2013

Reviewed and Updated
August 2015

New Orleans
Area Contingency Plan

U.S. Coast Guard
Sector New Orleans
200 Hendee Street
New Orleans, LA 70114

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U.S. Department of Homeland Security

United States Coast Guard

Commander
United States Coast Guard
Sector New Orleans

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16471

6 MAY 2014

MEMORANDUM

From: P.W. Gautier, CAPT
CG SECTOR New Orleans

Reply to Attn of: Mr. Ken Jones,
(504) 365-2117

To: Distribution

Subj: SECTOR NEW ORLEANS AREA CONTINGENCY PLAN ANNUAL UPDATE

1. This promulgates the New Orleans Area Contingency Plan's annual revision requirement for 2014.

2. The Area Contingency Plan (ACP) is designed to meet the requirements and intent of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), is aligned with the National Response Framework (NRF), and is built around the principles of the National Incident Management System (NIMS). This update to the New Orleans Area Contingency Plan is effective immediately and incorporates all information listed in the Record of Changes.

3. This ACP is electronic, enabling users to rapidly access a wide range of supporting documents that are linked to the ACP. For the ACP to provide maximum benefit, responders and members of the Area Committee, along with other port partners, must continuously update and revise the ACP annually, incorporating lessons learned and/or best practices through exercises and actual responses. Therefore, response personnel should make themselves familiar with this plan.

4. This ACP highlights the national importance of the New Orleans and Southeast Louisiana area of responsibility, both environmentally and economically, and is the culmination of the excellent cooperation and teamwork by the members of the New Orleans Area Committee.

5. If you have any questions, please contact Mr. Kenneth Jones, the Sector New Orleans Area Contingency Plan Coordinator at (504) 365-2117 or via email at Kenneth.C.Jones@uscg.mil.

#

Enclosures: (1) Record of Changes

Dist: Sector New Orleans Area Committee Members
CGD EIGHT (dr)
CG LANTAREA (LANT-5)
CG GST
COMDT (CG-MER)

U.S. Department of Homeland Security
United States Coast Guard

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Eighth Coast Guard District

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22 Mar 2013

MEMORANDUM

Digitally signed by CUBANSKI.EDWARD.J.III.1014188939
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USCG, cn=CUBANSKI.EDWARD.J.III.1014188939
Reason: I am the author of this document
Date: 2013.03.22 15:06:29 -05'00'

From: E. J. Cubanski, III, CAPT
CGD EIGHT (dr)

To: CG SECTOR New Orleans

Subj: APPROVAL OF 2013 NEW ORLEANS AREA CONTINGENCY PLAN

Ref: (a) CGD EIGHT New Orleans LA 311313Z Oct 12

1. Congratulations to you and your staff! Your subject plan, as updated, has been reviewed by my staff and determined to be in substantial compliance with reference (a) and all of its references. Please issue a letter of promulgation and post the approved ACP to Homeport no later than 1 Jun 2013.

2. Please also pass along my thanks to your Area Committee (AC) for the effort that went into this latest update. Continuous improvement, and maintaining the current momentum, will ensure that we are always prepared to effectively respond to oil discharges and hazardous substance releases in the coastal zone. To assist with this momentum, in the course of this ACP review, my staff identified areas that warrant consideration as your AC prioritizes its work, as part of the ACP review cycle in accordance with reference (a); see enclosures (1) and (2).

3. If you have any questions regarding this matter, please contact LT Christopher G. Buckley at (504) 671-2233 or the CGD 8 (drm) email address: D08-DG-District-DRM@uscg.mil.

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Enclosures: (1) Area Contingency Plan Review Summary (see D8 SharePoint site)
(2) Area Contingency Plan Review Checklist (see D8 SharePoint site)

U.S. Department of Homeland Security

United States Coast Guard

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16474
12 JUN 2013

MEMORANDUM

From: P. W. Gautier, CAPT
CG SECTOR New Orleans

To: Distribution

Subj: 2013 NEW ORLEANS AREA CONTINGENCY PLAN

1. Pursuant to the provisions of the Clean Water Act, Regional Response Team VI Regional Contingency Plan and the National Contingency Plan (NCP), the Sector New Orleans Area Contingency Plan (ACP) is established. Our Area Contingency Plan is designed to provide guidance and process for a coordinated response to oil discharges and hazardous substance releases by local, state, and federal government and non-government agencies.

