, water intakes etc.)
- public use areas (parks, marinas, etc.)
- other resources of specific significance

II. RECOMMENDATIONS TO THE RRT

A) Possible options:

1. Do not use dispersants.
2. Use dispersants on a trial basis, but not as a control or cleanup technique. (To evaluate for future use on this or other spills)
3. Disperse in limited or selected areas.
4. Disperse to the maximum extent possible with accepted methods and available equipment.

B) Other recommendations/rationale:

III. RRT EVALUATION OF THE CONSEQUENCES OF A DISPERSANT APPLICATION DECISION.

- Will applications of dispersant remove a significant amount of the slick from surface water?
- Can the extent of location of shoreline impacts be altered in a positive manner?
- Can the damage to endangered or threatened species, marine mammals, and waterfowl be lessened?
- Will the damage to habitats and resources resulting from chemical dispersion be less than those resulting without chemical dispersion?
- If recreational, economic and aesthetic considerations are a higher priority than natural resource considerations, what is the most effective means of their protection?

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(12APPEN1main)

DEEP APPENDIX 2 SOURCES

APPENDIX 2-A

A. Dispersant Supplies

Dispersant Product Quantity Where Stockpiled

Corexit 9527 22 drums Delaware Bay and

River Co-op

Lewes, DE

(302) 645-7861

Phoned 3/21/91 - verify 22 drums (up from 12)

A PO is in process for an additional 8 drums.

Corexit 9527 25 drums Clean Harbors Co-op

Perth Amboy, NJ

(201) 738-2438

Phoned 3/21/91 - verify 25 drums

spoke with Manger, Mr. Wirkowski

Corexit 9527 500 drums Clean Caribbean Co-op

Ft. Lauderdale, FL

(419) 465-2541

Hotline # (419) 465-2545

Phoned 3/25/91 - Mr. Don Alberts (ALL POINTS

ASSOCIATES) verified 500 drums (down from 532)

and aerial dispersants equipment.

APPENDIX 2-B

B. Application Equipment

1. Aircraft

The following three companies have a known dispersant spraying capability. Note that only one

company is in the immediate area (Cordoba). Their involvement, interest, and capability grows out of the efforts of the New York Cooperative, Clean Harbors, to provide an aerial spraying capability. The other two companies each operate a fleet of large fixed wing aircraft and have extensive dispersant spraying experience. They are prepared to respond throughout the U.S. and abroad.

Company Location Phone

Cordoba Helicopter Hightstown, NJ (609) 448-0031

Bigert Aviation Chandler, AZ (602) 821-2400

One ADDS PACK and one 2,500 gallon system installed in a DC-4 aircraft.

Conair Aviation Abbotsford, BC (609) 853-1171

Ten DC-6 fitted for 3,000 U.S. gallon system, capable of delivering up to 20 gallons/acre. Fifteen 360 U.S. gallon systems for Bell 205 Helicopters and six 180 U.S. gallon systems for Bell 206 Helicopters. NOTE: Per phone conversation on 1/29/91 with Rod Boles of Conair, the two Fokker F-27 (not F-17) systems fitted for 7,000 U.S. gallons, were sold to France.

The only boat mounted spraying systems identified on the East Cost, north of Florida were those owned by the Delaware Bay and River Cooperative (one complete self contained system) and the Clean Harbors Cooperative in New York (one complete self contained system).

Similar system are held by other industry cooperatives at more distant locations. Clean Harbors and the Delaware Bay and River Cooperative have mutual assist agreements which allow for quick access to each others equipment.

Company Location Phone

Delaware Bay &

River Co-op Lewes, DE (302) 645-7861

Clean Harbors Co-op Perth Amboy, NJ (201) 738-2438

Federal Region III Regional Response Team's Dispersant Employment Evaluation Plan (DEEP) May 1991.

(13APPEN2main)

RRT 2

Dispersant MOU

MEMORANDUM OF UNDERSTANDING

Among

U.S. Coast Guard District 1 (USCG)

and

U.S. Environmental Protection Agency Region II (EPA)

and

U.S. Department of the Interior (DOI)

and

U.S. Department of Commerce/
National Oceanic and Atmospheric Administration (DOC/NOAA)

and

State of New Jersey Department of Environmental Protection
and Energy (NJDEPE)

and

New York State Department of Environmental Conservation (NYSDEC)

PURPOSE

This Memorandum of Understanding (MOU) is designed to implement sections of Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and implement the requirements of 33 USC 1321(j)(4)(C)(v), the Federal Water Pollution Control Act (FWPCA), as amended by the Oil Pollution Act of 1990, that the Area Contingency Plan (ACP) shall "describe the procedures to be followed for obtaining an expedited decision regarding the use of dispersants." This MOU provides preauthorization for the use of chemical countermeasures (listed in the NCP Product Schedule) by the USCG On-Scene Coordinator. This pre-approval applies only in designated zones in the Captain of the Port New York (COTP-NY) geographic area of responsibility and the Captain of the Port of Long Island Sound (COTP-LIS) geographic area of responsibility.

This MOU also implements Subpart J (Use of Dispersants and Other Chemicals) and Appendices M and N of the Region II NY/NJ Regional Contingency Plan (RCP).

This MOU will be incorporated into Subpart J of the RCP and preempts any pre-existing MOUs.

AUTHORITY

Section 311(d)(2)(G) of the FWPCA requires that the NCP include a schedule for identifying "dispersants, other chemicals, and other spill mitigating devices and substances, if any, that may be used in carrying out" the NCP. These are referred to as "chemical countermeasures" and are listed on the NCP Product Schedule. The responsibility to maintain the NCP Product Schedule was delegated to the Administrator, Environmental Protection Agency, by Executive Order 12777, and is carried out under Subpart J of the NCP.

Subpart J of the NCP provides that the Federal On-Scene Coordinator (FOSC) with the concurrence of the EPA representative to the (RRT) and the States with jurisdiction over the navigable waters threatened by the oil discharge, and in consultation with DOC and DOI natural resource trustees, may authorize the use of chemical and biological countermeasures on oil discharges; provided however, that such chemical and biological countermeasures are listed in the NCP Product Schedule. Subpart J further authorizes agreements for the advance approval of the use of chemical and biological countermeasures listed in the NCP Product Schedule under specific circumstances.

Commandant, United States Coast Guard, has pre-designated the USCG COTP-NY as the FOSC for oil discharges in the COTP-NY zone (as defined in 33 CFR Part 3 and subject to joint response boundary agreements with EPA), and has delegated to the COTP the authority and responsibility for compliance with the FWPCA.

Commandant, United States Coast Guard, has pre-designated the USCG COTP-LIS as the FOSC for oil discharges in the COTP-LIS zone (as defined in 33 CFR Part 3 and subject to joint response boundary agreements with EPA), and has delegated to the COTP the authority and responsibility for compliance with the FWPCA.

The Governor of the State of New Jersey has designated the Commissioner of NJDEPE the authority and responsibility for providing approval for the use of chemical countermeasures for control of oil spills.

The Governor of the State of New York has designated the Commissioner of NYSDEC the authority and responsibility for providing approval for the use of chemical countermeasures for control of oil spills.

The US DOI and DOC/NOAA are designated Federal trustees of certain natural resources under Subpart G of the NCP and are to be consulted regarding the determination to apply chemical countermeasures to oil discharges in U.S. waters.

This MOU constitutes pre-consultation (for DOC/NOAA and DOI) and pre-concurrence (for USCG, EPA, NYSDEC and NJDEPE) for the use of

chemical countermeasures in the preapproved area (Zone 1) and for the trial application in the specific areas designated within Zone 2.

SCOPE

The USCG, EPA, DOI, DOC/NOAA, NJDEPE, and NYSDEC agree that the primary method of cleaning up oil shall be the physical removal of oil from the environment. These agencies recognize that in certain circumstances timely effective physical containment, collection, and removal of the oil may not be possible, and the utilization of chemical countermeasures, alone or in conjunction with other removal methods, may be considered as a means to minimize substantial threat to public health or welfare, or minimize serious environmental damages.

This MOU establishes advance approval under which NCP product schedule chemicals may be used by the FOSC in certain waters of the COTP-NY and COTP-LIS zones (defined in 33 CFR Part 3). The waters of COTP-NY and COTP-LIS are divided into three zones for the purposes of this MOU (see figure 1). The geographic areas and advance approval conditions are as follows:

Zone 1 - Advance Approval Zone

Geographic scope:
Zone 1 is defined as waters under the jurisdiction of COTP-NY and COTP-LIS that lie 3nm and seaward of the Territorial Sea Baseline (as defined in 33 CFR 2.05-10) along the coast of New Jersey (north of the demarcation of the jurisdiction of COTP Philadelphia) and along the south shore of Long Island (New York) west of a line from Montauk Point Light bearing 132 T to the outermost extent of the Exclusive Economic Zone.

Advance approval for Zone 1:
This MOU provides the FOSC with advance approval to use chemical countermeasures listed in the NCP Product Schedule in Zone 1 following the protocols listed later in this MOU.

Zone 2 - Trial Application Zone

Geographic scope:
Zone 2 is defined as waters under the jurisdiction of COTP-NY and COTP-LIS that lie between 0.5nm and 3nm from the Territorial Sea Baseline along the coast of New Jersey (north of the demarcation of the jurisdiction of COTP-Philadelphia) and along the south shore of Long Island (New York) west of a line from Montauk Point Light bearing 132 T, exclusive of all bays and coves. In addition, specific water bodies are also included in Zone 2, and are as follows:

Hudson River south of Tappan Zee Bridge
Upper New York Bay
The Narrows
Lower New York Bay

Raritan Bay excluding Spermaceti Cove and not within 0.5 nautical miles of Sandy Hook, New Jersey
Arthur Kill
Newark Bay up to mouths of Passaic and Hackensack Rivers
Kill Van Kull
East River south of Throgs Neck Bridge
Long Island Sound within COTP-NY area of responsibility only, excluding Little Bay, Little Neck Bay, Manhasset Bay, Hempstead Harbor, Eastchester Bay, Pelham Bay and not within 0.5nm of the northern shore of Long Island.

Advance approval for Zone 2:
This MOU provides the FOSC with advance approval to use chemical countermeasures listed in the NCP Product Schedule on a trial basis in Zone 2 following the protocols listed later in this MOU, unless otherwise prohibited in local Area Contingency Plans. The trial application will not take place if threatened or endangered species are known to be present. The trial application will be performed on a portion of the spill covered by less than 1,000 gallons to determine the product's efficacy on the specific oil under the current set of environmental and meteorological conditions. The quantity of chemical countermeasures utilized should not exceed 110 gallons. The trial application may begin prior to the initial request to the RCP concurrence network for operational use of the chemical countermeasures on a greater portion of the spill. This initial application will be supervised by a trained observer (USCG Strike Team, NOAA Scientific Support Coordinator, etc.) and be reported as qualitative observation (pass/fail). Results of the trial will be reported to the RRT as soon as they are available. A positive efficacy trial should not mean that the chemical countermeasure may automatically be extensively applied as there are many other factors to be weighed in the decision process. This trial application is solely for the purpose of determining if the time and effort should be expended to seek further clarification of the incident-specific issues and concurrence for operational use. If the trial application fails to produce significant results the request for further use will not be made.

<u>Zone 3 - Exclusion zone</u>
Geographic Scope:
Zone 3 is defined as the waters under the jurisdiction of COTP-NY and COTP-LIS that lie within 0.5 nm of the Territorial Sea Baseline along the coast of New Jersey (north of the demarcation of the jurisdiction of COTP-Philadelphia) and along the south shore of Long Island (New York) west of a line from Montauk Point Light bearing 132 T, including all bays and coves. Zone 3 also includes the Hudson River north of the Tappan Zee Bridge, and Long Island Sound, with the exception of the COTP-NY portion described in Zone 2.

Advance approval for Zone 3:
No advance approval is given in Zone 3. Use of chemical countermeasures is not recommended in this Zone. Any request for the use of chemical countermeasures must be accepted by the RCP concurrence network and must follow the guides in the RCP and ACP.

PROTOCOLS

As attested by the signatures set forth at the end of this document, the USCG, EPA, DOI, DOC/NOAA, NJDEPE, and NYSDEC agree that the predesignated FOSC has the authority and may order the use of chemical countermeasures on oil discharges using the guides found in the Subpart J and Appendix M of the Region II RCP and Annex G of the COTP-NY and COTP-LIS ACPs and subject to the following conditions:

1. The decision to use chemical countermeasures within these guidelines rests solely with the pre-designated USCG FOSC.

2. The FOSC may authorize the use of chemical countermeasures on a release or discharge to prevent or substantially reduce the hazard to human life without obtaining concurrences from EPA, affected states, DOI, DOC/NOAA, without following protocols established in this MOU, and without following the guides in the RCP and ACP. If dispersants are used in this manner, notifications to EPA, affected states, DOI and DOC/NOAA shall be made as soon as practicable. Once the risk to human life has subsided, these exceptions no longer apply.

3. In the preapproved area (Zone 1) NCP Product Schedule chemical countermeasures may be used by the FOSC without further concurrence or consultation with the RCP concurrence network.

4(a) For a trial application in Zone 2 areas designated under "Scope" of this MOU no further concurrence or consultation prior to a decision to apply chemical countermeasures need be initiated by the FOSC provided the procedures outlined in the "RRT OSC Dispersant Decision Process" in Subpart J of the Regional Contingency Plan have been followed.

4(b) For operational use in Zone 2, the FOSC must follow the "RRT OSC Dispersant Decision Process" which includes the concurrence of USCG, EPA, and the affected state(s), and consultation of DOI and DOC/NOAA. The information obtained during the decision process needs to be provided to these agencies.

5. The USCG agrees with EPA, DOI, DOC/NOAA and the states that if a decision has been made to use chemical countermeasures under the provisions of this agreement, the FOSC will immediately notify EPA, DOI, DOC/NOAA and the states of that decision. This initial notification will include, but is not limited to, the following information to the extent available:

   Type and amount of oil discharged
   Area affected
   The projected area of impact of the oil if not dispersed
   Reasons why chemical agent has been selected
   Type of chemical agent to be used
   Application rate and method of application
   On-scene weather

6. Only chemical countermeasures listed on the NCP Product Schedule shall be considered for use.

7. If chemical countermeasures are used as described in this MOU or for the protection of human life, a post incident debriefing will take place within 45 days to gather information concerning the effectiveness of chemical agents use and whether any changes to this agreement are necessary. The debriefing will be chaired by the USCG FOSC arranging the time, place, and date of the debrief. The results of the debrief will be included in the FOSC report.

8. Monitoring will be initiated in accordance with the monitoring protocols developed for each of the different zones.

AMENDMENTS

This Memorandum of Understanding may be amended in whole or in part as is mutually agreeable to all parties thereto.

Area Committees may additionally submit for consideration and approval by the RRT concurrence agencies, further defined areas for use/non-use. Approved amendments shall be found in (future) Appendix I of this MOU.

CANCELLATION

This Memorandum of Understanding may be canceled in whole or in part by any party thereto. Cancellation will take place 30 days following delivery of written notification to each of the agencies participating in this Memorandum of Understanding.

SIGNATURES

Eric J. Williams III

Capt. Eric J. Williams III, USCG
Commander (m)
First Coast Guard District
RRT Co-Chair

3/31/94
Date

Capt. Thomas H. Gilmour, USCG
Captain of the Port, New York
Federal On-Scene Coordinator

4-7-94
Date

Captain T.W. Allen, USCG
Captain of the Port, Long Island Sound
Federal On-Scene Coordinator

4/6/94
Date

Mr. Richard Salkie
Associate Director for
Removal and Emergency Preparedness Programs
U.S. Environmental Protection Agency, Region II
RRT Co-Chair

4/12/94
Date

William Patterson

Mr. William Patterson
Regional Environmental Officer/Northeast
U.S. Department of Interior
RRT Representative

3/31/94
Date

Ms. Diane Wehner
NOAA/CRC
U.S. Department of Commerce
RRT Representative

Date

Mr. Lance Miller
Assistant Commissioner, Site Remediation Emergency Response Coordinator
Department of Environmental Protection and Energy
State of New Jersey

4/13/94
Date

Mr. Thomas Quinn
Assistant Director, Division of Spills Management
Department of Environmental Conservation
State of New York

Date

U.S. Department of Transportation
United States Coast Guard

Commander
First Coast Guard District

408 Atlantic Avenue
Boston, MA 02210-3350
Staff Symbol: (mep)
Phone: 617/223-8586
T.Walker/D1m@cgsmtp.uscg.mil

16450
April 4, 1996

Mr. Richard Gimello
Assistant Commissioner,
Site Remediation Emergency Response Coordinator
Department of Environmental Protection
CN 028, 401 East State St.
Trenton, NJ 08625

Dear Mr. Gimello:

The Regional Response Team in Region II (RRT II) unanimously agreed to amend the Memorandum of Understanding concerning Chemical Countermeasure Preauthorization (MOU) at the 7 December 1995 RRT II meeting.

This amendment, included as Enclosure 1, will extend the southern boundary of the MOU from Tom's River, New Jersey to the boundary between Federal Regions II and III. This change eliminates the artificial boundary that coincides with the division between Coast Guard Districts 1 and 5, instead substituting a boundary that is more consistent with the geography of the area.

Based on discussions with the agencies party to the original MOU, we only need your signature and that of Coast Guard Captain of the Port, Philadelphia to put this amendment into effect. Please return the accepted MOU amendment to LCDR Thomas Walker of my staff. Copies will be distributed to all RRT II members.

If you need further information, please contact LCDR Thomas Walker of my staff at the above address or telephone number.

Sincerely,

for

E. J. WILLIAMS III
Captain, U. S. Coast Guard
Chief, Marine Safety Division
By direction of the Commander,
First Coast Guard District

Encl: (1) Amendment to Memorandum of Understanding concerning chemical countermeasure preauthorization
(2) Memorandum of Understanding concerning chemical countermeasure preauthorization

Copy: Bruce Sprague, RRT II EPA Co-Chair
Andrew Raddant, RRT II DOI Representative
Diane Wehner, RRT II DOC/NOAA Representative
Thomas Quinn, RRT II N.Y. State Representative
U.S. Coast Guard Captain of the Port, Philadelphia
U.S. Coast Guard Fifth District, Marine Safety Division

U.S. Department
of Transportation

**United States
Coast Guard**

Commander
First Coast Guard District

408 Atlantic Avenue
Boston, MA 02210-3350
Staff Symbol: (mep)
Phone: 617/223-8586
email:T.Walker/D1m

16450
April 4, 1996

From: Commander, First Coast Guard District
To: Commanding Officer, Marine Safety Office Philadelphia, PA
Via: Commander, Fifth Coast Guard District (m)

Subj: CHEMICAL COUNTERMEASURE PREAUTHORIZATION IN REGION II

1. The Regional Response Team in Region II (RRT II) unanimously agreed to amend an existing Memorandum of Understanding concerning Chemical Countermeasure Preauthorization (MOU) at the 7 December 1995 RRT II meeting.

2. This proposed amendment, included as Enclosure 1, would extend the southern boundary of the MOU from Tom's River, New Jersey to the boundary between Federal Regions II and III. This change would give you, as COTP Philadelphia, preapproval to use chemical countermeasures in this part of your zone, subject to the conditions of the original MOU (see Enclosure 2). This is a beneficial change because it both makes chemical countermeasures a more viable tool for spill response and replaces the artificial D1/D5 boundary with a boundary that is better aligned with the geography of the area.

3. Based on discussions with the agencies party to the original MOU, we only need your signature and that of New Jersey DEP to put this amendment into effect. After signing please forward to the State of New Jersey for their signature.

4. Please contact LCDR Walker of my staff if you have any questions.

E. J. WILLIAMS III
By direction

Encl: (1) Amendment to Memorandum of Understanding concerning chemical countermeasure preauthorization
(2) Memorandum of Understanding concerning chemical countermeasure preauthorization

Copy: Bruce Sprague, RRT II EPA Co-Chair
Andrew Raddant, RRT II DOI Representative
Diane Wehner, RRT II DOC/NOAA Representative
Thomas Quinn, New York DEC
Richard Gimello, New Jersey DEP

RECEIVED
DEPT OF THE INTERIOR
MAY 22 1996
OFFICE OF THE SECRETARY
BOSTON, MA

AMENDMENT

to

Memorandum Of Understanding

Among

U.S. Coast Guard District 1 (USCG D1)

and

U.S. Coast Guard District 5 (USCG D5)

and

Captain Of The Port Long Island Sound (COTP LIS)

and

Captain Of The Port New York (COTP NY)

and

Captain Of The Port Philadelphia (COTP PHIL)

and

U.S. Environmental Protection Agency Region II (US EPA)

and

U.S. Department of Interior (US DOI)

and

U.S. Department of Commerce /
National Oceanic and Atmospheric Administration (US DOC/NOAA)

and

State of New Jersey Department of Environmental Protection (NJ DEP)

and

New York State Department of Environmental Conservation (NYS DEC)

As unanimously agreed upon at the Regional Response Team II meeting on 7 December, 1995, at the Liberty State Park Environmental Center, in Jersey City, NJ, the above Memorandum Of Understanding (MOU) has been amended to extend the southern boundary of pre-authorization to the boundary between Federal Regions II and III (see revised Figure 1).

This MOU provides pre-authorization for the use of chemical countermeasures (listed in the NCP Product Schedule) by the USCG On-Scene Coordinator. This pre-approval applies only in designated zones in the Captain Of The Port Long Island Sound, New York, and Philadelphia areas of responsibility.

SIGNATURES

Mr. Richard Gimello
Assistant Commissioner,
Site Remediation Emergency Response Coordinator
Department of Environmental Protection
State of New Jersey

5/6/96
Date

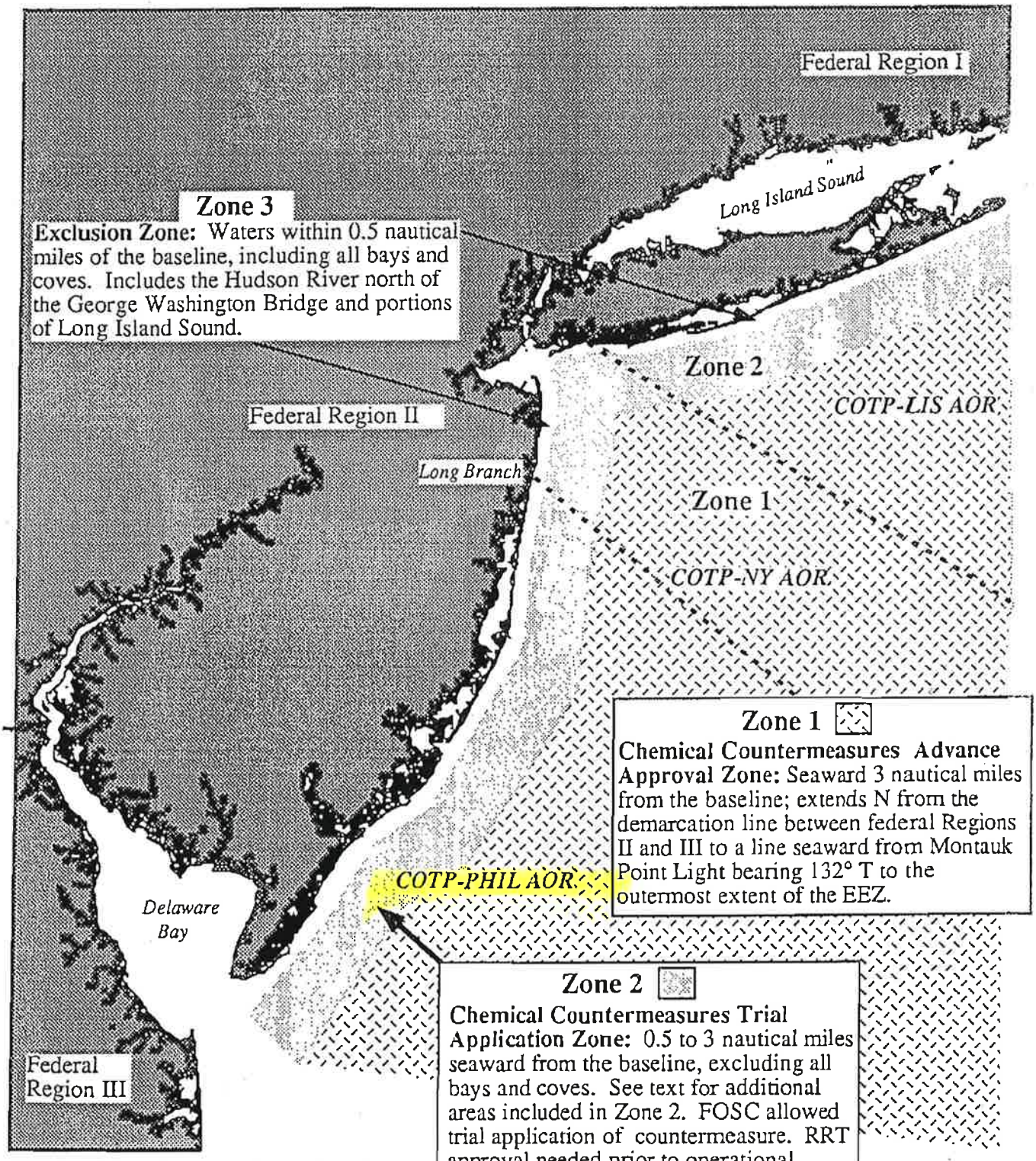
Capt. Richard Vlaun, USCG
Commander (m)
Fifth Coast Guard District
RRT III Co-Chair

April 17, 1996
Date

Capt. John Veentjer, USCG
Captain of the Port, Phialdelphia
Federal On-Scene Coordinator

April 23, 1996
Date

Region II Chemical Countermeasures Application Zones



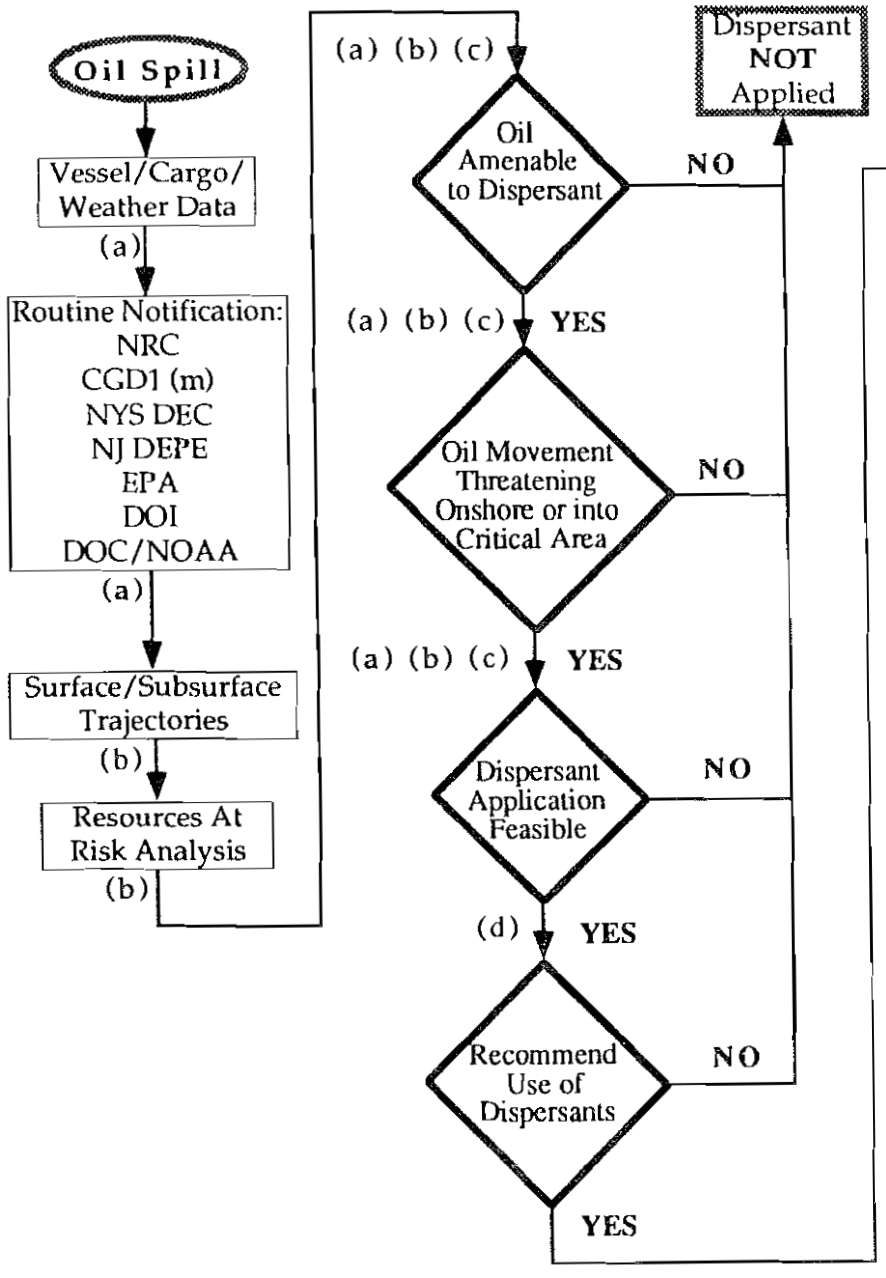
NOTE: Map zones not drawn to scale

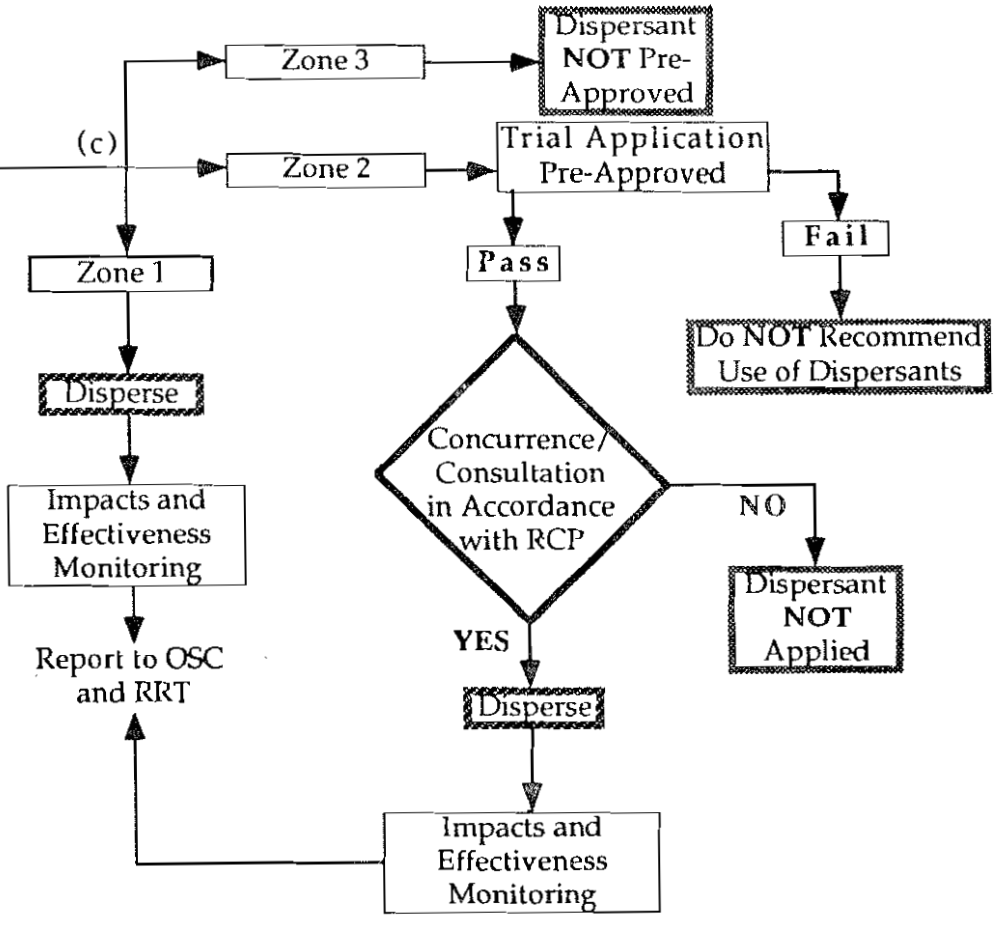
12 December, 1995 Update

Figure 1

Memorandum of Understanding concerning Chemical Countermeasure Preauthorization in COTP PHIL, COTP NY and COTP LIS zones

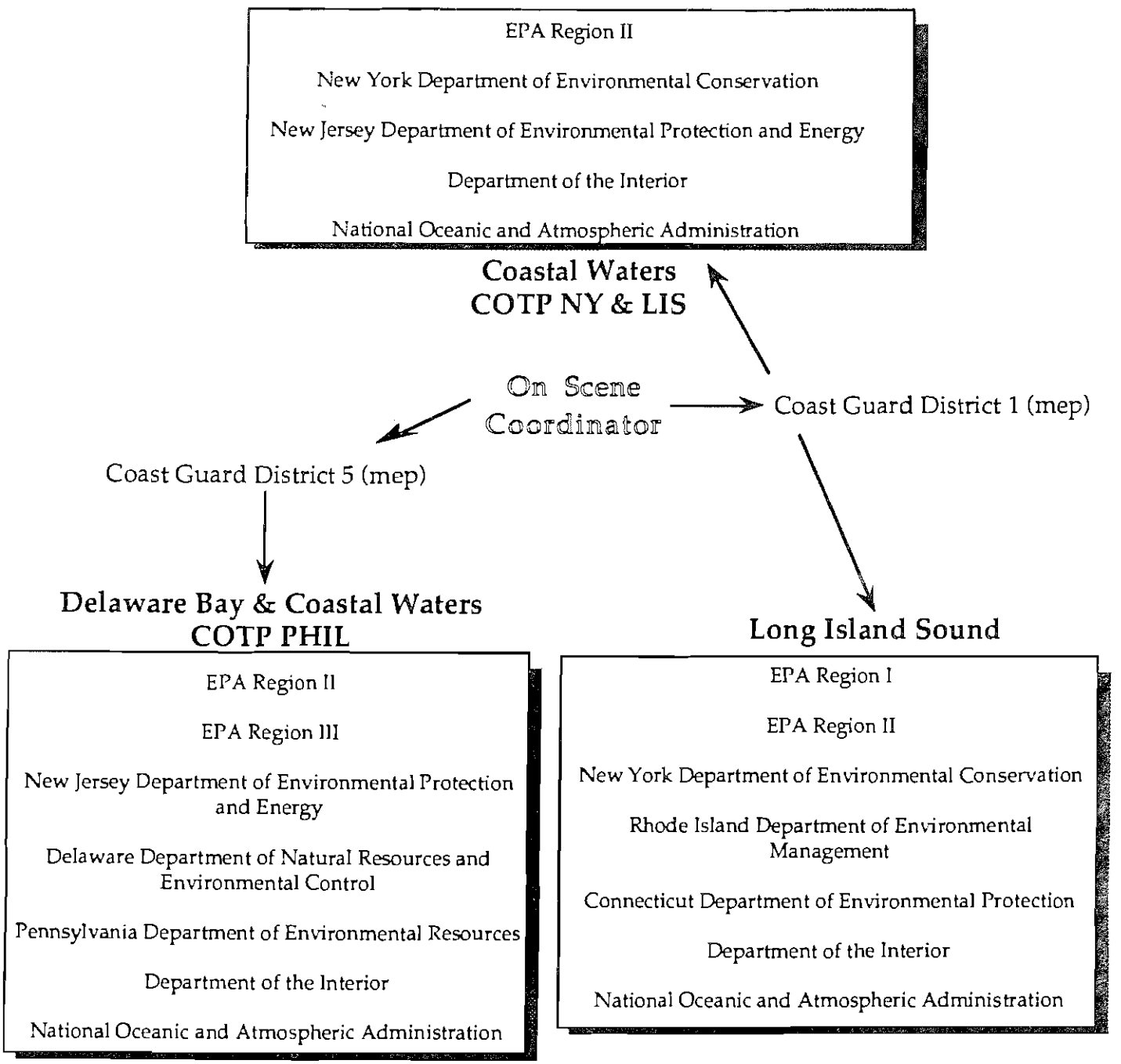
RRT II OSC DISPERSANT DECISION PROCESS

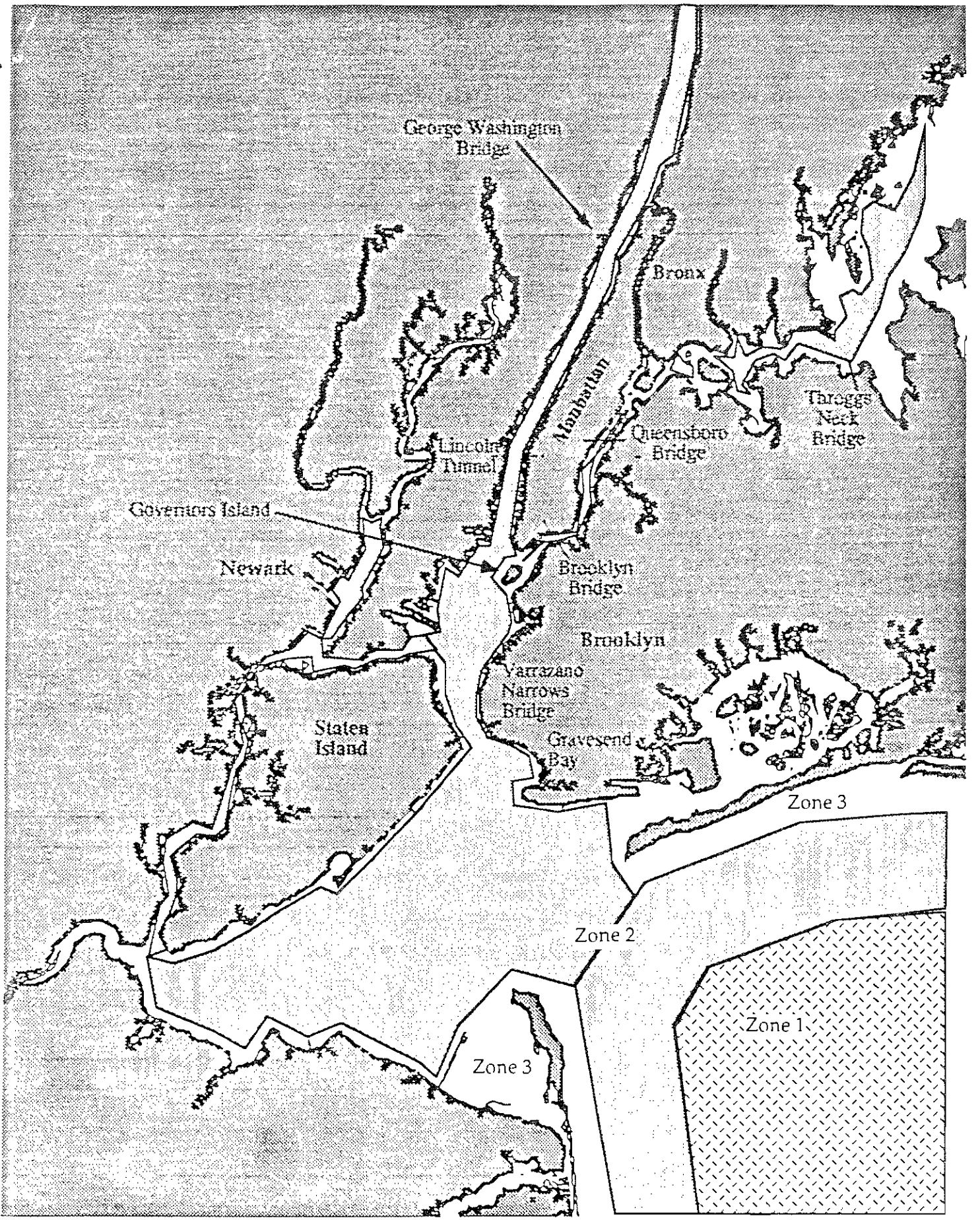




NOTES:
(a) OSC = On Scence Coordinator
(b) SSC = Scientific Support Coordinator
(c) ACP = Area Contingency Plan
(d) The suggestion to use dispersants may be made to the OSC by the spiller, any RRT agency, or any other party
MOU = Memorandum of Understanding
RCP = Regional Contingency Plan
Zone 1 = Advance Approval Zone designated in MOU
Zone 2 = Trial Application Zone and not otherwise prohibited
Zone 3 = Exclusion Zone

Regional Response Team II
Concurrence Network for Chemical Countermeasure Use




George Washington Bridge
Bronx
Manhattan
Throggs Neck Bridge
Queensboro Bridge
Lincoln Tunnel
Governors Island
Newark
Brooklyn Bridge
Brooklyn
Verrazano Narrows Bridge
Staten Island
Gravesend Bay
Zone 3
Zone 2
Zone 1
Zone 3

Annex ZZA

Incident

Management

The First 96 Hours of the Response Guide

Sector Delaware Bay Response Management Guide

Keys to Success in the First 96 Hours

Version 1.0

October 2017

Ref: (a) National Contingency Plan, 40 CFR 300
(b) Stafford Act 42 USC 5121
(c) National Response Framework
(d) Presidential Policy Directive 8, National Preparedness
(e) Coast Guard Pub 3-28, Incident Management and Crisis Response
(f) Incident Management Handbook, COMDTPUB P3120.17B
(g) Maritime Operational Threat Response (MOTR) Plan
(h) Contingency Preparedness Planning Manual (Vol. 4), Incident Management and Crisis Response, COMDTINST M3010.24
(i) COMDT-DCO Strategic Planning Direction (SPD)
(j) LANTAREA Operational Planning Direction (LANT OPD)
(k) D5 Operational Planning Direction (D5 OPD)
(l) D5 OPLAN 9700-06
(m) DCMS Support Plan 9930
(n) C4IT Support to Contingencies Process Guide, CGTO PG-85-00-1220-T, May 2014
(o) Delaware Bay Area Contingency Plan
(p) Delaware Bay Area Maritime Security Plan

1. Purpose

The Coast Guard plays a vital role in managing or contributing to major local, regional, national, or international all-hazard responses. Lessons learned and best practices from previous events and exercises show that leadership must take effective and credible steps early on in a response in order to establish operational momentum, build interagency coordination, and earn public trust. How the Coast Guard handles the first days of a major event typically sets the tone for the remainder of the response. References (a-p) are some of the key applicable policy and guidance documents that serve to inform readiness and preparedness requirements and activities. This guide presents tools to help ensure unity of effort and to achieve best effect in the first 96 hours.

1.1 Background

Sector Delaware Bay's Contingency Planning & Force Readiness Staff (CPFR) analyzed lessons learned from recent major incidents requiring a large-scale Coast Guard response. The analysis focused on three scenarios: (1) hurricane, (2) oil spill, and (3) ship/bridge allision, and drew upon lessons learned from Hurricanes KATRINA and SANDY, T/V ATHOS I, M/V COSCO BUSAN, DEEPWATER HORIZON, the 2015 Papal Visit, and 2016 Democratic National Convention. While these events differed in size and scope, several recurring themes were discovered:

- Accountability and Mobilization of Personnel. Coast Guard Incident Management Teams (IMT) struggled to account for all attached personnel, especially following hurricanes, due to communications infrastructure damage and the level of chaos in the region. A hurricane in the greater Philadelphia area would present similar challenges. In addition, IMTs found it

difficult to quickly mobilize sufficient additional personnel resources.

- Information Management. Responders struggled with tracking information effectively, and maintaining situational awareness of resources and operations, because of an overwhelming and constantly changing influx of information. Sharing information within the response organization, and ensuring dissemination of accurate information to the public, stakeholders, and Congress proved very difficult in multiple instances. Additionally, incident management personnel faced challenges with discerning the accuracy of initial reports, staying ahead of social media, and responding to spurious information.

- Logistics. IMTs had to overcome significant logistical challenges dealing with Incident Command Post (ICP) location, emergency relocation sites for continuity of operations, information technology infrastructure, food, fuel, and berthing. These topics must be addressed during exercises and training to ensure a smooth rollout during an actual crisis response.

- Watch Rotation. Leadership should consider crew endurance when planning crew rotations, overnight operations, and deliberate crew rest measures. A crisis response demands a full crew effort in which non-urgent leave and TDY will not normally be granted. To ensure safety and effectiveness, personnel tempo should not exceed **14 hours per 24 hour period** (with a target of 12 hours ideally), and 60-72 hours per week during a sustained response. A key issue will be to identify who to send home early on in an event to keep from burning out responders and incident management personnel.

- Cascading Resources. A Type 1 or 2 incident (and in some cases a Type 3 incident) will quickly overwhelm Sector resources. Response leadership should familiarize themselves with available surge capabilities and initiate requests for additional forces early, as appropriate, via the District. The long standing Coast Guard culture of being "forward leaning" and "hitting cases hard and fast" continues to be relevant. Scaling back is always easier than ramping up after initial incident momentum has been expended.

- Volunteers. Historically, volunteers from the general public have not been utilized in oil spills outside the care and processing of oiled wildlife due to the health and safety hazards present during an oil spill incident. Volunteers must be trained, OSHA compliant, safe, supported, and properly coordinated. To be successful, the volunteer program needs a strong **designated volunteer coordinator** and a robust program to ensure positive public opinion of the response. The Use of Volunteers section within the Delaware Bay Area Contingency Plan (ACP) sets forth guidance and protocols for the potential use of volunteers for non-wildlife related work assignments during an oil spill incident.

2. Road Map to Success

2.1 Meeting the demands of the first 96 hours of a major incident starts with the very first decisions made by the Sector Commander/Incident Commander (IC) and/or Unified Command (UC). The initial Incident Action Plan (IAP) will capture key decisions, command priorities and response objectives. The ICS process provides a structure and process to make well informed decisions.

Chapter 4 of reference (f) provides the IC/UC with standard key decisions, priorities, and objectives that are common to most response types the Coast Guard will encounter. When developing response priorities, incident leadership should consider **p**ersonnel/**p**ublic safety, **e**nvironmental concerns, **p**roperty at risk, **s**ecurity, and **e**conomic impact (**PEPSE**), as well as public and political reaction to the incident and perception of the response.

In evaluating the context of the situation at hand, response leadership should take a few moments to ask themselves the following questions:

- What have we not seen before; what is completely foreign to us?
- What have we seen before; what is familiar to us?
- What do we know?
- What are we still learning?

Next, response leadership should consider:

- What must we do?
- What can we do?
- What are we trying to accomplish?
- What resources do we need to bring to bear?
- What critical steps must we take?
- What are the restrictions or limitations (legal, procedural, etc)?
- What are the critical notifications that must be made?

This thought process will not only serve to put one in the right mindset with respect to leadership and decision-making styles, but it will help to frame initial response priorities.

2.2 Routine Missions

Depending on the scale and/or severity of the event, Sector Delaware Bay may have to alter or curtail routine missions to support the operational tempo of the response. If this happens, Sector personnel must quickly work with state and local counterparts to notify customers, stakeholders, affected partner agencies, and elected officials. The Sector Commander may consider temporarily suspending or curtailing the following missions if such suspension does not pose undue operational risk:

- Activities not mandated by regulation or statute such as voluntary uninspected passenger or towing vessel examinations.
- Mid-period, annual, or periodic inspections that exceed regulatory requirements.
- Oversight of new construction done under class authorization (except safety, firefighting and environmental oversight).
- Safety inspections at bulk liquid, dry bulk, and liquefied gas facilities, except those that pose a high risk to the port.
- Priority III and IV Port State Control and International Ship and Port Security (ISPS) III boardings.
- Formal marine casualty investigations for informal investigations and informal investigations for data collection upon approval from D5(dp).

- Formal suspension and revocation hearings; pursue settlement agreements instead.
- Container inspections; except for explosives, hazmat, fireworks, etc.
- Marine event support; place burden on event organizers and local agencies to the largest extent possible.
- Transfer monitors.
- Unannounced government-led vessel or facility response plan exercises and all other planned unit exercises/drills.
- Inspections such as Ready for Operations (RFO), Operational Safety Inspections, etc
- Request relief from external inspections/audits (STAN, EKMS, etc).
- Living Marine Resources/Recreational Boat Safety boardings and select PWCS activity.
- SOPP/OPAR reporting/review.

2.3 Information Management

- Strategic Messaging. Working with state, local, and responsible party counterparts, leadership should employ robust, aggressive, and targeted strategic messaging to gain the confidence of the public and elected officials during a response. Review the guidance listed in the PIO Toolkit with the PIO to develop the FOSC/UC Strategic Messages. Strategic messaging, not to be confused with routine public affairs outreach, builds upon strong relationships with key agency leadership, the media, and elected officials, cultivated by Sector leaders on a routine basis. These relationships will facilitate streamlined communication focused on risk communication, safety and environmental issues, and public safety/security during a response.

- Media Outreach. Media outreach must be rapid and aggressive during a major response, and should focus on demonstrating and conveying the capability of the federal government, through the network of partners, to manage the response. Coast Guard leadership cannot miss the opportunity in the first hours to deliver a strong message focused on winning public confidence. Failure to make this effort may result in competing media coverage that could send contradictory or misleading information. Even in situations where information is incomplete, response leadership must make it a priority to issue a press release outlining:

  - Who is in charge;
  - What we know;
  - What we don't know (or are learning);
  - Current actions;
  - Agencies involved;
  - Preliminary specific messaging; and
  - Time and place for a press conference.

  Coast Guard led operations should be aggressive in conducting daily press conferences that:

  - Include key stakeholder spokespeople to convey response unity;
  - Outline the maximum potential of the incident;
  - Deliver coordinated safety messages and response goals; and
  - Demonstrate organization, control of situation, pre-planning, inter-agency coordination

and amount of assets and personnel engaged in the response.

Additionally, consider:

- Knowledge of and potential participation in (or requests for information to support) other stakeholder press events;
- Embedding media with Coast Guard responders and/or providing access to the ICP.
- Establishing a visible Coast Guard presence.
- Allowing media escorted access to the ICP in order to capture the level of commitment required by crisis response, while still ensuring operational security.

- Risk Communication. Working with state, local, and responsible party counterparts, detailing *PEPSE* through the media following a major event will ease public scrutiny. Consider using recognized (and trusted) local or regional officials, or national experts (i.e. NOAA Scientific Support Coordinators, academic experts, etc.) to deliver such messages. Strategy sessions for risk communications should be scheduled. Additionally, risk/crisis communications specialists from the Coast Guard Public Affairs program should be engaged and mobilized early on. These specialist can help with strategic messaging, strategic insight into communications tools, social media monitoring, rumor control, etc.

- Congressional/Elected Official/Political Appointee Outreach. Elected officials, including Congressional delegates, expect to be included in communications protocols for major responses. Often, they only require periodic operational briefs, but some may expect to visit the ICP and to be shown the on-scene response effort. Working with state, local, and responsible party counterparts, response leadership should ensure that their staff conduct elected official briefings early on in the response once they have gained reliable situational awareness (ideally, within the first 12 hours). The message should follow the same guidelines of normal public information protocols. Including elected officials early on will likely garner critical support from the political community. If response leadership does not maintain an aggressive political outreach program, they run the risk of having to publicly defend response actions in addition to trying to fill an information gap. Incident management staff should establish a political info sharing cycle during the 24-96 hour period.

- Town Hall Meetings. Although normally done beyond the initial 96-hour response period for prolonged events, town hall meetings with state and local officials and responsible party, as part of a coordinated media plan and organized by interagency public information representatives (i.e. Joint Information Center), have proven to be an effective method to reach out to the impacted community in a sensitive manner, particularly with pollution incidents. While a simple presentation format works well, a "College Fair" style format is also effective. The College Fair format requires multiple stations in a large open setting, which allows the public to access information they want. The College Fair format requires more labor, but can serve to better answer specific (and challenging) questions in a palatable manner more geared to the attendee and less confrontational to the responder. As an example, stations for a environmental incident may include:

    - Risk communication station (specific hazards of pollutant)
    - Response organization station (Unified Command and response structure)

- Response strategies and goals (sensitive area protection, booming, fishing closures, economic concerns, etc.)
- Regulatory station (OPA-90 history and applicability)
- Investigation station (investigative role, functions, timeline, purpose)

- Web-based media. During an incident, the public will use television, internet, and social media for news to fulfill a never-ending demand for information. A portion of the public may view the incident as an **opportunity** to place political blame on elected officials and the sitting Administration. Others may consider the incident part of a government conspiracy. Failure to tell our story using these mediums will result in an information void. In addition to a televised press conference(s) within 24 hours of a major crisis, Coast Guard-led responses should incorporate an incident specific web site that allows collaboration between all members of the UC. Working with state, local, and responsible party counterparts, PIOs should also use social media, including Facebook and Twitter, to deliver publicly available information such as scheduled press conferences, major response milestones, major successes, etc.

- Common Operating Picture. To help create multi-agency situational awareness, all involved responding agencies should use a Common Operating Picture (COP) to visually display and maintain situational awareness in the ICP. The COP should utilize the Situation Unit (SITU) as the official and sole source of response information. Consider also utilizing the following COP technologies:

  - Environmental Response Management Application (ERMA) - This is the desired COP tool for pollution incidents. ERMA has proven very valuable through employment at the Spill of National Significance (SONS) 2010 Exercise as well as Deepwater Horizon.
  - Web Emergency Operations Center (WebEOC)
  - Homeland Security Information Network (HSIN) Connect

  Additional resources available to support COP development include:

  - Incident Management Software System (IMSS)
  - CG One View
  - Enterprise Geographical Information System (E-GIS)
  - Marine Information for Safety and Law Enforcement (MISLE)
  - Automated Information System (AIS)
  - Ship Arrival Notification System (SANS)
  - Vessel Monitoring System (VMS)
  - Web-based port or waterway cameras
  - Common Assessment and Reporting Tool (CART)
  - Watchkeeper

- Operational External Communications. Depending on the nature of the event and targeted audience, various tools exist for communicating with maritime interests, including:

  - Alert Warning System (for brief immediate information sharing)
  - Homeport (for more detailed internal and external secure information sharing)
  - Marine Safety Information Bulletins (MSIB)

- Maritime Exchange
- Safety Marine Information Broadcasts (SMIB)
- Delaware Bay MTSRU Port Stakeholder Conference Calls
- Adobe Connect

o Information Safeguarding. Information management includes collecting data from a variety of sources, organizing and processing the data, and disseminating information throughout the response to support current and future operating cycles. Information management also involves communicating vetted data up and down the chain of command in order to maintain consistent situational awareness. During a response, leadership must take great care to avoid sharing sensitive information (regardless of classification) with non-affiliated personnel. Such information sharing includes casual discussion of sensitive information in public spaces, texting or e-mailing non-affiliated personnel, and posting information and/or photographs on personal social media websites or other similar electronic forums. It may also include sharing sensitive information with personnel from non-governmental organizations (NGOs) who are serving in a liaison role. Leadership should consider issuing policy regarding personal social media usage during protracted responses. Additionally, information and data retention protocols and controls must be addressed in anticipation of post-event litigation.

o Battle Rhythm. Within the first six to ten hours, leadership should establish (or recommend) a deliberate daily cycle of formal situation reporting for the chain of command. The UC should coordinate to ensure inclusion of each of the UCs' supervising entities in a single formal situation reporting timeline, using a single format, if possible. The best method for determining the desired reporting criteria (metrics, etc.) and frequency involves reverse engineering the criteria and frequency requirements from the highest ranking entity in the reporting chain for a particular response (i.e. potentially from the White House or DHS downward). Based upon LANTAREA's and District Five's default battle rhythm applied to hurricanes, the Sector should anticipate a minimum of two formal situation reports due daily, with the potential for a third based upon any significant overnight developments. The required format for these reports should be clarified early on in the response, and may depend on the circumstances of the event, but will likely be in the form of either a DHS Senior Leader Brief or ICS 209. Additionally, graphics, slide decks or photos may also be required to better or more quickly convey details to senior officials. Template DHS Senior Leader Briefs and additional resources may be found on the D5 IMT Portal Site, https://cg.portal.uscg.mil/units/d5/district-five-incident-management-branch, and the LANTAREA IMT Portal Site, https://cg.portal.uscg.mil/units/lantarea/LANT3/LANT35/LANT35IM.
In establishing or recommending the frequency of reports, the UC should consider the schedule of meetings in the ICS Operational Planning Cycle so that the most current information is available to report out.

Situation reporting should contain the following critical information at a minimum:

- Current situation.
- Whether the situation is improving or degrading.
- Resource gaps.
- Resources or critical assets/infrastructure at risk.
- Port or national security implications/economic impact.
- Key metrics (oil spilled, oil recovered, ships diverted, passengers rescued, miles of

waterway/beaches affected, etc.).
- Political considerations.
- Press status/media relations.
- Wildlife impacted.
- Status of key stakeholders (RP, LE agencies, investigations, etc).

o Informal Communication. Upper levels of the chain of command (i.e. District Commander) may require additional, discreet informal communication with the Sector Commander, especially early on in the response, in order to fill any gaps in the normal battle rhythm reporting scheme. The Sector Commander or IC should consider establishing an informal telephone or e-mail reporting system with his/her chain of command that covers key incident challenges, goals, and accomplishments at least twice daily. To avoid unrealistic reporting expectations, operational commanders should strive to deliver timely information while managing expectations on statistical compilation, milestone reporting, etc. Furthermore, the Sector Commander/IC should rely on statistical data supported by the response's established documentation system rather than other tactical reports to avoid inconsistent reporting. Similar to formal reporting, the content and schedule of these informal communications will be influenced by subsequent informal briefings occurring further up the chain of command (i.e. District Commander to LANTAREA Commander, etc). Often a simple e-mail with applicable (well selected) attachments from the Sector Commander/IC up the chain of command serves to best inform critical parties. To ensure early alignment during the initial stages of an incident, the Sector Commander should plan to brief the District Commander (ideally within the first 30-45 minutes of a major incident) and coordinated through the respective Sector and District Command Centers. Enclosure (4) contains a sample script for an initial "quick call" made by the Sector Commander to the District Commander.

Suggested Informal Communication Reports	
Informal communications serve to deliver messages to permit senior level consultation and advocacy for the field. Reports should focus on whether situations are improving or degrading, resource gaps/needs, resources at risk, and any national defense concerns.	
Morning Report	Evening Report
• Overnight accomplishments • Forecasted major events • Incident metrics • Resource needs • Challenges • Goals for the day • Local/national media reporting	• Accomplishments for the day • Incident metrics • Resource needs • Challenges • Goals for the evening

Sample Consolidated Battle Rhythm				
Time	Call Focus / Deliverable	Frequency	Participants / Audience	Internal/ External
0400	Formal SITREP *(confirm case by case)*	Daily	Sector to District	Internal
	Morning Command Situation Brief	Daily	Sector IMT to Sector Commander/UC	Internal
	Morning Informal Communication w/ District Commander	Daily	Sector Commander to District Commander	Internal
	Objectives Meeting	Daily/Weekly	See IMH	Internal
	Command and General Staff Meeting	Daily/Weekly	See IMH	External
1000	Formal SITREP	Daily	Sector to District	Internal
	Tactics Meeting	Daily/Weekly	See IMH	Internal
	RRT Conference Call (if needed)	Daily/weekly	UC, FOSC to RRT via D5 IMPA	External
	Port Coordination Team	Daily	Sector to MTSRU Port Coordination Team	External
	Press Conference	Daily	UAC/IC	External
	Planning Meeting	Daily/Weekly	See IMH	Internal
	Operations Briefing	Daily/Weekly	See IMH	Internal
	Evening Informal Report	Daily	Sector Commander to District Commander	Internal
2200	Formal SITREP	Daily	Sector to District	Internal

2.4 Logistics

- Contingency Logistical Support. The Office of Contingency and Deployable Logistics (DOL-4) coordinates the overall DCMS logistics response effort to any contingency across the Coast Guard. DOL-41, the DCMS Watch, is co-located with the LANTAREA Command Center and serves as a 24/7 single point of contact for emergent mission support issues, including requests for Deployable Support Elements and Emergency Response Teams. Requests may be forwarded to the DCMS Watch via the D5 Command Center or

IMT. References (l-m) further describe resources, capabilities and equipment available to support contingency responses. Additionally, DOL-4's CG Portal site contains helpful fact sheets, references and contacts: https://cg.portal.uscg.mil/units/dol/dol-4.

- Incident Command Post (ICP) Locations. A large multi-agency response will quickly overwhelm the capabilities found within Sector Delaware Bay's General Greene room (holds approx. 40-50 people), which is typically Sector Delaware Bay's initial ICP site. Following the T/V Athos I incident in 2004, the Sector Delaware Bay CP/FR staff, with input from the Area Committee, decided that maintaining a list of alternative pre-designated ICP sites was not feasible, due to the varying nature of conferences, contracts, and events at possible locations. In lieu of a pre-designated list, CP/FR in conjunction with the Logistics Department should ensure that a full ICP can be supported within the Sector Delaware Bay multipurpose room for the first 96 hours of an incident.

  During the latter part of the first 96 hours, or when the full nature and extent of the incident is known, plans should be made to move to a new ICP site. The Sector Delaware Bay ACP contains a copy of the T/S ATHOS I ICP Move Plan (section 9796), which can be referenced as a guide to develop requirements for moving the ICP from Sector Delaware Bay to an incident's new ICP.

Enclosures:
(1) Major Incident Initial Command Briefing Script
(2) Response Timeline
(3) First 96 Hours Checklist
(4) Notification Matrix
(5) Joint Initial Media Plan Template for Oil Spill
(6) First 96 Hours PIO Toolkit
(7) Template Press Releases and Fact Sheets
(8) Fate of Oil Graphic
(9) Sector AOR Units

Major Incident Initial Command Briefing Script
Sector Commander to District Commander/Chief of Staff

(This is an initial guide and contingent upon unique requirements/desires of the next senior official)

1. What is the initial assessment?

2. What are the immediate plans/initial objectives? (pull from ICS-201 or pre-scripted ICS-202)

   Examples:
   - *Provide for the safety and welfare of citizens and response personnel.*
   - *Identify impacts to MTS infrastructure and cargo flow.*
   - *Conduct damage/stability assessment of vessel.*
   - *Develop and implement salvage and tow plan.*
   - *Implement agency and maritime community security plans.*
   - *Establish and continue enforcement of safety and security zones.*
   - *Initiate actions to stop or control the source, and minimize the total volume of product released.*
   - *Contain, treat, and recover spilled materials from the water's surface.*
   - *Identify and protect environmentally sensitive areas.*
   - *Establish an IMT.*
   - *Inform the public, stakeholders, and the media of response activities…*

3. What assets are on scene; who is On Scene Commander & Maritime Firefighting Coordinator (if req'd). Competency/Capacity/Sustainment?

4. Are there any limiting factors/constraints (what don't I have now or will I "run out of" first)?

5. Are there any resources that D5 can/should move right now? (i.e. Strike Team, MSST, MSRT, Cutters, CST, helos, Fixed Wing, Crisis Communications Team, PIAT, IMAT)

6. What CG missions/units/members/families are affected and how bad?

7. How many members of public are affected (roughly)? Is there a need for a public health advisory?

8. Are MARSEC or Force Protection changes being considered or requested? (if yes, ensure this is highlighted in CIC reporting)

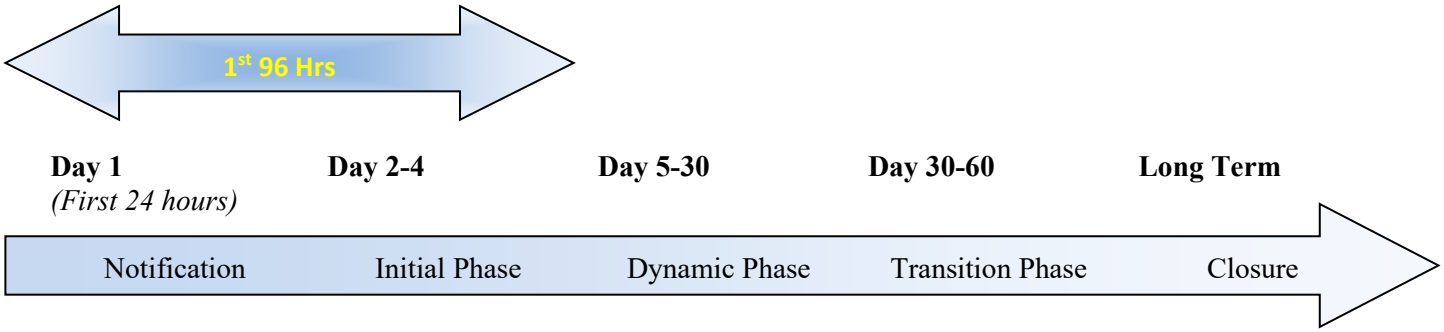
9. What is the most significant worry/concern with the incident?

10. Is there anything D5 can do for the Sector right now?

11. When should the next informal call occur? (be cognizant of CIC reporting timelines)

Enclosure (1)

Response Timeline



Notification	Initial Phase	Dynamic Phase	Transition Phase	Closure
• Make internal/ external briefings • Obtain situational assessments • Ensure initial safety of public is addressed • Assure preservation of CG personnel, assets, & capability • Establish UC and strategic goals • Assign CG roles • Develop/ implement unified media outreach plan & put out initial press release • Enact pre-scripted plans (ACP/AMSP) & pre-designated COP tools • Seek additional CG support resources • Conduct initial briefings of elected officials • Complete ESA Consultations	• Begin transition to ICS/ICP • Coordinate info sharing cycle with elected officials • Establish incident-specific website • Establish/refine COP • Execute media outreach plan & embed media into operations, if feasible • Establish liaisons in applicable EOCs • Carry out pre-scripted plans • Establish or update battle rhythm • Establish resource needs for sustained response & ordering process • Obtain Crisis Communications support & monitor the public narrative; ensure rumor control	• Sustained crisis management • Full Unified / Area Command Ops • If the incident is large-scale, evaluate transfer to an IMT in order to resume normal Sector missions • Employ novel/original practices as necessary • Ensure document retention process & controls in place	• Force "right sizing" • Force scale-down • Demobilization • Recognize / reward crew performance	• After action reports • Incident Specific Preparedness Review (ISPR) • Case studies • Continuous improvement on lessons learned • Incorporate scientific / academic research • Identify funding needs/opportunities and/or FY budget requests

Enclosure (2)

First 96-Hours Checklist

Once leaders have determined the context of the situation and initial priorities, they can better utilize the checklist that follows. This checklist complements the USCG Incident Management Handbook, ICS Job Aids, and other guiding documents, and like these references, it does not address all potential action items or situations. During the first 96 hours, responders will likely encounter unfamiliar scenarios and conditions requiring adaptive behavior, new procedures, and novel tactics. Responders should view the checklist in this light, keeping in mind that action items may not apply in all circumstances.

Color Legend

Sector Command Center	
Unified Command	
Planning	
Operations	
Logistics	
PIO	
LOFR	
Safety Officer	

Hour +1 **(Day 1)**

UC	Identify Unified Command members and conduct an initial conference call or meeting.
	Consider briefing D5 commander and/or Chief of Staff (see script in Enclosure 1).
SCC	Ask the following evaluation questions: • What has happened? • What have we not seen before; what is completely foreign to us? • What have we seen before; what is familiar to us? • What do we know? • What are we still learning? • What are we doing? • What resources do we need to bring to bear? • What are our immediate future plans? • What are the restrictions or limitations? • What are the critical notifications that must be made?
	Classify the incident (Act of terrorism, major marine casualty, flood, etc.)
	Coordinate partner agency/NRC notifications.
	Make critical federal, state and local stakeholder notifications per QRC.
	Initiate Critical Incident reporting (DAD-SAFE) and/or Maritime Operations for Threat Response (MOTR). Establish reporting timeframes and briefing thresholds.
	Evaluate immediate responder risks.
	Develop SMIB and broadcast.
	Coordinate appropriate COTP orders and Safety or Security Zones.
	Assess on-scene situation using Operational Risk Management.
	Activate/recall an initial Incident Management Team.
	Activate COOP Plan, if necessary.
	Contact ESDD Philadelphia and/or D5 C4IT for IT support to ICP.
LOGS	Evaluate need to initiate an Order to Account (CGPAAS).

Hour +2 **(Day 1)**

UC	Determine port impacts and need/potential for closures or restrictions.
Planning	Determine need for Coast Guard deployable specialized forces per RFF process. Initial/anticipated requests may be made verbally via CIC reporting and/or via the D5 Command Center. (AST, PIAT, IMAT, D5 DRAT, MSST, MSRT, SERT)
	Determine need for OGA deployable specialized forces and request as necessary (DOD Civil Support Team, DOD Explosive Ordnance Division, CDC, etc)
	Contact Scientific Support Coordinator if not already done by SCC or Response.
PIO	Engage PADET/D5 to issue initial press release (refer to Initial Media Plan, PIO Toolkit and templates).

Hour +5 **(Day 1)**

UC	Evaluate MARSEC level.
	Establish Key Asset and Critical Infrastructure protection priorities.
	Determine need for DCMS/DOL support.
	Request D5 Governmental Affairs assistance with managing/liaising with impacted Governor & Congressional staffs.
	Ensure ESA consultations have been initiated or completed.
SCC	Prepare to transition incident out of Command Center. Prepare ICS 201.
Planning	Prioritize sensitive areas for protection.
	Update appropriate MISLE Cases.
	Post MSIB on Homeport.
	Monitor and post to event created on WebEOC as necessary.
	Establish reporting protocol via HSIN.
	Develop CART entry; update waterway status as necessary.
	Establish Common Operating Picture.
	Identify high risk/high consequence vessels/cargoes, in-port or arriving.
	Notify MTSRU members and conduct a conference call.
	Determine the need to activate Reserve forces. Recall Reserve forces as necessary.
	Update waterway status on Homeport as necessary.
	Establish Battle Rhythm Communication Plan.
OPS	Initiate or complete ESA consultations with NOAA SSC and FWS.
	Deploy VOSS.
	Establish use of force policy.
	Establish use of force policy.
LOGS	Consult initial IMT members and SCC to determine incident transition plan and timing.
	Conduct USCG asset/infrastructure damage survey.
LOFR	Establish Agency Reps (AREP) at activated State EOC's (NJ, PA or DE).
PIO	Schedule/plan for press conference. Establish prep time and key messages with FOSC.
SOFR	Establish Response Safety Plan.

Hour +10 **(Day 1)**

UC	Cancel/curtail non-essential missions/tasks – ensure public/partner notification.
Planning	Engage with NMFS and State Fisheries agencies to open dialogue regarding closures (if applicable).
	Stand up MTSRU and begin cargo prioritization.
LOGS	Update internal forces using AWS.

LOFR	Conduct briefings of elected officials/staff; coordinate with D5 external affairs.
	Assess requirements/locations for CG Agency Reps (state/county EOCs, etc).
PIO	Monitor media reports and social media; assess need to conduct rumor control.

Hour +24 (Day 1)

Planning	Establish appropriate (written) safety and security zones.
	Activate Volunteer Plan as appropriate.
	Monitor critical port cargo/energy inventories (daily).
	Adjust battle rhythm/reporting/meeting timelines etc.
PIO	Initiate daily press release and press conference protocol (refer to Initial Media Plan).
	Utilize incident-specific website for public release for information.
	Prepare to embed media on/near-scene.

Hour +48 (Day 2)

Planning	Refine vessel traffic management plan.
OPS	Engage with State Energy Offices – establish daily critical energy dashboard, if needed.
	Conduct Waterway Assessments and ATON verifications (post wx event).
LOGS	Manage emergent personnel tempo not to exceed 14 hours in 24. Submit request for additional forces if necessary.
PIO	Embed media on/near-scene.

Hour +72 (Day 3)

LOGS	Consolidate Coast Guard damage reports to D5.
PIO	Develop VIP engagement site brief plan within first 72 hours.

Hour +96 (Day 4)

UC	Consider Town Hall Meeting with partners/UC/public within 96 hours of event.
	Adjust Battle Rhythm accordingly.
LOGS	Support VIP site visit.

Notification Matrix

The following matrix identifies key notifications that the IC, AC, or National Incident Command (NIC) / Principal Federal Official (PFO) have responsibility for making.

Audience	Coast Guard Authority	Incident Command
Executive	COMDT/AREA	NIC/PFO
Cabinet	COMDT/AREA	NIC/PFO
S-1	COMDT/AREA	NIC/PFO
International Partner Coordination	D5	UAC
NIC	D5	UAC
Governors	D5	UAC
Congressional Reps	D5/Sector GAO	UAC
FEMA	D5	UAC
EPA Region II, III	D5/RRT Coordinator	UAC
State OSC	Sector CC/Response	IC
DAD SAFE (NCC)	Sector CC	IC
NRC	Sector CC	IC
Strike Team	Sector CC via D5 CC	IC
PIAT	Sector CC via D5 CC	IC
SERT	Sector CC via D5 CC	IC
MSST / MSRT	Sector CC via D5 CC	IC
Area Maritime Security Committee	Sector CPFR	IC
Area Committee	Sector CPFR	IC
Port Stakeholders via Maritime Exchange	Sector CPFR/Prevention	IC
City/State Elected Representatives	Sector GAO/LOFR	IC
Affected Municipalities	Sector LOFR	IC
City/State EMA Director/EOC(s)	Sector LOFR/CPFR	IC
State/Local LE and Fire Services	Sector Response	IC
CBP Port Director	Sector Commander	IC
FBI SAC	Sector Commander	IC
Port Authorities	Sector Prevention	IC
CDC	Sector Response	IC
State Surgeon General	Sector Response	IC
Department of the Interior	Sector Response	IC
State Energy and Pollution Response Agencies	Sector Response	IC
Army Corps of Engineers	Sector Prevention	IC
Nat'l Marine Fisheries Service	Sector Response	IC
Civil Support Team	Sector Response	IC
DOD Naval Explosive Ordnance Division	Sector Response	IC

Enclosure (4)

Joint Coast Guard and NJDEP and/or PADEP and/or DNREC Initial Media Plan for an Oil Spill Incident

(NOTE: City/County may participate too)

Objective for the First 96 Hours

Day 1

- Develop an incident-specific media plan (PIO/JIC).
- Distribute an initial release with basic information on the response.
- Determine whether to establish a Joint Information Center (JIC).
- If a JIC is activated, send out a media advisory with phone numbers and other pertinent numbers including how to report oiled wildlife, oil sighting, third party claims, volunteer hotline, and other public information hotlines.
- Coordinate with the PADET, District Public Affairs, PIAT and/or state agency resources to launch an incident-specific website. De-conflict with NOAA (SSC).
- Agree to info distribution/release protocol.
- Send a media advisory announcing the first press conference, staging area/command post information, website link, etc.
- Send the second news release out just prior to the press conference.
- Prior to the press conference, review the guidance in the PIO Toolkit.
- At the press conference, provide an overview of the incident and response efforts to date. Address public health advisories, response organizations, resources deployed, environmental/wildlife impacts, closures, policies and plans, and potential opportunities to use affiliated/unaffiliated volunteers.
- Evaluate opportunities for disseminating information on a variety of levels such as social networking tools (i.e. Twitter, Facebook, etc.).

Day 2

- Use the Day 1 Media Plan as a baseline and expand to meet the needs of the targeted operational period. Include:
  - JIC hours of operation.
  - Appropriate protocols for the situation (i.e. Congressional/VIP site visits, etc.).
  - ICS-207 (Incident Organization Chart) information.
  - List of products to be produced.
- Produce fact sheets as appropriate (product, fate of oil, spill countermeasures).
- Assist with establishment of volunteer hotline (or obtain the information about the hotline).

Day 3

- Establish a schedule for holding future press conferences and disseminating news releases (1100 and 1500 each day works well with news cycles).
- Evaluate the effectiveness of social media for dissemination of information, including the use of social media as a data collection tool.
- Continue posting specific information on websites and disseminating information through the media.
- Consider establishing an email address as a means for the public to ask questions.

Enclosure (5)

Day 4

- Prepare and release success stories and photos of the response efforts.
- Provide the media with photo opportunities and tours of activities, site cleanup, command post operations, etc.
- Continue JIC operations until no longer needed and then demobilize as directed.

News Release Checklists

1st News Release

- Announce formation of the UC.
- Summarize the incident.
- Provide basic information (contact phone numbers for media).
- Include exclusion zone, safety zone, and security zone information as applicable.
- Include evacuations if applicable.
- Include links to PIER or to appropriate incident specific or state agency web-site, Twitter, and Facebook.
- Include a tag line for JIC hours of operation.
- Include information about air monitoring.
- Include wildlife impacts (animals collected, and animals released after care) and oiled wildlife reporting hotline.

2nd News Release

- Announce formation of the JIC.

3rd News Release

- Announce the time and location of the press conference.

4th News Release

- Include information about air monitoring.
- Include wildlife impacts (animals collected, and animals released after care) and oiled wildlife reporting hotline.

Future Press Releases (update all info as it becomes available)

- Summarize the incident.
- Provide basic information (contact phone numbers for media).
- Include exclusion zone information if applicable.
- Include evacuations if applicable.
- Include links to PIER or to appropriate incident specific or state agency web-site, Twitter, and Facebook.
- Include a tag line for JIC hours of operation.
- Include information about air monitoring.
- Include wildlife impacts (observed/reported/monitoring for) and wildlife hotline information.
- Contact info/sources for more information.

Social Media Protocol

The Coast Guard will partner with members of the Unified Command to maintain social media coverage during incident response. Prior to the establishment of a joint information center or formal/approved media plan, Sector PIO(s) should work closely with the Public Affairs Detachment and/or D5 Public Affairs to release vetted information via applicable official Coast Guard social media accounts.

Types of information that may be appropriate for social media releases include:

- Initial confirmed information and response actions.
- Establishment of the UC.
- Re-direction to social media thread (i.e. Twitter), and/or the appropriate incident specific UC or state agency web-sites being used for response communications.
- Links to news releases and fact sheets.
- Exclusion zone, safety zone, and security zone information as applicable.
- Evacuation information, if applicable.
- Air monitoring information.
- Wildlife impacts (animals collected, and animals released after care) and oiled wildlife reporting hotline.

Elected Official Site Visit Protocol

While the guidance below focuses on a site visit by the Governor, these protocols can be used for most elected official site visits. Clearly, the UC/AC/National Incident Command would need to consider additional measures for a Presidential or Vice-Presidential site visit.

Initial Contact

- Designate a single point of contact (typically the Liaison Officer) for the Governor's office.
- The Governor's office scheduler should call and follow up via e-mail. The first schedule presented almost always changes.
- Coordinate security with the State On Scene Coordinator (SOSC) and with the applicable state police.
- The Liaison Officer and PIO should coordinate planning for the site visit

Preparation

- Pre-arrival concerns:
  - Press staging, cameras, and media presence.
  - Press availability needs:
    - Portable PA system.
    - Break-out box.
    - Appropriate backdrop (work with PIO for proper location).
  - Site control for media:
    - The Liaison Officer, PIO, and site security should develop a press credential and/or check-in protocol.
    - Site security should protect the integrity of the operation during visit.
    - Provide media escorts as necessary.
- Arrival:
  - The Governor will expect to be met upon arrival by a senior official(s) involved in the response. The Federal On Scene Coordinator (FOSC)/SOSC, Area Commander, or Principal Federal Official (PFO) is the best choice to greet the Governor.
  - Have necessary transportation and parking ready (coordinate with Logistics).
  - Walk to the briefing area (if able to get close to ICP).
  - Provide the UC with information on security arrangements for the Governor's visit.
- Briefings:
  - Pre-briefing:
    - UC should answer questions. The presence of local government representatives may need to be considered by the UC based on event circumstances and as per the ACP.
  - Formal briefing (arrange with Governor's team as to preference):
    - Provide a guided tour of the incident command post.
    - Include section chiefs and agency representatives. Ensure the Wildlife Branch/Environmental Unit Leader is/are present.
    - Provide a spill response site tour as appropriate.
  - Public Briefing/Press Conference
    - Work with the scheduler/Governor point of contact if the Governor prefers a more public briefing/press conference. The Liaison Officer should coordinate closely with the PIOs for this type of event.
    - Arrange for pool reporter(s) to be present.
    - Take B-roll (arrange with PIO).
    - Press conference specifics will depend on Governor's preferences, so work closely with the Liaison Officer and Governor's people.

**** Note: The Liaison Officer or the Sector/D5 Government Affairs Officer is the primary point of contact with elected officials, but he/she must share info with the PIO.***

Briefing Area Setup

- Display a map with an overview of the area (provided by GIS expert or Situation Unit Leader).
  - Provide a briefing packet with critical information. Include source of spill, amount, actions taken to date, amount recovered, public health concerns, air monitoring, number of

skimmers/vessels/responders in the field, number/type ordered (and source), spill countermeasures deployed/considered, etc.

- Have technical specialists on alert to attend if necessary.
- Ensure the room has enough space for the Governor, the Governor's security, and agency representatives if allowed. Coordinate with Logistics to ensure enough chairs will be available.

First 96-Hours Public Information Officer (PIO) Toolkit

Key Messages

Ensure the PIO prepares FOSC for any interviews, press conferences, or Town Halls. Preparation should develop the opening statement that covers the Who/What/When/Where/Why/How. Preparation should also include going over questions that are likely to be asked that highlights five good things, five bad things, and five 'ugly' things. Ensure the FOSC knows the target audience and develops key messages to communicate to that audience. Ensure the FOSC is familiar with the three keys to answering questions in an interview:

1. **A**nswer – address the specific question (however NEVER repeat the negative part of the question)
2. **B**ridge – redirect to your message ("What's important to remember is…", "However…", "I do want to highlight…", "The key issue is…")
3. **C**ommunicate – communicate your message

Key Messages (FOSC)

- As the Federal On-Scene Coordinator, my role is to work with all the agencies involved, the responsible party and local government representatives to ensure that everything possible is done to ensure a coordinated and effective response effort.
- There are three key elements of this response effort (ensure the three elements are agreed upon by the UC if there are more ICs than just the FOSC; it is recommended to have three supporting facts for each key element; consider selecting from the below key messages to support the three):

    1. First, an aggressive and effective response has been initiated and will be sustained as long as necessary. Foremost concern is to ensure public safety and safety of our responders. The response effort includes a variety of response equipment, including _____.
    2. Second, every effort will be made to minimize damage to the environment including protection of sensitive environmental areas, removal of as much oil from the water as possible, and taking care of wildlife. We have an effective tool called the Area Contingency Plan to guide the multi-agency effort during the early stages of the response. This plan has been created by federal, state, local and industry experts and has been exercised numerous times over the years.
    3. The third element of this response is to determine why this occurred in the first place so we can prevent similar events in the future. If we can determine what went wrong and take preventive measures hopefully we can reduce the possibilities of similar future responses (note that since investigations take time, this may not be encompassed in the first three key elements identified by the FOSC/UC).

Enclosure (6)

Key Messages (Oil Spills)

- In response to the_____oil spill, a unified command has been established to oversee and direct cleanup activities. Representatives from the United States Coast Guard, the state, and responsible party _will be working together in this effort.
- The unified command's top priorities are to protect public health and safety, limit environmental impacts and contain and clean up the spill as quickly and efficiently as possible.
- The oil is a hazardous material and can present significant health hazards, so the public is asked to stay away from area beaches and do not attempt to rescue wildlife.
- We are currently evaluating the situation and determining how much oil/material has been released. In this regard, some of our key objectives are to ensure the source of the spill has been secured to prevent further release, and that we mobilize sufficient resources to the scene to recover oil, and prevent the spill from causing further damage.
- Initial estimates of the amount of oil/chemical spilled are almost always inaccurate. But, to be safe, we are prepared to respond to the maximum potential that could be released.
- We ask the public not to attempt to rescue oiled birds or other wildlife on their own. They should instead report any sighting of oiled wildlife to_____.
- The public is further advised to avoid contact with the oil and to keep pets on leashes away from beaches where the product has accumulated.
- The cause of the incident is under investigation.

Key Messages (Public Safety)

- The safety of the public and incident responders is our number one priority.
- The public is advised to avoid contact with the oil and to keep pets on leashes away from beaches where the product has accumulated.
- People should not attempt to rescue oiled wildlife. Untrained individuals who attempt to rescue wildlife may cause more harm than good and may injure themselves in the process. If oiled animals are scared back into the water by pets or people, their chances of survival decrease dramatically.
- If someone comes in contact with the oil, he/she should wash it off with warm water and soap. For any serious injury or illness, seek medical attention.
- Air monitoring is/will be conducted to identify atmospheric hazards for spill responders. That data will be regularly provided to the Unified Command and local public health officials, who will determine whether risks to public health exist.
- The oil is/is not expected to pose any threat to the public. Air monitoring has determined that the air quality is/is not currently below OSHA occupational exposure limits.
- The local public health department is responsible for alerting the public if there is a health hazard. People may smell spilled petroleum product, even when there is no threat to public health. Some may experience headaches and/or nausea, as well. If discomfort, such as headaches, develops the affected person should consult his/her personal physician.
- The local Office of Emergency Management will handle the evacuation of communities threatened during a spill. If the OES decides there is a risk to public health, they will tell local radio and television stations to notify the public via the Emergency Broadcast System or emergency alerts via cell phone (i.e. Ready Philadelphia). Local law enforcement personnel would direct the evacuation, and possibly make public address announcements from vehicles being driven through the affected area.

Key Messages (Cleanup Methods and Considerations)

- It is important that only trained personnel conduct oil spill cleanup. Oil is a hazardous substance and highly toxic if handled improperly. It is important to stay off oiled beaches and keep children and pets at a safe distance from a spill site. If someone comes in contact with the oil, he/she should wash it off with warm water and soap. For any serious injury or illness, seek medical attention.
- Initial spill response will generally focus on stopping the oil leak first, conducting on-water containment and recovery, and then shoreline protection. Efforts will be made to get oil off the water first so that continued re-oiling of shorelines is minimized.
- The main tools used to contain and recover spilled oil are booms and skimmers. Boom is a plastic barrier that floats on top of the water with a skirt that hangs below that helps to keep oil contained or keep it away from sensitive areas. Boom is most effective in calm waters. If seas are too rough or currents are too fast, the oil will escape containment. Skimmers are equipped to skim oil off the surface of the water and store it in large tanks. Absorbent materials are also used to collect oil.
- Oil evaporates and disperses into the water, in a process called weathering. *Refer to "fate of oil" graphic.*
- Oil that is not recovered on water is likely to wash up on the shoreline causing further damage to wildlife and the environment. As a preventative measure, responders may place boom around sensitive areas to keep the oil at bay.
- The Area Contingency Plan, developed by the Coast Guard and State Environmental Protection Agencies, has geographic response strategies that identify environmentally sensitive sites. During an incident a decision will be made, using spill movement data and local expert observations, about which of the sites are in imminent danger and will, therefore, receive the earliest efforts at protection.
- Once shorelines become oiled, cleanup crews must determine the best methods to remove the oil from the environment without causing further damage. Much research has gone into developing these strategies. Different sites require different approaches. For instance, using a high-pressure wash on a rocky slope may simply push the oil further into the crevices, so instead hand scrubbing may be the best method. For sandy beaches, using shovels and small excavation equipment may be the most effective approach. The public should not attempt to employ their own strategies.
- Trained crews are instructed in how to dispose of the oil and oily materials. The recovered oil must be carefully quantified to determine how much was removed from the environment. Then it is transported to a hazardous materials landfill or recycled. When oil is disposed of improperly such as; household or public receptacles this may lead to contamination of municipal water supplies.
- Local beaches may remain closed during these cleanup activities. The local health department and/or the governing agency have the authority to close beaches for public safety reasons.

Key Messages (Volunteers)

- An aggressive cleanup operation is underway to secure the source, recover spilled oil and protect environmentally sensitive sites and wildlife that may impacted.

- There has been a tremendous outpouring of support and offers to help from the community. We appreciate the public's desire to volunteer and understand their concern.
- The Unified Command will make the decision on whether and how to safely use affiliated and/or unaffiliated volunteers. It will depend on a variety of factors including the type of oil spilled, the location and size of the spill, and most importantly the safety of volunteers.
- In order to keep the public informed about the status of the cleanup and to provide information on possible volunteer opportunities, a **Volunteer Hotline** has been established at (###) ###-####.
- At this time, a decision has not been made to use volunteers, and the public is asked to stay off beaches where oil has accumulated and to not attempt to rescue oiled wildlife.
- A volunteer can either be pre-trained or come forward during a spill event with no prior oil spill volunteer experience. Each spill response is unique, and the skills needed may be somewhat different each time.
- Volunteers must first register before participating in a spill response. They must be at least 18 years, in good health, capable of lifting 25-35 pounds and able to follow both written and oral directions. They must also be willing to attend required training.
- Volunteering does not necessarily mean cleaning up oil. Oil is a toxic substance and dangerous if handled or disposed of improperly. Only Hazardous Waste Operations and Emergency Management Response (HAZWOPER) trained personnel are authorized to conduct oil spill cleanup.
  - The best way to become a volunteer is to contact your local community volunteer center, nonprofit environmental group, local humane society, service organization, faith-based organization, or government agency volunteer program. Some of these organizations train volunteers to be long-term environmental monitors or to work in various types of disaster management.

Question & Answer (Q&A)

Tactics and Techniques

o Always… o Stick to the facts o Use your messages o Be concise o Stay in your lane o Speak plainly o Provide periodic updates o Correct mistakes o Be honest, direct, and courteous o Speak in sound bites o Use quotable quotes	o Never… o Go "off the record" o Over-answer o Use jargon and acronyms o Repeat negatives o Lie, bluff, or exaggerate o Speculate o Fake it if you don't know it

Q&A (Spill Response)

Q: How many gallons of oil are in a barrel?
A: 42

Q: How does this spill compare to the ATHOS I?
A: The M/T ATHOS I spilled approximately 250,000 gallons of heavy crude oil into the Delaware River, after striking a submerged object on 26 November 2004. Response operations led to the recovery of 8,498 gallons of oil, 221,910 gallons of oily water mixture, and 19, 197 tons of oily contaminated debris. More than 1,800 responders were involved in the response operation.

Q: How big is this spill compared to the 1989 Exxon Valdez, Alaska spill?
A: The Exxon Valdez spilled nearly 11 million gallons of crude oil, of the 42 million gallons onboard. That spill led to the Oil Pollution Act of 1990, which gave us many of the procedures, plans, and authorities we have today. No two responses are alike and caution should be taken when trying to compare them solely by the amount of product released.

Q: What is the Unified Command System? Who has authority?
A: When a significant event takes place the state, federal and local agencies establish a unified command to oversee the response. The unified command consists of the U.S. Coast Guard (the lead federal agency for marine spills) or the U.S. Environmental Protection Agency (lead federal agency for inland spills), State, and the responsible party. The incident commanders work together to plan and direct the response, using the best available technology. Experts from all of the entities involved work together in the planning, operations, logistics and finance sections, and fill command staff positions at the incident command post.

Q: Who investigates the spill?
A: The Coast Guard is investigating this incident and may assess fines and penalties according to state and federal laws and regulations. These investigations may lead to administrative penalties, or to civil and/or criminal charges.