2. I want to emphasize the importance of the many partnerships that enable us to effectively plan and respond to potential pollution threats. It is through our federal, state, tribal, parish, local government and industry members within the Area Committee that we strengthen this plan as we share lessons learned, updated policies and advancements in response technologies. Your continued commitment is essential to the effectiveness of our plan.

3. The Area Contingency Plan and associated Geographic Response Plans (GRPs) are considered part of the Area Contingency Plan but may be distributed and revised separately.

4. In accordance with the National Contingency Plan, our Area Contingency Plan has and will continue to be readily accessible among our partners and the general public. The New Orleans Area Contingency Plan is located at the U.S. Coast Guard Homeport website https://homeport.uscg.mil/.

5. Please direct any inquiries regarding our ACP to the Sector New Orleans Contingency Planning and Force Readiness Department at 504-365-2102.

#

Dist: New Orleans Area Committee Members
CGD EIGHT (dr)
CG LANTAREA (LANT-5)
CG NSFCC
CG GST
COMDT (CG-MER)

New Orleans Area Contingency Plan

This is the New Orleans Area Contingency Plan (NOACP). This plan serves as New Orleans Area Contingency Plan and is written in accordance with the Regional Response Team VI Regional Contingency Plan and the National Contingency Plan. Federal, State, Tribal Parish and Local government representatives as well as representatives from commercial, non-profit, and private concerns continue to drive this planning effort. All Federal, State, Tribal, and Local response organizations that are members of Regional Response Team VI and the New Orleans Area Committee should use this plan for responses to oil and hazardous materials spills, drill, and exercises.

This plan supersedes all previous editions. In addition, the entire document has been reviewed and updated, as appropriate, to reflect as up to date information as possible. All chapters contain changes and should be reprinted to ensure users have the most recent version of the NOACP.

Geographical Response Plans (GRPs) are currently being developed for many of the coastal and inland waters of the NOACP geographical boundaries. The GRPs are considered part of the NOACP but may be distributed and revised separately.

The New Orleans Area Committee encourages active participation by all interested parties in the continuing area contingency planning process. Comments, suggestions, and corrections should be directed to the New Orleans Area Committee.

The effective date of this plan is June 1st, 2013

The annual update to this plan was completed on April 30, 2014.

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Record of Changes

Date	Change Number	Comments
4/14/14	1	New Section 8000 Marine Firefighting and Salvage Plan. New numbering system add to Table of Contents
4/14/14	2	Deleted Appendix Y Sensitive Site Index and Replaced with the Natural Disaster Response Plan
4/14/14	3	Added T & T Salvage Contact information into Section 8000 page 49
4/14/14	4	Added new Dispersant exclusion zone statement into Appendix D on page 4
4/14/14	5	Section 9250 deleted Shea Penland POC and changed to BSEE Dispatch on page 13
4/14/14	6	Appendix G Shoreline Assessment Manual PDF version added as attachment
4/14/14	7	Removed Proprietary information form Appendix R needs completion to remove inventory lists for public
4/15/14	8	Coastal Parish GRP's Added for Appendix S
4/16/14	9	Section 3000 p. 62 Staging Area Item #42 "boat ramp closed" and #46 "new boat ramp Cyprus Cove"
4/25/14	10	Added Signature Pages from Coastal Parrish's
9/28/15	11	Chapter 9000 Appendicies, Appendix C, p. 8, In-Situ Burn Application Checklist - changed "populated area" to "shoreline."
9/28/15	12	Chapter 9000 Appendicies, Appindix C, p. 15 - changed "human population" to "shoreline."
9/28/15	13	Chapter 9000 Appendicies, Appindix C, p. 15 - deleated sentence "Human population is defined as 100 people per square mile."