Q: How do local government agencies fit in?
A: The state liaison officer, who is part of the unified command, establishes a multi-agency committee made up of local government stakeholders. Through the liaison officer, local government concerns and offers of assistance are reported to the incident commanders. If necessary a local representative may serve in the unified command as the local incident commander.

Q: How do you know where the oil came from if nobody confesses to spilling it?
A: The Coast Guard Marine Safety Laboratory in New London, Connecticut, as well as private analytical laboratories, use gas chromatography and mass spectrometry to produce a "fingerprint" of oil taken from the water or oiled habitat. Oil samples are also taken from vessels, pipelines or facilities that were in the area at the time of the spill. Matching or chemically consistent fingerprints between spill and source samples allow us to identify the responsible party.

Q: What is boom?
A: Boom is a floating physical barrier with a skirt underneath the water used to contain or divert oil spills. Boom floats on the surface of the water, but parts may extend above and below it. Because oil primarily floats on water, the boom is used to collect or direct floating oil. Boom is not a perfect containment device. Waves can carry oil over a boom and a current may force oil under it. Tidal shifts, debris, or ice can cause the boom to get hung up and limit its effectiveness. Boom is more effective directing oil which moves at a slight angle to the line of boom than as a barrier blocking

the oil's movement.

Q: How is boom allocated?
A: Boom is allocated based on priorities established by the Unified Command (UC). The UC is guided by protection strategies pre-identified in the Delaware Bay Area Contingency Plan (ACP) and then refined by spill trajectory modeling using real-time tide, wind, and current data following an incident. The main focus of spill response contingency planning is the identification and protection of environmental, cultural, and economic sites that have been identified by the Area Committee. Strategies such as containment or exclusion booming are included in the ACP and are designed to: 1) protect human health and safety, 2) protect identified environmental resources of concern, and 3) protect economic resources of concern.

Q: What are dispersants? How do they work?
A: Dispersants are chemicals, primarily surfactants, which are applied to spilled oil early in a spill in order to break down the oil into small particles and move the particles of oil into the water column, where they will eventually be broken down by bacteria and other microorganisms into carbon and oxygen. The primary goal of dispersant use is to move the oil from the surface waters, where the oil can pose a threat to sea birds and marine mammals for up to several weeks, to the water column, where the impact to marine resources are typically measured in days.

Q: What is in-situ burning?
A: In-situ burning means burning something in place — where it is. In some cases, this may be the most effective way to remove oil from the environment and protect sensitive ecosystems. But, like all response methods, it has drawbacks. Burning oil creates a noxious plume of smoke and airborne particulate matter, so this method of removing oil from water would only be considered in an area and under weather conditions in which the smoke would not affect human populations.

For a burn to work, the oil must be a certain thickness on the water to ignite, and it must be ignited within a few hours of being spilled, before the high-end, volatile chemicals evaporate. Not all oil is burnable. Specialized equipment must be readily available, and weather and oceanographic conditions must be favorable.

Q: Can you use biological agents? What are they, and how do they work?
A: Biological agents, approved by the EPA and the State, can be used during spill response. Biological agents (i.e. bioremediation) are used primarily as a final or "polishing" process to remove the remaining oil following initial cleanup activities or in areas where the more commonly used cleanup procedures are not applicable. Biological cleanup agents are typically chemical fertilizers that are applied to an oiled area to stimulate the growth of existing oil degrading bacteria. These bacteria will in turn breakdown the oil into carbon and oxygen. The efficacy of this process will depend on the type of oil spilled and environmental conditions.

Q: What should the public do if they see oil in a place where it shouldn't be (a spill)?
A: Spills can be reported to the US Coast Guard's National Response Center by calling 800-424-8802. For DE report the spill by calling (toll-free) 800-662-8802. For NJ report the spill by calling (toll-free) 877-827-6337. For PA report it by telephoning 484-250-5900. Agency websites: http://www.dnrec.delaware.gov, http://www.state.nj.us/dep and http://www.dep.pa.gov.

Q&A (Habitat and Wildlife)

Q: How does oil affect fish and wildlife?
A: Fish and wildlife can be harmed when their bodies contact oil. For aquatic birds and furred marine mammals, oil may cause feathers and fur to lose the ability to trap air and keep water out. These animals are then susceptible to hypothermia and reduced buoyancy. Aquatic birds that are oiled will often attempt to come ashore to escape the cold water. When oil coats fish and invertebrates, it can lead to smothering or tissue damage. There are also toxic effects from ingesting or inhaling petroleum products. Depending on the amount and type of oil ingested, fish and wildlife may die or experience a variety of toxicological effects including immune and reproductive system effects and disrupted organ function. In addition to direct effects on fish and wildlife, oil can also contaminate and persist for long periods in the habitats upon which these animals rely.

Q: What process does the animal go through after capture?
A: The bird or other animal is handled very carefully, in an attempt to limit stress while being evaluated for its ability to survive; then it is stabilized. Oiled wildlife must be kept warm, as oil ruins the normal ability of fur and feathers to retain body heat. The animal is first stabilized in the field, and then medically evaluated once it arrives at a facility. Sick or injured animals are provided veterinary care at this point. Once the animal is medically stable (usually 24-48 hours after arrival) it will be washed with warm water and an oil-dispersing detergent, dried and held in captivity until it is healthy enough to be released to the wild. On average, this entire process lasts a minimum of 7-10 days.

Q: How successful is rehabilitation?
A: That depends on several variables, such as the animal's species, physical condition prior to oiling, the time of year and weather conditions in which it was oiled, the length of time between initial contact with oil and the animal's capture, the type of oil, and whether there is an oiled wildlife care facility with trained veterinary staff nearby when it was captured.

Q: Can people volunteer to help?
A: Yes, there are a variety of jobs that volunteers can safely do in response to an oil spill. Hazardous materials training may be required for some of these jobs. Each incident is unique, however, and whether or not volunteers are used during a spill response is the decision of the unified command.

Q&A (Public Health and Safety)

Q: What about public health?
A: The public is advised to avoid contact with the oil and to keep pets on leashes away from beaches where the product has accumulated. In addition, they should not to attempt to rescue oiled wildlife. Untrained individuals who attempt to rescue wildlife may cause more harm than good and may injure themselves in the process. If oiled animals are scared back into the water by pets or people, their chances of survival decrease dramatically. If someone comes in contact with the oil, he/she should wash it off with warm water and soap, baby oil, or a widely used, safe cleaning compound such as the cleaning paste sold at auto parts stores.

The safety officer in the Unified Command will set up air monitoring equipment, as needed, to identify atmospheric hazards for spill responders. He will provide the data collected to the Unified Command and to the local public health department, which will determine whether the human population is endangered. The local public health department is responsible for alerting the public if there is a health hazard. People may smell spilled petroleum product, even when there is no threat to public health. Some may experience headaches and/or nausea, as well. If discomfort, such as headaches, develops the affected person should consult his/her personal physician.

Q: Who would handle an evacuation of the community?
A: This is extremely rare; however, the local Office of Emergency Services would handle the evacuation of communities threatened during a spill. If the OES decides there is a risk to public health, they will tell local radio and television stations to notify the public via the Emergency Broadcast System and viable cell phone alerts. Examples of alert apps in the area include "Ready Philadelphia," and mobile alerts offered by New Jersey and Delaware offices of emergency management. Local law enforcement personnel would direct the evacuation, and possibly make public address announcements from vehicles being driven through the affected area.

Q: What should people do if they think they've been exposed to toxins?
A: Contact your local Public Health Department, and then get medical attention from your personal physician, just as you would for any illness or injury. Anyone without a personal physician will be advised on further action by the health department staff.

Q. What if you can't find a Responsible Party?
A. In the case of a "mystery spill" – where the spiller can't be identified, located, or is insolvent– a rapid response will be funded by either the State or Federal Oil Spill Liability Trust Fund. In many cases, the state fund can be reimbursed by the federal fund if not, and the amount is significant, a mechanism will be activated for the oil industry to replenish the account. Since the Oil Spill Prevention and Response Act of 1990 were enacted, the account has never had to be replenished with a higher fee.

Q&A (Dispersants)

Q: Why are dispersants used on an oil spill?
A: Dispersants are used to reduce the environmental impact created by oil slicks on the water surface. Dispersants accelerate the weathering and biological breakdown of oil at sea and reduces the impact of oil on sensitive near shore environments.

Dispersants are also highly effective in reducing exposure of sea birds and marine mammals to oil as most sea birds are oiled by slicks on the surface of the sea or in near shore coastal habitats. Undispersed slicks and residual oils are a persistent threat to near shore birds, mammals, and intertidal communities due to the toxicity of, and contact with oil. Dispersed oil is less "sticky" than undispersed oil; therefore, the adhesion and absorption onto surfaces and sediments of dispersed oil is greatly reduced compared with the original oil slick.

In a spill incident, environmental trade-offs of protection and sacrifice will occur. These decisions are not taken lightly by response authorities and will be based on the best available advice and

scientific data to achieve a net environmental benefit.

Q: What are oil spill dispersants?
A: Dispersants are a class of chemicals specifically designed to remove oil from the water surface. These chemicals reduce the interfacial tension between the oil and water and help the creation of small oil droplets, which move into the water column facilitating quicker natural biological breakdown (biodegradation) and dispersion. By decreasing the size of the oil droplets, and dispersing the droplets in the water column, the oil surface area exposed to the water increases and natural breakdown of the oil is enhanced. This removes the threat of the oil from the water surface to within the water column.

Dispersion is a natural process that occurs in surface slicks as wind and wave action break up the surface slick. However, naturally dispersed oil droplets tend to re-coalesce and return to the water surface and reform as surface slicks. The addition of chemical dispersants allows the wind and wave action to then carry the small oil droplets away and dilute the concentration of the droplets in the water column; these dispersed oil droplets are then targeted by indigenous oil-consuming microbes where they are broken down into the ultimate components, carbon dioxide and water.

Q: On what basis is the decision made to use dispersants in a spill incident?
A: The main basis for decision making in determining whether oil spill dispersant will be used is whether the application of the chemical dispersant to the spilled oil be effective and minimize the overall environmental impact of the oil spill. Time is a key determinant.

Except for the impact on marine birds and mammals, the most damaging effect of oil spills is when the oil strands on shorelines or enters restricted shallow waters like estuaries. Dispersants are a prime and vital response tool to stop oil coming ashore or from entering sensitive near shore environments especially when weather and sea conditions do not allow the use of oil containment and recovery equipment.

Dispersant use may be authorized by the Region II or III Regional Response Team in these circumstances when there is a possibility of an impact of oil on a more sensitive near shore habitat, or wildlife impacts are possible. For example, when an approaching oil slick may impact sensitive marine mammal breeding areas, or endangered species such as migratory birds. RRT Regions II and III have pre-authorized a small area in the Delaware Bay where dispersants can be used for testing on an oil spill to determine efficacy.

Q: What are the negative effects of dispersants on the environment?
A: The acute toxicity of dispersed oil generally does not reside in the dispersant but in the more toxic fractions of the oil. Dispersing oil into the water in situations where there is little water movement or exchange, such as shallow embayment's, increases exposure of subsurface, benthic organisms and fish to the toxic components of the oil.

Fish and other marine life in the larvae stage or juvenile stages are more prone to the toxicity effects of oil and dispersants. Therefore it is unlikely dispersants will be used near commercial fisheries, important breeding grounds, fish nurseries, shellfish aquaculture, etc., unless it is to protect a more important environmental resource.

Sea grasses and coral reef communities are particularly sensitive to dispersed oil because instead of

the oil "floating over" the reefs and submerged sea grass beds the oil/dispersant mixture in the water column will come into direct contact with these sensitive ecosystems. Generally there is reluctance by spill responders to use dispersants in shallow waters less than 30 feet deep, although there may be situations where using dispersants could prevent impacts to near shore habitats and wildlife.

Q: Who authorizes the use of dispersants during an oil spill response?
A: Under the Oil Pollution Act of 1990, the Regional Response Team is vested with the authority over dispersant use for marine oil spills. The National Contingency Plan (NCP) provides that the Federal On-scene Coordinator, with concurrence from the EPA and the State representatives, may authorize the use of dispersants.

Criteria detailed in the Sector Delaware Bay Area Contingency Plan must be met before the Federal On-scene Coordinator can authorize dispersant use. If it is determined that a spill does not meet the pre-approval, then the final decision for a dispersant-use determination rests with the RRT.

Q: How effective are oil spill dispersants?
A: Chemical dispersants aid the natural dispersion of oil by reducing the oil/water interfacial tension and, along with the natural motion of the sea, allow the breakup of oil on the water into very fine droplets.

Effectiveness of oil dispersion by chemical dispersants at sea is governed by a range of conditions and include the type and chemistry of the oil, degree of weathering of the oil (time), the thickness of the oil slick, type of dispersant, droplet size and application ratio, prevailing sea conditions (wave mixing energy), and sea temperature and salinity.

Q: Will dispersants work on all types of oils?
A: No, dispersants will not work on all oil spills. The first rule in combating oil spills with dispersants is that the oil must be amenable to dispersant use. It is also well understood by oil spill response agencies that dispersants are only effective on certain types of oils and the first priority is always to determine the spilled oil's physical and chemical properties in order to assess combat options. Non-dispersible oils include: 1) non-spreading oils (pour point is higher than sea temperature), 2) highly viscous oils (> 2000 Centistokes (cSt) - a measurement of the mobility of oil), 3) a water-in-oil emulsion has formed (mousse).

A "rule of thumb" is a dispersant may have a reasonable success rate if the oil is continuing to flow or spread as a fluid (not just sheening). Unfortunately this "rule of thumb" is only partly correct. The properties of these oils are determined by their chemical compositions which vary widely. For the purposes of determining the use of dispersants at various sea temperatures the important properties are: 1) the specific gravity (or API gravity), 2) pour point, and 3) viscosity.

Q: How quickly do we need to apply dispersants to an oil spill?
A: As quickly as possible! There is only a limited "window of opportunity" to use chemical dispersant in an oil spill incident. This is primarily due to the changing properties of the spilled oil due to weathering of the oil, but is also governed by the location and speed of movement of the slick onto the foreshores or into estuarine environments. This window of opportunity may be as little as only a few hours or if the conditions are favorable, a day or two.

Q: What are the health and safety issues associated with the use of chemical dispersants? A: Response workers must be careful to ensure that personnel do not get sprayed by the dispersants, or come in contract with any of the overspray. Vessels must only be deployed under safe sea conditions.

News Release Templates

Coast Guard Responds to Spill Incident

Date: _____
Contact:_____

News Release

Coast Guard responds to TYPE spill in LOCATION

PHILADELPHIA — Coast Guard crews are responding to a report of a TYPE spill near LOCATION, TIME/DATE.

REPORTING SOURCE notified Coast Guard Sector Delaware Bay of the spill, which took place at LOCATION. Initial reports indicate the spill is coming from a VSL/FACILITY/SUSPECTED SOURCE due to SUSPECTED CAUSE.

The SUSPECTED SOURCE was reportedly CARRYING/TRANSFERRING nearly MAX POTENTIAL gallons of PRODUCT, but it is not known how much of the product was discharged.

Coast Guard Sector Delaware Bay pollution responders and state environmental officials are on scene investigating the impact of the spill. A broadcast notice to mariners is in place advising mariners to transit the area with caution due to pollution.

The cause of the incident is under investigation. Drug and alcohol tests will be performed.

###

Enclosure (7)

Incident Joint Information Center Established

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact:_____

News Release

INCIDENT NAME joint information center established

PHILADELPHIA — A Joint Information Center has been established at LOCATION to provide response information for the INCIDENT NAME.

For incident response inquiries and interviews, media representatives should use the contact numbers below:

(###) ###-####

(###) ###-####

(###) ###-####

A website with incident response information can be found at the following URL: www.incidentwebsite.com

Members of the Unified Command are responding to a TYPE spill near LOCATION, DATE. The SUSPECTED SOURCE was reportedly CARRYING/TRANSFERRING approximately AMOUNT gallons of PRODUCT, but it is not known how much of the product was discharged.

The cause of the incident is under investigation.

###

Incident Media Briefing

Joint Information Center

(Unified Command logos/names here)

Date: _____

Contact:_____

News Release

INCIDENT NAME media briefing to be held in LOCATION

PHILADELPHIA — The INCIDENT NAME unified command is holding a media briefing at LOCATION today to discuss TOPIC.

WHEN: TIME, DAY

WHERE: BUILDING NAME, ROOM NUMBER, EXACT LOCATION, STREET ADDRESS, CITY, STATE

WHO: (NAME, AGENCY), Federal On Scene Coordinator
(NAME, AGENCY), State On Scene Coordinator
(NAME, AGENCY), Responsible Party

BACKGROUND: INCIDENT SUMMARY, SOMETHING HAPPENED AT SOME PLACE SOME DAY. TYPICALLY CAN BE THE LEAD PARAGRAPH FROM PREVIOUS RELEASE.

Please visit WWW.INCIDENTWEBSITE.COM for incident response information.

###

Response Continues

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

RESPONSE TYPE spill response continues in LOCATION

PHILADELPHIA — Members of the unified command continue to coordinate PRODUCT spill recovery operations in LOCATION, DATE.

Responders have recovered more than ----- gallons of oily water mixture and -- yards of solid soiled waste. More than ----- feet of containment boom and -- responders have been deployed to conduct shoreline assessments and recover as much product as possible.

Shipping traffic is still required to maintain minimum safe speed from ------ to ------ to minimize the impact to clean-up operations. The unified command will continue to closely monitor the situation and will adjust restrictions to commercial and recreational boating traffic accordingly.

The unified command consists of representatives from the UC MEMBER AGENCIES.

WHAT HAPPENED, WHERE at approximately TIME/DATE.

There have been no reports of impacted wildlife.
Address public safety concerns/messaging.

The cause of the incident is under investigation. Drug and alcohol tests will be performed.

###

Date: _____
Contact: _____

Unified Command Approves Dispersants

Joint Information Center

(Unified Command logos/names here)

News Release

Unified Command has approved the use of dispersants for the RESPONSE NAME

PHILADELPHIA — The Unified Command has approved the use of the chemical dispersant Name in order to break up the oil slick and protect shoreline habitat, seabirds and marine mammals from becoming oiled due to the PRODUCT spill recovery operations in LOCATION, DATE.

Dispersants break down oil into smaller particles helping it to disperse and sink below the surface. Before dispersants are used a range of criteria must be met:

- The application of dispersants must be 3 – 200 miles off shore and not within a National Marine Sanctuary.
- The application of dispersants must provide an environmental benefit for species at risk and/or species of special concern.
- The application of dispersants must be done safely and in accordance with standard marine and aviation practices.

Federal and state trustee agencies identified the LIST OF SPECIES as species of special concern and of significant risk of injury from this oil spill, especially if the spill were allowed to spread and hit sensitive habitats and shorelines.

Wildlife and resource agencies believe that these species will be benefited by the use of dispersants and will monitor the operations as appropriate for these species.

(PROVIDE ANY INFORMATION, AS NECESSARY ON FISHERIES AND PLANS FOR ANY SEAFOOD TAINTING PANELS)

The unified command consists of representatives from the UC AGENCIES.

THERE HAVE BEEN NO REPORTS OF IMPACTED WILDLIFE.

The cause of the incident is under investigation. Drug and alcohol tests will be performed.

###

Fishing Activity Suspended

Date: _____

Contact: _____

Joint Information Center

(Unified Command logos/names here)

News Release

Fishing activity suspended due to SPILL RESPONSE in LOCATION

PHILADELPHIA — Members of the unified command have suspended all fishing for human consumption in the areas affected by the INCIDENT NAME until at least DATE, or when state health officials have determined that fishing can safely be reopened.

The AGENCIES are collecting samples of fish and shellfish from the area impacted by the spill. Samples of FISH are being collected from various locations in WATER BODY and along the coast. The samples will be tested for toxic chemicals that are found in the oil, which can accumulate to dangerous levels in fish and shellfish. The main toxins of concern in the oil that was released are a group of chemicals called polycyclic aromatic hydrocarbons. Long-term exposure to high levels of PAHs is associated with an increased risk of developing cancer.

AGENCY's safety guidelines call for avoiding consumption of any fish or shellfish from WATER BODY until analysis of the collected samples is completed. Visible oil or oily smell are obvious indications of contamination, but fish and shellfish from the spill area could still pose a potential risk even if there are no visible signs of contamination.

In addition, health officials are asking people to stay away from shore areas until cleanup efforts are completed. After beaches are reopened, people who find oil deposits along the shore should report them to cleanup officials by telephoning CONTACT.

Safety advice for beaches in the spill area:

- Avoid direct contact with spilled oil, which can cause skin irritation. Prolonged contact can cause rashes.
- If you get oil or tar on your skin, wash it off with soap and water, and be certain to wash your hands before eating.
- If you get oil on your clothing, wash it in the usual way. There is no need to use harsh detergents, solvents or other chemicals to wash oil from skin or clothing.
- Do not burn driftwood or other debris that may be contaminated with oil.
- Use common sense. Do not swim in water with an oil slick and do not swallow water from the area. Oil-contaminated water can cause choking and lead to severe pneumonia if it gets into the lungs.

- Avoid prolonged exposure to fumes in closed spaces.
- Fish and shellfish caught from waters outside the spill area remain as safe to eat as before the spill, but marine life from the spill area should be avoided until the evaluation of its safety is completed.

THERE HAVE BEEN NO REPORTS OF IMPACTED WILDLIFE.

The cause of the incident is under investigation.

###

Volunteer Hotline Established

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact:_____

News Release

RESPONSE NAME Volunteer Hotline Established

PHILADELPHIA — The unified command has activated a volunteer hotline at 000-000-0000 for people who would like to contribute to the spill recovery operations near LOCATION, DATE.

The Volunteer Hotline will provide updates on the spill response and will allow potential volunteers to provide their contact information, availability, and applicable skills.

"We appreciate the public's outpouring of support and their desire to help out in the unfortunate event," said NAME, POSITION. "We are doing everything we can to minimize impacts to the environment and protect the wildlife that lives here. At this time, we are evaluating how we may best use volunteers in our response in a way that is both safe for the volunteers and productive."

Volunteers have been used in previous oil spill responses, with activities coordinated through the unified command. By calling the Volunteer Hotline number, prospective volunteers will get the most up-to-date information on whether their time and skills will be needed.

Volunteers and others should stay away from the spill site and not attempt to rescue oiled wildlife, as this may hamper clean-up efforts and increase the danger to both wildlife and humans. Oil is a toxic substance and only those with hazardous materials training are authorized to clean up oil. For the safety of both the public and the animals, only trained wildlife specialists will handle oiled wildlife.

The public can help at this time by reporting any oiled animals to 000-000-0000 (potentially Tristate Bird Rescue). This facility uses modern equipment and facilities and has trained staff to care for the oiled wildlife. Personnel experienced in animal capture and handling will respond at the earliest opportunity, presenting the best chance for wildlife survival.

The public's cooperation is greatly appreciated.

For more information on volunteering, visit WEBSITE.

###

Fact Sheet Checklists

Fact sheets produced and/or released by the PIO/JIC may include the following:

1st Fact Sheet

- Facts about the incident as known.
- Exclusion zones and evacuations.
- Total spill potential, expressed in gallons.
- MSIB information.
- Air monitoring information.
- Wildlife impacts/hotline number.
- Claims line (if established).
- Equipment/resources deployed.
- Number of personnel responding.
- Contact phone numbers for media.

Subsequent Fact Sheets

- Amount and type of product spilled.
- Location and time of the spill.
- Cause of the spill.
- Vessel information.
- Injuries or casualties.
- Responsible party.
- Trajectory of the oil.
- Public safety message.
- Evacuations.
- Air monitoring information.
- Environmental impacts.
- Beach closures.
- Wildlife impacts.
- Fishery closures.
- Cleanup contractors.
- Agencies responding.
- Actions taken.
- Resources applied and numbers.
- Personnel deployed.
- Future actions.
- Special considerations (dispersant use, port of refuge).
- Status of the investigation.
- Third party claim line.
- Oiled wildlife hotline.
- Volunteer hotline.
- Cost of the spill.
- Amount of product recovered.

Fact Sheet Templates

Initial Incident Details

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: RESPONSE TYPE spill response near LOCATION

PHILADELPHIA — Members of the unified command continue to coordinate PRODUCT TYPE spill recovery operations in LOCATION, DATE.

INCIDENT SUMMARY. Emergency response operations will continue and are being closely monitored until long term salvage or oil pollution mitigation plans can be finalized.

Unified Command:

- Members consist of the WHO.
- Agencies contributing to the response include WHO ELSE.

Current activity:

- Responders continue oil/water mixture removal from the SUSPECTED SOURCE.
- Crews continue to tend the hard boom while removing and replacing the sorbent boom used to collect the oil.
- Responders deployed skimmers.
- Responders place recovered oil into a tank where it will decant, settle and separate, for later quantification.
- Number of wildlife affected, being treated, released.

Quantities:

- VESSEL had a maximum capacity of ------ gallons aboard at the time of the incident.
- ------ gallons of oil/water mixture recovered to date.
- The Oil Spill Liability Trust Fund is currently at $--- million. More information on the OSLTF is available at http://www.uscg.mil/npfc/About_NPFC/osltf.asp.

Equipment and personnel on scene:

- ----- boats, and aircraft
- ----- skimmers
- ----- skiffs
- ---- holding tank for recovered oil
- ---- vacuum truck
- ---- personnel from -------
- ---- on scene recovery capacity compared to state requirements---- and federal requirements----
  * Note: Only use this metric if the on scene capacity is greater than state and federal requirements.

Safety:

- Coast Guard Sector Delaware Bay is requesting all vessel traffic inbound and outbound of ----- travel with no wake as a safety measure for responders working in and on the water.

Wildlife:

- 000 wildlife impacts have been reported at this time. Crews will monitor for oiled wildlife for the duration of the spill cleanup. Anyone seeing oiled wildlife should report it to 000-000-0000.

Fishery Closure:

- LOCATION

Ship Facts:

- Built in ----.
- Length -----
- Beam ____
- Draft -----
- ----- Flagged
- Max capacity of the tanks is approximately ------ gallons.

Photo and video resources

###

Unified Command

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Unified Command

PHILADELPHIA — A Unified Command (UC) is indispensable to response activities and requires a clear understanding of the roles and responsibilities of each participating organization. Success requires unity of effort, which respects the chain of command of each participating organization, while harnessing seamless coordination across jurisdictions in support of common objectives.

Use of the Incident Command System (ICS) is an important element across multijurisdictional or multiagency incident management activities. It provides a structure to enable agencies with different legal, jurisdictional, and functional responsibilities to coordinate, plan, and interact effectively on scene. As a team effort, the UC is made up of Incident Commanders (IC) from agencies with jurisdictional authority and/or functional responsibility for the incident, as well as staff for coordinating planning, operations, finance, and support. This allows each agency or IC to provide joint support through mutually developed incident objectives and strategies established at the command level. Each participating agency maintains its own authority, responsibility, and accountability, while the UC provides a forum for these agencies to make consensus decisions.

The need for UC arises when incidents:

- Cross geographic boundaries (e.g., two states, international boundaries);
- Involve various governmental levels (e.g., federal, state, local);
- Impact functional responsibilities (e.g., Search and Rescue, fire, oil spill, EMS); or
- Some combination of the above.

The UC is responsible for:
(1) developing a single set of objectives;
(2) using a collective, strategic approach;
(3) improving information flow and coordination;
(4) creating common understanding of joint priorities and restrictions;
(5) ensuring that no agency's legal authorities are compromised or neglected; and
(6) optimizing the combined efforts of all agencies under a single plan.

UC representatives must be able to:

- Agree on incident objectives and priorities;
- Have the capability to sustain a 24-hour-7-day-a week commitment to the incident;
- Have the authority to commit agency or company resources to the incident;
- Have the authority to spend agency or company funds;
- Agree on constraints/limitations, priorities, decisions and procedures;
- Agree on an incident response organization;
- Agree on the appropriate Command and General Staff position assignments to ensure clear direction for on-scene tactical resources;
- Commit to speak with "one voice" through the Public Information Officer (PIO) or Joint Information Center (JIC), if established;
- Agree on managing sensitive information and operational security issues;
- Agree on logistical support including resource ordering procedures; and
- Agree on cost-sharing and cost accounting procedures, as appropriate.

In general, a successful UC is a team. A UC is to skillfully use the strengths of each IC and acknowledges each representative's unique capabilities and authorities. A UC has a shared understanding of the situation and agrees on common objectives to bring the incident to closure. A UC is open to different perspectives and knows that contentious issues may arise, but that ICS inherently relies on the UC framework to provide the forum to resolve problems and find solutions.

###

Boom

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Boom

PHILADELPHIA — Spilled oil may be contained or diverted by using a floating physical barrier called boom. Boom floats on the surface, but parts may extend above and below it. Because oil primarily floats on water, the boom is utilized to collect or direct floating oil.

Boom length is measured in feet, and it is not unusual for thousands of feet of boom to be deployed for even a modest spill. Boom sizes are described in inches of freeboard and skirt. A 6-by-12 boom has a six-inch-high freeboard and 12-inch-deep skirt. Boom typically is manufactured in high-visibility colors, such as white, yellow or orange, for easy tracking by response teams and for the safety of vessels operating nearby.

Boom is not a perfect containment device. Waves can carry oil over a boom and a current may force oil under it. Debris or ice can also limit the effectiveness of boom. Boom is more effective directing oil which moves at a slight angle to the line of boom than as a barrier blocking the slick's movement. Such circumstances may require replacing light boom with boom having higher freeboard and deeper skirt. Multiple lines of boom are more effective at containing oil than a single line.

Limitations on the use of boom include the time required to get it to the scene, load it on boats, carry it to the spill and deploy it. Boom also has to be stored within reasonable traveling distance of a potential spill. Once used, boom has to be de-contaminated of the waste oil or chemical before it can be stored. If sorbent boom is used, it has to be disposed of safely once it has been contaminated with oil or chemical waste. Some types of boom have operational limitations, such as the loss of ballast or buoyancy if the water- or air-filled sections are breached by abrasion or handling.

A single string of boom often will serve several purposes simultaneously. Typical tasks for boom include:

- Encirclement – laying one or more barriers of boom around the source of the spill to keep it from spreading or around a section of slick to hold it in place for recovery. Tankers transferring cargo may be encircled by boom as a precaution, even though there is no spill.
- Diversion – setting one or more lines of boom at angles into or across a moving slick’s path to guide it toward an area where it can be confined and recovered, or to let it safely pass a sensitive area. Diversion is primarily used near shore on rivers. It is most effective where currents are weak and there is little wave action.
- Collection – towing boom in a “V,” “U,” “J,” or teardrop configuration through or around a slick to gather oil together for recovery or burning.

- Recovery – placing sorbent boom where it will contact floating oil and absorb or adsorb some of it for later recovery, or similarly using weir boom to catch oil and transport it to a skimmer.
- Exclusion – stringing boom around un-oiled areas to keep oil out. The exclusion booming may also divert moving oil away from a sensitive area.

Although different types of boom may look different, virtually all boom has five common components:

- Flotation device – keeps the boom at the water's surface, where floating pollutants are.
- Freeboard – the part that rises above the water's surface and prevents waves from washing pollutants over the top.
- Skirt – similar to freeboard but below the surface, the skirt prevents the current from washing floating pollutants under the boom.
- Ballast – this is the weight at the bottom of the skirt that keeps it hanging vertically against a current.
- Tension line or strength member – cables, chains or lines extending the length of the skirt or freeboard and, like the main boom cable, chain or boom, attached at the end.

In general, boom with a high freeboard and short skirt is called fence boom, because it prevents the pollutant from moving across the surface. A boom with a longer skirt and shorter freeboard is a curtain boom, and is good to prevent pollutants from moving just below the surface. Some boom includes both characteristics.

Similar to fence and curtain boom is tubular containment boom, such as Texas Boom. Tubular boom has at least two sections…one or more air-filled tubes above the water, for flotation and to keep oil from crossing the boom on waves, and one or more water-filled tubes below the water for ballast and to keep oil from passing beneath the boom.

Sorbent boom made of absorbent or adsorbent material to collect and hold oil within the boom itself. It's most effective with thin layers of pollutants and light winds or currents. Once soaked to capacity, the boom can be recovered and the collected oil squeezed out. Once soaked, it is heavier than simple barrier boom and so needs extra effort to remove from the water.

Recovery boom, such as three-weir boom, has four sections. An air-filled tube extending above the water for buoyancy and to keep oil from passing over the boom. A water-filled tube extending below the surface for ballast and to keep oil from passing beneath the boom. A discharge tube which collects oil from inlets between the air- and water-filled tubes and moves it the length of the boom to a recovery device. A smaller air-filled tube to keep the discharge tube afloat. Recovery boom not only holds floating pollutants in place, but is an active part in recovering pollutants from the water.

A frequent problem in the use of boom is the fact that each end of the boom must be anchored in place. On a small stream, it can be anchored to trees or rocks on land; in a harbor, it may be attached to piers or seawalls. On open water, however, the ends must be literally anchored, using lines attached to weights on the lake or sea bottom, or they must be attached to boats. The use of a boat to anchor one end of a boom means that boat cannot be used for any other assignment, and boats may be in short supply.

Sources: Department of Transportation, Pipeline and Hazardous Materials Safety Administration; US Coast Guard; Environmental Protection Agency; Department of the Interior, Bureau of Safety and Environmental Enforcement.

###

Oil Types

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Oil Types

PHILADELPHIA — Oil spills along coasts affect many parts of the environment, such as water, ocean bottom, shoreline sea birds, marine mammals, shellfish, and people.

Major oil spills most commonly involve oils shipped in large quantities at sea, such as crude oil/petroleum, No. 1 and No. 2 fuel oils, diesel oil, Bunker C oil, kerosene, and jet fuel. Oils are compounds, complex mixtures that vary widely in composition.

Oils can be described as belonging to one of five groups:

- I very light oils (jet fuel, gasoline);
- II light oils (diesel, No. 2 fuel oil, light crude, home heating);
- III medium oils (most crude oils);
- IV heavy oils (heavy crude oils, No. 6 fuel oil, Bunker C);
- V group (very heavy oils).

The different types of oils behave in different ways during a spill, so the response to a spill varies, depending on the type of oil and quantity released.

Most oil has a density less than water and floats. The natural tendency of oil is to spread in a thin layer on the surface of the water as a sheen or film. Such sheens are extremely difficult to recover and do not remain for long periods; however, they do represent a continued threat to fish and wildlife, particularly nesting birds. Under turbulent conditions, oil is more likely to disperse into the upper layers of the water.

Oil changes rapidly once it is spilled into water. These changes are enhanced by the processes of evaporation, dilution and emulsification (when water incorporates into the oil, forming a stable mixture). Some changes help dissipate spilled oil, but others can make it linger in the water, on the bottom, or on the shore. Evaporation tends to

remove the more toxic components and reduces the toxicity of spilled oil. Emulsification, on the other hand, can slow degradation of spilled oil.

Weathering describes the physical, chemical, and biological changes that happen to crude oil and refined petroleum products once they begin to interact with the watery environment. Ultimately, the more toxic elements of oil products spilled in the marine, estuarine, or freshwater environment are broken down. Exposure to air, sunlight, wave and tidal action, and certain microscopic organisms degrades and/or disperses oil. The rate of degradation and dispersion depends on many factors like the type of oil, weather, temperature, and the type of shoreline and bottom.

Very light oils are highly volatile, which means they evaporate quickly, usually completely within one to two days after a spill. These oils are also flammable and contain high concentrations of soluble toxic compounds. Very light oils can mix with water and kill aquatic life that lives in the upper layers. Cleanup is usually not necessary, or possible, with spills of very light oil.

Light oils are moderately volatile, but can leave a residue of up to one-third of the amount spilled after a few days. These oils contain moderate concentrations of soluble toxic compounds. Light oils leave a film or layer on intertidal resources with the potential of long-term contamination. Cleanup can be very effective on spills of light oil.

Medium oils are less volatile, leaving a residue of about two-thirds of the amount spilled after 24 hours. These oils are less likely to mix with water, and oil contamination of intertidal areas can be severe and long-term. The impact of medium oils on waterfowl and fur-bearing mammals can also be severe. Cleanup is most effective with spills of medium oil if conducted quickly.

Heavy oils have far less evaporation or dilution potential, and they weather more slowly. These oils do not readily mix with water. Spills of heavy oils can cause severe contamination of intertidal areas and possible long-term contamination of sediments. Heavy oils have severe impacts on waterfowl and furbearing mammals. Shoreline cleanup in spills of this type is difficult and long-term under most conditions.

Group V oils, mostly very heavy oils, can float, sink, or hang in the water. These oils can become oil drops and mix in the water, or accumulate on the bottom, or mix with sand and then sink. As a rule, these oils are less toxic than lighter oils, however they pose significant problems to responders because they are extremely difficult to track or predict.

Spill response teams of federal, state and local agencies, organizations and industry representatives have prepared contingency plans for oil spill emergencies.

###

Tarball

Joint Information Center

(Unified Command logos/names here)

Date: _____
Contact: _____

News Release

FACT SHEET: Tarball

-

PHILADELPHIA — Tarballs are remnants of oil spills or natural oil seeps in the Ocean. When crude oil from a seep, spill, or a heavier refined product floats on the ocean surface, its physical characteristics change.

During the first few hours of a spill or natural release, the oil spreads into a thin slick. Winds and waves tear the slick into smaller patches that are scattered over a much wider area. Various physical, chemical, and biological processes change the appearance of the oil. These processes are generally called "weathering."

Initially, the lighter components of the oil evaporate much like a small gasoline spill. In the cases of heavier types of oil, such as crude oil, much of the oil remains behind. At the same time, some crude oils mix with water to form an emulsion that often looks like chocolate pudding. This emulsion is much thicker and stickier than the original oil. Winds and waves continue to stretch and tear the oil patches into smaller pieces, or tarballs. While some tarballs may be as large as pancakes, most are coin-sized. Tarballs are very persistent in the marine environment and can travel hundreds of miles.

Weathering processes eventually create a tarball that is hard and crusty on the outside and soft and gooey on the inside, not unlike a toasted marshmallow. Turbulence in the water or beach activity from people or animals may break open tarballs, exposing their softer, more fluid centers. Scientists have not been very successful at creating weathered tarballs in the laboratory and measuring the thickness of the crusty outer layer. Therefore, we don't know how much energy is needed to rupture a tarball. We do know that temperature has an important effect on the stickiness of tarballs. As air and water temperatures increase, tarballs become more fluid and, therefore, sticky— similar to an asphalt road warmed by the summer sun. Another factor influencing stickiness is the amount of particulates and sediments present in the water or on the shoreline, which can adhere to tarballs. The more sand and debris attached to a tarball, the more difficult it is to break the tarball open. These factors make it extremely difficult to predict how long a tarball will remain sticky.

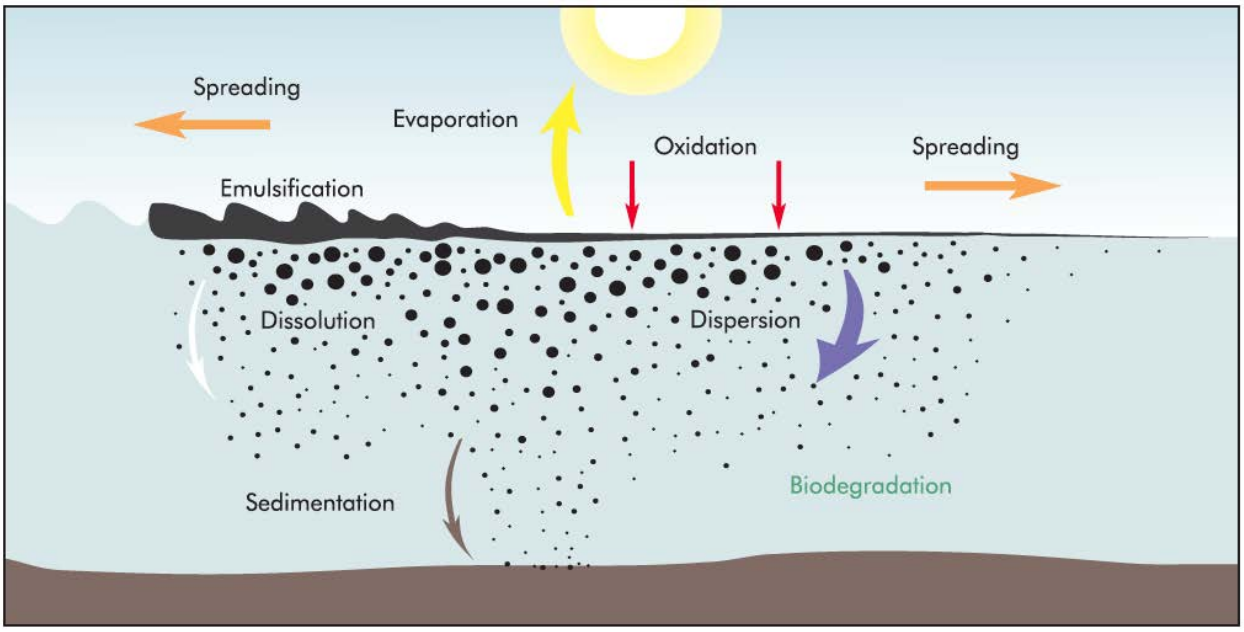
For most people, an occasional brief contact with a small amount of oil, while not recommended, will do no harm. However, some people are especially sensitive to chemicals, including the hydrocarbons found in crude oil and petroleum products. In general, we recommend that contact with oil be avoided. If contact occurs, wash the area with soap and water, baby oil, or a widely used, safe cleaning compound such as the cleaning paste sold at auto parts stores. Avoid using solvents, gasoline, kerosene, diesel fuel, or similar products on the skin. These products, when applied to skin, present a greater health hazard than the smeared tarball itself.

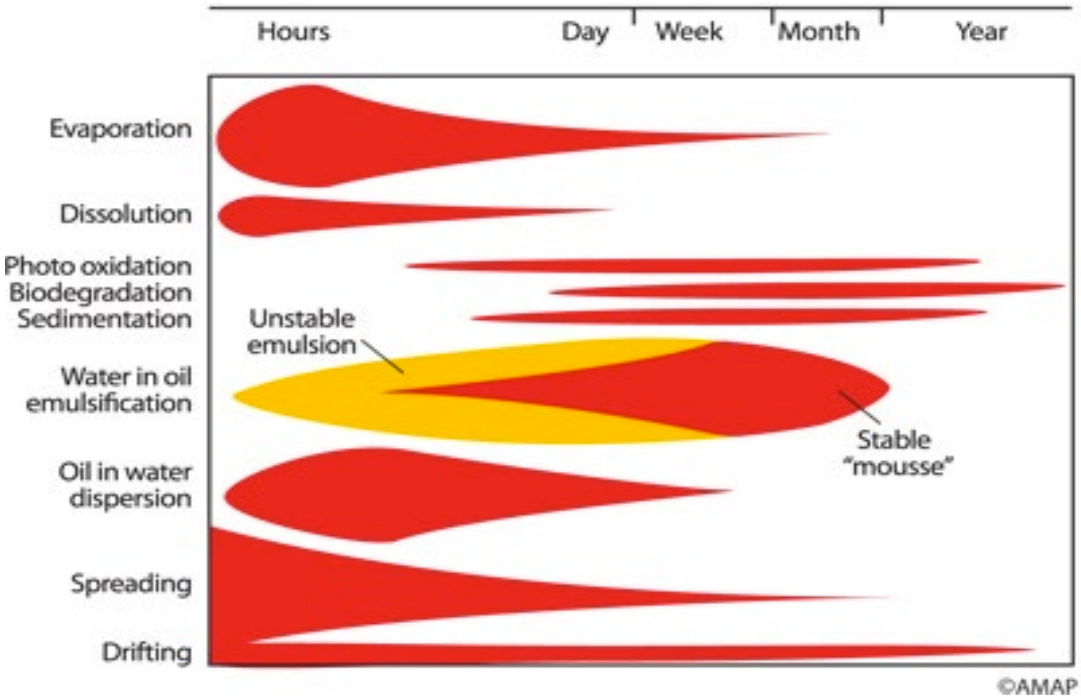
There is no magic trick to making tarballs disappear. Once tarballs hit the beaches, they may be picked up by hand or by beach-cleaning machinery. If the impact is severe, the top layer of sand containing the tarballs may be removed and replaced with clean sand. The number of tarballs found on the beach depends on several factors: tanker traffic, wind patterns, sea currents, whether an oil spill or seep occurred recently, and how often the beach is cleaned.