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Record of Review

Date	Name of Reviewer	Comments
April 2014	Ken Jones MST1 K Carpino	Annual Review and Update
September 2015	MSTCM Kimberly McLoud	Annual Review and Update

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NOACP SIGNATURE PAGE

Peter W. Gautier
Captain, US Coast Guard
Commander, Sector New Orleans
Captain of the Port, New Orleans
New Orleans Area Committee Chair

Brian Wynne
Louisiana Oil Spill Coordinator
New Orleans Area Committee Co-Chair

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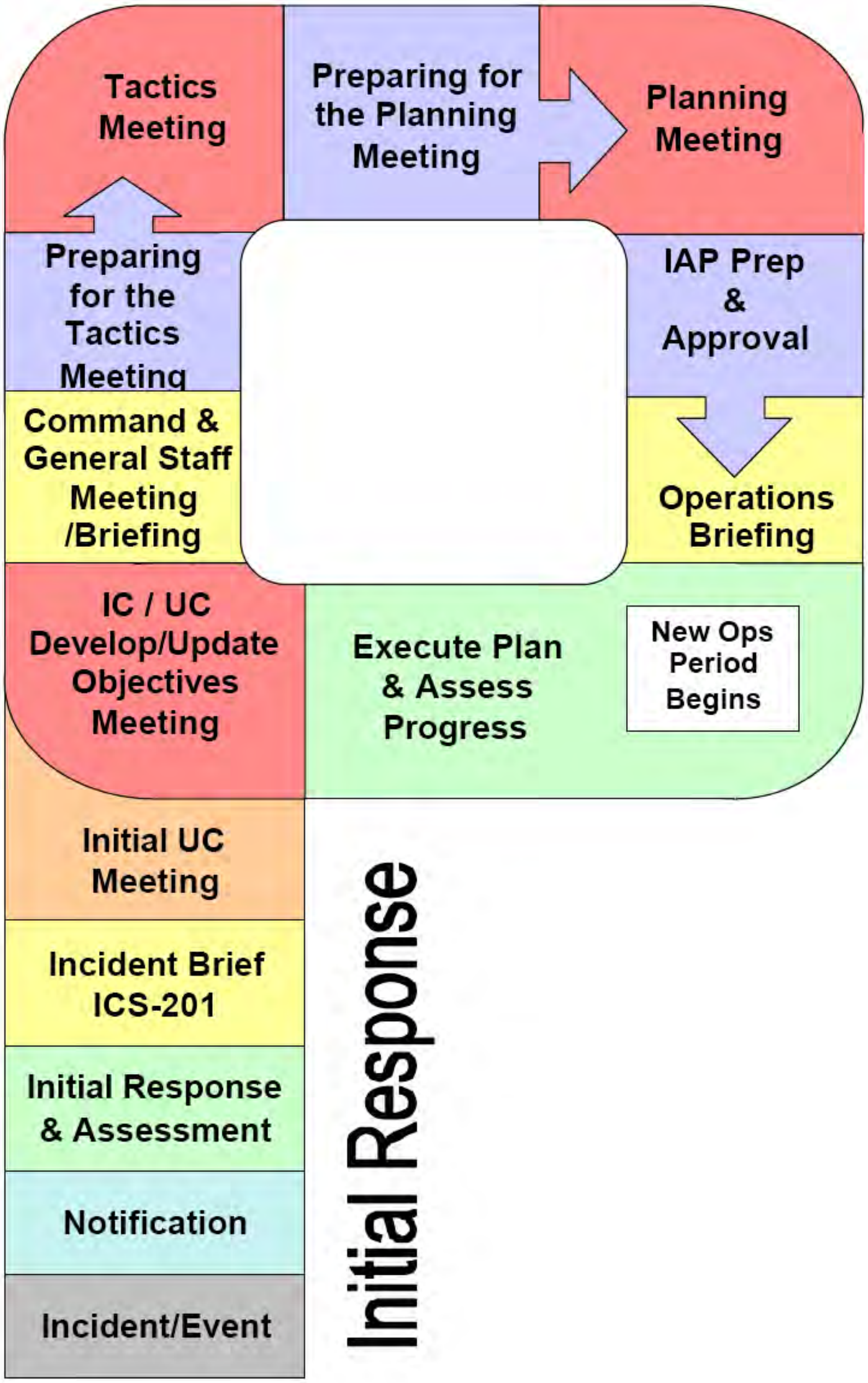
Incident Command System Operational Planning "P"