####

Fate of Oil (Weathering)

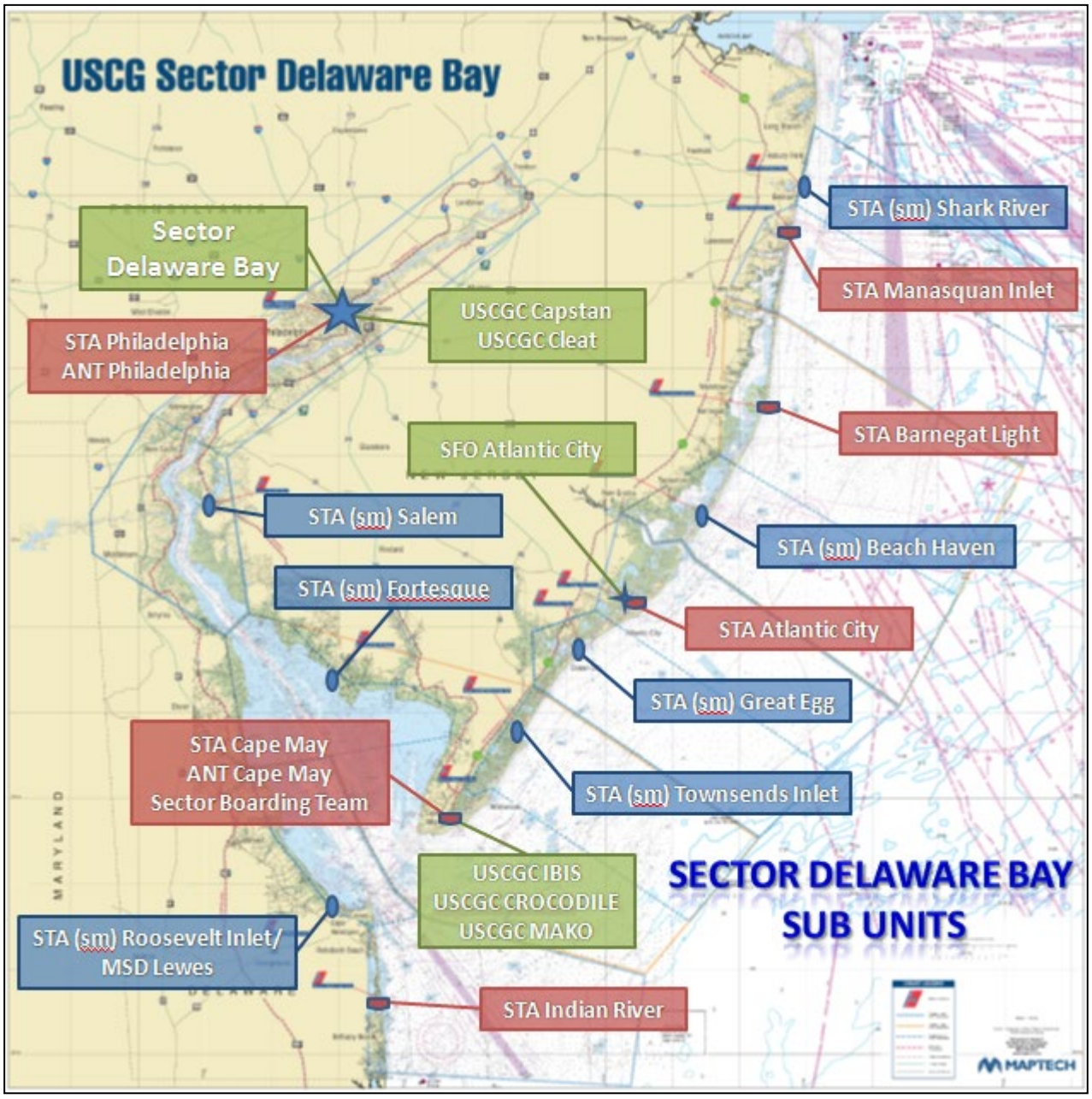
Source: NOAA





Enclosure (8)

Sector Delaware Bay Units



Enclosure (9)

Transition from a Responsible Party Managed Spill to a Federally Managed Spill

9721 TRANSITIONING FROM A RESPONSIBLE PARTY MANAGED RESPONSE TO A FEDERAL RESPONSE

To ensure a seamless transition in managing spill response operations from a responsible party (RP) managed response to a Federal managed response the Federal On-scene Coordinator should consider the following actions:

Federal On-scene Coordinator

- Draft a Letter of Federal Assumption [Link to sample Letter Section 9722]

Finance Section

- MLCLANT (A-fcp) will assume the duties and responsibilities as the incident's Finance Section Chief (FSC)
- If directed by the FOSC, make the necessary contracting arrangements to retain the commercial spill management team
- The FSC will evaluate and determine the best method of contracting existing spill response clean-up companies
- The FSC will keep the National Pollution Funds Center (NPFC) informed of financial issues
- The FSC will coordinate with NPFC to determine the best method for handling claims generally and specifically claims dealing with the decontamination of private craft
- The FSC will determine and order required staff to maintain oversight of & direct operations of the finance section

Logistics

- Identify and Coast Guard Logistics Section Chief
- Order in a Coast Guard Supply Unit Leader
- The Logistics Section Chief will work with the FSC to establish a resource ordering process and coordinate closely with the commercial spill management team's Logistics Section Chief to ensure a smooth transition
- The newly designated Coast Guard Logistics Section Chief will assume approval authority for resource decisions in addition to oversight

Operations

- Determine if Strike Team and/or Sector Delaware Bay Personnel will be designated as Division/Group Supervisors or contractors will be used in that capacity. If contractors are used as Division/Group Supervisors, implement the following protocols for the Federal On-scene Coordinator Representatives (FOSCRs) to follow [Link to FOSCR Protocol Section 9723]
- Order in Coast Guard personnel to support extended operations commitment

- Strike Team and or Sector Delaware Bay Personnel will ensure that submission of Form 5136s are completed daily and submitted by 1800
- Strike Team and/or Sector Del. Bay Personnel will be located at every established staging area and decontamination area and will complete a Form 5136 daily

Planning

- Obtain a full accounting of response resources including overhead personnel
- Establish a visual resource tracking system and evaluate potential areas for demobilization

Documentation

- The Documentation Unit Leader will ensure that the decision to transition is documented and placed in the historic record.

Example of Federal Assumption Letter

9722 Example of Letter of Federal Assumption

In the event that the Responsible Party notifies the Coast Guard that they are no longer going to finance spill removal operations a Letter of Federal Assumption should be sent back to the RP. Below is a sample letter.

Dear,

On 26 November 2004, the Cypriot-flagged tank vessel ATHOS I struck a submerged object as the vessel approached the CITGO Asphalt Refining Company in West Deptford, New Jersey, releasing 265,000 gallons of Venezuelan crude oil into the Delaware River. On 26 November 2004, my office issued a Notice of Federal Interest designating the vessel's owner, Frescati Shipping Company Limited, as the Responsible Party.

I understand that the Responsible Party, having exceeded the statutory limits of liability as set forth in 33 USC 2704, requests that the federal government assume responsibility for the continued response efforts. Per our discussions, effective 21 March 2005, the U.S. Coast Guard will assume financial responsibility for the clean up. I further understand that the Responsible Party will pay for all costs, including all reasonable or required amounts owed to contractors, for work performed before 21 March 2005. With regard to your concern about opening yourself up to the defense of non-cooperation against any effort to recoup sums over the statutory cap, it is the National Pollution Funds Center's view that the fact that a responsible party stops paying for a response, in good faith reliance on its having paid or incurred removal costs and damages in excess of its liability limit, is not in itself a failure to provide all reasonable cooperation and assistance within the meaning of the Oil Pollution Act sections 1003 and 1004. Whether a responsible party has provided all reasonable cooperation and assistance will be determined on a case-by-case basis in light of all the relevant circumstances.

I would like to take this opportunity to extend my personal thanks to the Responsible Party for their professionalism over the past three months and for helping to facilitate a smooth and seamless transition to a federally funded response, allowing us to continue clean up operations uninterrupted. Please contact [ ] or me if you have any questions.

Sincerely,

Orders to

Federal On Scene Coordinator Representatives

“What to Look For”

9723 Protocols for Federal On-Scene Coordinator Representatives (sample)

Now that the response to the M/V ATHOS I incident has been federalized, the Coast Guard has assumed responsibility for not only the financial and operational oversight, but also the health and safety of the responders. In order to provide the best stewardship and protection of government interests, there must be an increased level in federal oversight of operations and incident management. This policy outlines the roles and responsibilities of the Federal On-Scene Coordinator Representatives.

ROLES

A Federal On-Scene Coordinator Representatives (FOSCR) is the designated representative of the Federal On-Scene Coordinator, per the National Contingency Plan (NCP). In this capacity, the FOSCR has the responsibility to ensure coordination, direction and to review the work of others involved in the response to ensure compliance with the NCP and lead agency-approved plans applicable to the response. It is the responsibility of the FOSCR to ensure the job is done safely, efficiently, and in accordance with the direction and plans of the Unified Command.

Each day, the FOSCR will report in to the designated location and receive the day's assignment. Obtain a copy of the relevant ICS204 and any other mission-specific instructions in order to best understand the tasking of each operational element. The ICS204 will outline what resources, both personnel and equipment, are assigned to each staging area/division/group. It is the responsibility of the FOSCR to verify the use of the assigned resources in the field. Using the guidance below, conduct daily "contractor oversight," forwarding any unresolved questions or issues to the Deputy Operations Section Chief.

RESPONSIBILITIES

1. At the beginning of each work shift, before departing for assigned location, obtain current copies of all applicable operational plans, including current ICS204.
2. Review all plans, ensuring familiarity with UC-approved operations.
3. Arrive at assigned location and check in with Task Force Leader. Discuss understood operational assignment.
4. Collect copy of "daily" (CG5136) from contractors and verify accuracy. Ensure all personnel and equipment listed on "daily" are on scene and actively employed. Compare resources to those listed on ICS204. Note any discrepancies. See Key Items section for examples of items to look for.
5. Maintain ICS214 (Unit Log) to note all interactions with field personnel.
6. Upon completion of day's shift, return to ICP. Make sure all "dailies" are signed and make 3 copies. Give the original to the Cost Unit Leader and provide copies to the Time Unit Leader, the Documentation Unit Leader and the relevant response contractor.
7. Make copies of the ICS214 and provide copies to Documentation Unit Leader and the Deputy Operations Section Chief.
8. Check out with Deputy Operations Section Chief, being sure to note any unresolved issues, concerns, or problems from the field.

KEY ITEMS

Below, is a general list of items to be watchful for when conducting contractor oversight. The list is not exclusive, add appropriate items as necessary.

1. First and foremost: all issues shall be discussed *immediately* with the Task Force Leader to gain a mutually agreeable resolution. Do not depart until the situation has been corrected or resolution has been obtained through the Deputy Operations Section Chief.

2. The following is a list of key points requiring verification of FOSCRs
    a. Verify with Task Force Leaders that any newly reporting field personnel have current HAZWOPER training. The Site Safety Officer maintains records of all responder HAZWOPER certificates.
    b. Look for use of PPE appropriate to operations and Site Safety Plan. Correct any safety issues immediately.
    c. Verify equipment and personnel resources used in the field are listed on the ICS204 and the CG5136. Note all discrepancies on the CG5136 and your ICS214.
    d. Verify that equipment and personnel resources listed on the CG5136 are being effectively used for operations. Discuss discrepancies with Task Force Leader and note all unresolved discrepancies on the CG5136 and your ICS214.
    e. Verify efficiency of operations/equipment/personnel use. If resources are not being used effectively, note on ICS214 and discuss with Task Force Leader.
    f. Monitor field activities for safe practices and operations conducted IAW approved Site Safety Plan. Immediately correct unsafe practices through discussions with Task Force Leader and note on ICS214. Consult Safety Officer if necessary.
    g. Record progress of field crews. If an alternate strategy for oil removal is identified, discuss with Task Force Supervisor, note on ICS214 and make recommendation to Deputy Operations Section Chief.
    h. Routinely walk assigned response area with Task Force Leader to evaluate progress. Discuss recommendations and concerns about progress, operational assignments, resource allocation and influences of tides/weather on productivity with the Task Force Leader. Coordinate with Task Force Leaders on end points for cleaning areas, ensuring proper oil removal techniques as specified in the MAT work orders (attached to the 204's) are being utilized.
    i. Be familiar with sensitive areas in assigned divisions and ensure field crews do not enter areas without required authorization (see Cleanup Methods and Endpoints).
    j. For questions about clean-up procedures, waste handling/disposal, decontamination, etc, consult copies of current, UC-approved operational plans. If issue is not clearly resolved by reviewing plans, discuss with Task Force Supervisor. Contact Deputy Operations Section Chief to discuss unresolved issues.
    k. Sharps are to be disposed on in the red containers in the possession of each Task Force Leader.

3. Documentation requirements:
    a. Completed CG5136, with signature. Make required copies and file as outlined in #6 under Responsibilities.

b. FOSCRs are to note all interactions with the Task Force Leaders on their ICS214s in order to properly document all instructions, corrections, and discussions.
c. It is particularly important to note any issues that require Deputy Operations Section Chief intervention, including the all circumstances relating to the incident and final disposition of the issue.
d. If an alternate strategy for oil removal is identified, discuss with Task Force Supervisor, note on ICS214 and make recommendation to Deputy Operations Section Chief.
e. Document all issues concerning site safety on an ICS SSP form H. Have Task Force Leader sign. Forward the original to the Site Safety Officer and a copy to the Documentation Unit Leader.

4. If at any time you are uncertain about any issues, including whether there is a legitimate reason for concern or if you notice an infraction but are not confident in the remediation action to pursue, contact the Deputy Operations Section Chief

APPLICABLE INCIDENT PLANS

All FOSCR should ensure they have current copies of all UC-approved plans in their possession prior to departing for day's assignment.

IAP (specifically 204's with MAT work orders)
Site Safety Plan
Cleanup End Points and Methods
Debris and Soil Removal Work Plan
Decontamination Plan
Drum Collection Site Procedures
Safety Plan for Heavy Weather Operations
Marina Decontamination Procedures
Recommendations to avoid disturbance and/or adverse impacts to bald eagles during egg incubation (USFWS Memo)
Resources at Risk and Cleanup Priorities
Recreational Vessel Cleaning Procedures
Tarball and Oiled Debris Removal Plan for Delaware River and Atlantic Ocean Beaches
Waste Management and Disposal Plan

Guidance for the Transition From

Coast Guard FOSC

to

EPA OCS

9760 Guidance for Transitioning On-scene Coordinator Responsibilities from the Coast Guard to the Environmental Protection Agency

Introduction

The Coast Guard and Environmental Protection Agency can request transferring On-Scene Coordinator (OSC) responsibilities to the other agency for releases and/or discharges which occur within its zone.

Purpose

To ensure a consistent and orderly transfer of On-Scene Coordinator's (OSC) responsibility and authority from Commanding Officer Sector Delaware Bay to the Environmental Protection Agency Regions II or III.

Circumstances when the Coast Guard can Transfer OSC to the EPA

The most common circumstances in which the Coast Guard OSC would transfer OSC responsibilities to the EPA for action are if:

- The release originates from a Hazardous Waste Management Facility.
- The release does not require an immediate removal action
- A time critical response that evolves into or is determined to be a remediation action as a result of a site assessment
- A removal has been secured before cleanup is complete. The Coast Guard OSC should consult with the EPA regional officials and affected state to discuss adding the site to the National Priorities List for further cleanup
- Coast Guard policy requires that removal be secured when prompt action is no longer necessary and substantial remediation methods must be used to completely remove the remaining contamination.

When requesting a transfer of the OSC authority a "Memorandum Transferring Federal On-Scene Coordinator Responsibility" shall document the transfer of authority. [Link to example Agreement Section 9761]

Guidance for ensuring a smooth transition

To ensure that the transfer of OSC responsibilities is conducted in an orderly manner the following steps should be undertaken:

- Ensure that the appropriate EPA regional office has been contacted and requested to provide an EPA agency representative to the Incident Command/Unified Command
    - The EPA Regional Response Center contact numbers are:
        - Region II 732-548-8730
        - Region III 215-814-9016
- Ensure the EPA Agency Representative is provided with all pertinent incident information. Review guidance in Section *2120 Transfer of Command* of the

Base Plan to ensure a smooth transition [Link to Transfer of Command Section 2120]

- If the incident is complex, discuss with the EPA Agency Representative about placing EPA personnel in Operations and Planning
- Document decision to Transfer OSC responsibility
- Ensure that a "Statement of Agreement Transferring Federal On-Scene Coordinator Responsibility" is signed.

Statement of Agreement

To

Transfer From

Coast Guard to EPA Form

9761 Statement of Agreement to Transfer Federal On-Scene Coordinator (OSC) Authority Between the U.S. Coast Guard (USCG) and U.S. Environmental Protection Agency (EPA) - Region 2/3

This agreement documents the transfer of OSC responsibility for the discharge or release[1]

at (location): _____

from (source): _____

on or about (time): _____, (date): _____ 20_____

and otherwise identified as (case name or number) _____

This transfer of authority is (check one):

❑ from USCG _____ to EPA Region _____
(Sector Delaware Bay) (Region number)

—OR—

❑ from EPA Region _____ to USCG _____
(Region number) (Sector Delaware Bay)

It is hereby agreed:

That this transfer of responsibilities to the accepting OSC is COMPLETE and will include all associated investigation, cleanup or removal, disposal, public relations, incidental paperwork and filing of required reports.

That this transfer will further remain in effect until such time as the accepting OSC has determined that there is no further danger to the public health or welfare.

That this agreement does not preclude continued mutual support between the Coast Guard and EPA as deemed appropriate for this incident.

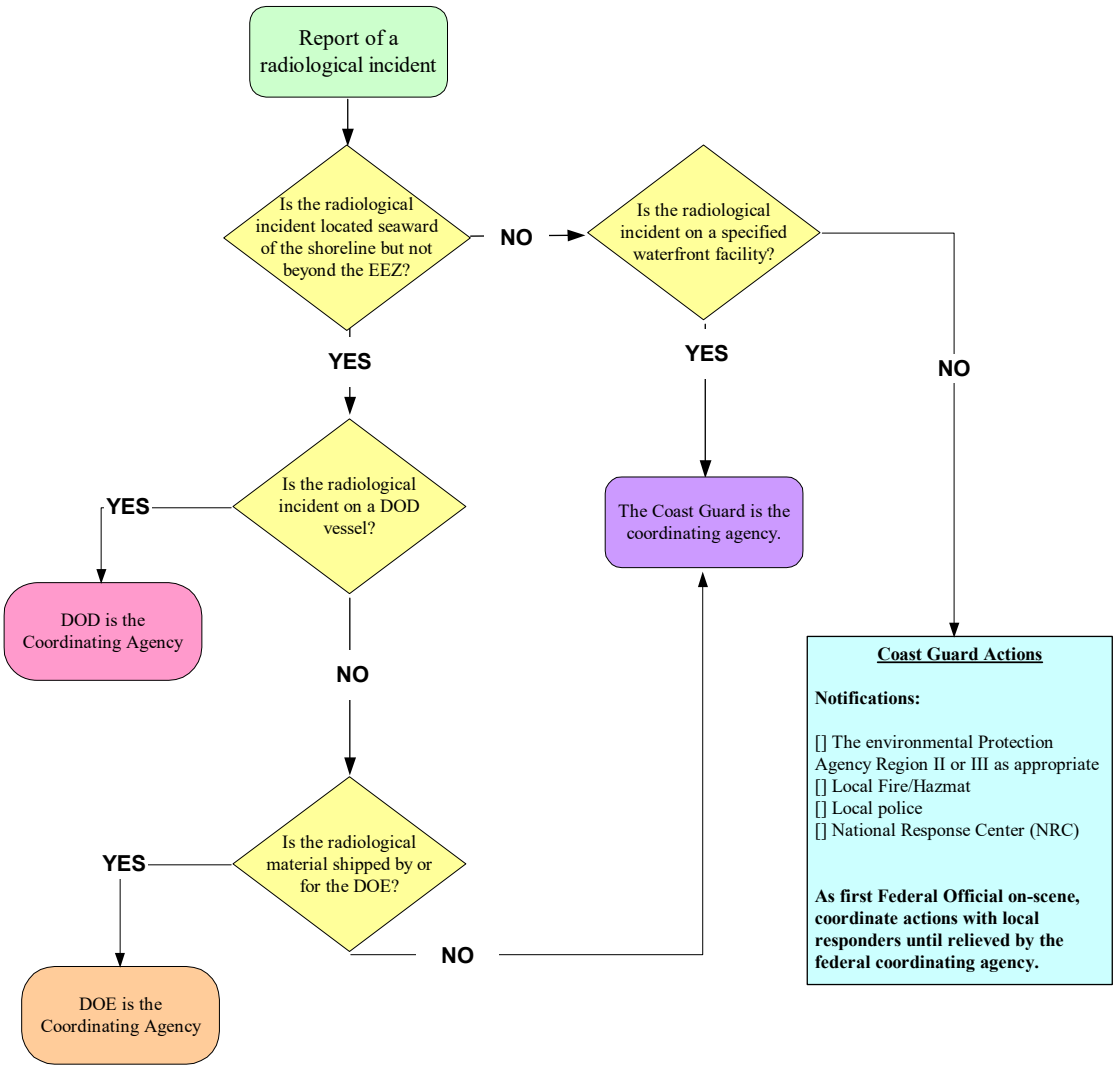
_____	_____
USCG Captain of the Port (FOSC)	**EPA OSC/Removal Branch Manager**
_____	_____
DATE	**DATE**

[1] This document is provided as a means, not the sole means, to document exchange of OSC authority.

Flow Chart

to Determine if Coast Guard is Coordinating Agency in a Radiation Event

9780 Determining if the Coast Guard is the Coordinating Agency (has jurisdiction)



FOSC's Considerations for a Federally Managed Spill

9799 FEDERALLY MANAGED SPILL RESPONSES

To ensure a properly managed federal response the Federal On-scene Coordinator should consider the following actions:

Federal On-scene Coordinator

- ❑ Assume federal responsibility for response. [Link to Incident Command Job Aid]

Finance Section

- ❑ MLCLANT (A-fcp) will assume the duties and responsibilities as the incident's Finance Section Chief (FSC)
- ❑ The FSC will evaluate and determine the best method of contracting existing Oil Spill Response Organizations [Link to List of Sector Delaware Bay OSROs with BOAs]
  [Link To OSRO response equipment within 300 miles of Sector Delaware Bay]
  An on line list of OSROs with BOAs is available at
  http://webapps.mlca.uscg.mil/fdiv/fcp-2.html
- ❑ The FSC will keep the National Pollution Funds Center (NPFC) informed of financial issues
- ❑ The FSC will coordinate with NPFC to determine the best method for handling claims generally and specifically claims dealing with the decontamination of private craft
- ❑ The FSC will determine and order required staff to maintain oversight of & direct operations of the finance section

Logistics

- ❑ Identify and Coast Guard Logistics Section Chief
- ❑ Order in a Coast Guard Supply Unit Leader
- ❑ The Logistics Section Chief will work with the FSC to establish a resource ordering process and coordinate closely with the commercial spill management team's Logistics Section Chief to ensure a smooth transition
- ❑ The newly designated Coast Guard Logistics Section Chief will assume approval authority for resource decisions in addition to oversight

Operations

- ❑ Evaluate and select the Oil Spill Response Organization that can provide an appropriate response [Link to List of Sector Delaware Bay OSROs with BOAs]
  [Link To OSRO response equipment within 300 miles of Sector Delaware Bay]
  An on line list of OSROs with BOAs is available at
  http://webapps.mlca.uscg.mil/fdiv/fcp-2.html

- ❑ Ensure an Authorization to Proceed document is sent to selected OSRO(s).

- Determine if Strike Team and/or Sector Delaware Bay personnel will be designated as Division/Group Supervisors or contractors will be used in that capacity. If contractors are used as Division/Group Supervisors, implement the following protocols for the Federal On-scene Coordinator Representatives (FOSCRs) to follow [Link to FOSCR Protocol Section 9723]
- Order in Coast Guard personnel to support extended operations commitment
- Strike Team and or Sector Delaware Bay personnel will ensure that submission of Form 5136s are completed daily and submitted by 1800
- Strike Team and/or Sector Delaware Bay Personnel will be located at every established staging area and decontamination area and will complete a Form 5136 daily

Planning

- Obtain a full accounting of response resources including overhead personnel
- Establish a visual resource tracking system and evaluate potential areas for demobilization

Documentation

- The Documentation Unit Leader will ensure that all required documentation be placed in the historic record.

Annex ZZB

Alternate Response Tool Evaluation System

ARTES Guide

Alternative Response Tool Evaluation System (ARTES)

The Alternative Response Tool Evaluation System (ARTES) was designed by workgroups of Regional Response Team (RRT) II and III. It provides On-Scene Coordinators (OSCs) with a method for evaluating non-conventional, alternative response countermeasures that may be considered for use at an oil or chemical spill. The ARTES may also be used for evaluating proposed conventional countermeasures.

During a spill, OSCs may be approached by vendors, responsible party representatives, Special Teams personnel, or members of their staff requesting that a non-conventional alternative cleanup countermeasure be considered. This type of countermeasure could be another viable "tool" for the OSC to use during a spill. The ARTES provides an evaluation program that will help the OSC and RRT decide whether to implement alternative cleanup tools. The ARTES evaluates a response tool on its technical merits and not economic factors.

It should be fully understood and noted that an OSC need not wait for the ARTES recommendation when deciding whether to use a response tool. ARTES is designed to help, not hinder, the OSC. It should also be understood that completion of an ARTES evaluation does not mean that a product is pre-approved, recommended, licensed, certified or authorized for use on an incident. The ARTES is solely designed to evaluate a products appropriateness for use during a specific incident under specific circumstances, or as a pre-evaluation to identify likely conditions which favorable outcomes are anticipated by using a product.

The ARTES may be used both before and during an incident. If an OSC would like to consider using an alternative response tool for pre-spill planning, the ARTES may help evaluate the tool. ARTES uses an Alternative Response Tool Team (ARTT) to rapidly evaluate a tool and provide feedback to the OSC in the form of a recommendation. This enables the OSC to make a well-informed decision on the use of an alternative tool.

One of the advantages of ARTES is that it provides a management system for addressing the numerous proposals submitted by vendors during a spill. Needs of a spill change as the response progresses. ARTES requires evaluations only on an as-needed basis. That is, once an operational need is identified, then an evaluation can be initiated. Having a record of proposals on file will enable the OSC to address alternatives for any future needs. Subjecting all proposals to the same degree of evaluation ensures that vendors are considered on a "level playing field."

ALTERNATIVE RESPONSE TOOL EVALUATION SYSTEM (ARTES)

I. PURPOSE

The Alternative Response Tool Evaluation System (ARTES) is designed to provide On-Scene Coordinators (OSCs) with a method for evaluating non-conventional, alternative response countermeasures that may be considered for use at an oil or chemical spill. An OSC may use the ARTES for evaluating proposed conventional alternative countermeasures as well. During a spill, OSCs may be approached by vendors, responsible party representatives, Special Teams personnel, or members of their staff requesting that a non-conventional alternative cleanup countermeasure be considered. This type of countermeasure could be another viable "tool" for the OSC to use during a spill. The ARTES provides an evaluation program that will help the OSC and Regional Response Team (RRT) decide whether to use alternative cleanup tools. The ARTES evaluates a response tool on its technical merits and not economic factors.

It should be fully understood and noted that an OSC need not wait for the ARTES recommendation when deciding whether to use a response tool. ARTES is designed to help, not hinder, the OSC.

II. SCOPE

A. ARTES Can be Used Both Before and During an Incident (Figure 1)

1. If an OSC would like to consider using an alternative response tool for pre-spill planning, the ARTES may help evaluate the tool. The OSC is strongly encouraged to seek Area Committee input and then incorporate this input, if appropriate, into a formal request for evaluation to the RRT Spill Response Countermeasures Workgroup (SRCW). The SRCW then forms a Response Tool Subcommittee (RTS), which, in turn, uses the ARTES to evaluate the tool and provide feedback to the OSC. Not all tools will require RRT approval. Those that do, however, will be presented before the RRT concurrently by the RTS and OSC to obtain approval.

2. During a spill OSCs may be considering the use of an alternative response tool either by their own volition or through input from their staff, vendors, responsible party representatives, or members of the Special Teams. ARTES uses an Alternative Response Tool Team (ARTT) to rapidly evaluate a tool and provide feedback to the OSC in the form of a recommendation. This enables the OSC to make a well-informed decision on the use of an alternative tool.

3. One of the advantages of ARTES is that it provides a management system for addressing the numerous proposals submitted by vendors during a spill. The OSC can direct all proposals to the ARTT, which is then responsible for prioritizing them

according to need and developing a file on each proposal. Needs of a spill change as the response progresses. Having a record of proposals on file will enable the OSC to address alternatives for any future needs. Subjecting all proposals to some degree of evaluation ensures that vendors are considered on a "level playing field."

Figure 1

III. PROCEDURES FOR FORMING AN RTS AND AN ARTT:

A. The Response Tool Subcommittee (RTS)

1. If an OSC would like the SRCW to evaluate a response tool, a written request for evaluation is submitted. The SRCW will convene the RTS.

2. The RTS should consist of persons knowledgeable about spill response tools and countermeasures. It should include state representation for those states included in the OSC's area of responsibility.

3. Once the RTS is activated, they shall begin the ARTES process.

B. The Alternative Response Tool Team (ARTT)

1. During a spill, the OSC may elect to set up an Alternative Response Tool Team. Whether the OSC needs to set up an ARTT depends on a number of factors. However, the major guideline for setting up the ARTT is when evaluation of recommended tools becomes such a burden to the OSC that operational decisions are impeded.

2. The ARTT should be composed of personnel knowledgeable about response tools. It can range from one to several personnel, depending on the size of the incident. Provisions may need to be made for 24-hour operations. Examples of personnel who could participate as a member of the ARTT include:

    a. NOAA Scientific Support Team
    b. National Strike Force
    c. EPA Environmental Response Team
    d. Coast Guard Research and Development Center
    e. Navy Supervisor of Salvage
    f. Oil and Hazardous Materials Simulated Environmental Test Tank
    g. OSC staff
    h. State representative
    i. Responsible Party representative
    j. Cleanup contractor representative

3. It is recommended that the ARTT be located in the Planning Section of the Unified Command organization.

4. The ARTT is not designed to relieve the responsible party of the obligation to evaluate and approve response tools for cleanup operations under the RP's supervision. The OSC is encouraged to forward all proposals for alternative response tools to the responsible party unless they require RRT approval. Those response tools requiring RRT approval may be subjected to ARTES.

IV. THE ALTERNATIVE RESPONSE TOOL EVALUATION SYSTEM PROCESS

A. Determining the Need for Evaluation

1. OSCs who request an evaluation of a tool for a spill of opportunity will express that need by submitting a written request for evaluation to the Spill Countermeasures Workgroup.

2. During a spill incident it is important for the ARTT to conduct a needs survey to determine the present and future needs of the OSC.

    a. The ARTT will circulate the Operational Needs Survey (ART-ONS; Enclosure 1), through the Unified Command structure. The survey should pass through the Operations Section, Planning Section, and the OSC. It is best that the survey be hand-carried by a member of the ARTT. The survey could also be completed during Section Chief staff meetings.

    b. How often the Needs Survey is conducted will depend on the size of the spill. For large incidents the survey should be circulated daily.

B. Prioritizing Alternative Response Tool Proposals (ARTP) According to Need

1. The SRCW is responsible for prioritizing OSC requests for an alternative response tool evaluation for future spills.

2. During major pollution incidents it may become necessary to use a prioritization system due to the large volumes of ARTPs submitted. The ARTT will use the data from the Operational Needs Survey to prioritize all ARTPs into one of four categories:

    a. Could meet immediate operational need; classify as Type A ARTP.
    b. Could meet future operational need; classify as Type B ARTP.
    c. Could possibly improve operations; classify as Type C ARTP.
    d. All other ARTPs; classify as Type D ARTP.

3. The ARTPs should be placed in four separate files according to this classification.

4. Each ARTP should be logged into a log book and/or a computer database. The log should include the date and time the ARTP was submitted, a brief description of the ARTP, the name of the solicitor, and designation according to type of response need addressed.

C. Collecting All Necessary Data to Conduct a Thorough Evaluation

1. Starting with the highest-priority ARTPs (Type A), the RTS or ARTT shall ask the solicitor to complete the Proposal Worksheet (PWS; Enclosure 2). The purpose of this worksheet is to collect as much data as possible on a response tool so that a complete evaluation can be performed. Instructions for completing the PWS are included in Enclosure 2. All the information identified in the PWS must be collected. If information is not available on a particular subject, it must be so stated on the worksheet.

2. The RTS or ARTT should work closely with the Alternative Response Tool solicitor to obtain the information needed to complete the worksheet. The data collected must be deemed acceptable by the RTS or ARTT before an evaluation can be done. The PWS is not all-encompassing. The RTS or ARTT may request additional information as needed. Once the PWS and attachments are received, the RTS or ARTT will review the data and complete the Data Collection Worksheet (DCW; Enclosure 3).

3. The Data Collection Worksheet may serve as the cover sheet for the RTS's or ARTT's evaluation report.

D. Conducting the Evaluation

1. Starting with Type A ARTPs, the RTS or ARTT will conduct a detailed review of the data submitted in accordance with the Alternative Response Tool-Data Collection Worksheet. The RTS or ARTT will rely on their response experience when evaluating ARTPs.

2. The RTS Chairperson or the ARTT Leader shall spearhead the evaluation. It is not the intention of this instruction to dictate how the evaluation is to be conducted. It is recommended that the RTS/ARTT members review the ARTPs in detail then convene for general discussion on the advantages and disadvantages of the ARTP. When evaluating the ARTP, the RTS or ARTT should consider all the factors listed on the data collection worksheet and any additional factors not listed that may be a concern. During a spill, key considerations are the effectiveness and effects of the response tool under the spill conditions (physical setting, oil type and degree of weathering, shoreline type, ecological sensitivity, etc.). Urgency of need will dictate the length of time to conduct an evaluation. If a pressing need for an alternative response tool develops, the ARTT may be encouraged to make a swift evaluation.

3. An optional Alternative Response Tool Evaluation Summary Worksheet (ESW) (enclosure 4), has been developed to assist the RTS or ARTT in categorizing an ARTP in summary fashion. The ESW uses a rating system to determine how well the ARTP meets certain operational criteria. An average rating is computed which enables the RTS or ARTT to compare the ARTP with other ARTPs and to select the best alternative. Instructions for completing the ESW are included in enclosure 4.

4. Type D ARTPs need not be evaluated if there is no need as identified by the Operational Needs Survey. However, they should be kept on file for consideration as needs change.

E. Preparing the Final Recommendation

A recommendation report should be prepared once an ARTP has been evaluated. In time-critical situations a written report may not be feasible. In these cases a verbal report would suffice. However, a written report should be completed when time is available. The Alternative Response Tool Evaluation Summary Worksheet can be used as a cover sheet for the recommendation report.

F. Presenting the Recommendation

1. The RTS:
   a. The RTS presents their recommendation to the SRCW, who reviews the recommendation report and either:
      (1) Accept the report and prepare it's presentation for the RRT. If the SRCW accepts the report, they must pass judgment on the recommendation. They may agree or disagree with the recommendation. If they disagree, they must provide written arguments and attach them to the report.
      (2) Return the report to the RTS for a secondary review because of incomplete information or for a consideration that was overlooked.

   b. Once the SRCW has accepted the report, the report is brought before the RRT for consideration.

   c. If the RRT accepts the alternative response tool for use at future spills it should be noted that this acceptance is not a formal pre-authorization of the response tool.

2. The ARTT:

a. Once the ARTT has produced their recommendation report on a response tool, they may present their report by two methods: at a Unified Command Section Chiefs meeting, or hand-carried through the Unified Command structure. The method of presenting the report will depend on the need of the response tool.

(1) *Immediate operational need (Type A ARTP)*
Present the report to the Planning Section Chief. Recommend that the Planning Section Chief meet with the Operations Section Chief as soon as possible. The Planning Section Chief should have the ARTT leader accompany him/her when presenting the report. Hand-carry the report to the Operations Section Chief. Once the Operations Section Chief reviews and accepts the report, the report should be routed to the Unified Command Staff.

(2) *Future operational need (Type B ARTP)*
Present the report to the Planning Section Chief. Once the Planning Section Chief reviews and accepts the report, the report should be presented to the Unified Command. Since the response tool addresses a future operational need, the recommendation report may not need to be hand-carried to the Unified Command but may be presented at a Unified Command Section Chiefs meeting.

(3) *May improve response operations (Type C ARTP)*
Present the report to the Planning Section Chief. Since there is no immediate or future operational need, this alternative response tool can be presented at a future Unified Command Section Chiefs meeting for consideration by the Unified Command.

G. Filing ARTPs, Data and Recommendation Reports

1. When an OSC has approved or disapproved the ARTP, it shall be noted on the recommendation report before filing the report.

2. All information collected and developed by the ARTES process should be filed in an organized fashion and secured from release to unauthorized personnel.

It should be fully understood and noted that an OSC need not wait for the ARTES recommendation when deciding on whether

or not to use a response tool. ARTES is designed to help, not hinder, the OSC.

ALTERNATIVE RESPONSE TOOL - OPERATIONAL NEEDS SURVEY (ART-ONS)

Date: _____

Resource Categories	Immediate Operational Needs	Future Operational Needs
CONTAIN/RECOVER TOOLS Offshore Containment Boom		
Offshore Pumping		
Offshore Barge/Receptacle		
Offshore Skimming		
Dispersant Application		
In-Situ Burning		
Communications		
Shoreline Protection		
Nearshore Skimming		
SHORELINE CLEANUP TOOLS Mechanical Shoreline Cleanup		
Shoreline Cleaning Agents		
Sorbents		
Solidifiers		
Bioremediation		
Decontamination		
Disposal		
Other		

Signature of Section Chiefs: _____ **Time:**_____ _____ **Time:**_____

Operations **Planning**

ALTERNATIVE RESPONSE TOOL - PROPOSAL WORKSHEET (PWS)

This worksheet is designed to collect information to assist an evaluation team in assessing your response tool.

INSTRUCTIONS:
Please fill out the form completely and attach as much detail and supporting documentation as possible. For each item you include, assign it an attachment number and indicate this number in the appropriate space under each heading. If no data on a given topic are available, please check the "Not available" box. If you have any questions, please do not hesitate to contact the evaluation team member listed at the end of this worksheet.

1. Solicitor Information:

a. Name: _____
b. Address: _____
c. Phone: _____ d. Fax: _____
e. Pager: _____

2. Method/Technology Description:

a. Name: _____
b. Mechanical [__] Chemical [__] Biological [__] Other [__]
c. Specific Use: _____

3. Human health and safety concerns:	**Attachment #**
a. Material Safety Data Sheet	[____]
b. Personal Protective Equipment	[____]
c. Human Toxicity Data	[____]
d. Additional comments enclosed	[____]
e. Not available	[____]

4. Biological toxicity:	
a. Aquatic toxicity data	[____]
b. Mammal toxicity data	[____]
c. Bird toxicity data	[____]
d. Reptile toxicity data	[____]
e. Vegetation toxicity data	[____]
f. Additional comments enclosed	[____]
g. Not available	[____]

5. Application procedure or system:	
a. Description of application procedures and system	[____]
b. Number of persons needed to apply response tool	[____]
c. Level of experience required by applicators	[____]
d. Description of application rate (square yards/second)	[____]
e. Product availability and stockpile locations	[____]
f. Additional comments enclosed	[____]
g. Not available	[____]

6. Recovery information:	Attachment #
a. Method of recovery	[____]
b. Amount equipment available	[____]
c. Location of equipment stockpiles	[____]
d. Storage equipment needed in conjunction with device	[____]
e. Recovery efficiency data	[____]
f. Additional comments enclosed	[____]
g. Not available	[____]

7. Disposal information:	
a. Specific disposal requirements	[____]
b. Disposal sites identified	[____]
c. Additional comments enclosed	[____]
d. Not available	[____]

8. Monitoring information:	
a. Monitoring plan	[____]
b. Monitoring equipment required	[____]
c. Level of experience required by monitors	[____]
d. Additional comments enclosed	[____]
e. Not available	[____]

9. Pre-operational testing:	
a. Description of test	[____]
b. Amount equipment available	[____]
c. Location of equipment stockpiles	[____]
d. Storage equipment needed in conjunction with device	[____]
e. Recovery efficiency data	[____]
f. Additional comments enclosed	[____]
g. Not available	[____]

10. Field test information:	
a. Written field test data	[____]
b. Historical field use data	[____]
c. Video documentation	[____]
d. Not available	[____]

Evaluation Team: _____
Team POC: _____
Phone Number: _____
Fax Number: _____

Date Request Sent: _____
Date Information Received: _____

ALTERNATIVE RESPONSE TOOL - SUMMARY EVALUATION WORKSHEET (SEW)

The Summary Evaluation Worksheet is a scoring worksheet, to be filled out by the ARTES review committee, with a copy sent to the solicitor or vendor and another archived with the DRAT.

INSTRUCTIONS FOR COMPLETING THE SEW

1.In Items A through C, ensure that no spaces are left blank.

2.In Item D, for each evaluation factor in the Summary Evaluation Matrix, check the best rating description. Check Non-Applicable (N/A) if a given evaluation factor doesn't apply to the tool/product under review.

3. Compute an average score for the response tool/product by totaling the numbers checked for all applicable factors (ignore any checked N/A values), then dividing this total by the total number of applicable factors (the factors for which you did not check N/A). Write this score in the Average Score space.

3.In Items E and F, write in relevant comments and the RTS's or ARTT s final recommendations.

INSTRUCTIONS FOR USING THE COMPLETED SEW

1.Review the average scores of each Alternative Response Tool Proposal (ARTP) evaluated to select the best alternative. While generally, the ARTP with the highest average score is likely to be the one selected, two caveats apply:

- Average scores are useful only for comparing similar technologies.
- ARTPs that receive a score of 1 or 2 in any factor should be carefully scrutinized. In most cases, ARTPs that score a 1 or 2 in any factor will not be considered as an alternative.

2.The RTS or ARTT should check YES or NO to make their final recommendation, and also may choose to discuss their recommendation in Item E (Comments).

ALTERNATIVE RESPONSE TOOL - SUMMARY EVALUATION WORKSHEET (SEW)

A. Method/Technology: _____

B. Operational Need Addressed: _____

C. Type ARTP: A ○ B ○ C ○ D ○

D. Summary Evaluation Matrix:

FACTORS	RATING DESCRIPTION					
Toxicity	Extremely Toxic 1 ○	Toxic 2 ○	Slightly Toxic 3 ○	Possible Toxic Effects 4 ○	Non-Toxic 5 ○	Non-Applicable N/A ◉
Application	Extremely Difficult 1 ○	Very Difficult 2 ○	Difficult 3 ○	Slightly Difficult 4 ○	Not Difficult 5 ○	Non-Applicable N/A ○
Pre-test Procedures	Extremely Difficult 1 ○	Very Difficult 2 ○	Difficult 3 ○	Slightly Difficult 4 ○	Not Difficult 5 ○	Non-Applicable N/A ○
Historical Success	Negative Data 1 ○	No Data 2 ○	In-House Data 3 ○	Small Spill Data 4 ○	Large Spill Data 5 ○	Non-Applicable N/A ○
Recovery Potential	None 1 ○	Low 2 ○	Moderate 3 ○	Good 4 ○	High 5 ○	Non-Applicable N/A ○
Time of Arrival On Scene	Greatly Exceeds Window of Opportunity 1 ○	Exceeds Window of Opportunity 2 ○	Meets Window of Opportunity 3 ○	Precedes Window of Opportunity 4 ○	Greatly Precedes Window of Opportunity 5 ○	Non-Applicable N/A ○
Required Outside Support	Very Difficult to Obtain 1 ○	Not Reasonably Obtainable 2 ○	Slightly Difficult to Obtain 3 ○	Easily Obtainable 4 ○	None 5 ○	Non-Applicable N/A ○
Disposal	Extremely Difficult 1 ○	Very Difficult 2 ○	Difficult 3 ○	Slightly Difficult 4 ○	Not Difficult 5 ○	Non-Applicable N/A ○
Operational Parameters	Poor 1 ○	Fair 2 ○	Good 3 ○	Excellent 4 ○	Excellent & performs in harsh conditions 5 ○	Non-Applicable N/A ○
Technical Monitoring	Extremely Difficult 1 ○	Very Difficult 2 ○	Difficult 3 ○	Slightly Difficult 4 ○	Not Difficult 5 ○	Non-Applicable N/A ○
Environmental Impacts	Severe 1 ○	Moderate 2 ○	Slight 3 ○	Minimal 4 ○	None 5 ○	Non-Applicable N/A ○

Average Score: _____

E. Comments: _____

F. Recommendations: _____

YES		NO	

G. Signature of ARRT/RTS Leader: _____ Date: _____ Time: _____

DEFINITIONS

TOXICITY: Data for exposure concentrations and duration consistent with expected use patterns should be assembled since they may be more appropriate than standard test data (e.g., LC_{50}). These standard toxicity tests have been designed for testing readily soluble materials. Products which are sparingly soluble, chemical-treating agents will present methodological problems as to how to prepare a test solution. These problems may lead to highly variable test results depending on how individual laboratories interpret test procedures. Use of readily available toxicity data may be misleading, so all information should be used with caution.

APPLICATION: When determining the degree of difficulty in putting a response tool into action, one must consider sophistication of the application system, the level of operator training required, and the available stockpile of the response tool. Sophisticated response tools that have application systems with multiple mechanical and power components and that require a high degree of training are least desirable and therefore "extremely difficult" to use. Those response tools that are used in bulk or that are not available in sufficient quantities to aid in the response, are also least desirable.

PRE-TEST PROCEDURES: If insufficient information is submitted or data are not available, evaluators may require additional testing of the tool to augment the evaluation. This may also be a requirement of use under specific conditions at the time of a spill. The evaluators will need to determine whether this is a necessity and, if so, the degree of difficulty associated with this requirement.

HISTORICAL USE: This is a measure of the documented success of the response tool under actual spill situations, based on the availability of data. This data can be in the form of photo and video documentation, third-party letters of support, and independent scientific field tests. Those response tools having any negative data, i.e., information that indicates the response tool as being adverse to response operations, would get the lowest rating. Response tools having little or no data to support historical success would receive the next lowest rating.

RECOVERY POTENTIAL: This is a measure of the response tool's ability to remove the pollutant of concern. This entails a review of the tool's recovery efficiency (percentage of pollutant recovered in a mixture) and recovery rate (rate at which pollutant is recovered (usually expressed in volume/unit time)). The response tool should be evaluated on its enhancement of recovery efficiency and rate.

TIME OF ARRIVAL ON SCENE: Each response tool is assumed to have an optimal window of opportunity for use. It is preferable for a response tool to arrive on scene well in advance of its window of opportunity to allow for field-testing and troubleshooting if required.

REQUIRED OUTSIDE SUPPORT: The evaluators must determine what auxiliary support the response tool requires, such as special fuels, respirators, hoses, boats, and eductors. An ideal response tool is one that comes with all the support equipment needed to put the tool into service.

DISPOSAL: Federal, state, and local permits and requirements differ for various waste products. All conditions for removal, storage, and final disposition must be met.

OPERATIONAL PARAMETERS: The performance of the response tool under current spill conditions needs to be assessed. "Spill conditions" in this context refer to the parameters that make up the spill operating environment, for example, sea state, wind, wave, currents, and temperature. For evaluations conducted before a spill, N/A would be selected for this factor. However, the evaluation team will need to define the best operating spill conditions for the response tool and write their findings in the comments section of this worksheet.

TECHNICAL MONITORING: The evaluators will need to determine the necessity for environmental monitoring and/or sampling and, if required, the degree of difficulty to perform the prescribed tasks. These tasks may include measurements in the air, water, and/or sediment, for biological, chemical, and/or physical components.

ENVIRONMENTAL IMPACTS: As opposed to specific toxicity issues, some of the factors to be considered here are possible smothering effects, adherence to feathers and fur, fate and degradation time for unrecovered product, effects on surrounding habitats, and effects of setting up and operating equipment.

PowerPoint Explaining

ARTES

Explaining the Relationship Between

the NCP Product Schedule,

Selection Guide for Oil Spill Applied Technologies,

And ARTES

History and Background

- **Past spill experiences shapes our current decision-making about countermeasures e.g., *Torrey Canyon*, *Ixtoc I* blowout, *Exxon Valdez, etc.***

History, Cont.d

- Use of “non-traditional” response technologies (e.g., early dispersants) ⇒ perceived damages
- Their use resulted in changes in Federal regulations:
  - National Contingency Plan, and
  - the Oil Pollution Act of 1990

High Comfort Level

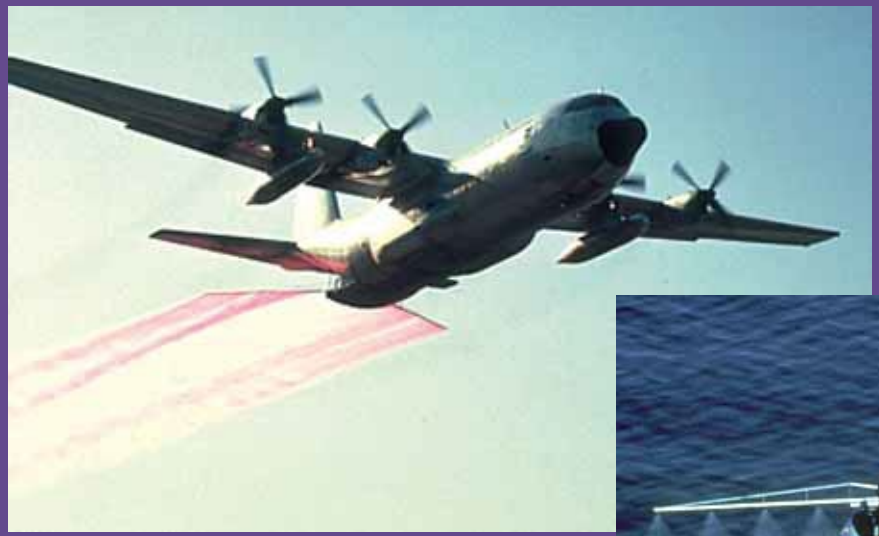
- Traditional countermeasures are a known entity

Applied Oil Spill Technologies, Defined

- a.k.a. – “non-traditional” countermeasures
- Countermeasures that are infrequently if ever used; little experience/knowledge about when these countermeasures could be useful and environmentally beneficial
- Includes:
  - Dispersants
  - Bioremediation Agents
  - Surface Washing Agents
  - Shoreline Pre-treatment Agents
  - Surface Collecting Agents
  - Solidifiers
  - Elasticity Modifiers
  - Emulsion Treating Agents
  - Other Miscellaneous Agents

Discomfort with Applied Technologies

- Decision-maker's wary of non-traditional response technologies



Why?

- Lack of experience with the various products/strategies
- Perceived problems with their use:
  - Liability?
  - Result in additional environmental damage?
  - Lack of experienced application/recovery personnel
  - Difficult to interpret product information
  - Vendors

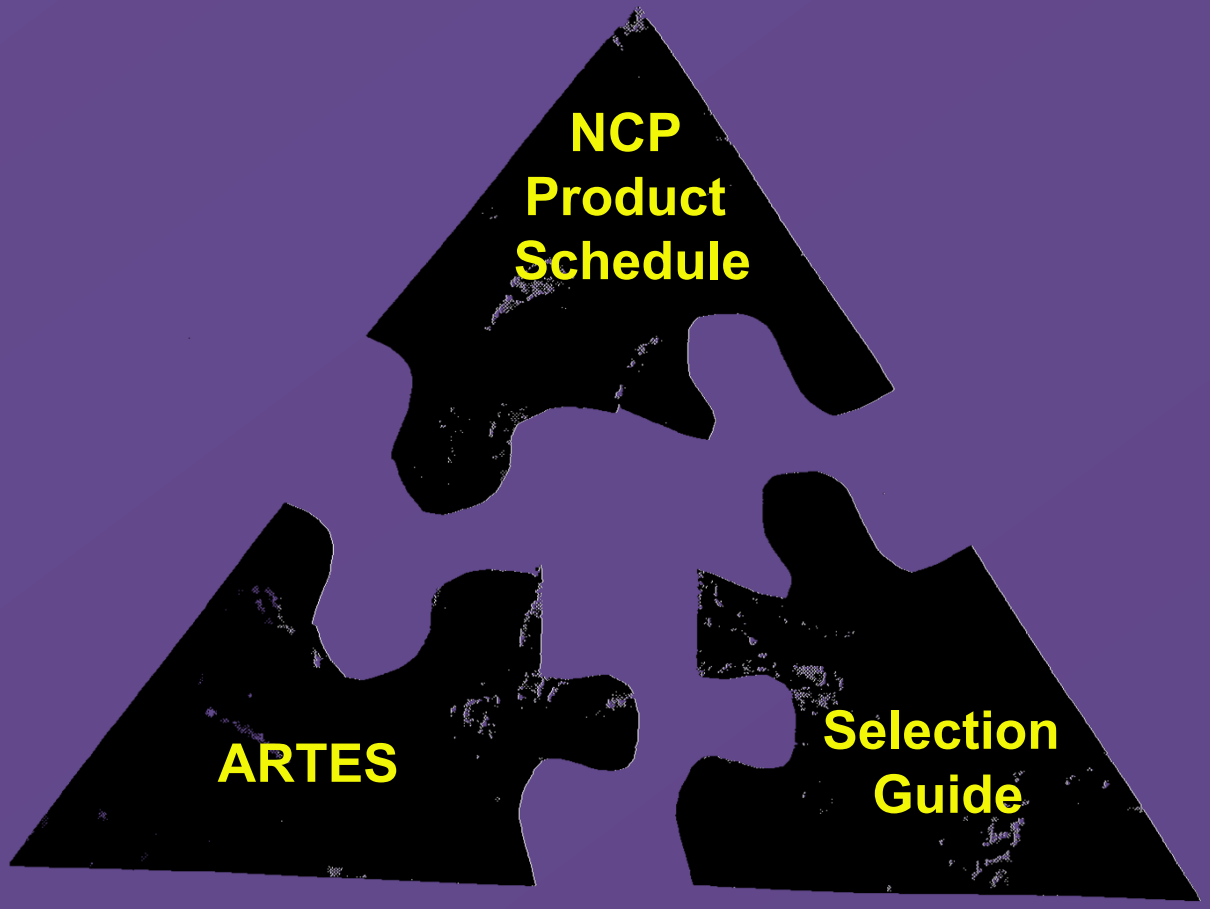
Applied Technologies Today

- Dispersants significantly changed from past formulations
- Standardized effectiveness and toxicity testing required
- Must be registered with EPA for use on oil spills in the US

3-Pronged Approach For Evaluating Applied Technologies

- Three “tools” available to response decision-makers:
  - The National Contingency Plan (NCP) Product Schedule (Subpart J 40CFR Part 300.900)
  - Applied Response Tool Evaluation System (ARTES)
  - Selection Guide for Oil Spill Applied Technologies

Putting the Pieces Together for Response Decision-making



3-Prong Review

- Each piece has a specific function, and strengths and limitations relative to the others
- Interaction of the three decision-making tools not well understood by decision-makers or vendors
- 3 “tools” contain information to provide the basis for making informed, appropriate decisions

NCP Product Schedule

- Functions as regulatory vehicle for use of any applied technologies
- Regulated under:
  - Section 311(d)(2) of the Clean Water Act, and
  - Section 4201 (a) of the Oil Pollution Act of 1990

NCP Product Schedule, Cont'd

- Listing is under the direction of the USEPA Oil Program Center
- Vendors submit required information and perform specified effectiveness and toxicity tests
- Information is posted and updated

Listing of a product does NOT mean that the product is recommended or endorsed by the USEPA for use on an oil spill;

Only that product has met minimum information requirements for listing.

Product Categories on NCP PS

- Dispersants
- Surface Washing Agents
- Surface Collecting Agents
- Bioremediation Agents
- Miscellaneous Oil Spill Control Agents

NCP PS, Cont'd

- Products that consist of materials that meet the definition of two or more of the product categories are evaluated and products are only listed under one category

NCP PS
Information Requirements

➢Special Handling	➢Toxicity
➢Worker Precautions	➢Shelf Life
➢Effectiveness	➢Recommended Application Procedure
➢Emergency Procedures From Skin or Eye Contact	➢Physical Properties (Flash Point, Pour Point, Viscosity, Specific Gravity, pH)
➢Protective Clothing Requirements	➢Analyses for Heavy Metals, Chlorinated Hydrocarbons and Cyanide
➢Minimum and Maximum Storage Temperatures	➢ Temperatures of Phase Separations and Chemical Changes

Strengths of NCP PS

- Federal requirement – Vehicle for product use during response operations in the US
- Minimum information standards must be submitted, including effectiveness and toxicity information
- Updated regularly (every 2 months or as necessary)

Limitations of NCP PS

- Not designed for incident-specific decision-making
- Does not allow easy comparison of products
- No way to capture lessons learned for individual product use
- Limited to chemical and biological additive products, that is…not new or advanced mechanical strategies or techniques

Limitations of NCP PS, Cont'd

- Does not provide all information needed by decision-makers
- Does not provide a basis by which new products (those not yet listed) can be considered prior to listing
- Does not provide assistance in choice of products/strategies or guidance in their application

Selection Guide
for Oil Spill Applied Technologies

Why Selection Guide Developed

- Designed to provide OSCs and other response decision-makers with an easy-to-use technical guidance database for considering applied oil spill technologies for use during an incident.
- Developed by Region III in cooperation with Region IV

Selection Guide, Cont'd

- Two volumes:
  - Decision-making information (Nationally applicable) and
  - Implementation/operational support documentation (regionally customizable)
- Provides information requested by decision-makers to consider, select, and implement an environmentally-appropriate product or technology

Selection Guide Information

- **Technology Categories**
  - Bioremediation Agents
  - Dispersants
  - Elasticity Modifiers
  - Emulsion Treating Agents
  - Fire-Fighting Foam
  - *In situ* Burning on Land
  - *In situ* Burning on Water
  - Shoreline Pre-treatment Agents

- **Technology Categories**
  - Solidifers
  - Sorbents
  - Surface Collecting Agents
  - Surface Washing Agents
  - Fast-water Booming Strategies
  - Non-floating Oil Strategies
  - Oil-in-ice Strategies
  - Pyrolytic Oil Strategies
  - Water Intake Monitoring Strategies

Information, Cont'd

- **Information Categories**
  - Mechanism of action
  - Authority required
  - Availability
  - General application requirements
  - Health and safety concerns
  - When to use
  - Limiting factors/environmental constraints
  - Monitoring requirements
  - Waste generation and disposal issues
  - Who to call for more information and additional resources

Content

- Instructions and matrices for selecting a strategy or countermeasure using job aid techniques (Human Performance Technologies techniques)
- Allows direct product comparisons among products and categories/strategies using product comparison tables
- Establishes the need for monitoring and capturing lessons learned

Content, Cont'd

- Glossary used with various products/ strategies
- History and status of product use (case study examples)
- Toxicity primer – how toxicity is measured and what the numbers really mean

Strengths of Selection Guide

- Allows comparison of similar products as well as comparison of various strategies to determine the best response
- Developed using “job aid” techniques
- Allows documentation for the decision-making process

Strengths, Cont'd

- Provides situation–specific assistance in the selection of products and strategies during planning and response, including new products/strategies
- Provides guidance on the use of response technologies and products
- Developed to capture and incorporate lessons learned (not fully initiated)

Limitations of Selection Guide

- Only as good as the information submitted; data could be limited.
- Should be updated as new information becomes available (e.g., ARTES evaluations, actual use)
- January 2003 Edition available in:
  - paper format,
  - internet download from www.response.restoration.noaa.gov/oilaids.html, and
  - interactive CD version

Limitations, Cont'd

- Decision-makers need to ensure that they are making their decisions with the most current information available
- Not a cook book – still have to evaluate incident-specific information with product in mind

The Applied Response Tool Evaluation System (ARTES)

- A tool for evaluating value of individual products for oil spill response discharges
- Developed to evaluate effectiveness of applied technology response options and evaluate proposed conventional countermeasures
- Evaluators review information provided by vendors and NCP PS to determine/identify the best use or value of the product/technology.

Why ARTES Was Developed

- To provide on-scene coordinators (OSCs) with method for evaluating applied response technologies for use at an oil or chemical spill
- To provide evaluation program to assist OSC and RRT in deciding whether to implement an applied technology
- To get a better understanding of how an applied response technology would/should work
- To evaluate proposed conventional countermeasures

ARTES Information Requirements

- Chemical/physical properties
  - Composition, density, specific gravity, viscosity, solubility, etc.
- Human health and safety concerns
- Biological toxicity data, where available
  - Aquatic, mammal, bird, reptile, vegetation toxicity
- Application information
- Historical success
- Recovery/disposal information
- Technical monitoring

Undergoing an ARTES

- Evaluators independently review vendor information
- As a group, Evaluators review vendor information
- Evaluators gather group consensus and product restrictions/ limitations as identified by the group
- Evaluators develop recommendations for the product ‘s use

Undergoing an ARTES, Cont'd

- Completion of an ARTES evaluation does not mean that a product / technology is pre-approved, recommended, licensed, certified, or authorized for use on an incident

Strengths of ARTES

- May be used both before and during an incident
- Evaluates a response tool on its technical merits and not economic factors
- Solely designed to evaluate a product's appropriateness for use during a specific incident under specific circumstances, or as a pre-evaluation to identify likely conditions which favorable outcomes are anticipated by using a product

ARTES Strengths, Cont'd

- Rapidly evaluate and provide feedback to the OSC in the form of a recommendation. This enables the OSC to make a well-informed decision on the use of an individual product
- Subjecting all proposals to consistent degree of evaluation ensures that vendors are considered on a "level playing field."

Current Limitations of ARTES

- Only evaluates a single product; does not facilitate easy comparison among products
- Regionally- and incident-specific. Currently an evaluation is only applicable for the habitat/ climate specific conditions being considered by the Evaluators. *Evaluations are not universally applicable on the National level*.
- Products would have to be put through the evaluation process independently in each region/area to address regionally-specific issues. $$ Limited.

Limitations, Cont'd

- Currently, no plan for capturing lessons learned or effectively sharing information from previous ARTES evaluations among regions.

Proposed ARTES Updates

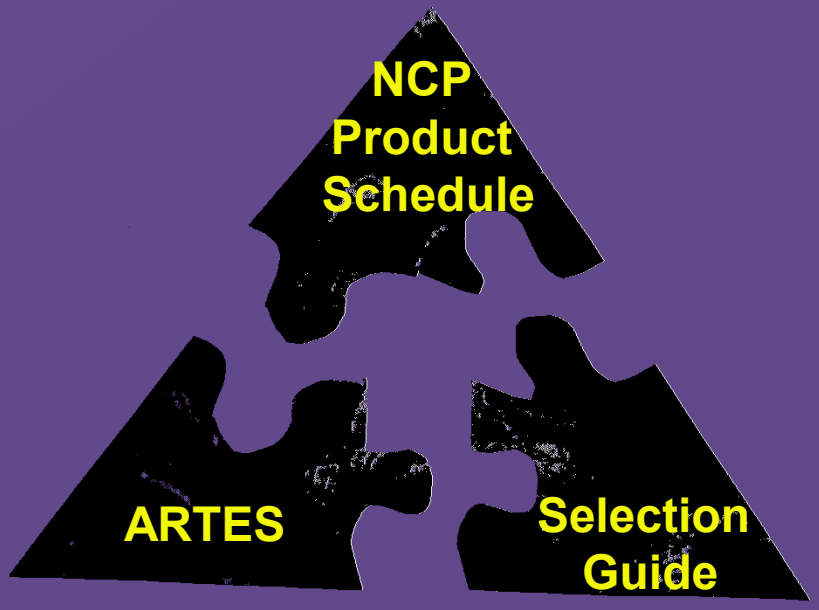
- Regions II, III and IV submitted request to NRT to take role in "nationalizing" ARTES
- Asks NRT to take the lead in the following:
  - ID panel of technical experts for each product category
  - Have technical experts review products at the National level (not restricted by habitat/climate considerations)
  - Make National ARTES evaluations available for adoption and further customization by Regions

Updates, Cont'd

- Make vendor information submittal easier; compile a complete list of information requirements to address all possible information needs of NCP, ARTES, and Selection Guide
- Have USEPA Oil Program Center warehouse this information for all evaluation methods

In Summary

- Use all the pieces to solve the puzzle (make a decision)



In Summary, Cont'd

- Most effective use of these tools is in a coordinated manner
- NCP is the first step and requirement; provides guiding legislation; Nationally applicable information
- ARTES assists in the evaluation of single product / technology for regional or incident-specific conditions

In Summary, Cont'd

- Selection Guide allows:
  - Screening the incident for possible strategies/ products that could add value to a response, and
  - Comparison of products/strategies of interest relative to other techniques to select the most appropriate technology

Thanks for your attention!

Annex ZZC

Regional Contingency Plans

Federal Region III Regional Response Team

Region III Regional Oil and Hazardous Substances Pollution Contingency Plan

Report Oil and Chemical Spills

1-800-424-8802

http://www.rrt3.nrt.org

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To Report Spills Call the National Response Center

24-hour phone: (800) 424-8802
(202) 267-2675

Or on-line at http://www.nrc.uscg.mil

National Response Center
United States Coast Guard Headquarters
Washington, DC

Regional Response Centers & Emergency Response 24-Hour Emergency Numbers

(215) 814-3255
U.S. Environmental Protection Agency
Region III
Hazardous Site Cleanup Division
Office of Preparedness and Response
Planning and Preparedness, Western and Eastern Response Branches
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

(757) 398-6390
U.S. Coast Guard
Fifth District
431 Crawford Street
Portsmouth, Virginia 23704-5004

(504) 589-6225
U.S. Coast Guard
Eighth District
Hale Bogs Federal Building
500 Poydras Street
New Orleans, Louisiana 70130

(216) 902-6118
U.S. Coast Guard
Ninth District
1240 East 9th Street
Cleveland, Ohio 44199-2060

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LETTER OF PROMULGATION

The Region III Regional Oil and Hazardous Substances Pollution Contingency Plan (R3RCP) was developed in accordance with the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, the Clean Water Act of 1977, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), which require the Regional Response Teams (RRTs) in each federal region to develop a Regional Contingency Plan (RCP) to coordinate effective response to oil spills and hazardous substance releases into the environment of the United States within the Mid-Atlantic Area, including the District of Columbia, Delaware, Maryland, Pennsylvania, Virginia and West Virginia.

The R3RCP was developed in cooperation with the designated representatives from organizations that make up the Region III Regional Response Team (RRT3): thirteen federal departments and supporting agencies, one federally recognized tribe, three states, two commonwealths, and the District of Columbia.

The RCP is organized according to key functions of the RRT. To promote ease of use, the revised RCP had been published electronically and is available for viewing or download from the RRT3 website:

www.nrt.org/RRT3_RCP

The seven main sections of the RCP are as follows:

- Section 1: Introduction
- Section 2: Consistency with the NCP
- Section 3: Regional Response Policies
- Section 4: RRT Operations and Administration
- Section 5: RRT Agency Roles, Capabilities, and Support
- Section 6: Related Plans and Programs
- Section 7: Abbreviations and Acronyms

Updates to this plan will be considered at RRT semi-annual meetings and changes will be distributed in electronic form. Full review with letters of promulgation will take place every four years. Future changes to the plan will be consecutively numbered and designated as such. Any changes or comments to the R3RCP should be submitted to:

Cindy E. Santiago
USEPA RRT Coordinator
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 9103-2029
santiago.cindy@epa.gov

David Pugh
USCG RRT Coordinator
Fifth Coast Guard District
1 Washington Avenue
Philadelphia, PA 19148
david.e.pugh1@uscg.mil

This plan is in effect upon signature, and supersedes and replaces previous RCPs:

Kevin Boyd
Emergency Planning and Response Branch Chief
Co-chair
U.S. EPA Region III
Region III Regional Response Team

David T. Ormes
Incident Management Preparedness Advisor Co-Chair
Fifth Coast Guard District
Region III Regional Response Team

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SECTION 1: Introduction

Region III Regional Response Team (RRT3) is a part of the National Response System (NRS) and our members include representatives from the states of Delaware (DE), Maryland (MD), West Virginia (WV), the Commonwealths of Pennsylvania (PA) and Virginia (VA), the District of Columbia (DC), and 13 federal departments and supporting agencies. The RRT3 Co-Chairs are: the United States (U.S.) Environmental Protection Agency (USEPA) from the Region III office in Philadelphia, PA and the U.S. Coast Guard (USCG) Atlantic Area/Fifth USCG District office in Portsmouth, VA.

RRTs function in two ways – as a standing team and as an incident-specific team. The standing RRT3 is a planning, policy, and preparedness coordinating body that does not respond directly to the scene of a spill or release. They provide a regional mechanism for the development and coordination of preparedness activities before a response action is taken. The incident-specific RRT is available for coordination of assistance and advice to the Federal On-Scene Coordinator (FOSC) during incident response. It provides assistance as requested by the FOSC during an incident. For a thorough description of both the NRS and the responsibilities of Regional Response Teams (RRTs), please visit the National Response Team (NRT) website.

There are 13 RRTs in the U.S., each representing a particular geographic region (including the Caribbean and the Pacific Basin) (**Figure 1.1**). RRTs are composed of representatives from field offices of the federal agencies that make up the NRT, as well as state representatives.

Like the NRT, the standing RRTs are bodies that coordinate, plan, and update policy, and do not respond directly to the scene. The RRT provides assistance as requested by the FOSC during an incident.

To access an RRT Home Page, please see https://www.nrt.org/site/regionmap.aspx.

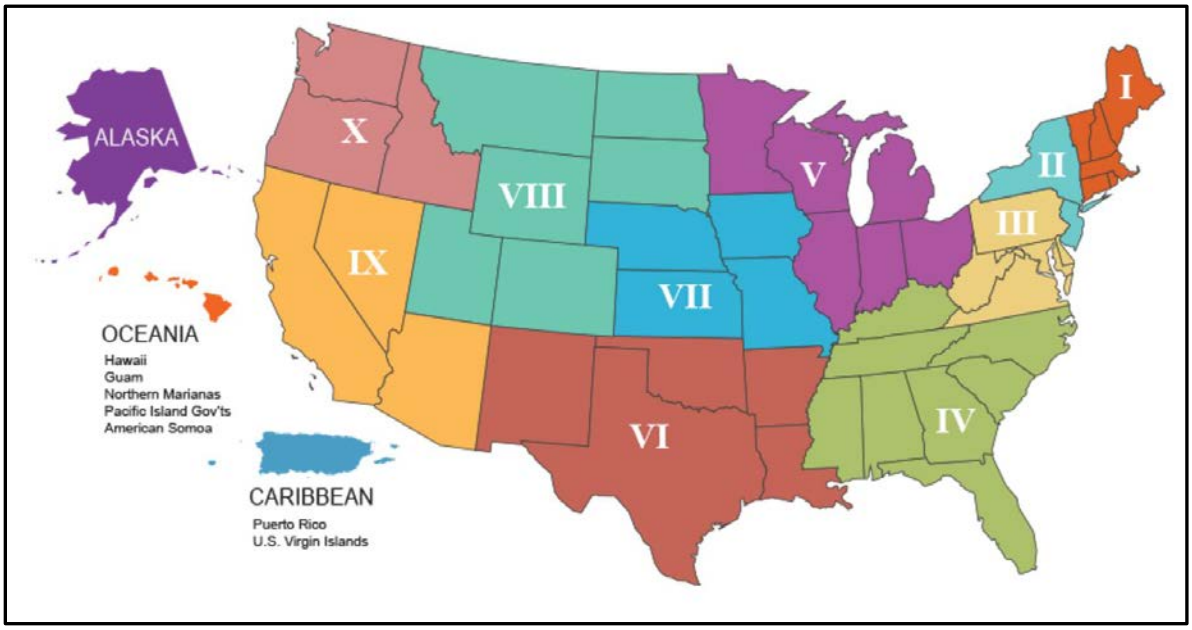


Figure 1.1. Regional Response Team Areas.

A. Purpose and Objectives

Large or dangerous spills that impact significant areas or important resources or that last a long time may require RRT support to the FOSC. Some examples of RRT support to the FOSC include:

- Broker of information to the larger political, media, and technical communities that we call stakeholders;
- Filter of information or demands from the political and industrial communities; and
- Strategic planning. The skills required for RRT members for these types of planning or emergency roles are strategic thinking, flexibility, and organizational problem solving.

The purpose of the Region III Regional Oil and Hazardous Substances Pollution Contingency Plan (R3RCP) is to provide organizational structure and procedures for preparation for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants; natural or man-made disasters; or acts of terrorism. The R3RCP fulfills this purpose by providing a framework in which Area Contingency Plans (ACPs) in Region III fit with each other, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and with other federal emergency response plans. The R3RCP also describes the mechanisms by which the RRT3 assists FOSCs before a response by providing planning and training activities, and during a response through organizational and coordination assistance. Last, the R3RCP serves as a compilation of RRT3 policies and guidance pertaining to all-hazards responses.

Members of the RRT3 are listed in the following categories:

- Standing RRT Primary and Alternate Members
- Incident Specific RRT Membership by State
- Area Committee Members
- State Trustees for Natural Resources
- Designated On-scene Coordinators
- State Offices Designated to access the Oil Spill Liability Trust Fund (OSLTF)

A directory of RRT3 members, which provides primary points of contact (POCs) for each member agency and contact information, is provided in **Appendix 1**. The *RRT3 Primary Contact List* will be updated after each semi-annual RRT3 meeting.

The references for support that can be provided by RRT Members to the FOSC is listed in the National Contingency Plan, Part 300.175 Federal agencies: and Part 300.185 State and Local.

B. Scope

The R3RCP applies to response operations taken by all federal, tribal, state, and local agencies within the Standard Federal Region III area that are covered under the provisions of the NCP. Region III includes the following geographical areas:

- State of Delaware
- District of Columbia
- State of Maryland
- Commonwealth of Pennsylvania
- Commonwealth of Virginia
- State of West Virginia
- All lands of federally recognized tribes located within the geographical boundaries of Region III.

In subject areas where RRT policy and structure mirror that which is laid out in the NCP, the RCP defines and communicates the roles of RRT3 members in support of the FOSC in planning or in response to oil and chemical spills in the region. Oil and chemical spill planning also includes spills or releases resulting from natural emergencies such as floods, hurricanes, or man-made emergencies such as terrorism events. The R3RCP contains regional plans that outline the complex interactions and funding mechanisms required during implementation of disaster plans. The ACPs or the plans of the Local Emergency Planning Committee (LEPC) will not duplicate the R3RCP. The RCP documents the guidance policy, methods, and

criteria that the RRT3 uses to evaluate the oil response planning of the ACP and the chemical response planning of the LEPC. The RCP will not duplicate the National Response Framework or details in the Emergency Support Functions. Instead, the R3RCP documents the supporting roles and activities of the RRT3 during an oil or chemical spill or during a natural disaster that would require federal funding and federal authorities under the Stafford Act.

C. Relationship with Other Plans

As many as five levels of emergency-related plans may be found within the federal, state, and local levels of government. A seventh tier of plans appears when those developed by business and industry are considered. Within the planning levels of governments, there are three levels of federal plans; national contingency and response plans, federal RCPs and federal ACPs. At the state and local level are state plans, regional plans, local plans and departmental and support-agency plans. Each of these plans reflects levels of action and responsibility. Some of these plans are multi-hazard comprehensive plans while others are single-hazard response and coordination plans. Given the fact that responses to incidents involving oil and hazardous substances will most certainly be multi-organizational and multi-jurisdictional, a basic understanding of each planning level and how the various plans fit together is needed to facilitate integration and coordination of the several plans that may be activated in a response. Section 1G – Administrative Procedures describes the three levels of contingency plans under the National Response System and cross-references emergency preparedness plans at the state and local level.

Planning and preparedness for disasters occurs at all levels of government and business and industry. The coordination of actions taken under these plans is critical, particularly in a chemical emergency. **Figure 1.2** identifies the governmental plans that may be operative during an oil or hazardous substances event so that those implementing this plan may be aware of other probable plan activations and how best to integrate and coordinate the overall response activities. Business and industry planning directs how an individual facility will respond and integrate with the regulatory requirements of the governmental planning documents shown in **Figure 1.2**.

Figure 1.2. Governmental Plans Supporting the NCP. Note: Business and Industry Planning are not included in the figure because they are not governmental plans, but also support and are inserted into emergency response activities.

D. Planning Process

Preparedness planning is not an exact science, but it does have elemental processes that can be used to shape the desired direction of a response by focusing your development of pre-planned actions that assist in establishing clear goals and achievable objectives. Preparedness processes involve deciding in advance what must be done, how to do it, when to do it, and by whom it should be done. It should be done carefully and systematically. Thus, a truly successful response organization is one that enhances its ability to accomplish predetermined Critical Success Factors discussed in Section 1F – Measurement Process.

Conducting an accurate and systematic risk assessment of the area is critically important in understanding what risks are present. Risk assessment provides for easier and more accurate scenario development, because knowing the risks allows you to know what to plan for and what level of preparedness is required.

The development and use of a Response Management System and Response Management Organization as a tool in Command and Control of the response is critical to the effective and efficient use of resources. A Response Management System must enhance the achievement of the Critical Success Factors. The use of the Incident Command System and Unified Command System (ICS/UCS) has been mandated for response to oil and hazardous material responses. The Response Management Organization must be properly organized, trained, exercised, and facilitated to ensure unity of effort, centralized control, and functional decentralization.

Resource development involves the assemblage of all necessary and appropriate resources within the bounds of logistical and financial considerations. Resources that are necessary to accomplish the objectives assigned to the Critical Success Factors include people, equipment, and finances.

Resource Mobilization capability is the capacity and capability to coordinate, assemble, and put into motion or action the organization of all necessary resources assigned to it. Efficient and effective mobilization of response resources is a critical element in reducing the cost and environmental impact of an incident.

E. Exercise Process

Government led exercises, simulations, and training preparedness for response exercise program (PREP) exercises are supported by the USEPA and USCG Area Commands. These exercises are designed specifically to test the readiness and abilities of the FOSC/RRT response organization and Area Contingency Planning process. These exercises will be given the highest priority of RRT participation. The mode of participation, (telephone activation, on-site activation, etc.) will be at the discretion of the RRT members. Realism and use of existing procedures and policies will be maintained to the maximum extent possible. Industry led PREP exercises are supported to the greatest extent possible as well, but often do not have RRT involvement other than certain RRT members who are requested to participate as exercise design team members, controllers, evaluators, or players.

External Exercises

External exercises are defined as those conducted by member agencies of the Region III RRT including the state members, local governments (i.e., LEPCs), and industries within the region. Exercises conducted by other RRTs or in other regions will also be considered external. The RRT encourages member agency participation, in external exercises, to the greatest extent possible as a means of providing training or testing readiness capabilities. To allow for broad RRT participation, any RRT member agency solicited for participation in or assistance in conducting an exercise should inform the RRT Coordinators or the Chair of the Training Workgroup of the event. The Co-Chairs and Executive Committee will determine the level of RRT participation; however, Member agencies may participate at their own discretion. The Training Workgroup is available to provide technical assistance and training to other organizations and agencies who are interested in developing an exercise program or in planning and staging an exercise. The Workgroup updates the schedule of exercises and training events during the semi-annual RRT meetings.

Preparedness and Response Training

The Training Workgroup has access to resources, both within the RRT membership as well as through outside organizations, that have expertise in a wide variety of areas applicable to oil and hazardous substance emergency preparedness and response. This expertise includes emergency and disaster planning for both government and industry, exercise design and planning, first responder training, organization and implementation of an Incident Command System and managing multi-organizational emergency response through the National Response System. This assistance is available to the RRT as well as individual member

and non-member agencies and organizations. The RRT Coordinators and Chair of the Training Workgroup can provide assistance and points of contact in these areas.

RRT Exercise Reports

A summary of RRT exercise and other training activities will be included as a part of the annual report to the NRT and posted to the RRT3 Home Page (www.nrt.org/RRT3). The procedures/expectations for the submittal of these reports are explained within the "Reports" section of this document.

F. Measurement Process

The Best Response Model as a Tool for Response and Planning

Planning for a spill emergency requires the creation of a response organization with strengths that include the ability to quickly and efficiently accomplish a large number of tasks. Although tasks can be categorized in different ways, the Best Response model categorizes tasks into five Key Business Drivers. The Best Response Model then identifies a number of Critical Success Factor that must be accomplished for each of the Key Business Drivers to accomplish the spill response goal, which is to minimize the consequences.

Key Business Drivers	Critical Success Factors
Human Health and Safety	No spill related public injuries, illness, or death No response worker injuries, illness, or death
The Natural Environment	Source Discharge Minimized Spill Effectively Contained/Controlled Sensitive Areas Protected Resource Damage Minimized
The Economy	Economic Impact Minimized
Public Communication	Accurate Timely Information Dissemination Positive Media Coverage of Response Positive Public Perception
Stakeholder Support and Services	Minimize Impact to Stakeholders Stakeholders Well Informed Positive Meetings with Stakeholders Prompt Handling of Damage Claims

The Preparedness Planning Focus

All ACPs contain predetermined objectives that are designed to achieve each of the Critical Success Factors. For each objective of each Critical Success Factor, the planning process identifies the organization, response resources, resource mobilization issues, and the objectives needed to achieve success.

Preparedness Tasks

RRT3 and associated contingency plans will conduct preparedness tasks in line with the National Preparedness Goal. FOSC's are expected to brief out recent exercises associated with oil and hazmat and discuss lessons learned. The first step in preparedness is to score the planning documents on their ability to provide support to the FOSC. This can be measured through the effective use of planning documents during

exercises. The second step in preparedness is to ensure the planning documents are consistent with the NCP. The planning crosswalk in Section 2 provides a measurement of the R3RCP's consistency with the NCP. The third step in preparedness is to meet with your response partners. This can also be done by conducting and attending exercises. Another way to interact with response partners is by attending RRT, LEPC, area committee, and other meetings.

G. Administrative Procedures

This part of the R3RCP details procedural information that is needed both internally and externally to support the RRT3.

Responsibility Organization for Response (Subpart B of the NCP)

The Administrative Procedures part of the RCP, including activation, membership, workgroups, meetings, and reports and documentation guidelines, are discussed in detail in Section 4.

The RCP Re-Write Workgroup is responsible for reviewing and revising the Administrative Procedures outlined in this RCP. A regular update cycle will be considered to provide for changes that are not time-critical, but interim amendments may also be required to reflect significant changes within the defined area. Version control will be established and an interim update process is critical. Certain portions of the plan, such as contact lists, may change frequently and should be maintained separately from the plan itself. Significant revisions to the document are subject to approval by the Executive Committee.

Reference Sec. 300.115 - Regional Response Teams.

> *(a) Regional planning and coordination of preparedness and response actions is accomplished through the RRT. In the case of a discharge of oil, preparedness activities will be carried out in conjunction with Area Committees, as appropriate. The RRT agency membership parallels that of the NRT, as described in Sec. 300.110, but also includes state and local representation. The RRT provides:*
>
> - *The appropriate regional mechanism for development and coordination of preparedness activities before a response action is taken and for coordination of assistance and advice to the OSC/RPM during such response actions; and*
> - *Guidance to Area Committees, as appropriate, to ensure inter-area consistency and consistency of individual ACPs with the RCP and NCP.*
>
> *(b) The two principal components of the RRT mechanism are a standing team, which consists of designated representatives from each participating federal agency, state governments, and local governments (as agreed upon by the states); and incident-specific teams formed from the standing team when the RRT is activated for a response. On incident-specific teams, participation by the RRT member agencies will relate to the technical nature of the incident and its geographic location. (NCP, Sec 300.115)*

Reference Sec. 300.210 -- Federal contingency plans.

> *There are three levels of contingency plans under the national response system: The National Contingency Plan, RCPs, and ACPs. These plans are available for inspection at EPA regional offices or USCG district offices. Addresses and telephone numbers for these offices may be found in the United States Government Manual, issued annually, or in local telephone directories.*

(a) The National Contingency Plan. The purpose and objectives, authority, and scope of the NCP are described in Secs. 300.1 Through 300.3.

(b) Regional Contingency Plans. The RRTs, working with the states, shall develop federal RCPs for each standard federal region, Alaska, Oceania in the Pacific, and the Caribbean to coordinate timely, effective response by various federal agencies and other organizations to discharges of oil or releases of hazardous substances, pollutants, or contaminants. RCPs shall, as appropriate, include information on all useful facilities and resources in the region, from government, commercial, academic, and other sources. To the greatest extent possible, RCPs shall follow the format of the NCP and be coordinated with state emergency response plans, ACPs, which are described in Sec. 300.210(c), and Title III local emergency response plans, which are described in Sec. 300.215. Such coordination should be accomplished by working with the SERCs in the region covered by the RCP. RCPs shall contain lines of demarcation between the inland and coastal zones, as mutually agreed upon by USCG and EPA.

(c) Area Contingency Plans. (1) Under the direction of an OSC and subject to approval by the lead agency, each Area Committee, in consultation with the appropriate RRTs, USCG DRGs, the NSFCC, SSCs, LEPCs, and SERCs, shall develop an ACP for its designated area. This plan, when implemented in conjunction with other provisions of the NCP, shall be adequate to remove a worst case discharge under Sec. 300.324, and to mitigate or prevent a substantial threat of such a discharge, from a vessel, offshore facility, or onshore facility operating in or near the area. (NCP, Sec 300.210)

SECTION 2: Consistency with the NCP

The NCP requires that RCPs follow the format of the NCP to the greatest extent possible. Policies and operating procedures of the RRT are consistent with the NCP, as much as they are described therein. In an effort to create the most streamlined and user-friendly document possible, information from the NCP that applies to policies and procedures in Region III without modification was excluded from the RCP. Responders can reference the NCP for that information. The RCP includes only information where the scope and applicability are limited to Region III.

A cross reference matrix for the R3RCP relative to the NCP is provided in **Appendix 2**. The matrix table lists all sections of the NCP and states whether information pertaining to any specific section has been included in this R3RCP or in the ACPs for areas within Region III. Sections of the NCP, for which RRT policy and operating procedures are identical to that laid out in the NCP, are marked NRM, or 'No Regional Modifications'.

The cross reference matrix in **Appendix 2** documents cases where the RRT3 has supplemented or deviated from information in the NCP pertaining to aspects of response procedure or policy.

SECTION 3: Regional Response Policies

A. Objectives

This section serves as a source for regional response policies that have been instituted by members of the response community in Region III and are specific to response operations in Region III. Some of the policies are specific to geographic areas within Region III, and the boundaries between these areas are described in this section. Some of the documents that set these policies, including Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA) and policy documents, are included as appendices of the R3RCP.

B. Regional Boundaries

From the perspective of a federal-led response to a discharge of oil or a release of hazardous substances, the most significant geographic boundary in Region III is the area between the inland and the coastal zones. The USEPA provides the FOSC for all responses within the inland zone. The USCG provides the FOSC for all responses within the coastal zone. These functions were delegated to USEPA and USCG in Executive Orders 12580 and 12777 [as amended]. Links to these documents are included in **Appendix 3**. The boundary between the two zones was established by USEPA and USCG using recognizable landmarks (usually roads) that can be identified in the field. The inland/coastal boundary can be changed with the concurrence of the Fifth USCG District and Sector Commander in which the change is to take place, and the Chief of the Emergency Planning and Response Branch of USEPA Region III. This boundary is defined as described in **Appendix 4**.

As per 40 CFR 300.120 (1), the USCG provides the FOSC for oil discharges within or threatening the coastal zone. The USCG shall also provide FOSCs for the removal of releases of hazardous substances, pollutants, or contaminants into or threatening the coastal zone. USEPA generally provides the FOSC for long-term removal or remedial actions in response to releases of hazardous substances (except in response to releases from vessels). This policy is documented in the *Instrument of Re-delegation Between the USCG and the USEPA* signed on 29 November 1987 and on 27 May 1988. A copy of this document is included in **Appendix 5**.

For planning and response purposes, the inland zone is considered to be one area (Region III) and is covered under one ACP, the Inland Area Contingency Plan. Furthermore, USEPA Region III has defined 14 sub-areas that are within the inland area (see **Figure 3.1**):

- II – Washington DC Extended,
- III – Southeast PA/DE,
- IV – Northeast PA,
- V – Southcentral PA,
- VI – Northcentral PA,
- VII – Southwest PA/Wheeling WV,
- VIII – Northwest PA,
- IX – Huntington/Central WV,
- X – Shenandoah Valley,
- XI – Upper Chesapeake,
- XII – Southeast VA,
- XIII – Southcentral VA,
- XIV – Northcentral WV, and
- XV – Southwest VA/WV.

The Region III coastal zone is overseen by three USCG Districts (see **Figure 3.1**) encompassing the following Sectors/Marine Safety Units (MSU):

- **Fifth USCG District** - The district office is located in Portsmouth, Virginia and is comprised of: Virginia; District of Columbia; Maryland; Delaware; and eastern Pennsylvania.
  - Sector Delaware Bay
  - Sector Maryland and National Capitol Region
  - Sector Hampton Roads
- **Eighth USCG District** - The district office is located in New Orleans, LA, and includes West Virginia and Western Pennsylvania.
  - MSU Pittsburgh
  - MSU Huntington
- **Ninth USCG District** - The district office is located in Cleveland, Ohio, and includes Northwestern Pennsylvania:
  - Sector Ohio Valley
  - Sector Buffalo

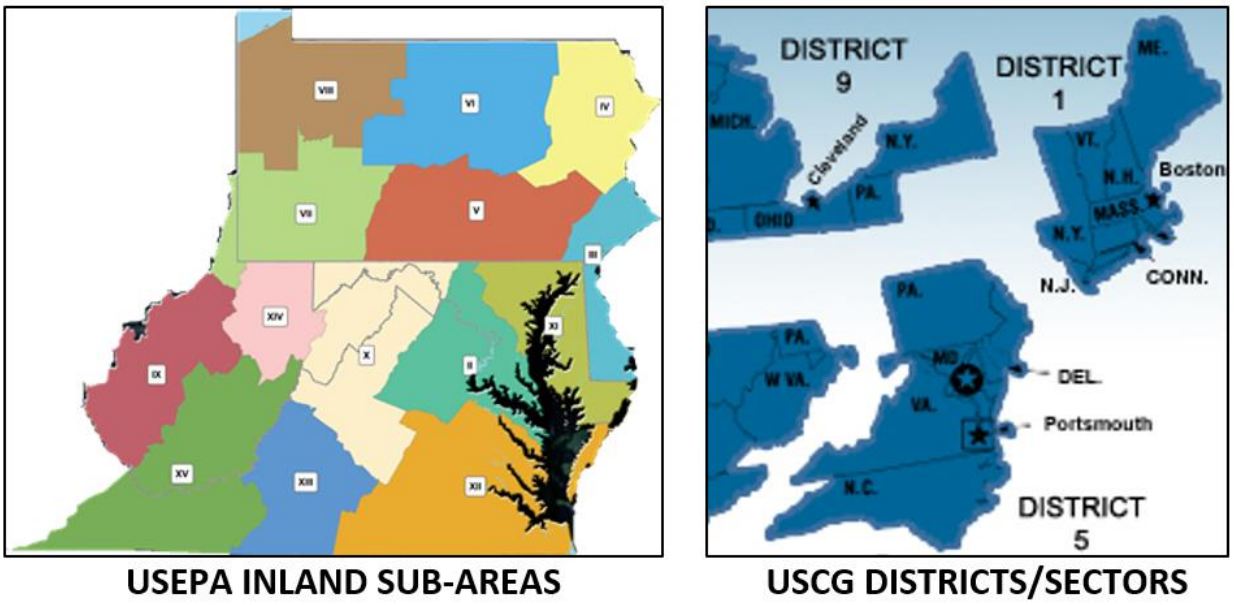


Figure 3.1 USEPA Inland Sub-Areas and USCG Districts in Region III.