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REQUIRED NOTIFICATIONS

All spills of oil or hazardous substance into navigable waters as defined by the Clean Water Act (CWA) and all spills of a reportable quantity of hazardous substance (40 CFR Part 302) must be immediately reported by the spiller to the National Response Center (NRC). The NRC will contact appropriate local US Coast Guard (USCG) or Environmental Protection Agency (EPA) offices. Notifying state offices does not relieve the spiller from federal requirements to notify the NRC or vice versa.

NATIONAL RESPONSE CENTER (NRC)
1-800-424-8802 Toll Free 24hrs
1-202-267-2675 Toll Call 24hrs

All unauthorized discharges of pollutants in Louisiana must be immediately reported to the Louisiana Emergency Hazardous Materials Hotline.

LOUISIANA EMERGENCY HAZARDOUS MATERIALS HOTLINE
1-877-925-6595 24hrs

In addition to contacting the NRC, spillers may contact the nearest USCG or EPA office. For spills in the Captain of the Port New Orleans area of responsibility contact:

Sector New Orleans
1-504-365-2200

For spills occurring in the inland zone contact:

U.S. Environmental Protection Agency
1-866-EPASPILL (372-7745)

FIRST RESPONDER GUIDELINES

REMAIN UPWIND, UPHILL, OR UPSTREAM OF THE INCIDENT. FROM A SAFE DISTANCE, assess the situation. Use binoculars, if available, to view the scene. Attempt to determine if radiological materials or hazardous substances are present. Observe and note the following:

- Effects on people, animals, and the environment;
- Container types, markings, placards and labels. If available, use the DOT Emergency Response Guidebook for reference;
- Signs of any release or discharges substances and any unusual or pungent odors (move farther away or upwind if you detect an odor and are not positive it is safe);
- Wind direction and prevailing weather;
- Distance and direction of nearby dwellings; and
- Distance and direction of any nearby surface water.

The initial responder shall make all appropriate notifications. The initial responder shall not enter an area where the responder may become a victim, *even to rescue another.*

Until help arrives, the initial responder should:

- Cordon off the incident area and establish a safety zone. If chemical vapors or flammable/explosive materials are involved, evacuate all persons from the immediate area and remain upwind of the incident area; if sources of radiation or radioactive materials are suspected to be involved, use the principles of time, distance, and shielding to reduce potential exposure;

- Enter the incident area only if properly trained and equipped with appropriate protective clothing and equipment;

- Render first aid to victims; be sure to notify medical personnel if radiation exposure or contamination is suspected;

- Serve as an on-scene communication point;

- Brief the response team leader or incident commander upon arrival.

INTIAL ASSESSMENT/INFORMATION CHECK-OFF LIST

The following information should be collected for all spills reported to member agencies:

Date and Time of Call:

Caller Name, Address, & Phone Number:

Name of Person Taking the Report:

VESSEL/FACILITY/SPILLER INFORMATION:

1. Name of Potentially Responsible Party

2. Name of vessel/facility. Railcar/truck number or other identifying information

3. Type and size of vessel/facility

4. Total quantity of fuel on board or in tank

5. Nationality (vessel only)

6. Location of Incident (i.e. street address, lat/long, mile post)

7. Date and time of incident (or when discovered)

8. Number and type of injuries or fatalities (if any)

9. Have evacuations occurred (if any)

10. Description of spill (i.e. size, color, smell, etc.)

11. Type of incident (i.e. explosion, collision, tank failure, grounding, etc.)

12. Material released/discharged

13. Source of material released/discharged

14. Estimated amount released/discharged

15. Total potential quantity that could be released/discharged (i.e. total quantity in tank or on board)

16. Environmental media impacted or potentially impacted by spill (i.e. air, water, ground/soil)

17. Description of who is on-scene and what response activities are being done or have been completed.

18. Weather/Sea Conditions

19. Point of contact (i.e. Responsible Party name, phone address)

20. Vessel/facility agent(s) (i.e. name and phone)

21. Name and contact information of insurance carrier.

22. Other agencies notified

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FIRST FEDERAL OFFICAL ON-SCENE

The first Federal official affiliated with a National Response Team member agency to arrive at the scene of a discharge/release should coordinate activities under the National Contingency Plan (NCP); and is authorized to initiate, in consultation with the pre-designated Federal On Scene Coordinator (FOSC), and necessary actions normally carried out by the FOSC until the arrival of the pre-designated FOSC, or his/her representative. This official may initiate federal fund-financed actions only as authorized by the pre-designated FOSC.

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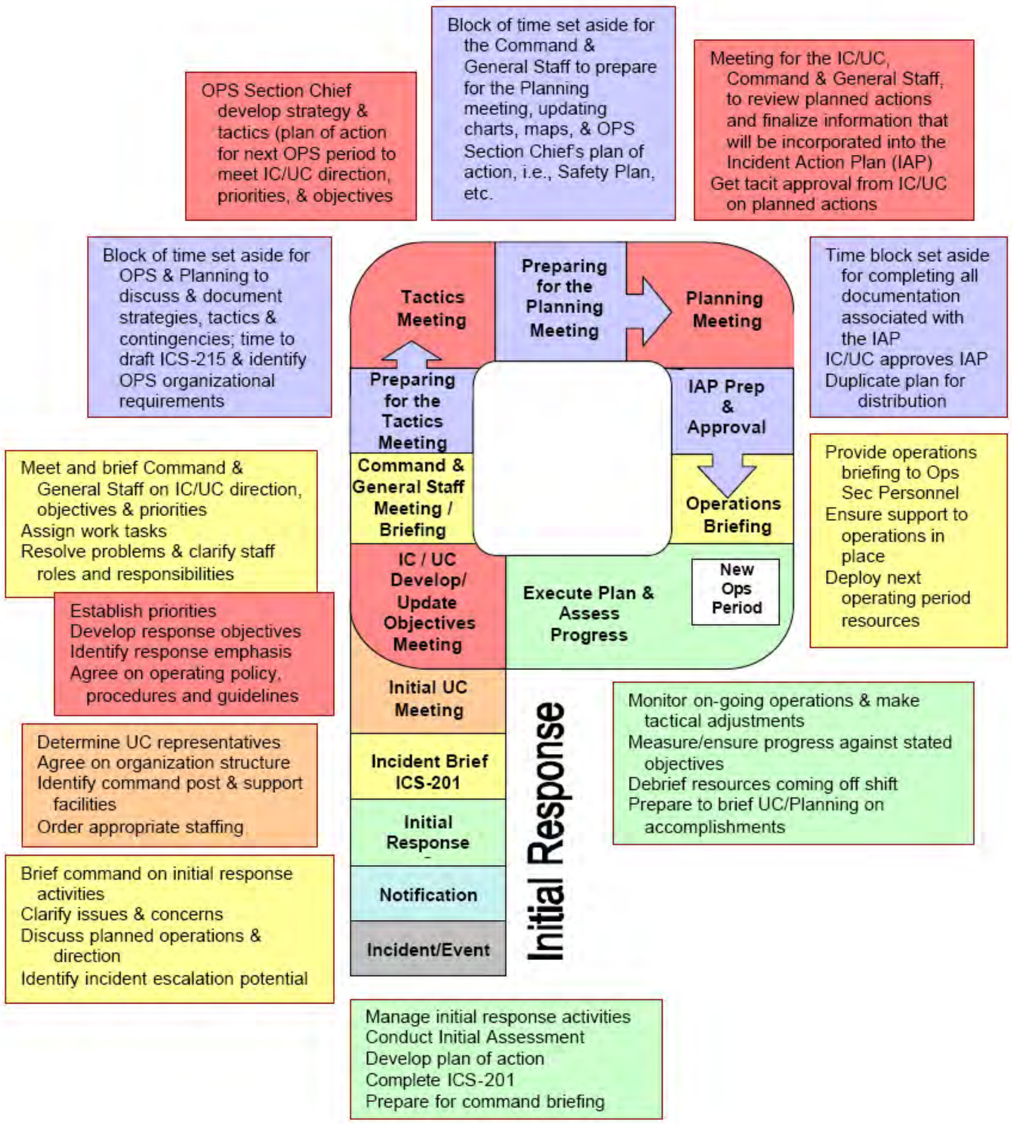
Incident Command System Operational Planning "P" For General Activities



OPS Section Chief develop strategy & tactics (plan of action for next OPS period to meet IC/UC direction, priorities, & objectives

Block of time set aside for the Command & General Staff to prepare for the Planning meeting, updating charts, maps, & OPS Section Chief's plan of action, i.e., Safety Plan, etc.

Meeting for the IC/UC, Command & General Staff, to review planned actions and finalize information that will be incorporated into the Incident Action Plan (IAP)
Get tacit approval from IC/UC on planned actions

Block of time set aside for OPS & Planning to discuss & document strategies, tactics & contingencies; time to draft ICS-215 & identify OPS organizational requirements

Time block set aside for completing all documentation associated with the IAP
IC/UC approves IAP
Duplicate plan for distribution

Meet and brief Command & General Staff on IC/UC direction, objectives & priorities
Assign work tasks
Resolve problems & clarify staff roles and responsibilities

Provide operations briefing to Ops Sec Personnel
Ensure support to operations in place
Deploy next operating period resources

Establish priorities
Develop response objectives
Identify response emphasis
Agree on operating policy, procedures and guidelines

Monitor on-going operations & make tactical adjustments
Measure/ensure progress against stated objectives
Debrief resources coming off shift
Prepare to brief UC/Planning on accomplishments

Determine UC representatives
Agree on organization structure
Identify command post & support facilities
Order appropriate staffing

Brief command on initial response activities
Clarify issues & concerns
Discuss planned operations & direction
Identify incident escalation potential

Manage initial response activities
Conduct Initial Assessment
Develop plan of action
Complete ICS-201
Prepare for command briefing

CHAPTER 1000

1000 Introduction

The purpose of the New Orleans Area Contingency Plan (NOACP) is:

- To provide for orderly and effective implementation of response actions to protect the people, natural resources, and property of the coastal zone covered by this plan from the impacts of an oil discharge, substantial threat of discharge of an oil, a release of hazardous substance, or substantial threat of a release of a hazardous substance, including Weapons of Mass Destruction (WMD), from inland and marine sources.

- To promote the coordination of and describe the strategy for a unified and coordinated federal, state, tribal, local, potential responsible party, response contractor, response cooperative, and community response to an oil discharge, substantial threat of an oil discharge, release of a hazardous substance, or substantial threat of a release of a hazardous substance, including WMD, from inland and marine sources.

- To be consistent with the NCP and to be adopted as the Area Contingency Plan for the New Orleans Federal On-Scene Coordinator's (FOSC) Coastal Zone.

- To provide guidance to all Facility and Vessel Response Plan, and Offshore Oil Spill Response Plan reviewers and Plan holders to ensure consistency with the ACP.

- To be a guidance manual for responders.

This plan is intended for use as a guideline for response actions to spill incidents and to ensure consistency in response to spills. Federal rules require that a Responsible Party (RP), or spiller, must be able to manage spills with a pre-designated response management organization that accommodates a unified command structure in recognition of federal, state, tribal, or local jurisdiction.