For response purposes, pre-designated FOSCs are provided within each of these zones. An incident-specific USEPA FOSC is provided for a discharge or release from a group of FOSCs home-based at the USEPA Region III office in Philadelphia, PA. USCG FOSCs are the Sector Commander for each of the Sectors and MSUs in Region III (Sector Delaware Bay, Sector Maryland and National Capitol Region, Sector Hampton Roads, Sector Buffalo, MSU Pittsburgh, and MSU Huntington). The FOSC for multi-area responses is generally from within this group as described in the following Multi-Area Response section. Precise geographic boundaries are defined in 33 CFR Part 3.05 (see www.ecfr.gov).

C. Multi-Area Responses

Oil discharges and hazardous substance releases may cross regional or area boundaries, potentially adding complexity to the response. The compact nature of jurisdictions within Region III heightens the importance of detailing responses to boundary incidents. This section describes the approach to spills that cross

boundary areas within the region to ensure a consistent approach to both FOSC leadership and efficient RRT support to the FOSC, regardless of the location of an incident. It defines the system of activating the response mechanisms of multiple ACPs or RCPs in boundary incidents as called for by 40 CFR 300.140(a).

The following tenets apply to boundary situations:

- **One FOSC**: There shall be only one FOSC at any time during the course of a response operation to a single incident per 40 CFR 300.140(b), regardless of the various types of zones within the U.S. it may cross (Captain of the Port [COTP], inland/coastal, area, regional). Plans for joint response with Canadian equivalents of the U.S. OSC are detailed in international boundary contingency plans.
- **Incident Origin is the initial determinant of the FOSC**: The FOSC will generally be provided based on the location of the incident origin, although this may shift based upon the area most vulnerable to the greatest threat.
- **FOSC use of NIMS and UC**: National Incident Management System (NIMS) structures, most notably ICS/Unified Command (UC), will be used to coordinate an effective response. Other NIMS tools for complex incident management may be required in complex incidents.
- **Single Incident-Specific RRTs**: A single incident-specific RRT, or the international equivalent, most effectively supports the FOSC, even if this incident-specific team draws upon multiple regional representatives of an agency. Guidance for activation and operations of an Incident-Specific RRT for a cross-regional or multi-area response is included in Section 4.A.
- **Disagreements addressed by RRT then NRT**: The RRT Co-chairs will designate the FOSC if RRT agencies with jurisdiction, within affected areas, disagree on the FOSC designation in a boundary incident, or will refer the matter to the NRT if they cannot.

D. Specific Boundaries

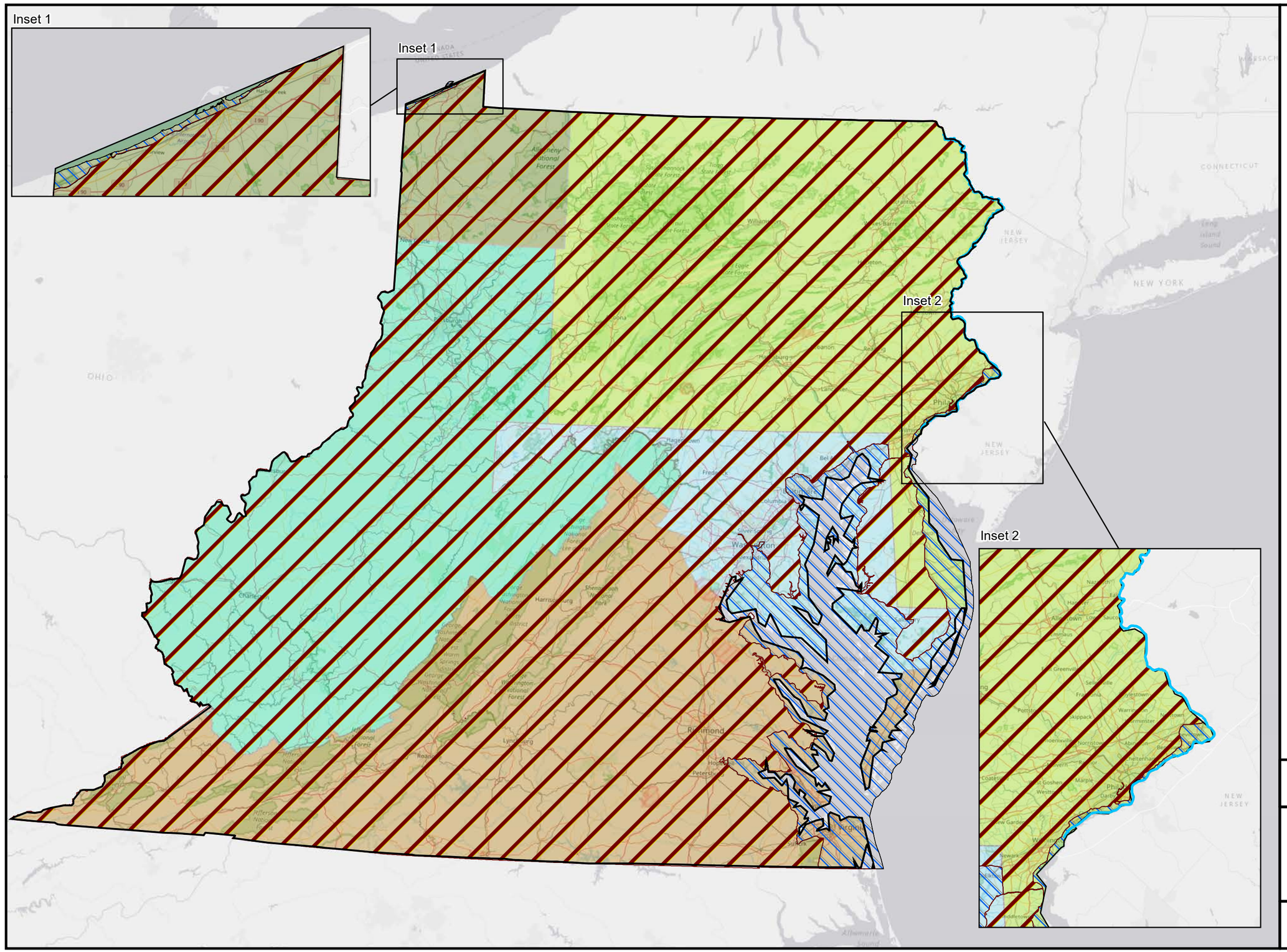
Intra-Regional Boundaries.

Boundaries within Region 3 that determine the pre-designated FOSC consist of the Inland/Coastal Boundary between USEPA and the USCG and the USCG Sector Boundaries within the coastal zone/inland waterways (see **Figure 3.2**). All intra-regional boundaries fall within the area of responsibility of the RRT and are supported by incident-specific activation of RRT3 as needed. **Figure 3.3** shows the ten USEPA regional boundaries; there are 13 RRTs, one for each of ten federal regions, plus one for Alaska, one for the Caribbean, and one for the Pacific Basin.

Inland-Coastal Zone Boundary.

USEPA and the USCG will carry out general agency and incident-specific responsibilities under the NCP, National Response Framework (NRF), R3RCP, and the applicable ACP. Both agencies will assist each other to the fullest extent possible to prevent or minimize the impacts of actual discharges or releases or threats of discharges of oil onto navigable waters or adjoining shorelines, and actual releases or threats of releases of hazardous substances into the environment.

Appendices 4-A and 4-B of this plan define the inland/coastal zone boundaries as required by 40 CFR 300.210(b) between Districts 5 and 8 and Region 3, specifying the inland zone where the USEPA provides FOSCs, and the coastal zone where the USCG provides FOSCs. USCG District 5, 8, and 9 boundaries are defined in 33 CFR 3.25, 3.40, and 3.45, respectively and shown on **Figure 3.2**. USEPA and USCG also chair the area planning committees within their respective jurisdictions. **Appendices 4-A and 4-B** further describe responses to incidents crossing the inland/coastal zone boundary, with the lead generally assigned depending on the zone containing the source.



Legend

- Region III Boundary
- USEPA Inland Zone
- USCG Coastal Zone
- D5- Sector Maryland-National Capitol Region AOR
- D5- Sector Delaware Bay AOR
- D5- Sector Hampton Roads AOR
- D8- Sector Ohio Valley AOR
- D9- Sector Buffalo AOR

AOR = Area of Responsibility

Imagery: ESRI, GeoEye, DigitalGlobe Mapping Service.

N

Coordinate System: WGS84 UTM Zone 18N Feet

0 30 60

Miles

USEPA Region 3

USEPA Inland Zone & USCG Coastal Zone Jurisdictional Boundaries

TDD#: W501-15-07-019
Contract: EP-S3-15-02
Prepared: 9/8/2017

WESTON SOLUTIONS

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For certain incidents, a complete transfer of FOSC responsibility may be more practical than providing expertise and resources to the primary agency through mutual support. Significant discharges or releases may require shifting FOSC and/or establishing a Unified Area Command (UAC) to support FOSCs, prioritize critical resources, and provide strategic objectives. Execution of tactical operations and coordination remains the responsibility of the FOSC/UC.

If an incident crosses agency boundaries, the original FOSC will generally retain FOSC status for the duration of the spill, unless the adjacent area is vulnerable to the greatest threat. A formal agency transfer may be appropriate based on the incident impact, the agency with greater expertise for the incident specifics, or because of workloads or other situational factors. If the greatest vulnerability is in question, the multiple impacted FOSCs will consult with the RRT3 Co-chairs, who will seek consensus or make the determination on the single FOSC.A mechanism is provided in **Appendix 4** for this transfer.

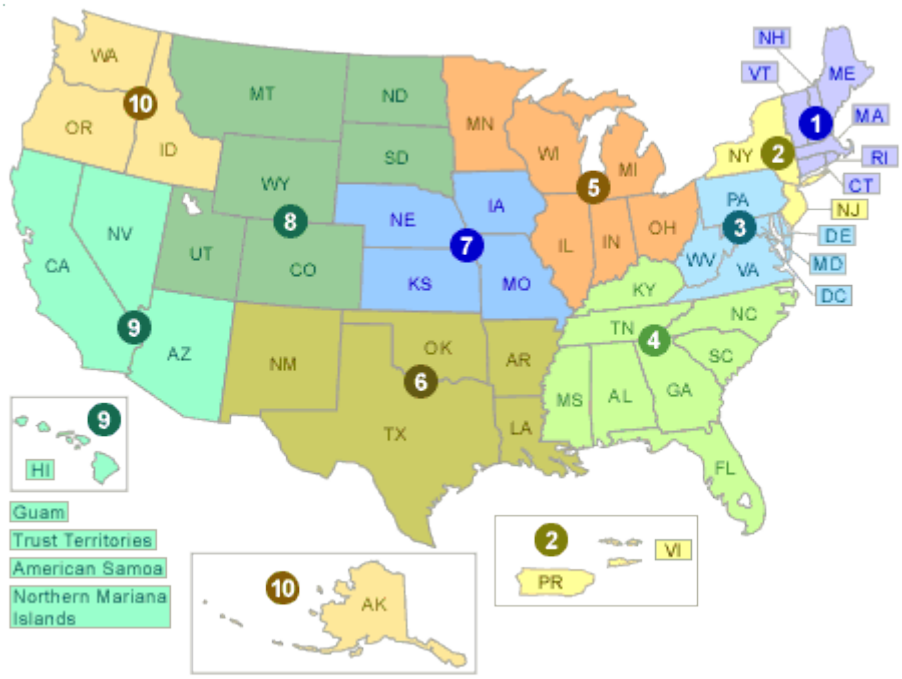


Figure 3.3 USEPA Regional Boundaries for Inland Areas

Regional Boundary

The principal characteristics of the Regional boundary that influence oil and hazardous substance response are inland/coastal and domestic/international. Both characteristics influence the pre-designated FOSC and also the mechanism of RRT support. **Appendix 3** provides the MOAs for Cross Boundary Support between Regions II, III, IV and V.

Coastal Region III and II Boundary

This coastal boundary area is with the USCG Fifth District's area of responsibility; the coastal boundary essentially divides New Jersey (Region II) from Pennsylvania and Delaware (Region III) following the state boundary line with the Delaware Bay. USCG Sector Delaware Bay's zone crosses this boundary area, ensuring a consistent FOSC and ACP for spills in the waters of the Delaware Bay. The USCG Fifth District is Co-chair of RRT3, and will chair incident-specific activations of the RRT3 for Delaware and Pennsylvania (and a small portion of southwestern New Jersey), drawing appropriate representation for spills in the RRT area of responsibility.

Coastal Region III and IV Boundary

This coastal boundary area divides Virginia and North Carolina along the state boundary line. USCG Sector Hampton Road's zone crosses this boundary area, ensuring a consistent FOSC and ACP. The USCG Fifth District is the Co-chair of RRT3 and will chair incident-specific activations of the RRT along this boundary, drawing appropriate representation from both RRTs.

Coastal Region III and V Boundary

This coastal boundary area divides northwestern Pennsylvania and northeastern Ohio along the state boundary line at Lake Erie. The USCG Sector Buffalo zone crosses this boundary area, ensuring a consistent FOSC and ACP. The USCG Fifth District is the Co-chair of RRT3 and will chair incident-specific activations of the RRT along this boundary, drawing appropriate representation from both RRTs. Sector Buffalo also responds for USCG Ninth District.

Inland Region III and II Boundary

The inland boundary area separates USEPA Regions II and III, which mirrors the New York/Pennsylvania, New Jersey/Pennsylvania, and New Jersey/Delaware state borders (see **Figure 3.3**). A discharge/release crossing this boundary would lead to an incident-specific RRT activation and assignment of the FOSC initially based on the origin of the discharge/release. Initial actions to spills impacting the Regional boundary area between USEPA Regions II and III would be conducted in accordance with the ACP based on the origin of the discharge/release. A specific sub-contingency plan is in development for the waters of Lake Champlain, which also has an international boundary.

Inland Region III and IV Boundary

The inland boundary area separates USEPA Regions III and IV, which mirrors the Virginia/North Carolina, Virginia/Tennessee, Virginia/Kentucky, and West Virginia/Kentucky state borders (see **Figure 3.3**). A discharge/release crossing this boundary would lead to an incident-specific RRT activation and assignment of the FOSC initially based on the origin of the discharge/release. Initial actions to spills impacting the Regional boundary area between USEPA Regions III and IV would be conducted in accordance with the ACP based on the origin of the discharge/release. Both MSU Huntington and MSU Pittsburgh are units within Sector Ohio Valley from USCG Eighth District. MSU Huntington and MSU Pittsburgh will also respond within this area as requested (see **Appendix 3-B** for MOAs authorizing cross boundary support).

Inland Region III and V Boundary

The inland boundary area separates USEPA Regions III and V, which mirrors the Pennsylvania/Ohio and West Virginia/Ohio state borders (see **Figure 3.3**). A discharge/release crossing this boundary would lead to an incident-specific RRT activation and assignment of the FOSC initially based on the origin of the discharge/release. Initial actions to spills impacting the Regional boundary area between USEPA Regions III and V would be conducted in accordance with the ACP based on the origin of the discharge/release. **Appendix 7-J** provides a reference to the Ohio River Valley Umbrella Plan that would be applicable to responses along the Ohio River.

E. RRT3 Response Policies

Response polices are developed as "ground rules" to ensure the coordination of a timely, effective response by federal and local agencies to an oil or hazardous substance incident. Response policies include USEPA/USCG jurisdictional boundaries, federal Strike Forces and Teams, communications and response equipment, trustees for natural resources, and pertinent federal and local geographical ACPs. In addition, response policies outline steps that are to be taken to ensure coordination among federal agencies; details assistance available from other agencies; and to provide protocols to be followed to secure assistance from other agencies and response organizations. Finally, response policies also contain guidance on the use of

dispersants and burning technologies which is included in the RRT's *In situ* Burning and Dispersant Preauthorization MOUs.

The Spill Response Countermeasures Workgroup is responsible for revisions to response policies in Region III. The response policies outlined in the R3RCP will be reviewed and revised as needed. The USEPA RRT3 Coordinator will consult with the USCG RRT3 Coordinator on any changes to the response polices before distributing revisions to the Executive Committee, RRT3 members and plan holders.

Priority response actions may include but are not limited to: analyzing water samples to determine the source and spread of the oil; controlling the source of discharge; measuring and sampling; source and spread control or salvage operations; placement of physical barriers to deter the spread of the oil and to protect natural resources and sensitive ecosystems; control of the water discharged from upstream impoundment; and the use of chemicals and other materials in accordance with subpart J of this part to restrain the spread of the oil and mitigate its effects.

Traditional Response Countermeasures

In general, Region 3 prefers response countermeasures that will remove the oil or hazardous material from the environment using conventional means including source control, containment (booming and other physical barriers), recovery or removal (i.e., skimming), and shoreline cleanup methods (i.e., use of flushing, vacuum, mechanical, sorbents, or manual removal). We have determined that traditional methods are the least impactful of all countermeasures. Region 3 acknowledges traditional countermeasures are not always effective or appropriate for the incident specific conditions; therefore, additional countermeasures have been evaluated for effectiveness by the RRT. The following sections detail these additional countermeasure policies.

Chemical Countermeasures Policy

As appropriate, non-traditional response measures shall be taken to recover the oil or mitigate its effects. Of the numerous chemical or physical methods that may be used, the chosen methods shall be the most consistent with protecting public health and welfare and the environment. **Sinking agents shall not be used.** Region III has developed policies and guidance for the use of chemicals and other products listed on the NCP Product Schedule (40 CFR 300.900 – Subpart J). The use of these products and strategies are authorized through several processes: pre-approval/preauthorization and on case-by-case basis. For spill situations that are not addressed by the preauthorization plans developed pursuant to paragraph (a) of 40 CFR 300.910 (Authorization of Use), the FOSC, with the concurrence of the USEPA representative to the RRT and, as appropriate, the concurrence of the RRT representatives from the states with jurisdiction over the navigable waters threatened by the release or discharge, and in consultation with the U.S. Department of Commerce (DOC) and U.S. Department of Interior (DOI) natural resource trustees, when practicable, may authorize the use of dispersants, surface washing agents, surface collecting agents, bioremediation agents, or miscellaneous oil spill control agents on the oil discharge, provided that the products are listed on the NCP Product Schedule.

Note: Coordination and notification between the regions and districts is necessary with the use of any chemical countermeasure due to shared geopolitical boundaries. Defensive actions may include the use of chemicals and other materials to restrain the spread of the oil and mitigate its effects. Any chemical countermeasure use must be in accordance with the NCP and RRT3 Guidance. **Use of chemical agents is not pre-approved in USEPA Region 5/USCG District 9 (in the Great Lakes region).**

Pre-approval/Preauthorization

The RRT3 has addressed as part of their planning activities the desirability of using appropriate chemical countermeasures, bioremediation agents, or miscellaneous oil spill control agents through development of applicable preauthorization plans to address specific context in which such products should and should not

be used. The policies themselves are located in **Appendices 6 and 7**; monitoring guidance for these policies are provided in **Appendix 8**.

Dispersants Policy

This policy provides preauthorization in specific zones and expedited approval procedures in other areas for the use of chemical countermeasures by the FOSC. For this policy, chemical countermeasures include: dispersants; surface collecting agents; and biological additives, otherwise known as bioremediation. This policy applies only in the Federal Region III portion of the designated zones in the geographic areas of responsibility for the COTP for Sector Delaware Bay and Hampton Roads. The Region III jurisdiction is divided into 4 zones:

- Zone A = Limited preauthorization
- Zone 1 = Advanced preauthorization
- Zone 2 = Trial application
- Zone 3 = No use, except in emergency situations

The Region III policy has been derived from two principal documents: the Dispersant Employment Evaluation Plan (DEEP), approved in May 1991 (see https://www.nrt.org/ResponseTools-FactSheets), and an MOU (see **Appendix 6**) among the state and federal agencies who have decision authority as defined in the National Contingency Plan (Part 300.910), which was signed January 1997. The MOU refined the policy in the DEEP, and established a policy allowing the preauthorized use of chemical countermeasures, in addition to dispersants, in certain parts of this region.

The MOU provides details on the following: preauthorization zones, zone-specific conditions, critical decision-making data, trial use policy, dispersant monitoring protocol, and products with completed Section 7 Consultation.

NCP Product Schedule: Regulations require the preparation of a "schedule of dispersants, other chemicals, and other spill mitigating devices and substances, if any, that may be authorized for use on oil discharges..." USEPA prepares and maintains this schedule, known as the NCP Product Schedule. Vendors, response personnel, other federal agencies, state agencies, and the public request and use Product Schedule information.

Decision-Making: For incidents which are in the pre-approved zone; the FOSC will make a decision with the Responsible Party; notify the RRT of the decision; and initiate dispersant operations, using the Region III Dispersant Operations Implementation Plan, which is contained in *Volume 2 of the Selection Guide for Oil Spill Applied Technologies – Operations Plans* (**Appendix 8-C**). For situations which do not have pre-approval, the checklist in Annex II of the MOU in **Appendix 6-A** plus *Volume 1 of the Selection Guide for Oil Spill Response Countermeasures – Decision Making* (**Appendix 8-C**) will be used to make a decision whether or not chemical countermeasures are applicable for that incident.

For convenience, major aspects of the MOU and the DEEP are summarized in the following matrix.

Chemical Countermeasures Pre-Approval MOU for RRT3 (coastal Delaware, Maryland, Virginia)	
Reference: **Appendix 6-A1**	
Zone A	Pre-approval for trial use only on spills 50 barrels (bbls) or less or on portions 50 bbls or less of larger spills, on waters within Big Stone Beach Anchorage in the Delaware Bay area. Trustees and states must be notified of the decision to deploy.
Zone 1	Chemical Countermeasures area approved in advance for any size spill in this zone, which is 3 nautical miles (NM) seaward of the shoreline within Federal Region III to the outermost

	of the Exclusive Economic Zone (EEZ). Use MOU checklist in **Annex II of Appendix 6-A** to make the use/non-use decision.
Zone 2	Chemical countermeasures may be approved for Trial Application Zone, 0.5 to 3 NM seaward of the shoreline or greater than 40 feet deep, excluding bays and coves (except Zone A). FOSC can only authorize a trial application of countermeasures (only on spills 50 bbls or less, or on portions 50 bbls or less of larger spills, subject to provisions of **Annex III of Appendix 6-A**), without concurrence. For operational application, FOSC must communicate with MOU signatory representatives; concurrence/non-concurrence decision is limited to within 4 hours after agency communication has been established. Use MOU checklist in **Annex II of Appendix 6-A** to make the use/non-use decision.
Zone 3	No pre-approval is granted on waters within 0.5 mile of shoreline or less than 40 feet deep, including all bays and coves. Case-by-case approval may be obtained if agency concurrence is obtained; concurrence/non-concurrence decision is limited to within 4 hours after agency communication has been established. Trial applications only on spills 50 bbls or less, or on portions 50 bbls or less of larger spills may be authorized subject to **Annex III of Appendix 6-A** provisions and agency concurrence; concurrence/non-concurrence decision is limited to within 4 hours after agency communication has been established.
Monitoring Requirements: For dispersants, the Special Monitoring of Applied Response Techniques (SMART) is the minimum monitoring protocol to be used (**Appendix 8-A**). For other chemical countermeasures, *Vol. 1 of the Selection Guide for Oil Spill Response Countermeasures – Decision Making* provides monitoring guidance (**Appendix 8-C1**).	
Section 7/Endangered Species Act (ESA): Formal consultation was completed for COREXIT 9527/9500 for MOU (**Appendix 6-A1**). RRT3 MOU consultation initiated.	

In situ *Burning Preauthorization and Policy*

This policy provides preauthorization for the use of on-water *in situ* burning by the FOSC in response to coastal oil discharges within the jurisdiction of the RRT3. *In situ* burns on land areas would require prior authorization; no preauthorization policy for burning on land currently exists. The Region III jurisdiction addressed in this MOU is divided into 3 zones:

- Zone A = Preauthorized for open water *in situ* burning
- Zone B = Waters requiring case-by-case
- Zone R = Restricted zones

The *In situ* Burn MOU (**Appendix 6-B**) among the state and federal agencies who have decision authority, as defined in the National Contingency Plan (Part 300.910) and dated January 1998, establishes Region III RRT policy and outlines on-water areas which have been preauthorized for conditional *in situ* burning. It also provides protocols which apply to the use of all burning operations under the Endangered Species Act. In addition, the policy contains equipment lists, a decision tree, and an *in situ* burning application checklist.

The components of this policy; the MOU, authorized zones, decision diagram and evaluation check list are all presented in **Appendix 6-B**. For convenience, major aspects of the MOU are summarized in the following matrix.

***In situ* Burning Pre-Approval in Coastal RRT3 (Delaware, Maryland, Virginia)**	
Reference: RRT3 Preauthorization for Use of *In situ* Burning MOU	
Zone A	Preauthorization for open-water *in situ* burning, seaward 3 NM from the shoreline baseline within Federal Region III to the outermost extent of the EEZ. Zone B: No preauthorization, waters within 3 NM of the shoreline baseline and other areas set forth in text of MOU. RRT approval needed on case-by-case basis. See the MOU for additional details.
Zone R	No *in situ* burning operations will be conducted in an "R" zone, except in the following situations: (1) it is necessary to prevent an immediate risk to human health and safety, or (2) an emergency modification of this agreement is made on an incident-specific basis.
Monitoring USCG/National Oceanic and Atmospheric Administration (NOAA) and USEPA SMART protocol recommended but operations will not be delayed pending arrival of monitoring capability (**Appendix 8-A**).	
Section 7/ESA – needs to be updated **Appendix 6-B1** is U.S. Fish and Wildlife Service (USFWS) ESA Section7 Determination Letter for *In situ* Burn (September 1997)	

Appendix 6-B also includes the following:

1. MOU Appendix I: Response Decision Making Matrix for *In situ* Burn (FOSC reference)
2. MOU Appendix II: *In situ* Burn Evaluation & Response Checklist
3. MOU Appendix III: *In situ* Burn Monitoring Plan (refer to **Appendix 8-A** for SMART Protocol)

There are other *in situ* burn policies that are not addressed in the preauthorization MOU which are located in **Appendixes 7-E and 7-F**.

Response Policies, Procedures, and Guidance

Response resources and tools, including fact sheets, guidance documents, responder guides, etc. are available on the RRTIII Website: https://www.nrt.org/ResponseTools-FactSheets.

Appendix 7 provides additional details about the RRT3 response policies and procedures and discussed in the following subsections.

Bioremediation Policy

The policy in Region III is that bioremediation is an appropriate response option to speed recovery of areas affected by oil pollution and reduce the threat of additional or prolonged impacts to human health and natural resources. This policy does not support the use of bioremediation in open, flowing waters (e.g., coastal waters, large lakes, or rivers), or the use of genetically engineered microbes. Additional details about the RRT3 Bioremediation Policy are provided in **Appendix 7-A** for additional guidance and implementation requirements.

Miscellaneous Oil Spill Control Agent (MOSCA)

According to 40 CFR 300.5, a miscellaneous oil spill agent is any product, other than dispersants, sinking agents, surface washing agents, surface collecting agents, bioremediation agents, burning agents, or sorbent that can be used to enhance oil spill cleanup, removal, treatment, or mitigation. The following are Region 3 guidance or procedures for MOSCA. We are using the method of action description provided in the Selection Guide for Oil Spill Response Countermeasures to define the MOSCA.

Elasticity Modifiers Guidance [Reserved]

Elasticity Modifiers are chemical compounds that increase the viscoelasticity of the treated oil to improve the efficiency of removal by skimmers or other methods. Elasticity modifiers dissolve in the oil, modifying the oil's mechanical properties. **Appendix 6** dictates the use of elasticity modifiers (as part of chemical countermeasures) in Region III. All requests for use of elasticity modifiers during a response are evaluated on a case-by-case basis; products must be listed on the NCP Product Schedule. Any decision to operationally use elasticity modifiers must receive RRT3 concurrence from the USEPA, USCG, affected state(s), affected federally recognized Tribes, in consultation with DOI and DOC/NOAA, and other affected federal trustees. Application and monitoring protocols are identified in Part C of the Selection Guide (**Appendix 8-C1**).

The guidance document utilized by RRT3 for use of elasticity modifiers has not been developed yet; **Appendix 7-B** is [Reserved] for future guidance.

Emulsion Treating Agents [Reserved]

Emulsion Treating Agents are chemical compounds applied to the oil to prevent the formation of an emulsion (emulsion inhibitors) or break the emulsion into separate oil and water phases (emulsion breakers). They are also commonly referred to as demulsifiers. **Appendix 6** dictates the use of emulsion treating agents (as part of chemical countermeasures) in Region III. All requests for use of emulsion treating agents during a response are evaluated on a case-by-case basis; products must be listed on the NCP Product Schedule. Any decision to operationally use emulsion treating agents must receive RRT3 concurrence from the USEPA, USCG, affected state(s), affected federally recognized Tribes in consultation with DOI and DOC/NOAA, and other affected federal trustees. Application and monitoring protocols are identified in Part C of the Selection Guide (**Appendix 8-C1**).

The guidance document utilized by RRT3 for use of emulsion treating agents has not been developed yet; **Appendix 7-C** is [Reserved] for future guidance.

Herding Agents (Surface Collecting Agents) [Reserved]

Herding Agents or surface collecting agents are chemicals that "push" or "compress" the oil on the water surface into a smaller area to form thicker slicks that are more readily recovered or burned. These chemicals exert a spreading pressure on the water surface greater than the oil slick and contain surfactants to reduce the surface tension of water, thus increasing the spreading pressure. **Appendix 6** dictates the use of herding agents (surface collecting agents) (as part of chemical countermeasures) in Region III. All requests for use of herding agents during a response are evaluated on a case-by-case basis; products must be listed on the NCP Product Schedule. Any decision to operationally use herding agents must receive RRT3 concurrence from the USEPA, USCG, affected state(s), affected federally recognized Tribes in consultation with DOI and DOC/NOAA, and other affected federal trustees. Application and monitoring protocols are identified in Part C of the Selection Guide (**Appendix 8-C1**).

The guidance document utilized by RRT3 for use of herding agents has not been developed yet; **Appendix 7-D** is [Reserved] for future guidance.

Shoreline Pre-Treatment Agents [Reserved]

Shoreline Pre-Treatment Agents are a product which prevents oil from adhering to the shoreline by reducing the oil adherence (a wetting agent) and penetration (a film-forming agent). **Appendix 6** dictates the use of shoreline pre-treatment agents (as part of chemical countermeasures) in Region III. All requests for use of shoreline pre-treatment agents during a response are evaluated on a case-by-case basis; products must be listed on the NCP Product Schedule. Any decision to operationally use shoreline pre-treatment agents must receive RRT3 concurrence from the USEPA, USCG, affected state(s), affected federally recognized Tribes

in consultation with DOI and DOC/NOAA, and other affected federal trustees. Application and monitoring protocols are identified in Part C of the Selection Guide (**Appendix 8-C1**).

The guidance document utilized by RRT3 for use of shoreline pre-treatment agents has not been developed yet; **Appendix 7-G** is [Reserved] for future guidance.

In Situ Burn for Ocean, Coastal Areas, and Inland Zones

In 2003, the RRT3 developed *in situ* burn (ISB) guidance for ocean and coastal areas. This guidance enhances, and is a direct extension of, the 1997 MOU among the USCG District 5, the USEPA, the DOI, the DOC/NOAA, the Delaware Department of Natural Resources and Environmental Control (DE DNREC), the Maryland Department of the Environment (MDE) and the Virginia Department of Environmental Quality (VDEQ).

It provides clearer and more concise guidance and decision-making tools to the RRT3 members and to the FOSC with regard to ISB in the case of oil releases to ocean, coastal, and inland areas. The guidance enhances the preauthorization for use of ISB by providing a framework for communication and coordination between the members of the RRT3 should ISB be required to mitigate an oil release. This guidance does not replace the 1997 MOU, but rather provides additional information to enhance it.

The guidance document is located in **Appendix 7-E**.

In Situ Burn for Oil Impacted Herbaceous Wetlands

In 2004, RRT3 developed ISB guidance for coastal wetlands that have been impacted by oil. Burning of wetland grasses has been practiced as a vegetation management technique for many years, yet burning of oiled wetlands is relatively unknown.

The decision to conduct *in situ* burning of herbaceous wetlands is the responsibility of FOSC and the UC. However, permission to use *in situ* burning to treat oil pollution must be approved by the incident-specific RRT. This guidance document is intended to provide the FOSC, the UC, and the RRT guidance and decision-making tools to support the use of in-situ burn for oil spills.

This guidance document is located in **Appendix 7-F**.

Solidifier Guidance [Reserved]

Appendix 6 dictates the use of solidifiers (as part of chemical countermeasures) in Region III. Product-specific preauthorization has been given to one solidifying agent, CIAgent (refer to **Appendix 6-C** for those details). All other requests for use of solidifiers during a response are evaluated on a case-by-case basis; products must be listed on the NCP Product Schedule or have received a sorbent letter from USEPA. Any decision to operationally use solidifiers must receive RRT3 concurrence from the USEPA, USCG, affected state(s), affected federally recognized Tribes in consultation with DOI and DOC/NOAA, and other affected federal trustees. Application and monitoring protocols are identified in Part C of the Selection Guide (**Appendix 8-C1**).

The guidance document utilized by RRT3 for use of solidifiers has not been developed yet; **Appendix 7-H** is [Reserved] for future guidance.

Surface Washing Agents Policy

In Region III, the FOSC is pre-authorized to test surface washing agents (SWA) subject to the constraints and practices identified in this document, including those identified through state permitting. Any post-test decision to operationally use SWAs must receive RRT concurrence from the USEPA, USCG, affected state(s), affected federally recognized Tribes in consultation with DOI and DOC/NOAA, and other affected federal trustees. This test protocol identifies specific practices to be followed for evaluating the effectiveness and biological impacts of test applications of SWAs to recover oil that has been discharged,

and has adhered to surface environments within Region III. Application and monitoring protocols are identified in Part C of the Selection Guide (**Appendix 8-C1**).

Additional details about the RRT3 Surface Washing Agents Policy (under construction) are provided in **Appendix 7-I** is for future guidance.

Other RRT3-Specific Response Policies

The RRT3 has developed or modified and/or are in the process of approving a number of response policies for use during Region III incident-specific responses. Those documents are provided in **Appendix 7-L** and are described in the following subsections.

Ohio River Valley Umbrella Plan

The Ohio River Umbrella Plan (**Appendix 7-J**) is designed to clarify roles, responsibilities, and relationships for major oil spills and hazardous substance releases along the entire length of the Ohio River. The document is not an ACP or a RCP, and it does not replace or supersede existing plans for these locations. Instead, the document clarifies existing policy and applies it in terms of concept of operations when responding to major oil discharges or hazardous substance releases along the Ohio River.

Under the NCP, the USEPA is the lead federal agency (LFA) and provides the FOSC for an oil discharge or hazardous substance release within the Ohio River Basin, except where the discharge or release involves a commercial vessel, a commercial vessel transfer operation, or the marine transportation-related portion of a facility. In these instances, the USCG provides the FOSC as specified in MOUs between USCG and USEPA Regions III, IV, and V.

Places of Refuge

The decision of whether to allow a distressed vessel into a place of refuge, including cases of force majeure[1], should be reached after consideration of the full range of potential impacts, rather than being based on a policy of wholesale denial of entry.

The purpose of these guidelines [NRT, July 2007 in **Appendix 7-K**] is to provide: (1) an incident-specific decision-making process to assist USCG COTPs in deciding whether a vessel needs to be moved to a place of refuge and, if so, which place of refuge to use; and (2) a framework for pre-incident identification of potential places of refuge for inclusion in appropriate ACPs. This document emphasizes the inclusion of USCG COTPs, UCs, RRTs, Area Committees, natural resource trustees, and other stakeholders and technical experts in the identification of potential places of refuge during pre-incident planning.

Limited Jones Act

The Limited Jones Act (Jones Act) when used in the sense of maritime law refers to federal statute 46 USC section 883. This is the act that controls coastwise trade within the U.S, and determines which ships may lawfully engage in that trade and the rules under which they must operate.

The Jones Act prohibits the "transportation of merchandise by water, or by land and water, between points in the United States . . . either directly or via a foreign port" unless the vessel was built in the U.S. and is U.S.-owned and registered under the U.S.-flag (commonly called "coastwise vessels"). The general standard for waiving the Jones Act is if doing so is "necessary in the interest of national defense." There are two types of Jones Act waivers. One type that is requested by the Secretary of Defense is granted automatically. The other type of waiver may be granted at the discretion of Secretary of the Department of

[1] Force majeure is defined as an overwhelming force or condition of such severity that it threatens the loss of the vessel, cargo, or crew unless immediate corrective action is taken.

Homeland Security (DHS). It is discretionary and may only be granted if the Administrator of the Maritime Administration (MARAD) first determines that no U.S.-flag vessels are available.

Appendix L-1 provides RRT3 with guidance and decision-making tools to support and assist FOSC/UC actions when they are pursuing the use of foreign-flag vessels to mitigate pollution or the threat of pollution when the Jones Act is applicable.

Natural Resources Trustee [Reserved]

This guidance serves as the place-holder for information necessary to meet trustee notification requirements during emergency response events. It also serves as a guide for coordination of response activities between the trustees and the FOSC. This guidance meets the requirements for the preparation of a Fish and Wildlife and Sensitive Environments Plan in the NCP (40 CFR 300.210).

The guidance document utilized by RRT3 for natural trustee resource notification has not been developed yet; **Appendix 7-L2** is [Reserved] for future guidance.

Disposal of Contact Water

This document provides guidance, decision-making tools, and documentation to support and assist the FOSC and UC decision-making in conjunction with an incident specific RRT3 when considering the operational use of decanting contact water during oil and certain hazardous substance spills within inland, ocean, and coastal waters.

The Guidance for the Decanting of Contact Water in inland, ocean, and coastal waters is provided in **Appendix 7-L3**.

Ocean Dumping

This document provides RRT3with guidance and decision-making tools to support and assist FOSC/UC actions within the region when they are pursuing emergency permission for ocean dumping to mitigate pollution or the threat of pollution when other conventional disposal methods are not viable. The information contained within this document was developed strictly to identify issues and provide consistent viewpoints and procedures to assist the FOSC/UC and alleviate potential barriers that may inhibit the decision and permit process.

The guidance document is provided in **Appendix 7-L4**.

Non-Floating Oils

Most oil spill response strategies, tactics, and equipment are based on the simple principle that oil floats. However, oil does not always float. Sometimes it suspends in the water column; sometimes it sinks to the bottom of the water body. Sometimes it does all three: floats, suspends, and sinks. Furthermore, oil that has sunk to the bottom can become re-suspended and spread by currents.

The *Sunken Oil Detection and Recovery Operational Guide* (API, 2016) identifies and documents current best practices and alternative technologies possessing the potential to more effectively detect, contain, and recover sunken oil, defined as the accumulation of bulk oil on the bottom of a water body. The technical report includes summaries and lessons learned for 36 case studies of oil spills where a significant amount of the oil sank. For each technology, it includes a detailed description of the method, advantages and disadvantages, and summary tables—the kinds of information needed to select the most effective approaches to sunken oil detection and recovery.

The *Sunken Oil Detection and Recovery Operational Guide* is provided in **Appendix 7-L5**.

Shoreline Cleanup and Assessment Technique (SCAT)

Region III utilizes the NOAA Shoreline Assessment Manual and SCAT Job Aid for conducting shoreline cleanup activities.

The documents are located on the NOAA website: https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources

Vessel Decontamination Procedures [Reserved]

Some USCG Sectors have included vessel decontamination procedures in their respective ACPs. Area committees are responsible for reviewing and updating the procedures based on inland, coastal, and offshore scenarios. The guidance document utilized by RRT3 for vessel decontamination has not been developed yet; **Appendix 7-L6** is [Reserved] for future guidance.

Volunteer Management

The use of volunteers who wish to participate and assist in a response to affected communities has long been an issue for federal decision-makers and the responsible party or potential responsible party during spills of oil and hazardous substances as well as during the response and recovery to natural disasters and acts of terrorism. There are several regulations that directly affect the use of volunteers as well as the needs and requirements of a responsible party during an oil or hazardous substance incident.

In addition to the MOU provided in **Appendix 3-D**, the RRT3 will utilize the NRT guidance document *Use of Volunteers Guidelines for Oil Spills* provided in **Appendix 7-L7**.

Coordination with Tribal Officials

https://egis.hud.gov/tdat/

The Tribal Directory Assessment Tool (TDAT) was developed by the Office of Environment and Energy (OEE) to help users identify tribes that may have an interest in the location of a U.S. Department of Housing and Urban Development (HUD)-assisted project, and provide tribal contact information to assist users with initiating Section 106 consultation under the National Historic Preservation Act (54 U.S.C. § 300101 et seq.).

Two key aspects of TDAT are its ability to:

- Link tribes' geographic areas of current and ancestral interest down to the county level, and
- Perform a variety of queries related to tribes.

State reports link tribes to their counties of interest in the particular state. Tribes may reside in or outside of that state. Check back frequently for updates. Click on any state in the tool, choose one from the list at the bottom of the page or select a tribe from the drop down control. The TDAT link is also provided in **Appendix 1**.

The guidance document utilized by RRT3 for Tribal coordination has not been developed; **Appendix 7-L9** is [Reserved] for future guidance. [Utilize Region 10 Tribal Engagement Guidance to develop RRT3 guidance document]

F. Monitoring and Evaluation Tools

To monitor the effectiveness and results of all response countermeasures, including chemical countermeasures and *in situ* burning, the RRT3 uses the SMART program. SMART is a cooperatively designed monitoring program jointly developed by the NOAA, USCG, USEPA, Centers for Disease Control and Prevention (CDC), and the Bureau of Safety and Environmental Enforcement (BSEE) (part of the agency formerly known as the Minerals Management Service). SMART relies on small, highly mobile

teams to collect real-time data using portable, rugged, and easy-to-use instruments during dispersant and *in situ* burning operations. Data are channeled to the UC to assist in decision making and to address critical questions such as the following:

- Are particulate concentration trends at sensitive locations exceeding the level of concern?
- Are dispersants effective in dispersing the oil?

In situ Burning and Dispersants

General descriptions of SMART monitoring during dispersant use or *in situ* burning are included below. For a more detailed discussion of SMART, refer to the SMART Guidance Document, which can be found in **Appendix 8-A** and at http://response.restoration.noaa.gov/smart.

RRT3 Reference Monitoring documents are provided in **Appendix 8**.

In situ Burning

For *in situ* burning operations, SMART recommends deploying one or more monitoring teams downwind of the burn at sensitive locations such as population centers. The teams begin sampling before the burn begins to collect background data. After the burn begins, the teams continue sampling for particulate concentration trends, recording them manually at fixed intervals and automatically in the data logger, and reporting to the Monitoring Group Supervisor if the level of concern is exceeded. The Scientific Support Team forwards the data, with recommendations, to the UC.

Dispersants

To monitor the efficacy of surface dispersant application, SMART recommends three options, or tiers.

- **Tier I:** A trained observer, flying over the oil slick and using photographic job aids or advanced remote sensing instruments, assesses dispersant efficacy and reports back to the UC.
- **Tier II:** Tier II provides real-time data from the treated slick. A sampling team on a boat uses a fluorometer to continuously monitor for dispersed oil one meter under the dispersant-treated slick. The team records and conveys fluorometer data to the NOAA Scientific Support Team, which forwards it with recommendations to the UC. Water samples are also taken for later analysis at a laboratory.
- **Tier III:** By expanding the monitoring efforts in several ways, Tier III provides information on where the dispersed oil goes and what happens to it. Two fluorometers are used on the same vessel to monitor at two water depths. Monitoring is conducted in the center of the treated slick at several water depths, from 1 to 10 meters. A portable water laboratory provides data on water temperature, pH, conductivity, dissolved oxygen, and turbidity.

The NRT developed the *ENVIRONMENTAL MONITORING FOR ATYPICAL DISPERSANT OPERATIONS: INCLUDING GUIDANCE FOR SUBSEA APPLICATION AND PROLONGED SURFACE APPLICATION* (**Appendix 8-B** approved May 30, 2013) to assist FOSCs and RRTs in making incident-specific decisions regarding atypical dispersant use, including expedited decision making. Region III has accepted the environmental monitoring guidance as a reference document for the R3RCP; however, incident-specific conditions may require deviation from the specific guidance.

The *ENVIRONMENTAL MONITORING FOR ATYPICAL DISPERSANT OPERATIONS* is a living document envisioned to continue addressing monitoring challenges as it becomes necessary and, as resources allow, other atypical dispersant applications. In its current version, this document contains the following:

- Subsea Application Guidance – Generally applies to the subsurface ocean environment, focusing particularly on operations in waters below 300 meters and below the average pycnocline.

- Prolonged Surface Application Guidance – Supplements and complements the existing protocols as outlined in the SMART monitoring program where the duration of the application of dispersants on discharged oil extends beyond 96 hours from the time of the first application.

Applied Response Tool Evaluation System (ARTES)

Region III utilizes the NOAA ARTES to assess whether a proposed countermeasure could be a useful response tool. It aids in evaluating conventional and non-conventional countermeasures on their technical merit rather than on economic factors. ARTES is designed to work in concert with the NCP Product Schedule and the Selection Guide for Oil Spill Response Countermeasures.

The documents are located on the NOAA website: https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources

Selection Guide for Oil Spill Response Countermeasures

Region III utilizes the NRT Selection Guide. The Selection Guide is a compilation of information and guidance on the use of applied technologies: oil spill response products and countermeasures that may be unfamiliar to federal or state OSCs or local incident commanders. It includes information on response technologies to counter the effects of spilled oil on land, on fresh water, and on coastal (estuarine to open ocean) waters.

The primary objective of this guide is to provide information and guidance to responders for the timely evaluation of oil spill response technologies that are regulated under the NCP Product Schedule (40 CFR Part 300.900), i.e., chemical and biological products and response countermeasures, for a wide range of oil spill conditions and circumstances. *Volume I of the Section Guide for Oil Spill Response Countermeasures – Decision Making* is provided in **Appendix 8-C1**. The Selection Guide has not been updated since 2012, the NCP Technical Notebook web page should be consulted for current data (https://www.epa.gov/emergency-response/national-contingency-plan-subpart-j).

Volume II of the Section Guide for Oil Spill Applied Technologies – Operations Plans is provided in **Appendix 8-C2**.

The online version of Volume I is located on the NRT website: https://sg.nrt.org/build/#.

G. Consultation Requirements and References

The FOSC in charge of oil or hazardous substance spill response actions is required to consult with various agencies to identify potential impacts of the spill response activities on wildlife, natural resources and habitat, historical/tribal properties, or other sensitive environments. The goal of the consultation process is to facilitate cooperation and understanding between agencies to meet regulatory protection requirements. **Appendix 9** contains various guidance documents as discussed in the following subsections.

Endangered Species and Critical Habitat

Region III policy, with respect to environmentally sensitive areas, is set by an MOA between USEPA, USCG, the DOI Office of Environmental Policy and Compliance, USFWS, NOAA, the National Marine Fisheries Service (NMFS), and the National Ocean Service.

This MOA coordinates the consultation requirements specified in the ESA regulations, 50 CFR 402, with the pollution response duties outlined in the NCP, to establish a general framework for cooperation and participation between the parties in the exercise of their spill planning and response duties. The primary goal of the MOA is to emphasize that adequate planning and active involvement of all participants can minimize or obviate damage to listed species and critical habitats and the resulting need for a formal consultation under Section 7(a)(2) of the ESA. The text of the MOA is included in **Appendix 9-A**.

In addition, **Appendices 9-A1** through **9-A4** provide additional guidance and policy for ESA which includes a training manual for ESA, a USCG Marine Environmental Response (MER) policy letter, the USFWS *Best Practices for Migratory Bird Care During Oil Spill Response*, and the RRT3 ESA Spill Response Screening Matrices for Coastal and Inland Areas.

Essential Fish Habitat (EFH)

Under the Magnuson-Stevens Fisheries Conservation and Management Act (50 CFR 600), Essential Fish Habitat (EFH) describes all waters and substrate necessary for fish for spawning, breeding, feeding, or growth to maturity.

Nearly 1,000 species, at multiple life stages, have an EFH description; regional managers have identified more than 100 Habitat Areas of Particular Concern for enhanced EFH conservation. All federal agencies whose work may affect fish habitats must consult with NOAA Fisheries. EFH is described for federally managed species, some of which have habitats in state waters.

Appendix 9-B is an EFH guidance document developed by the National Marine Fisheries Service Office of Habitat Conservation.

Culturally Sensitive and Historic Areas

Under the National Historic Preservation Act (NHPA) Section 106, as amended and codified in Title 54 of the United States Code, Region III abides by the guidance pertaining to culturally sensitive areas and sites of historical significance as established by a national programmatic agreement between the National Park Service (which operates the National Registry of Historic Places), the Advisory Council on Historic Preservation, the National Conference of State Historic Preservation Officers (SHPOs), USEPA, USCG, the DOI Office of Environmental Policy and Compliance, NOAA, the U.S. Department of Energy (DOE), the U.S. Department of Defense (DoD), and the U.S. Department of Agriculture (USDA). This guidance establishes national policy and procedures for the protection of cultural resources during emergency response under the NCP.

The primary contact for seeking information and expertise on local culturally sensitive areas is the SHPO for the applicable state. Federally recognized Tribes in Region III may also have culturally sensitive areas in the vicinity of an incident, and should be contacted if an incident threatens to affect tribal holdings. Contact information for the Tribes and for the SHPOs can be found in local ACPs. A copy of the programmatic agreement is available at http://www.achp.gov/NCP-PA.html and provided in **Appendix 9-C**.

Tribal Consultation

The obligation for federal agencies to engage with Indian Tribes on a government-to-government basis is based on the U.S. Constitution and federal treaties, statutes, executive orders, and policies. Federal agencies help to meet that obligation through meaningful consultation with federally recognized tribes. RRT3 will develop and maintain a federal regional contingency plan to coordinate timely, effective response by various federal agencies and other organizations to discharges of oil or releases of hazardous substances, pollutants, or contaminants.

Because the RRT3 is made up of representatives from federal agencies and the states and commonwealths, its actions are subject to state and federal laws, regulations, and policy directives. It is important to note that state/commonwealth government responsibilities may differ from those of federal agencies, and that these guidelines apply only to the federal RRT3 member agencies. This document serves as a guide to implement the laws, regulations, and policies related to federal RRT3 interactions with federally recognized tribal governments. It is the RRT3 Co-Chairs' responsibility to ensure that actions of the RRT3 are conducted in a manner consistent with these Guidelines.

It is the intent of the RRT to engage tribes as early as possible in their work process, and document that engagement. It is the responsibility of the co-chairs to determine what level of tribal engagement is required, when assignments are delegated. As described in 40 CFR 300.115, the RRT3 may function as a standing RRT for policy-making and interagency coordination, or as an incident-specific response team activated in the event of a discharge or release.

Appendices 9-D1 through **9-D6** provide additional guidance and policy for tribal consultation. Contact information available through TDAT (see **Appendix A**).

Native American Graves Protection and Repatriation Act (NAGPRA)

The Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001-3013, 43 CFR Part 10, was enacted to address the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony. Under the control of federal agencies and institutions that receive federal funding ("museums"), as well as the ownership or control of cultural items and human remains discovered on federal or tribal lands after November 16, 1990. The Act also provides procedures for complying with NAGPRA including the development of a written Plan of Action for the consultation process mandated by 43 CFR 10.5 whenever there is activity affecting or likely to affect Native American cultural items on federal or tribal lands. The plan of action must document compliance with the Archaeological Resources Protection Act (ARPA), especially 43 CFR 7.7 – 7.9, regarding requirements for permits on Indian lands.

Appendix 9-E provides a blank plan of action checklist for compliance with NAGPRA. The Appendix is [Reserved] for development of future guidance.

U.S. Army Corps of Engineers Nationwide Permit (NWP) – 20 (Response Operations for Oil or Hazardous Substances)

This document discusses the factors considered by the U.S. Army Corps of Engineers (USACE) during the issuance process for this Nationwide Permit (NWP). Activities conducted in response to a discharge or release of oil or hazardous substances that are subject to the NCP (40 CFR part 300) including containment, cleanup, and mitigation efforts, provided that the activities are done under either: (1) the Spill Control and Countermeasure Plan required by 40 CFR 112.3; (2) the direction or oversight of the federal on-scene coordinator designated by 40 CFR part 300; or (3) any approved existing state, regional or local contingency plan provided that the RRT3 concurs with the proposed response efforts. This NWP also authorizes activities required for the cleanup of oil releases in waters of the U.S. from electrical equipment that are governed by USEPA's polychlorinated biphenyl spill response regulations at 40 CFR part 761. This NWP also authorizes the use of temporary structures and fills in waters of the U.S. for spill response training exercises. (Authorities: Section 10 and 404.)

Guidance regarding this consultation and permit process needs to be developed. **Appendix 9-F** currently contains the Decision Document and is [Reserved] for future development.

H. Natural Resource Damage Assessment (NRDA)

The Natural Resource Damages Assessment (NRDA) is the legal process of evaluating the impacts of an oil or hazardous material spill or release on the natural resources in the area of the spill or release. Typically, NRDA takes place following cleanup because cleanups sometimes negatively affect public, habitat, and natural resources in the cleanup area (and beyond); however, NRDA activities are often conducted simultaneously with emergency response efforts to identify the extent of impacts/injuries to natural resource and public access resulting from the incident. The NRDA process is driven by law, science, economics, and public input, and is coordinated through a Liaison Officer between federal, state, and tribal trustee agencies that work together with the responsible parties to identify both negative impacts to natural resources and lost recreational uses resulting from the incident.

Additional information about NRDA is available at: https://www.epa.gov/superfund/natural-resource-damages-primer. **Appendix 10** is [Reserved] for future development of RRT3 guidance for NRDA.

SECTION 4: Regional Response Team Operations and Administration

A. RRT Activation Procedures

The RRT should be activated as an intergovernmental coordination team when an actual or potential discharge or release:

1. Exceeds the response capability available to the FOSC in the place where it occurs;
2. Crosses state boundaries;
3. May pose a substantial threat to the public health, welfare, environment, or to regionally significant amounts of property;
4. Otherwise meets the definition of a major discharge as defined in the NCP; or
5. When requested by the FOSC or an RRT Representative.

Using the above criteria, any RRT representative may request either Co-chair to activate the RRT. The request should be made to the USCG Co-chair for coastal incidents and to the USEPA Co-chair for inland incidents. The request may transmitted either verbally, in writing, by fax, or electronic mail.

When an incident occurs in the Inland Zone of Region III, the Regional Response Center (RRC) will be located in the USEPA Regional Office Philadelphia, Pennsylvania. The RRC will provide a duty officer (an FOSC) and will coordinate communication, information, limited supplies and equipment and other personnel and facilities necessary to allow proper functioning and administration.

Regional Response Center	District Response Center
USEPA, Philadelphia, PA	USCG, Portsmouth, VA
215-814-3255	757-398-6231
215-814-3254 fax	757-398-6391 fax

When an incident occurs in the Coastal Zone or in specified harbor areas in Region III, the RRC will be located at the appropriate USCG District office. The USCG has three district offices that serve Federal Region III, although only one of them is physically located within the region.

Location	District Office
Incidents involving specific harbors in Western Pennsylvania, and West Virginia: contact is Commander, Eighth USCG District, New Orleans, LA.	504-589-6225
Incidents occurring in Eastern Pennsylvania, Delaware, Maryland, Virginia, and the District of Columbia: contact is Commander, Fifth USCG District, Portsmouth, VA.	757-398-6231
Incidents involving the Great Lakes portion of Northwestern Pennsylvania: contact is the Ninth USCG District, Cleveland, Ohio.	1-800-321-4400

Once a Co-chair decides to activate the RRT or receives such a request from another RRT representative, the other Co-chair will be notified of the decision. The USCG Co-chair will assume the lead for coastal incidents and the USEPA Co-chair will be the lead for inland incidents. Notification of remaining RRT members will be the responsibility of the lead Co-chair and may be delegated to the RRT Coordinator or other staff representatives. The RRT Coordinator may use the "Incident-Specific Region III Regional Response Team III Activation Quick Response Guide" located in **Appendix 11**.

Arrangements for meeting locations and/or teleconferences will be the responsibility of the incident-specific Chair or designated representative. The recording and distribution of summaries of meetings or teleconferences conducted upon RRT activation shall also be the responsibility of the lead Co-chair or other designated representative.

The RRT will be deactivated by the incident-specific Chair typically after a discussion with the RRT Agencies. The incident-specific Chair, or his/her representative will be responsible for notifying RRT members of the deactivation. The dates and times for activation and deactivation should be included in POLREPs or other summaries generated by the FOSC or the incident-specific Chair and/or documented in summaries of meetings or teleconferences of the RRT

B. Communication Procedures

As stated above, the RRT3 is activated to provide support to the FOSC. In a support role, the RRT3 will coordinate with the Joint Information Center (JIC) initiated by the response. RRT3 communications procedures for crises include the following components:

- General Approach (support to FOSC)
- Notification Procedures
- JIC Coordination
- Internal Communications (e.g., RRT incident-specific members to FOSC)
- External Communications (e.g., agencies outside the RRT, NRT level agencies, and community relations)
- Social Media (see the *RRT3 Information Management Plan*)

Dissemination and communication of information to the public and RRT members are discussed in Section 4-J (Distribution of Information).

General Approach: RRT3 involvement is at the FOSC request. RRT3 will a use the JIC established for the response for communications when dealing with incidents affecting multiple local jurisdictions, as well as catastrophic, severe or nationally significant incidents. The organization of the communication team should follow the structure outlined in the manual titled, *National Response Team (NRT) Joint Information Center Model*, dated April 2013 (available on the www.nrt.org/RRT3_RCP website). Once the JIC is established, the JIC becomes the focus of all internal and external communication, coordinating and unifying the participants responding to the crisis to generate a unified communication message.

Notification: The FOSC will notify the RRT3 Co-chairs when the incident requires communication support. The appropriate RRT3 Co-chair will initiate the incident specific RRT3 in support of the FOSC. This may include meetings and conference calls to address issues (i.e., boundaries, resource needs, authorization for specific product use, etc.) brought forth by the FOSC; and may involve coordination with the NRT and other supporting agencies.

Joint Information Center (JIC) Coordination: The FOSC will establish and lead a JIC and include the staff from other agencies (including both local and state public information officers) and industry representatives responding to the crisis. The staff of the JIC will work as a team producing a unified message for the public. The JIC will be the focus of internal and external communication and follow the organization prescribed by the *National Response Team Joint Information Center Model – Collaborative Communications During Emergency Response* (April, 2013). The RRT3 will coordinate utilizing the JIC structure to coordinate timely, accurate information transfer to the public and other stakeholders.

Internal Communications (e.g., RRT3 incident-specific members to FOSC): It is more efficient to negotiate with participants of the incident on a joint message rather than explaining multiple, and possibly conflicting, messages to the public and the media. Planning, scheduling and logistics for communications

may be funneled through the JIC to ensure a unified message or to coordinate incident-specific member decision-making.

External Communications (e.g., agencies outside the RRT, NRT level agencies, and community relations): Communication efforts will be coordinated through the JIC to provide information to the media, residents, and officials. Coordination between NRT and RRT will be conducted at the request of the FOSC or if the incident response is beyond the capabilities of the incident-specific member agencies. The NRT and RRTs can access key assets and capabilities of the 15 member agencies of the NRS to support federal agencies, states, and local responders in their efforts to mitigate the danger to public health and the environment from a hazardous release. RRT coordination with the NRT can also be beneficial for the resolution of issues associated with multi-regional and international scope. (https://www.nrt.org/NRT/About.aspx).

Social Media: refer to Information Management and Outreach Plan for Best Management Practices on how to handle social media.

Once finalized, the plan will be available on the RRT3 Website: https://www.nrt.org/RRT3_PLANS

C. Responding to an Incident-Specific Activation

The overall goal of RRT3 is to maintain a high state of emergency readiness and to assist the FOSC upon request, providing immediate and effective guidance and assistance for all environmental emergency responses.

RRT3 involvement is directed by 40 CFR Part 300 in support of the FOSC. The role of the incident-specific RRT is determined by the specifics of the response. Incident-Specific activation procedures are discussed in Section 4A and **Appendix 11**.

Call-up Procedures

Overview

In the event of an actual or potential medium or major oil spill, the RRT must be notified. This document describes

- Notification responsibilities.
- Conference call procedures.

Notification Responsibilities: RRT Coordinator

The RRT Coordinator will make the calls to the appropriate individual RRT3 members if the incident meets the criteria defined above. Each incident should be assessed to determine exactly which agencies require notification. Once notified, RRT3 members should consider whether they have resources to offer and then take the initiative to call the FOSC.

Conference Calls: Overview

Conference calls are arranged by the Incident-Specific Co-chair and may be delegated to the RRT Coordinator or other staff representatives. Conference call procedures are provided in **Appendix 11**.

National Response Center (NRC) phone number

The telephone numbers for the NRC are as follows:

1-800-424-8802 or

1-202-267-2675

D. Cross-Boundary Incident-Specific RRT

Incidents that affect two or more regions may require the activation of a single cross-boundary incident-specific RRT, which will be chaired and coordinated by the lead agency providing the FOSC for the incident. If the incident FOSC transitions to another Region or District, the incident-specific chair should likewise transfer. Participation by other federal and state agencies will be determined based on the location of the incident, the potentially impacted states/commonwealths, and the agency expertise that is required to address response issues and conditions.

It is important for a cross-boundary incident-specific RRT to recognize that there may be differences and inconsistencies between the affected regions' plans, protocols, and guidance documents. The purpose of the incident-specific RRT is to identify and resolve such issues, and to provide the FOSC with technical assistance and support to address such cross-boundary issues. For example, in the event the FOSC requests consultation and concurrence on the use of chemical countermeasures in a cross-boundary incident, members of the cross-boundary incident-specific RRT need to consider their respective regional plans and policies, while also identifying any differences in the involved region's plans and policies. The cross-boundary incident-specific RRT should meet and deliberate jointly, and consensus should be reached that meets the requirements and preferences of the affected states and agencies involved.

Cross-boundary support MOAs between RRT III and neighboring regions (Regions 2, 4, 5, and USCG District 8) are included in **Appendix 3-B**. Regional boundaries are outlined in Section 3.D of the R3RCP and applicable jurisdictional boundaries between the USCG Coastal and USEPA Inland Zones are provided in **Appendix 4**.

E. RRT Committees and Workgroups

The RRT3 has established several Standing Workgroups to address the various issues of concern to the RRT and FOSCs relative to significant oil and hazardous substances incidents. These workgroups are concentrating on specific areas of the RRT3 Goals. The RRT3 has assigned to various workgroups the responsibility for preparing recommendations and actions for each of the supporting goals. In addition to the Standing Workgroups outlined below, the RRT retains the authority to create ad hoc workgroups as situations or issues arise.

Executive Committee: The Executive Committee is co-chaired by USEPA and the USCG and its membership consists of the chairs of each RRT standing workgroup, the RRT Coordinators, a representative for the state/commonwealths, and a representative for the Trustees. The Executive Committee will meet at least semiannually and provides the primary focus for the direction of the RRT and its committees and identifies and resolves possible overlap of committee efforts. The Executive Committee is also responsible for the development of and adherence to the RRT's Work Plan, from which work plans and required reports will be derived.

Inland Area Committee: The Inland Area Committee provides planning and coordination of preparedness and response actions are accomplished through the Area Committees. There is only one Inland Area Committee for the entirety of USEPA Region III. This Inland Area Committee membership includes federal, state/commonwealth, and local representation. Members of the Inland Area Committee are appointed by the Region III Inland Area Committee Administrator. In addition to the standing Inland Area Committee membership, active participation by other interested parties is encouraged for all planning activities under the authority of the Inland Area Committee. The Region 3 OSC Planning Dashboard (the "Dashboard") is in online interactive data management site that also houses the USEPA Region 3 IACP Viewer (an interactive geographic information system [GIS]).
https://www.eparm.net/R3IACP/Default.aspx

Spill Response Countermeasures (SRC) Workgroup: The Spill Response Countermeasures Workgroup is responsible for examining the various methods of recovering, mitigating, and treating oil and hazardous

substance discharges/releases. The Workgroup is also tasked to develop and update criteria (including preauthorization), policy, advice, and recommendations for the following supporting goals:

- Develop and update spill countermeasures for inland and coastal areas.
- Develop, maintain, and disseminate a database of alternative oil spill response tools/techniques and encourage the FOSC's consideration of these tools/techniques.
- Develop new strategies for mitigating spills (i.e. protective booming).
- Prepare additional advice for FOSCs in areas of emerging technologies.

Information Management and Outreach (IMO) Workgroup: The Information Management and Outreach Workgroup conducts the assessment of communications technologies, coordination of information management/communications systems between member agencies, and the development of the RRT3 webpages (https://www.nrt.org/site/region_list.aspx?region=3).

As part of the outreach component, the workgroup is tasked to (a) explain the responsibilities, activities, and accomplishments of the RRT to its partners in the response community and the public and (b) to facilitate understanding and cooperation with the NRT and other RRT local and state response planning staff. The RRT Outreach Workgroup is also tasked to develop criteria, advice, and recommendations for the following supporting goals:

- Encourage the state and local response community to improve its preparedness for response.
- Conduct or participate in training and exercises as necessary to encourage preparedness activities of the response community within the region.
- Encourage public information and community relations during response activities.
- Develop outreach programs to improve awareness for RRT roles.

The chairs of each workgroup are responsible for establishing priorities and scheduling their workgroups and providing potential work items for the RRT and Executive Committee to consider in accordance with the RRT direction.

Consultation, Natural Resources and Damage Assessment (CNRDA) Workgroup: The CNRDA Workgroup is responsible for examining the Section 7 Consultation, improving best management practices for natural and socioeconomic resources, and Natural Resource Damage Assessment and Restoration (NRDAR) laws, requirements, and processes. The Workgroup has provided training on NRDAR processes to RRT members. The Workgroup seeks to identify approaches for assuring an early initiation of the Consultation and NRDA assessment processes without interfering with response actions being directed by the FOSC.

Regional Contingency Plan (RCP) Rewrite Workgroup: The RCP Rewrite Workgroup is responsible for drafting and updating the R3RCP. The RCP Rewrite Workgroup is also tasked to develop criteria, advice, and recommendations for the following supporting goals identified in the RRT3 Work Plan:

- Recommend revisions of the NCP to the NRT based on observations of response operations.
- As requested by the NRT or RRT, the FOSC/Remedial Project Manager (RPM) shall submit a complete report on the removal operation and the actions taken. The RRT shall review the FOSC report and send to the NRT a copy of the FOSC report with its comments or recommendations within 30 days after the RRT has received the FOSC report.
- The FOSC report shall record the situation as it developed, the actions taken, the names of the resources committee members, and the problems encountered.

Training Workgroup: The Training Workgroup is responsible for facilitating RRT3 membership discussions to identify training and presentation topics based on current issues of importance to the region, nationally, or internationally (i.e., recent responses, fuel transportation issues, and policy updates).

The RRT Workgroups should convene by teleconference between RRT meetings as needed. The RRT Coordinators, upon request of the Committee Chair, are responsible for arranging these teleconferences. Each committee may also meet in person or hold additional teleconferences as required to meet its goals and objectives.

F. RRT Meetings

The RRT generally meets twice a year, alternating between varying sites/states within the region. The RRT meets to:

- Review and comment on recent response actions or other issues related to the preparation, implementation, or exercise of regional and/or local plans;
- Recommend revisions of the RCP, the various ACPs, and the NCP;
- Review FOSC actions to ensure that the RCP and ACPs are effective;
- Conduct advance planning for the use of dispersants, surface collection agents, burning agents, biological additives, or other chemical agents in accordance with Subpart J of the NCP; and
- Conduct or participate in training and exercises as necessary to encourage preparedness activities of the response community within the region.

USEPA and USCG Co-Chairs will decide among themselves how the responsibility for arranging meeting locations, agendas, and meeting minutes will be divided.

The USCG and USEPA RRT Coordinators shall be responsible for developing and finalizing the agenda for each RRT meeting.

The Co-Chairs will decide among themselves the responsibility for moderating the RRT meetings and individual sessions with the assistance of their respective Alternate Co-Chairs, Coordinators, and USEPA Superfund Technical Assessment and Response Team (START) contractors. This includes introducing speakers, maintaining adherence to the agenda and its timeframe, determining appropriate times for breaks, and adjusting the agenda to fit the changing schedules of presenters and other similar "last minute" changes. Separate closed meetings between the Co-Chairs, Coordinators, and START contractors are held during the RRT3 meetings to discuss and resolve issues encountered since the last RRT3 meeting.

The RRT Coordinators and START contractors shall be responsible for recording a summary of each meeting, preparing the summary, and distributing it to RRT members and participants within 30 days of the meeting. The RRT Coordinators and START contractors will assist each other in the review and editing of the meeting summary. The meeting summary and presentations (as approved by the presenters) will be uploaded to the RRT3 Meetings website (for the respective year).

G. RRT Work Plans

The RRT3 Work Plan outlines the specific work action items that the RRT will address, initiate, or develop during the calendar year. This plan will set the priorities of the RRT based on the administrative and operational resources available to the RRT.

The development of the RRT3 Work Plan sets the annual project/issue priorities for the organization. The work plan is generated based on:

- Setting the priority for the issues or projects having the greatest need to be addressed by the RRT.

- The issues or projects should be within the RRT's administrative or operational span of control.
- The issues or projects addressed annually need to be doable by the RRT based on member agency work load, funding, and expertise.
- The work plan is a living document. The issues or projects addressed annually by the RRT may be adjusted or changed at any time by the RRT or Executive Committee based on the changing needs of the response community.

The RRT Executive Committee, with input from Workgroup Chairpersons, will develop the RRT3 Work Plan for submittal to the RRT by January 31st of each calendar year. The USCG and USEPA RRT Coordinators typically are responsible for ensuring that the Work Plan is finalized.

H. RRT Annual Reports

The RRT is required to submit a report that summarizes recent activities, organizational changes, operational concerns, and efforts to improve state and local coordination. The NRT has issued an outline of the preferred format of the reports and has instructed the RRTs to provide the reports once annually, by January 31, in lieu of semi-annual reports as required by the NCP.

The USEPA RRT Coordinator shall be responsible for preparing the annual report in coordination with the USEPA Region III FOSC. The USCG RRT Coordinator shall ensure sector FOSCs provide the USEPA RRT Coordinator with any pertinent USCG activities to be included in the report and will assist in collecting information from other RRT member agencies for inclusion in the report.

Once the annual report is finalized, the USCG RRT Coordinator shall ensure the signature of the USCG Co-Chair and forward the report to the USEPA RRT Coordinator. The USEPA RRT Coordinator shall ensure the signature of the USEPA Co-Chair and shall forward the report to the NRT Executive Secretary.

I. RRT Requests for FOSC Reports

The NCP requires that FOSC Reports be prepared "as requested by the NRT or RRT." FOSCs may, of course, also issue FOSC Reports on their own initiative, independent of an RRT or NRT request. The RRT should consider requesting an FOSC Report when the pollution response involved:

- an unusual challenge;
- a unique or complex issue (e.g., intergovernmental coordination, use of a new technology, etc.);
- a decision that creates precedent; or
- a lesson learned that should be made known regionally or nationally.

These FOSC Reports are required by Subpart B (Responsibility and Organization for Response) 40 CFR 300.165 and is referenced in **Appendix 2**.

J. Distribution of Information

The RRT3 website (https://www.nrt.org/site/region_list.aspx?region=3) provides for dissemination of RRT-related policies, information and materials such as mission, vision and goals of RRT3, meeting announcements, meeting minutes, and the R3RCP.

The IMO Workgroup has developed an Information Management Plan that describes the process for approving and/or securing RRT3-developed documents. The Plan also details the layout of the RRT3 website pages and information contained therein.

Information Management Support: Several other websites have been provided to support the information management needs of the Response Community by the Hazardous Materials Response Division, Office of Response and Restoration (OR&R), National Ocean Service, and NOAA.

- **Incident News:** During complicated spill events, NOAA provides communications to the UC information management support at a website located at https://incidentnews.noaa.gov/. Information on this website must be both provided by and approved by the UC for that specific spill incident. All information on this website is accessible by other emergency responders, headquarters organizations, the media, and the general public.
- **Response Link:** A government system for sharing information and documents with incident responders. Federal personnel can email orr.incidentnews@noaa.gov to request a Response Link account. All other Response Link account requests must be sponsored through the local NOAA Scientific Support Coordinator (SSC). During some spill events, NOAA also provides information management services to members of the RRT3 at a password-protected website at https://responselink.orr.noaa.gov/.

- **NOAA OR&R Public Website:** NOAA also provides to responders and the public a website at http://response.restoration.noaa.gov. This website contains detailed information about oil and chemical spill response and provides to responders many resources to help plan and respond to oil and chemical spill emergencies.

  EPA OSC Website: This site is intended to be a resource for USEPA FOSCs to access, track, and share information with FOSCs throughout the country and includes links, resources, and information about Health & Safety, Standard Operating Procedures, OSC Task Force Toolbox & Phonebook, and the Voluntary Exercise Program. https://response.epa.gov/Default.aspx.

K. RRT Exercises

To facilitate preparedness, the RRT3 exercise cycle is based on the *2016 National Preparedness for Response Exercise Program (PREP) Guideline*[2] and consists of:

1. Notification Drill – involves to verify and update POC information;
2. Activation Drill – where standing RRT3 members call in for a drill response;
3. Tabletop Exercise – is a discussion based exercise involving standing RRT3 members to explore a scenario to determine how the RRT would be engaged in a response;
4. Functional Exercise – is designed to validate and evaluate capabilities, multiple functions and/or sub-functions, or interdependent groups of functions; and
5. Full-Scale Exercise – typically the most complex and resource-intensive type of exercise that include many participants operating under cooperative systems such as the ICS or UC. Events are projected through an exercise scenario with event updates that drive activity at the operational level. These exercises are usually conducted in a real-time, stressful environment that is intended to mirror a real incident.

The area and regional exercise cycle is not addressed in regulations, and by policy is set at four years.

[2] The 2016 National Preparedness for Response Exercise Program Guidelines is available at https://homeport.uscg.mil/Lists/Content/Attachments/1308/New%202016%20PREP%20Guidelines.pdf or https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/2016-national-preparedness-response-exercise .

SECTION 5: Regional Response Team Agency Roles, Capabilities, and Support

A. Federal Departments and Supporting Agencies

The Standing RRT3 is made up of 14 federal departments and supporting agency members as described in the following subsections. Additional information about federal agency roles and responsibilities to Region III and the RRT are provided in fact sheets posted under "Documents" on the RRT3 Response Tools-Fact Sheets website: www.nrt.org/ResponseTools-FactSheets.

U.S. Environmental Protection Agency (USEPA)

The USEPA is the lead federal agency to respond to oil spills and reported releases of a hazardous substance(s) in the inland area. USEPA has a number of assets within the region to support emergency response actions:

- **Superfund Technical Assessment and Response Team (START)** are contracted personnel trained to provide technical expertise in health and safety, multimedia field monitoring and sampling, incident documentation, cost monitoring, cleanup restoration, and disposal techniques.
- **Emergency Response and Rapid Remediation Services (ERRS)** are contracted personnel who support cleanup operations, including equipment to control, stabilize, and clean up hazardous substances, and subcontract transportation and waste disposal.
- **Response Support Corps (RSC)** is made up of USEPA employees who provide critical support during USEPA emergency response efforts, but whose everyday/core responsibilities do not require routine emergency response duties.
- **Scientific Support Coordinator (SSC)** assists with responses to actual and potential hazardous substance releases and provides technical expertise for a variety of subject matter.
    - **Environmental Response Team (ERT)** serves as USEPA's SSC and provides experienced technical and logistical assistance in responding to environmental emergencies, such as oil or hazardous materials spills. ERT also provides assistance in characterization and cleanup of hazardous waste sites.
- **Chemical, Biological, Radiological, and Nuclear Consequence Management Advisory Division (CBRN CMAD)** provides scientific and technical expertise for all phases of consequence management, including sampling, decontamination, and clearance, with a focus on operational preparedness. CMAD provides specialized expertise, such as biochemistry, microbiology and medicine, health physics, toxicology, HVAC engineering, and industrial hygiene. CMAD is available to assist local, national, and international agencies supporting hazardous substance response and remedial operations, including Nationally Significant Incidents.
- **Radiological Emergency Response Team (RERT)** provides response and support for incidents or sites containing radiological hazards. RERT responds to emergencies requiring the cleanup of radioactive substances. RERT provides onsite and lab-based radiation risk monitoring services.
- **Remote Sensing and Imagery Analysis Service (RSIAS)** provides web access to users and overlay mapping. The Remote Sensing and Imagery Analysis Service (RSIAS) provides geographically-based data collection and analysis using technologies such as satellite imagery, aerial photography, LIDAR (Light Detection and Ranging).
- **Critical Incident Stress Management Team (CISMT) provides** professional on-scene critical incident stress management support for traumatic incidents or situations.

- **National Criminal Enforcement Response Team (NCERT)** supports environmental crime investigations involving chemical, biological, or radiological releases to the environment. NCERT's specially trained Law Enforcement Officers that collect forensic evidence within contaminated zones; serve as law enforcement liaisons with other law enforcement agencies; and provide protective escorts to USEPA's FOSCs, contractors and other USEPA Special Teams during national emergencies.

Department of Homeland Security (DHS)

U.S. Coast Guard (USCG)

Protects the public, the environment, and U.S. economic interests – in the nation's ports and waterways, along the coast, on international waters, or in any maritime region as required to support national security. Provides the following assets during a response:

- **National Strike Force (NSF)** provides highly trained, experienced personnel and specialized equipment to USCG and other federal agencies to facilitate preparedness for response and response.
- **Public Information Assist Team (PIAT)** provides crisis media relations support to a USCG or USEPA FOSC.
- **National Pollution Funds Center (NPFC)** manages funds for the OSLTF and is an independent unit of the USCG that serves as fund manager for the OSLTF set up under the Clean Water Act.
- **Basic Ordering Agreements (BOAs)** are pre-negotiated agreements that maintain an extensive commercial capability for pollution response using a standing "time and materials" contract for equipment and personnel from commercial firms that may be activated.

Federal Emergency Management Agency (FEMA)

FEMA provides guidance, policy, and technical assistance in emergency preparedness planning, training, and exercising activities for state and local governments. Advises and aids lead agencies in coordinating federal agencies during disaster responses, typically under the Stafford Act.

U.S. Department of Defense (DOD)

DoD includes both U.S. military (Air Force, Army, National Guard, Navy, and Marines) and nonmilitary (civilian) personnel dedicated to protecting the security of our Nation. DoD acts when oil or hazardous substances are released from a facility or vessel under its jurisdiction and provides the FOSC during an incident involving hazardous substances, pollutants, or contaminants on or from DoD property (40 CFR 300.120(c)).

U.S. Army Corps of Engineers (USACE)

USACE equipment and expertise are available for removing navigational obstructions and performing ship structural repairs. Also assists with coordinating federal public works and engineering-related support.

U.S. Navy

Provides knowledge and experience in ship salvage, shipboard damage control, and diving. U.S. Navy will provide U.S. Navy oil spill containment and recovery equipment and manpower, as well as equipment for ship salvaging, shipboard damage control, and diving through the Naval Sea System Command Supervisor of Salvage (SUPSALV).

U.S. Department of Energy (DOE)

DOE has been identified as the FOSC for releases of hazardous substances, pollutants, or contaminants (but not oil) when the release is on, or the sole source from any facility or vessel, including any bareboat vessel

chartered and operated under the jurisdiction, custody or control of DOE. DOE staff aids in the control of immediate radiological hazards.

Radiological Assistance Program

Radiological Assistance program provides DOE first response capability to federal, state, local and tribal governments for incidents involving radiological incidents.

- Provide technical advice throughout the DOE complex in response to:
  - Nuclear weapons accidents and incidents
  - Possible acts of radiological/nuclear terrorism
  - Radiological accidents
  - Lost or stolen radioactive materials
- Provide access to expertise in nuclear weapons design, nuclear/radiological materials characterization, and radiological detection and characterization
- Deployable capabilities configured for a rapid, time-phased response

U.S. Department of Agriculture (USDA)

USDA is made up of various agencies that have scientific and technical capabilities to measure, evaluate, monitor, and control situations where natural resources, such as soil, water, wildlife, and vegetation, have been impacted. The agencies include the following:

- **U.S. Forest Service** is responsible for protection and management of national forests and national grasslands.
- **Agriculture Research Service** conducts research in animal and plant protection and production.
- **Natural Resources Conservation Service** provides knowledgeable resources in soil, agronomy, engineering, and biology.
- **Animal and Plant Health Inspection Service** can respond in an emergency to regulate movement of diseased or infected organisms to prevent the spread and contamination of non-affected areas.
- **Food Safety and Inspection Service** prevents meat and poultry products contaminated with harmful substances from entering human food channels.

U.S. Department of Commerce (DOC)

National Oceanic and Atmospheric Administration (NOAA)

NOAA has multiple roles in a spill response, both as a component of the response (spill response and damage assessment) and as a steward of the NOAA trust resources. NOAA provides scientific support for resources and contingency planning in coastal and marine areas.

U.S. Department of Health and Human Services (DHHS)

Centers for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR)

Supports the RRT and serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and disease related to toxic substances.

In addition, the following DHHS are available to the RRT: the National Institute of Health (NIH) / National Institutes for Environmental Health Sciences (NIEHS) which also offers training on the health effects of oil spills and technical guidance regarding worker health and safety through the CDC / National Institute for Occupational Safety and Health (NIOSH).

U.S. Department of the Interior (DOI)

Office of Environmental Policy and Compliance

DOI protects, manages, and provides access to our Nation's natural and cultural resources. Numerous agencies are available to coordinate during an incident response, including the following:

- **U.S. Fish and Wildlife Service (USFWS)** provides support and location of migratory birds, endangered species, and wildlife habitats.
- **U.S. Geological Survey (USGS)** offers expert advice in geology, geochemical data, GIS and mapping, groundwater hydrology, and ground and surface water data.
- **Bureau of Land Management (BLM)** makes available expertise in minerals, soils, vegetation, habitat, archeology, and hazardous materials.
- **Bureau of Safety and Environmental Enforcement (BSEE)** works to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement.
- **Bureau of Ocean Energy Management (BOEM)** manages development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.
- **Office of Surface Mining Reclamation and Enforcement** ensures land is restored to beneficial use when mining is finished.
- **National Park Service (NPS)** provides expertise on historical, archaeological, and recreational sources as well as sites on the National Historic Register.
- **Bureau of Indian Affairs (BIA)** protect Native American trust resources and facilitates an active role in planning and response for Tribal governments.

U.S. Department of Justice (DOJ).

Provides expert advice on complicated legal questions arising from discharges or releases and federal agency responses. Also DOJ represents the U.S. Government in litigations relating to discharges or releases.

U.S. Department of Labor (DOL).

Occupational Safety and Health Administration (OSHA)

Provides technical assistance and support, resources, and coordination on preparedness, planning, response and recovery activities for emergencies involving hazardous substances, pollutants and contaminants, oil, and weapons of mass destruction in natural and technological disasters and other environmental incidents of national significance. OSHA can be activated under FEMA to lead implementation of the NRF worker safety and health support annex to protect the safety and health of response and recovery workers.

U.S. Department of Transportation (DOT)

DOT is the federal safety authority for the transportation of hazardous materials by air, rail, highway, and water. Under the NRF, DOT is the primary federal agency for the Emergency Support Function – 1, Transportation (ESF-1).

Federal Transit Administration (FTA)

The FTA is one of DOT's 10 modes of transportation and provides financial and technical assistance to local public transit systems. FTA also oversees safety measures and helps develop next-generation technology research through policy development, hazard investigation, data collection, risk analysis,

oversight programs and information sharing. The FTA represents all of the DOT Administrations on the RRT3 membership, including:

- Pipeline and Hazardous Materials Safety Administration (PHMSA),
- Federal Aviation Administration (FAA),
- Maritime Administration (MARAD),
- National Highway Traffic Safety Administration (NHTSA),
- Federal Highway Administration (FHWA),
- Federal Motor Carrier Safety Administration (FMCSA), and
- Federal Railroad Administration (FRA).

Nuclear Regulatory Commission

In response to an event at a Nuclear Regulatory Commission-licensed facility or an event involving Nuclear Regulatory Commission-licensed material that could threaten public health and safety or the environment, Nuclear Regulatory Commission activates its incident response program at its Headquarters Operations Center and its Regional Incident Response Centers located in King of Prussia, PA. To provide expert consultation, support, and assistance to state and local public safety officials responding to the event.

General Services Administration (GSA)

Provides logistic and telecommunications support to federal agencies during emergency response operations. Includes assisting local, state, tribal, territorial, insular area, and federal governments in the direct purchase and assisted acquisition of supplies, services, and equipment utilizing the GSA Schedules. Additionally, GSA provides leasing services for facilities and real property.

B. Federally Recognized Tribes

The roles and responsibilities of the federally recognized tribes to the RRT3 is mandated by 40 CFR 300.610 as a trustee and/or a state representative 40 CFR 300.115(h); 300.180(a) and (b).

The tribal chairmen (or heads of the governing bodies) of Indian tribes, as defined in §300.5, or a person designated by the tribal officials, shall act on behalf of the Indian tribes as trustees for the natural resources, including their supporting ecosystems, belonging to, managed by, controlled by, or appertaining to such Indian tribe, or belonging to a member of such Indian tribe, if such resources are subject to a trust restriction on alienation. When the tribal chairman or head of the tribal governing body designates another person as trustee, the tribal chairman or head of the tribal governing body shall notify the President of such designation.

The following Indian Tribes, all located in Virginia, are federally recognized in Region 3 (see **Figure 5.1**):

1. Pamunkey – retains Indian reservation land (1,200 acres) on the Pamunkey River adjacent to present-day King William County, Virginia;
2. Rappahannock – maintains 132 acres of land in Indian Neck, King and Queen County, Virginia;
3. Monacan – the Monacan Nation is headquartered in Amherst County, Virginia, owning 110+ acres on Bear Mountain;
4. Nansemond – the tribe currently owns no land; however, tribal members live in the Suffolk and Chesapeake Areas and are hoping to acquire 100 acres in Mattanock, Virginia to build a tribal center, museum, and living history area on ancestral lands;
5. Upper Mattaponi – purchased 32 acres of land along the upper reaches of the Mattaponi River, King William County, Virginia;
6. Chickahominy – tribal center is located in Charles City County, Virginia along the Chickahominy River (retaining approximately 110 acres of land), and
7. Eastern Chickahominy – maintains 41 acres of land in New Kent County, Virginia.

Other Federally Recognized Tribes with and Interest in Region III

The RRT3 has identified tribes with geographic areas of current and ancestral interest within the region; appropriate tribal contact information is available at https://eqis.hud.gov/tdat to assist with initiating Section 106 consultation. The Tribal Directory Assessment Tool (TDAT) is a web-accessible database that contains information about federally recognized Indian tribes and lists names and contact information for tribal leaders and Tribal Historic Preservation Officers (THPOs). Points of Contact for the tribes are also maintained in **Appendix 1**.

Federally Recognized Tribes in Region III

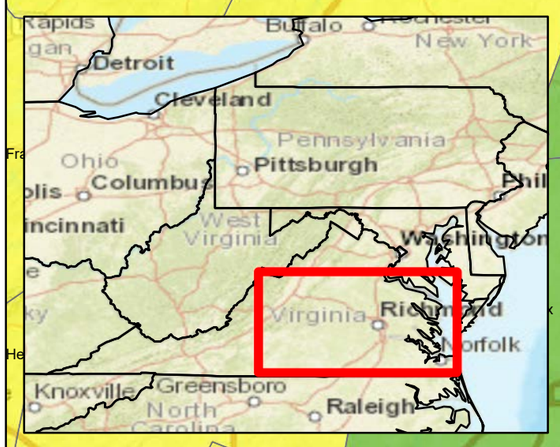
Legend

- States
- Counties
- USCG Coastal Zone
- Federally Recognized Tribes

	Jurisdiction	Lead OSC
II	Washington DC Extended	Charlie Fitzsimmons
X	Shenandoah Valley	Don Mclaughlin
XI	Upper Chesapeake	Kelley Chase
XII	Southeast VA,	Chris Wagner
XIII	Southcentral VA,	Myles Bartos

0 5 10 20 Miles

Page
Prince William
Fauquier
Culpeper
Charles
Calvert
Dorchester
Madison
Stafford
Greene
Fredericksburg
St. Mary's
King George
Orange
II
Spotsylvania
Westmoreland
Charlottesville
Caroline
Louisa
Rappahannock
Essex
Richmond County
Northumberland
X
Fluvanna
Alleghany
Lexington
Nelson
Hanover
Upper Mattaponi
Buena Vista
Goochland
King and Queen
King William
Lancaster
Pamunkey
Amherst
Middlesex
Buckingham
Botetourt
Powhatan
Richmond
Richmond City
Cumberland
Eastern Chickahominy
XIII
Monacan
New Kent
Gloucester
Mathews
Henrico
Lynchburg
Appomattox
Chesterfield
Chickahominy
Bedford City
Amelia
Charles City
James City
Bedford County
Hopewell
Williamsburg
Northampton
Colonial Heights
XII
York
Prince Edward
Petersburg
Prince George
Campbell
Poquoson
Nottoway
Surry
Newport News
Dinwiddie
Hampton
Charlotte
Lunenburg
Sussex
Isle of Wight
Norfolk
Portsmouth
Brunswick
Nansemond
Mecklenburg
Greensville
Southampton
Suffolk
Emporia
Chesapeake
Franklin City
Danville



C. States/Commonwealths

Additional information about state/commonwealth roles and responsibilities to Region III and the RRT are provided in fact sheets posted under "Documents" on the RRT3 Response Tools-Fact Sheets website: www.nrt.org/ResponseTools-FactSheets.

Delaware

Delaware Emergency Management Agency (DEMA) is the lead agency for coordination of comprehensive emergency preparedness and response. The governor has appointed the Director of DEMA as the State Incident Commander by Executive Order #13. State of Delaware designates the DE DNREC as the agency unit responsible for the response to oil and hazardous substances.

24-hour notification number is (800) 662-8802

District of Columbia

District of Columbia's Homeland Security and Emergency Management Agency (HSEMA) coordinates the city's response to disasters, emergencies, severe weather conditions, and other catastrophic events. It works closely with other emergency response agencies, including the Metropolitan Police Department (MPD) and the District of Columbia Department of Fire and Emergency Medical Services and other District and federal agencies, as well as with major utility companies and organizations such as the Red Cross and Salvation Army. The DC Department of Energy and Environment (DOEE) is also a primary response member of the Standing RRT3.

24-hour notification number for HSEMA is (202) 727-6161

24-hour notification number for DOEE is 311 or (202) 737-4404

Maryland

The MDE is designated as the agency unit responsible for the response to oil and hazardous substances for the state.

24-hour notification number is (866) 633-4686

Pennsylvania

The Commonwealth of Pennsylvania designates the Pennsylvania Department of Environmental Protection (PADEP), Environmental Emergency Response Program (EERP) as the agency unit responsible for the response to oil and hazardous substances in each of PADEP's six regional offices:

Region	Emergency Phone
Southeast	(484) 250-5900
Northeast	(570) 826-2511
Southcentral	(717) 705-4741 After Hours: (877) 333-1904
Northcentral	(570) 327-3636
Southwest	(412) 442-4000
Northwest	(814) 332-6945 After Hours: (800) 373-3398

Virginia

Virginia Department of Emergency Management (VDEM) and the VDEQ are the designated agency units responsible for the response to oil and hazardous substances.

VDEM and VDEQ 24-hour notification number is 1 (800) 468-8892

VDEQ regional offices serve as primary contacts for permitting, compliance, pollution, and enforcement response activities:

Region	Phone
Blue Ridge	(540) 562-6754
Northern	(703) 583-3850
Piedmont	(804) 698-4376
Southwest	(276) 676-4829
Tidewater	(757) 518-2010
Valley	(540) 574-7808

West Virginia

The West Virginia Department of Environmental Protection (WVDEP) is the designated agency unit responsible for the response to oil and hazardous substances within the boundaries of the state.

WVDEP 24-hour contact number is (800) 642-3074

SECTION 6: Related Plans and Programs

A. National Response System

The NRS is a mechanism routinely and effectively used to respond to a wide range of oil and hazardous substance releases. It is a multi-layered system involving individuals and teams from tribal, local, state, and federal agencies, as well as industry and other organizations. These groups share expertise and resources to ensure that response and cleanup activities are timely, efficient, and minimize threats to human health and the environment. For more information about the NRS, please visit the NRT website.

The NRF is another management system in the U.S. that provides structures and procedures to address incidents where federal support to local, state, tribal, territorial, and insular area governments is coordinated under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as well as incidents where federal departments and agencies exercise other authorities and responsibilities.

Although the framework of the NRS is the same for responding to discharges of oil or releases of hazardous substances, the NCP establishes separate operational elements for responding to each type of incident, and these elements differ in some respects. The source of federal funding to carry out a response also differs (refer to Section 6 D for additional details).

B. Coordination with Other Federal Response Planning

The Presidential Policy Directive (PPD) 8: National Preparedness was released in March 2011 with the goal of strengthening the security and resilience of the United States through systematic preparation for the threats that pose the greatest risk to the security of the Nation. The National Planning Frameworks, which are part of the National Preparedness System (additional details provided at https://www.fema.gov/national-preparedness-system), set the strategy and doctrine for building, sustaining, and delivering the core capabilities identified in the National Preparedness Goal.

The frameworks describe the coordinating structures and alignment of key roles and responsibilities for the whole community and are integrated to ensure interoperability across all mission areas. The frameworks address the roles of individuals; nonprofit entities and nongovernmental organizations (NGOs); the private sector; communities; critical infrastructure; governments; and the Nation as a whole. These are all applicable to disaster response.

The NRF recognizes that federal responses to emergencies of different types may be led by various federal agencies under assorted federal authorities and regulations, including the NCP. The NCP serves as an operational supplement to the NRF and may be used in conjunction with, or independent from, the Stafford Act. In the event of a Stafford Act declaration, NRF Emergency Support Function (ESF) #10 – Oil and Hazardous Materials Response Annex may be activated to provide a coordinated federal response to actual or potential oil and hazardous materials incidents. ESF #10 responses are generally carried out in accordance with the NCP. It is important to understand that most federal responses to oil pollution incidents, including a Spill of National Significance (SONS), are carried out in accordance with the NCP. In rare cases, ESFs may also be activated for non-Stafford Act incidents and/or to support NCP responses that require an extraordinary level of federal resources.

PPD-8 defines five preparedness mission areas—Prevention, Protection, Mitigation, Response, and Recovery—and mandates the development of a series of policy and planning documents to explain and guide the Nation's approach for ensuring and enhancing national preparedness.

National Planning Frameworks

There is one Federal Interagency Operational Plan (FIOP) for each National Planning Framework which builds upon and describes how the government aligns resources and delivers corps capabilities. The FIOPs

describe the concept of operations for integrating and synchronizing existing national-level capabilities to support local, state, tribal, territorial, insular area, and federal plans, and are supported by federal department-level operational plans, where appropriate. More information can be found at: https://www.fema.gov/federal-interagency-operational-plans.

1. National Prevention Framework

The National Prevention Framework describes what the whole community—from community members to senior leaders in government—should do upon the discovery of an imminent threat to the homeland (focusing on preventing terrorism). An imminent threat is intelligence or operational information that warns of a credible, specific, and impending terrorist threat or ongoing attack against the U.S. This Framework helps achieve the National Preparedness Goal of a secure and resilient Nation that is optimally prepared to prevent an imminent terrorist attack within the U.S.

2. National Protection Framework

Describes what the whole community should do to safeguard against acts of terrorism, natural disasters, and other threats or hazards. The National Protection Framework describes the core capabilities; roles and responsibilities; and coordinating structures that facilitate the protection of individuals, communities, and the Nation. This Framework is focused on actions to protect against the greatest risks in a manner that allows American interests, aspirations, and way of life.

3. National Mitigation Framework

Covers the capabilities necessary to reduce the loss of life and property by lessening the impact of disasters. This Framework focuses on understanding the risks faced as well as empowering communities to strengthen their resilience and undertake actions that put communities in the best position to bounce back quickly and effectively when disasters occur. This focus on risk and resilience is why the National Mitigation Framework permeates all other areas of national preparedness, from prevention to recovery.

4. National Response Framework

The NRF covers the capabilities necessary to stabilize the situation. This focus is designed to save lives, protect property and the environment, and meet basic human needs after an incident has occurred. Response activities typically take place immediately before, during, and in the first few days after a major or catastrophic disaster. Recovery efforts then begin to help the community get back on its feet.

5. National Disaster Recovery Framework

The National Disaster Recovery Framework (NDRF) establishes a common platform and forum for how the whole community builds, sustains, and coordinates delivery of recovery capabilities. Recovery efforts focus on how best to restore, redevelop, and revitalize the health, social, economic, natural, and environmental fabric of the community and often begin while response is still occurring. The Framework also emphasizes pre-disaster and post-disaster planning.

C. Title III State and Local Emergency Response Plans

State Emergency Response Commission (SERC)

The Governor of each state has designated a State Emergency Response Commission (SERC) that is responsible for implementing the Emergency Planning and Community Right-to-Know Act (EPCRA) provisions within its state. The SERC's duties include:

- Establishing procedures for receiving and processing public requests for information collected under EPCRA;
- Reviewing local emergency response plans;
- Designating local emergency planning districts;

- Appointing a LEPC for each district; and
- Supervising the activities of the LEPC.

Local Emergency Planning Committees (LEPC)

Under the EPCRA, LEPCs must develop an emergency response plan, review the plan at least annually, and provide information about chemicals in the community to citizens. Plans are developed by LEPCs with stakeholder participation. The LEPC membership must include (at a minimum):

- Elected state and local officials;
- Police, fire, civil defense, and public health professionals;
- Environment, transportation, and hospital officials;
- Facility representatives; and
- Representatives from community groups and the media.

The required elements of a community emergency response plan include:

- Identification of facilities and transportation routes of extremely hazardous substances;
- Description of emergency response procedures, on- and off-site;
- Designation of a community coordinator and facility emergency coordinator(s) to implement the plan;
- Outline of emergency notification procedures;
- Description of how to determine the probable affected area and population by releases;
- Description of local emergency equipment and facilities and the persons responsible for them;
- Outline of evacuation plans;
- A training program for emergency responders (including schedules); and
- Methods and schedules for exercising emergency response plans.

Emergency Management Assistance Compact (EMAC)

The Emergency Management Assistance Compact (EMAC) is an all hazards – all disciplines mutual aid compact that allows states to join forces and establish a firm legal foundation for sharing resources between states.

EMAC offers assistance during governor-declared states of emergency or disaster that allows states to send personnel, equipment, and commodities to assist with response and recovery efforts in other states. Through EMAC states can also transfer services and conduct virtual missions.

The strength of EMAC and the quality that distinguishes it from other plans and compacts lie in its governance structure; its relationship with federal agencies, national organizations, states, counties, territories, and regions; the willingness of state and response and recovery personnel to deploy; and the ability to move any resource one state wishes to utilize to assist another state.

The National Guard

The National Guard can be deployed through EMAC in both State Active Duty (SAD) and Title 32 to assist member states. Many events trigger responses across multiple jurisdictions and different levels of government. The National Guard is the only U.S. military force that operates across both state and federal responses:

- **SAD** – The Governor can activate National Guard personnel to SAD in response to natural or man-made disasters or Homeland Defense missions.

- **Full-Time National Guard Duty (Title 32)** – Title 32 allows the Governor, with the approval of the President or the Secretary of Defense, to order a member to duty for operational Homeland Defense activities in accordance with U.S. Code; and
- **Active Duty (Title 10)** – means full-time duty in the active military service of the U.S. Title 10. Federal Law provides the Governor with the ability to place a soldier in a full-time duty status under the command and control of the state but is directly funded with federal dollars. It also allows the President to "federalize" the National Guard forces by ordering them to active duty in their reserve component status or by calling them into federal service in their militia status.

The geographically disperse forces of the National Guard maintain links to local communities and ties to state and local governments. These relationships allow for rapid and integrated responses in times of emergency.

Weapons of Mass Destruction Civil Support Team (WMD-CST or CST)

A Weapons of Mass Destruction Civil Support Team (WMD-CST or CST) supports civil authorities in the event of the use, or threatened use, of a weapon of mass destruction. CSTs are federally funded units established under Presidential Decision Directive 39. There is one National Guard CST for each commonwealth/state in the region, including Washington, D.C. These support teams regularly interact with the RRT3.

D. Reimbursement for Services

Oil and/or hazardous substances incidents may range considerably in size and magnitude of the impact upon public health and the environment. They may range from minor incidents such as clandestine dumping of intact drums of oil or hazardous substances, to more severe incidents such as transportation accidents involving large amounts of oil or hazardous substances and fires at chemical facilities, or to catastrophic incidents such as a large-scale oil spill or hazardous materials release, including those caused by terrorist attacks or criminal acts of sabotage.

Response Under The NCP

The NCP is authorized by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 311 of the Clean Water Act (CWA), and the Oil Pollution Act of 1990 (OPA). The NCP provides an organizational structure and procedures for preparing for and responding to discharges and substantial threats of discharges of oil and releases; and substantial threats of releases of hazardous substances, pollutants, and contaminants.

These regulations have been revised several times, including in response to CERCLA and to the Oil Pollution Act of 1990.

Response Under The NRF

Whenever a disaster (either natural or manmade) occurs and harms or threatens a community or the natural environment, federal, state, local, and private emergency resources respond. DHS developed the NRF to structure the way responders work together and to provide supporting mechanisms for disasters so serious the Secretary of Homeland Security declares them to be Incidents of National Significance. The NRF is the comprehensive response plan for all hazards within the U.S.

Mission Assignments (MAs)

Activation under the NRF is provided under the authorities of the Stafford Act. The MA is issued by FEMA to direct other federal agencies and components of DHS to complete specified tasks in response to a Stafford Act event under the NRF. MAs are provided in anticipation of, or in response to, a Presidential declaration. Agencies can be directed to perform work under MAs, with or without reimbursement in accordance with

the Stafford Act. Each MA identifies the statement of work, fund citation, points of contact, projected completion "end" date, state cost share information, MA type, and authorized funding amount.

Intra-Agency Agreements

When a federal entity with primary responsibility and authority for handling an incident requires federal assistance above and beyond its interagency mechanisms (e.g., Executive orders, MOUs, MOAs, etc.), that department or agency can request additional federal assistance through DHS. Federal agencies participating in the NRF may request and provide federal-to-federal support by executing inter/intra-agency reimbursable agreements, in accordance with applicable authorities. Federal agencies providing mutual aid support may request reimbursement from the requesting agency for eligible expenditures.

NOTE: Pollution incidents that are not declared Incidents of National Significance or Stafford Act Disasters or Emergencies continue to fall under the NCP.

Cost Reimbursement

Established Trust Funds

There are several ways for federal agencies to obtain cost reimbursement for activities provided during an incident response. Congress has established two dedicated trust funds to finance the costs of a federal response to a discharge or oil or release of a hazardous substance, pollutant, or contaminant.

1. **OSLTF** – the USCG administers the OSLTF to finance the costs of responding to a discharge of oil. Currently, revenues for the OSTLF primarily are derived from a dedicated per-barrel tax on domestic and imported oil. OPA delineated fund uses include:

   - Removal costs incurred by the USCG and USEPA;
   - State access for removal activities;
   - Payments to federal, state, and Indian tribe trustees to conduct NRDAs and restorations;
   - Payment of claims for uncompensated removal costs and damages;
   - Research and development; and
   - Other specific appropriations.

   Refer to the NPFC website on how to submit a claim recover costs and damages under the OSTLF: https://www.uscg.mil/Mariners/National-Pollution-Funds-Center/Claims/

2. **Hazardous Substance Superfund Trust Fund** – USEPA administers the Hazardous Substance Superfund Trust Fund to finance the costs of responding to a release of a hazardous substance, pollutant, or contaminant. This Fund is financed mostly with revenues transferred from the General Fund of the U.S. Treasury, since the taxes on domestic and imported oil, chemical feed stocks, and corporate income that once financed this trust fund expired at the end of 1995.

These two trust funds differ in terms of how the monies are made available to carry out a response. In general, reimbursement from either fund requires extensive documentation of costs and services for the response which are consistent with the NCP. Monies spent from these trust funds may be recouped from the RPs under the liability provisions of the OPA and CERCLA, respectively. The USCG NPFC was commissioned to administer both funds. More information about cost reimbursement for the funds can be obtained from: https://www.uscg.mil/Mariners/National-Pollution-Funds-Center/.

Pollution Removal Funding Authorization (PRFA):

The PRFA is a tool available to FOSCs to quickly obtain needed services and assistance from other government agencies: federal, state, or local, as well as recognized Indian Tribes in oil spill and hazardous materials response actions. The PRFA commits the OSLTF to payment by reimbursement of costs incurred in pollution response activities undertaken by state and local agencies and other federal agencies under the

direct supervision of an FOSC. In such situations, the FOSC issues a PRFA to the requesting agency to establish a contractual relationship and obligate the fund. There are significant cost tracking and documentation requirements under a PRFA. Federal trustees have an alternate source of funding to help with the costs associated with initiation of NRDAs related to oil discharges (see OSLTF discussion above).

Stafford Act Funds

Another mechanism for funding a response includes funds provided under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act). Under a presidential declaration of an incident as a major disaster or emergency, the Stafford Act funds may also be used to finance the federal response costs, rather than the trust funds. The use of Stafford Act funds to pay for the federal response to a discharge of oil or a release of a hazardous substance has been limited to discharges or releases caused by natural disasters or other emergencies for which there is not a RP to pursue. In such instances, the President may make a Stafford Act declaration to provide federal assistance to augment state and local resources, in the absence of viable RPs to pay for the response.

Comparison of Pollution Incidents and Funding Source

The table below compares (and simplifies) the different types of pollution incidents (from https://www.uscg.mil/Mariners/National-Pollution-Funds-Center/About-NPFC/NRF-Disaster-Funding/).

Type of Pollution Incident	Who Declares	Plan	Funding
Most Spills	N/A	NCP	OSLTF (oil) Superfund (HAZMAT)
Spill of National Significance (SONS)	USEPA Administrator (inland zone spills) USCG Commandant (coastal zone spills)	NCP	OSLTF (oil) Superfund (HAZMAT)
Incident of National Significance (IONS)	Secretary of DHS	Usually ESF #10 of the NRF	Stafford Act Disaster Funding
		Occasionally, Oil & HAZMAT Incident Annex of NRF (Basically NCP)	OSLTF (oil) Superfund (HAZMAT)
Stafford Act Disaster/Emergency	President	Almost Always ESF #10 of the NRF	Stafford Act Disaster Funding

SECTION 7: Abbreviations and Acronyms

ACP	Area Contingency Plan
ARPA	Archaeological Resources Protection Act
ARTES	Alterative Response Tool Evaluation System
ATSDR	Agency for Toxic Substances and Disease Registry
bbl	barrel
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BOA	Basic Ordering Agreement
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
CBRN CMAD	Chemical, Biological, Radiological, and Nuclear Consequence Management Advisory Division
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CISMT	Critical Incident Stress Management Team
CNRDA	Consultation, Natural Resources, and Damage Assessment
COTP	Captain of the Port
CST	Civil Support Team
CWA	Clean Water Act
DC	District of Columbia
DE	Delaware
DE DNREC	Delaware Department of Natural Resources and Environmental Control
DEEP	Dispersant Employment Evaluation Plan
DEMA	Delaware Emergency Management Agency
DHHS	U.S. Department of Health and Human Services
DHS	Department of Homeland Security
DOC	U.S. Department of Commerce
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy

DOEE	Department of Energy and Environment
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
EERP	Environmental Emergency Response Program
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EMAC	Emergency Management Assistance Compact
EPCRA	Emergency Planning and Community Right-to-Know Act
ERRS	Emergency Response and Rapid Remediation Services
ERT	Environmental Response Team
ESA	Endangered Species Act
ESF	Emergency Support Function
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIOP	Federal Interagency Operational Plan
FOSC	Federal On-Scene Coordinator
FTA	Federal Transit Administration
GIS	geographic information system
GSA	General Services Administration
HCL	Hydrochloric acid
HSEMA	Homeland Security and Emergency Management Agency
HUD	U.S. Department of Housing and Urban Development
ICS	Incident Command System
IMO	Information Management and Outreach
IONS	Incident of National Significance
ISB	*in situ* burn
JIC	Joint Information Center
LEPC	Local Emergency Planning Committee
LFA	lead federal agency

MARAD	Maritime Administration
MD	Maryland
MDE	Maryland Department of Environment
MER	Marine Environmental Response
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPD	Metropolitan Police Department
MSU	Marine Safety Units
NAGPRA	Native American Graves Protection and Repatriation Act
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCERT	National Criminal Enforcement Response Team
NDRF	National Disaster Recovery Framework
NGO	non-governmental organization
NHPA	National Historic Preservation Act
NIEHS	National Institutes for Environmental Health Sciences
NIH	National Institute of Health
NIOSH	National Institute for Occupational Safety and Health
NIMS	National Incident Management System
NM	nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFC	National Pollution Funds Center
NPS	National Park Service
NRC	National Response Center
NRDA	Natural Resource Damage Assessment
NRDAR	Natural Resource Damage Assessment and Restoration
NRF	National Response Framework
NRM	no regional modification
NRS	National Response System
NRT	National Response Team
NSF	National Strike Force

OEE	Office of Environment and Energy
OPA	Oil Pollution Act of 1990
OR&R	Office of Response and Restoration
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OSLTF	Oil Spill Liability Trust Fund
PA	Pennsylvania
PADEP	Pennsylvania Department of Environmental Protection
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIAT	Public Information Assist Team
POC	point of contact
POLREP	Pollution Report
PPD	Presidential Policy Directive
PREP	Preparedness for Response Exercise Program
PRFA	Pollution Removal Funding Authorization
R3RCP	Region III Regional Oil and Hazardous Substances Pollution Contingency Plan
RCP	Regional Contingency Plan
RERT	Radiological Emergency Response Team
RP	responsible party
RPM	Remedial Project Manager
RRC	Regional Response Center
RRT	Regional Response Team
RRT3	Region III Regional Response Team
RSC	Response Support Corps
RSIAS	Remote Sensing Imagery Analysis Service
SAD	State Active Duty
SCAT	Shoreline Cleanup and Assessment Technique
SERC	State Emergency Response Commission
SHPO	State Historic Preservation Officer
SMART	Special Monitoring of Advanced Response Technologies
SMOA	Superfund Memorandum of Agreement

SONS	Spill of National Significance
SRC	Spill Response Countermeasures
SSC	Scientific Support Coordinator
START	Superfund Technical Assessment and Response Team
SUPSALV	Supervisor of Salvage
SWA	surface washing agents
TDAT	Tribal Directory Assessment Tool
THPO	Tribal Historic Preservation Officer
U.S.	United States
UAC	Unified Area Command
UC	Unified Command
UCS	Unified Command System
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VA	Virginia
VDEM	Virginia Department of Emergency Management
VDEQ	Virginia Department of Environmental Quality
WMD	weapons of mass destruction
WV	West Virginia
WVDEP	West Virginia Department of Environmental Protection

APPENDICES LIST

Appendix 1 Region III Regional Response Team (RRT3) Primary Contacts List

Appendix 2 Cross Reference Matrix for R3RCP - NCP

Appendix 3 Executive Orders, MOAs, MOUs

Appendix 3-A: Executive Orders

- Appendix 3-A1 EO 12580 Superfund Implementation (January 1987), as amended 13016 (August 1996) and 13286 (March 2003)
- Appendix 3-A2 EO 12777 Implementation of Section 311 of FWPCA and OPA (October 1991), as amended 13286 (March 2003) and 13638 (March 2013)
- Appendix 3-A3 EO 13650 Improving chemical Facility Safety and Security (August 2013)

Appendix 3-B: Cross boundary Support MOAs

- Appendix 3-B1 MOA USEPA Regions 2 & 3 (November 2006)
- Appendix 3-B2 MOA USEPA Regions 3, 4, & 5 (April 2000)
- Appendix 3-C: 1997 Interagency Agreement on ESA
- Appendix 3-D: MOU for Use of Volunteers (January 2011)

Appendix 4 Jurisdictional Boundaries for USCG Coastal / USEPA Inland Zones

- Appendix 4-A: MOA between USCG District 5 / USEPA Region III Response Jurisdiction Boundary (January 2010)
- Appendix 4-B: MOA between USCG District 8 / USEPA Region III Response Jurisdiction Boundary (September 2016)
- Appendix 4-C: Resources for USCG/USEPA Coastal and Inland Zone Jurisdictional Boundaries

Appendix 5 Instrument of Re-delegation between USCG and USEPA (signed 29 November 1987 and 27 May 1988)

Appendix 6 Preauthorization Documents

- Appendix 6.0: MOU for Preauthorization for the use of Chemical Countermeasures by the FOSC (January 1997)
  - MOU Annex I Preauthorization Zones and Zone-Specific Conditions
  - MOU Annex II Critical Decision Making
  - MOU Annex III Trial Use Policy
  - MOU Annex IV Dispersant Monitoring Protocol
  - MOU Annex V Products with Completed Section 7 Consultation
  - MOU Annex VI Biological Monitoring/Region 5 Bioassay Protocol
- Appendix 6.1: USFWS ESA Section 7 Determination Letter for Chemical Countermeasures (January 1997)

Appendix 6-A: Dispersants

- Appendix 6-A1: Update for Dispersant MOU Annexes I, II, and III (January 1999)
- Appendix 6-A2: Dispersants Employment Evaluation Plan (DEEP) (May 1991)
  - Dispersant Use Decision Guidelines & Checklist

  - Criteria for Monitoring Dispersant Use
    Special Monitoring of Applied Response Techniques (SMART) –Located in Appendix 8 of this RCP document
- Appendix 6-B: In Situ Burn (September 1997)
  - MOU Appendix I Response Decision Matrix for ISB
  - MOU Appendix II ISB Evaluation & Response Checklist
  - MOU Appendix III In-Situ Burn Monitoring Plan
    Special Monitoring of Applied Response Techniques (SMART) –Located in Appendix 8 of this RCP document
- Appendix 6-B1: USFWS ESA Section 7 Determination Letter for ISB (September 1997)
- Appendix 6-C: Solidifier: CIAgent (January 2007)
- Appendix 6-C1: Preauthorization & Section 7 Determination Letter for CIAgent (May 2007)

Appendix 7 Response Policy Guidance

- Appendix 7-A: Bioremediation Policy
- Appendix 7-A1: Bioremediation Policy (July 1999)
- Appendix 7-A2: Bioremediation Guidance & Decision Tool (February 2004)
- Appendix 7-B: Elasticity Modifiers (DRAFT) [Reserved]
- Appendix 7-C: Emulsion Treating Agents [Reserved]
- Appendix 7-D: Herding Agents (Surface Collecting Agents) [Reserved]
- Appendix 7-E: In Situ Burn for Ocean, Coastal Areas and Inland Zones (March 2003)
- Appendix 7-F: In Situ Burn for Oil Impacted Herbaceous Wetlands (2004)
- Appendix 7-G: Shoreline Pre-Treatment Agents [Reserved]
- Appendix 7-H: Solidifiers [refer to Appendices 6 and 6-C; Reserved]
- Appendix 7-I: Surface Washing Agents [Reserved]
- Appendix 7-J: Ohio River Valley Umbrella (September 2015)
- Appendix 7-K: Places of Refuge (NRT, July 2007)
  Appendix 7-L: RRT3 Specific Response Policies
- Appendix 7-L1: Limited Jones Act (May2002)
- Appendix 7-L2: Natural Trustee Resources [Reserved]
- Appendix 7-L3: Disposal of Contact Water (May 2002)
- Appendix 7-L4: Ocean Dumping (May 2002)
- Appendix 7-L5: Non-Floating Oil [Reserved]
- Appendix 7-L6: Vessel Decontamination [Reserved]
- Appendix 7-L7: NRT Use of Volunteers (September 2012)
- Appendix 7-L8: Photo-documentation [Reserved]
- Appendix 7-L9: Coordination with Tribal Officials [Reserved]

Appendix 8 Monitoring & Evaluation Tools

- Appendix 8-A: Special Monitoring of Applied Response Techniques (SMART) (August 2006)
- Appendix 8-B: NRT Monitoring for Atypical Dispersant Operations (May 2013)

Appendix 8-C: Selection Guide

- Appendix 8-C1: Volume 1 of the Selection Guide for Oil Spill Response Countermeasures – Decision Making (June 2009)
- Appendix 8-C2: Volume 2 of the Selection Guide for Oil Spill Applied Technologies – Operations Plans (June 2000)
- Appendix 8-D: Other Product/Category-Specific [Reserved]

Appendix 9 Consultation Requirements and References

- Appendix 9-A: Inter-agency MOA for Oil Spill Planning and Response under NCP and ESA (2001)
- Appendix 9-A1: MOA for ESA Guidebook (2002)
- Appendix 9-A2: MER Policy Letter 01-14 for ESA Section 7 and EFH Consultation Process Guidance (October 2013)
- Appendix 9-A3: Best Practices for Migratory Bird Care During Oil Spill Response (2003)
- Appendix 9-A4: RRT3 ESA Spill Response Screening Matrices for Coastal and Inland Areas (dynamic document)
- Appendix 9-B: Essential Fish Habitat (EFH) Consultation Guidance (April 2004)
- Appendix 9-C: Programmatic Agreement for Protection of Historic Properties during Federal Emergency Response (April 2002)

Appendix 9-D: Tribal Consultation

- Appendix 9-D1: EO 13007 Indian Sacred Sites (May 1996)
- Appendix 9-D2: Guidance for Implementing EO 13175 (July 2010)
- Appendix 9-D3: EPA Policy to Consult with Indian Tribes (May 2011)
- Appendix 9-D4: Section 106 Consultation with Indian Tribes Guidebook (December 2012)
- Appendix 9-D5: Role of the Tribal Historic Preservation Officer in the Section 106 Process (November 2013)
- Appendix 9-D6: Government-to-Government Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations (November 2013)
- Appendix 9-E: RRT3 NAGPRA Plan of Action Checklist [Reserved]
- Appendix 9-F: USACE Nationwide Permit (NWP)-20 (December 2017) [Reserved]

Appendix 10 National Resource Damage Assessment (NRDA) [Reserved]

Appendix 11 (DRAFT) Incident-Specific Region III Regional Response Team III Activation Quick Response Guide [Reserved]

APPENDIX 1: Region III Regional Response Team (RRT3) Primary Contact List

Appendix 1 is provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

APPENDIX 2: Cross Reference Matrix for R3RCP - NCP

40 CFR PART 300			
National Oil and Hazardous Substances Pollution Contingency Plan		**Regional Modifications**	**Location**
Subpart A - Introduction			
300.1	Purpose and objectives	The RCP limited to Region III	Sec. 1
300.2	Authority and applicability	No Regional modifications	See NCP
300.3	Scope	The RCP limited to Region III	Sec. 1
300.4	Abbreviations	NCP and region-specific abbreviations included to facilitate use	Sec. 7
300.5	Definitions	No Regional modifications	See NCP
300.6	Use of number and gender	No Regional modifications	See NCP
300.7	Computation of time	No Regional modifications	See NCP
Subpart B – Responsibility and Organization for Response			
300.100	Duties of the President delegated to federal agencies	No Regional modifications	See NCP
300.105	General organizational concepts	No Regional modifications	See NCP
300.110	NRT	No Regional modifications	See NCP
300.115	Regional Response Team	A description of Region III RRT operations and administration is included.	Sec. 4
300.120	On-scene coordinators and remedial project managers: general responsibilities	No Regional modifications	See NCP
300.125	Notification and communications	No Regional modifications	Sec. 4
300.130	Determinations to initiate response and special conditions	A description of the different emergency response plans that apply to oil and hazardous substances incidents is included	Sec. 4 and 6
300.135	Response operations	The RRT follows guidance set forth in the NRT ICS / UC Guidance document	Sec. 1-D
300.140	Multi-regional responses	Region-specific geographic information included	Sec. 3
300.145	Special teams and other assistance available to FOSCs / RPMs	No Regional modifications	See NCP
300.150	Worker health and safety	No Regional modifications	See NCP
300.155	Public information and community relations	The RRTs public information and community relations procedures follow the NRT JIC Model. The NRT JIC model guidance document can be found on the NRT website	Sec, 4-B
300.160	Documentation and cost recovery	No Regional modifications	See NCP

40 CFR PART 300			
National Oil and Hazardous Substances Pollution Contingency Plan		**Regional Modifications**	**Location**
Subpart B – Responsibility and Organization for Response (continued)			
300.165	FOSC reports	Information regarding when FOSC Reports are completed is included. Information regarding the format of FOSC Reports is in the ACP.	Sec. 4
300.170	Federal agency participation	No Regional modifications	See NCP
300.175	Federal agencies: additional responsibilities and assistance	Regional offices have more clearly defined their roles and capabilities	Sec. 5 and Agency / State Fact Sheets
300.180	State and local participation in response	Tribal and state information is specific to Region III	Sec. 5
300.185	Nongovernmental participation	No Regional modifications	See NCP
Subpart C – Planning and Preparedness			
300.200	General	No Regional modifications	See NCP
300.205	Planning and coordination structure	An overview and information on SERCs and LEPCs are included.	Sec. 6
300.210	Federal contingency plans	A description of the different emergency response plans that apply to oil and hazardous substances incidents is included.	Sec. 6
300.211	OPA vessel and facility response plans	No Regional modifications	See NCP
300.212	Area response drills	No Regional modifications	See NCP
300.215	Title III local emergency response plans	Information on SERCs and LEPCs within Region III are included.	Sec. 6
300.220	Related Title III issues	No Regional modifications	See NCP
Subpart D – Operational Response Phases for Oil Removal			
300.300	Phase I – Discovery and Notification	No Regional modifications	See NCP
300.305	Phase II – Preliminary assessment and initiation of action	No Regional modifications	See NCP
300.310	Phase III – Containment countermeasures, cleanup, and disposal	No Regional modifications	See NCP
300.315	Phase IV – Documentation and cost recovery	No Regional modifications	See NCP
300.317	National response priorities	No Regional modifications	See NCP
300.320	General pattern of response	No Regional modifications	See NCP
Subpart D – Operational Response Phases for Oil Removal (continued)			
300.322	Response to substantial threats to the public health or welfare of the United States	No Regional modifications	See NCP

40 CFR PART 300			
National Oil and Hazardous Substances Pollution Contingency Plan		**Regional Modifications**	**Location**
300.323	Spills of National Significance	No Regional modifications	See NCP
300.324	Response to Worst Case Discharges	No Regional modifications	See NCP
300.330	Wildlife Conservation	This is covered by a national MOA between the federal natural resource trustees and Federal response agencies	Sec. 3 and App. 3-C
300.335	Funding	No Regional modifications	See NCP
Subpart E – Hazardous Substance Response			
300.400	General	No Regional modifications	See NCP
300.405	Discovery or notification	No Regional modifications	See NCP
300.410	Removal site evaluation	No Regional modifications	See NCP
300.415	Removal action	No Regional modifications	See NCP
300.420	Remedial site evaluation	No Regional modifications	See NCP
300.425	Establishing remedial priorities	No Regional modifications	See NCP
300.430	Remedial investigation/feasibility study and selection of remedy	No Regional modifications	See NCP
300.435	Remedial design/remedial action, operation, and maintenance	No Regional modifications	See NCP
300.440	Procedures for planning and implementing off-site response actions	No Regional modifications	See NCP
Subpart F – Hazardous Substance Response			
300.500	General	No Regional modifications	See NCP
300.505	USEPA/State Superfund Memorandum of Agreement (SMOA)	No SMOAs between USEPA and states in Region III have been signed that pertain to emergency response or removal activities. Region III SMOAs apply only to remedial work sites listed on the National Priorities List and are therefore outside the scope of this plan.	Not applicable
300.510	State assurances	No Regional modifications	See NCP
300.515	Requirements for state involvement in remedial enforcement response	No Regional modifications	See NCP
300.520	State involvement in USEPA-led enforcement negotiations	No Regional modifications	See NCP
300.525	State involvement in removal actions	No Regional modifications	See NCP
Subpart G – Trustees for Natural Resources			
300.600	Designation of federal trustees	Specific geographic areas entrusted to various agencies are listed in the ACPs.	See ACPs and IACP
300.605	State trustees	State Trustees are specific to Region III.	Sec. 5

40 CFR PART 300			
National Oil and Hazardous Substances Pollution Contingency Plan		**Regional Modifications**	**Location**
300.610	Indian Tribes	Tribal Trustees are specific to Region III	Sec. 5
300.612	Foreign trustees	Not applicable	
300.615	Responsibilities of Trustees	Region III RRT policy with regard to environmentally sensitive areas is guided by a national MOA between federal natural resource trustees and federal response agencies	Sec. 3
Subpart H – Participation by Other Persons			
300.700	Activities by other persons	No Regional modifications	See NCP
Subpart I – Administrative Record for Selection of Response Action			
300.800	Establishment of an administrative record	No Regional modifications	See NCP
300.805	Location of the administrative record file	No Regional modifications	See NCP
300.810	Contents of the administrative record file	No Regional modifications	See NCP
300.815	Administrative record file for a remedial action	No Regional modifications	See NCP
300.820	Administrative record for a removal action	No Regional modifications	See NCP
300.825	Record requirement after the decision document is signed	No Regional modifications	See NCP
Subpart J – Use of Dispersants and Other Chemicals			
300.900	General	No Regional modifications	See NCP
300.905	NCP Product Schedule	No Regional modifications	See NCP
300.910	Authorization of use	The state of Region III, USEPA, and USCG have instituted preauthorization plans and MOUs that dictate RRT3 policy on the use of chemical countermeasures and *in situ* burning	App. 3 and 6
300.915	Data requirements	No Regional modifications	See NCP
300.920	Addition of products schedule	No Regional modifications	See NCP
Subpart K – Federal Facilities [Reserved]			
Subpart L – Involuntary Acquisition of Property by the Government			
300.1105	Involuntary Acquisition of Property by Government	No Regional modifications	See NCP

APPENDIX 3: Executive Orders, MOAs, MOUs

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

Appendix 3-A	Executive Orders
Appendix 3-A1	EO 12580 Superfund Implementation (January 1987), as amended 13016 (August 1996) and 13286 (March 2003)
Appendix 3-A2	EO 12777 Implementation of Section 311 of FWPCA and OPA (October 1991), as amended 13286 (March 2003) and 13638 (March 2013)
Appendix 3-A3	EO 13650 Improving chemical Facility Safety and Security (August 2013)
Appendix 3-B	Cross Boundary Support MOAs
Appendix 3-B1	MOA USEPA Regions 2 & 3 (November 2006)
Appendix 3-B2	MOA USEPA Regions 3, 4, & 5 (April 2000)
Appendix 3-C	1997 Interagency Agreement on ESA
Appendix 3-D	MOU for Use of Volunteers (January 2011)

APPENDIX 4: Jurisdictional Boundaries for USCG Coastal / USEPA Inland Zones

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

Appendix 4-A: MOA Between USCG District 5 / USEPA Region III Response Jurisdiction Boundary (January 2010)

Appendix 4-B: MOA Between USCG District 8 / USEPA Region III Response Jurisdiction Boundary (September 2016)

Appendix 4-C: Resources for Jurisdictional Boundary Maps

APPENDIX 4-C: Resources for USCG / USEPA Coastal and Inland Zone Jurisdictional Boundaries

Jurisdictional Boundary Maps between USCG Coastal and USEPA Inland Zones can be found at two locations:

1. NOAA's Environmental Response Management Application (ERMA)

For general information on the ERMA online mapping tool and to access the ERMA User Guide, visit: https://response.restoration.noaa.gov/resources/maps-and-spatial-data/environmental-response-management-application-erma

To access the Atlantic ERMA for Region III: https://response.restoration.noaa.gov/atlantic-erma

- Expand "Admin Boundaries & Reference Features"
- Expand "Federal Agency Regions & Offices"
  - ✓ Check "EPA Region Boundaries" to see EPA Region III Boundaries
  - ✓ Check "EPA/USCG Region 5 DE, MD, VA Jurisdictional Boundary (USCG)" to see where USCG Coastal and EPA Inland boundaries are located in DE, MD, and VA
  - ✓ Check "USCG Captain of the Port Zones" or "USCG Sectors" to see where USCG Sectors are located in Region III.
  - ✓ NOTE: The jurisdictional boundaries or area of responsibility (AOR) for USCG District 9 is not shown in Region III (in the Great Lakes Area on ERMA). Also, the jurisdictional responsibility where USCG District 8 overlaps with Region III lies with EPA on the navigable rivers.

2. USEPA's Region 3 OSC Planning Dashboard

The IACP Viewer is accessed through the Dashboard: https://www.eparm.net/R3IACP/Default.aspx

- Access to the Viewer requires a login, which can be requested on the main page by clicking on [Register for Access] in the upper right corner of the screen.
- Once you have a Login and Password, click on the button below the map on the Home page labeled "Open IACP Viewer in new window"
- Expand the "Boundaries" folder under Layers
  - ✓ Check Boundaries – Region 3
  - ✓ Check USEPA/USCG AOR Boundary
    NOTE: In addition to the USCG AOR for District 5 in DE, MD, and VA, this map will also show the USCG AOR for USCG District 9 on Lake Erie.

APPENDIX 5: Instrument of Redelegation Between USCG and USEPA (November 1987)

(Signed 29 November 1987 and 27 May 1988)

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

APPENDIX 6: Preauthorization Documents

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

Appendix 6.0 MOU for Preauthorization for the use of Chemical Countermeasures by the FOSC (January 1997)

- MOU Annex I Preauthorization Zones and Zone-Specific Conditions
- MOU Annex II Critical Decision Making
- MOU Annex III Trial Use Policy
- MOU Annex IV Dispersant Monitoring Protocol
- MOU Annex V Products with Completed Section 7 Consultation
- MOU Annex VI Biological Monitoring/Region 5 Bioassay Protocol

Appendix 6.1 USFWS ESA Section 7 Determination Letter for Chemical Countermeasures (January 1997)

Appendix 6-A Dispersants

Appendix 6-A1 Update for Dispersant MOU Annexes I, II, and III (January 1999)

Appendix 6-A2: Dispersants Employment Evaluation Plan (DEEP) (May 1991)

- Dispersant Use Decision Guidelines & Checklist
- Criteria for Monitoring Dispersant Use
- Special Monitoring of Applied Response Techniques (SMART) –Located in Appendix 8 of this RCP document

Appendix 6-B In Situ Burn (September 1997)

- MOU Appendix I Response Decision Matrix for ISB
- MOU Appendix II ISB Evaluation & Response Checklist
- MOU Appendix III In Situ Burn Monitoring Plan

Appendix 6-B1 USFWS ESA Section 7 Determination Letter for ISB (September 1997)

Special Monitoring of Applied Response Techniques (SMART) –Located in Appendix 8 of this RCP document

Appendix 6-C Solidifier: CIAgent (January 2007)

Appendix 6-C1 Preauthorization & Section 7 Determination Letter for CIAgent (May 2007)

APPENDIX 7: Response Policy Guidance

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

Appendix 7-A: Bioremediation Policy

Appendix 7-A1: Bioremediation Policy (July 1999)

Appendix 7-A2: Bioremediation Guidance & Decision Tool (February 2004)

Appendix 7-B: Elasticity Modifiers (DRAFT) [Reserved]

Appendix 7-C: Emulsion Treating Agents [Reserved]

Appendix 7-D: Herding Agents (Surface Collecting Agents) [Reserved]

Appendix 7-E: *In Situ* Burn for Ocean, Coastal Areas and Inland Zones (March 2003)

Appendix 7-F: *In Situ* Burn for Oil Impacted Herbaceous Wetlands (2004)

Appendix 7-G: Shoreline Pre-treatment Agents [Reserved]

Appendix 7-H: Solidifiers [refer to Appendices 6 and 6-C, Reserved]

Appendix 7-I: Surface Washing Agents [Reserved]

Appendix 7-J: Ohio Valley Umbrella (September 2015)

Appendix 7-K: Places of Refuge (NRT, July 2007)

Appendix 7-L: RRT3 Specific Response Policies

Appendix 7-L1: Limited Jones Act (May2002)

Appendix 7-L2: Natural Trustee Resources [Reserved]

Appendix 7-L3: Disposal of Contact Water (May 2002)

Appendix 7-L4: Ocean Dumping (May 2002)

Appendix 7-L5: Non-Floating Oil [Reserved]

Appendix 7-L6: Vessel Decontamination [Reserved]

Appendix 7-L7: NRT Use of Volunteers (September 2012)

Appendix 7-L8: Photo-documentation [Reserved]

Appendix 7-L9: Coordination with Tribal Officials [Reserved]

APPENDIX 8: Monitoring and Evaluation Tools

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

Appendix 8-A	Special Monitoring of Advanced Response Technologies (SMART) (August 2006)
Appendix 8-B	NRT Monitoring for Atypical Dispersant Operations (May 2013)
Appendix 8-C	Selection Guide
Appendix 8-C1	Volume 1 of the Selection Guide for Oil Spill Response Countermeasures – Decision Making (June 2009)
Appendix 8-C2	Volume 2 of the Selection Guide for Oil Spill Applied Technologies – Operations Plans (June 2000)
Appendix 8-D	Other Product/Category-Specific [Reserved]

APPENDIX 9: Consultation Requirements and References

Appendices are provided at the RRT3 Regional Contingency Plan (RCP) webpage:
https://www.nrt.org/RRT3_RCP

Appendix 9-A	ESA and Critical Habitats
Appendix 9-A1	MOA Training Manual for ESA (2002)
Appendix 9-A2	MER Policy Letter 01-14 (October 2013)
Appendix 9-A3	Best Practices for Migratory Bird Care During Oil Spill Response (2003)
Appendix 9-A4	RRT3 ESA Spill Response Screening Matrices for Coastal and Inland Areas (dynamic document)
Appendix 9-B:	Essential Fish Habitat (EFH) Consultation Guidance (April 2004)
Appendix 9-C:	Programmatic Agreement for Protection of Historic Properties during Federal Emergency Response (August 1998)
Appendix 9-D:	Tribal Consultation
Appendix 9-D1	EO 13007 Indian Sacred Sites (May 1996)
Appendix 9-D2	Guidance for Implementing E.O. 13175 (July 2010)
Appendix 9-D3	Policy to Consult with Indian Tribes (May 2011)
Appendix 9-D4	Section 106 Consultation Guidebook (December 2012)
Appendix 9-D5	Role of the Tribal Historic Preservation Officer in the Section 106 Process (November 2013)
Appendix 9-D6	Government-to-Government Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations (November 2013)
Appendix 9-E	RRT3 NAGPRA Plan of Action Checklist [Reserved]
Appendix 9-F	USACE Nationwide Permit (NWP)-20 (December 2017) [Reserved]

Appendix 10: Natural Resource Damage Assessment (NRDA) [Reserved]

[Reserved for addition of appropriate resource document/text]

Appendix 11: (DRAFT) Incident-Specific Region III Regional Response Team III Activation Quick Response Guide [Reserved]

This is a DRAFT document to be reviewed by RRT membership

10 pages

RECORD OF CHANGES FOR REGION III REGIONAL CONTINGENCY PLAN

Date of Revision: November 2019

Section	Change	Comments
3.C	Multi-Area Response	
3.D	Coastal Region III and II, and III and V – edited text for boundary with District 9 in NY along Erie Lake.	
3.E	▪ Reference to DEEP as policy ▪ Surface Washing Agents Policy no longer [RESERVED] ▪ Non-Floating Oils no longer [RESERVED] ▪ Vessel Decontamination…	▪ DEEP removed as appendix and moved to Response Tools webpage ▪ Surface Washing Agents Policy Appendix 7-I posted to RCP webpage ▪ Non-Floating Oils Appendix 7-L5 posted to RCP webpage ▪ added links to webpage?
4.D	Section revised to provide a better description of cross-boundary support and activation of an incident-specific RRT	
Appendix 4	Revised to include link to webpage and added Appendix 4-C	Resources for Jurisdictional Boundary Maps