Many New Orleans Area Committee (NOAC) member agencies have specific responsibilities during and following a weapon of mass destruction (WMD) incident or other terrorist act. No one document or plan can serve as a complete response guide for a WMD/terrorist incident.

Chapter 1000 Introduction

1010 Assumptions

Releases of hazardous substances and/or discharges of oil will occur within the boundaries of the NOAC which will require a Unified response action. These response actions will be directed or monitored by a Pre-designated FOSC. The U.S. Department of Energy (DOE) and the U.S. Department of Defense (DOD) will provide the FOSC for hazardous substance releases where the release is on or the sole source of the release is from a DOE or DOD facility.

Upon notification of a spill or threat of a spill, the response procedures, protocols, coordination mechanisms, and information in the ACP necessary to implement a unified response will be used.

This plan is written to be consistent with the Clean Water Act (CWA), Oil Pollution Act of 1990 (OPA90), CERCLA, the Region VI RCP, and the NCP. Any provision of this plan found to be inconsistent with the NCP will no longer be in effect.

1100 Introduction / Authority

The Federal Water Pollution Control Act (FWPCA) (33 UCS 1321 et seq.) and the Comprehensive Environmental Response Compensation Liability Act (CERCLA or Superfund) address the development of the National Planning and Response System. As part of this system, in conjunction with the NCP, area contingency plans are to address responses to worst-case discharges of oil or releases of hazardous substances, and mitigation or prevention of a substantial threat of discharge/release from a vessel, offshore facility, onshore facility, or pipeline. The Area Committee is given the responsibility for working with the response community to plan for joint response efforts, including spill containment, mechanical recovery, use of dispersants, in-situ burning, shoreline cleanup, protection of sensitive areas, and protection, rescue, and rehabilitation of fish and wildlife.

1110 Area Covered by the ACP

This Area Contingency Plan is the chief working document of the NOAC. It has been developed with the cooperation of all designated Federal and State government agencies.

This plan is applicable to all response actions taken pursuant to the authorities under the Comprehensive Environmental Response Compensation Liability Act (CERCLA) and Section 311 of the Clean Water Act, as amended.

Chapter 1000 Introduction

This plan provides an Incident/Unified Command with the strategy, direction, organization, and procedures for responding to oil discharges and releases of hazardous substances, pollutants, and contaminates; outlining the types of assistance available during response actions. The strategies, mechanisms, operations, and procedures contained in this plan are intended to conform to the provisions of the Region VI Regional Contingency Plan (RCP) and the National Contingency Plan (NCP).

This plan is applicable to and in effect for:

- Discharges/releases, or threat of a discharge/release, of oil and hazardous substances into or on the navigable waters and adjoining shorelines of the United States that lie within the geographical boundaries of the New Orleans Area Committee's area of responsibility (AOR);

- Releases or threat of release of hazardous substances, pollutants, and/or contaminants into the environment of the coastal zone which may present an imminent and substantial danger to public health or welfare; and

- Additional resources and support requirements above those available in the boundaries/jurisdiction of the NOAC will be coordinated through the Region VI RCP, and the NCP.

1120 Federal/State/Other Government Agencies (OGA) Authority

Identification of responsibilities and jurisdictions among Federal, State, Tribal, and Local governments in response actions, methods and procedures will inable coordinaton and integration amoungst agencies and promote effective joint spill response operations.

1120.1 Federal

Designating areas, appointing area committee members, determining information to be included in, and review of area contingency plans, has been delegated by Executive Order 12777 of 22 October 1991, to the Commandant of the U.S. Coast Guard (USCG), through the Department of Homeland Security, for the Coastal Zone, and to the Administrator of the Environmental Protection Agency (EPA) for the inland zone. The coastal zone and inland zone are defined in the NCP (40 CFR Part 300.5). The EPA has NCP response authority for incidents in all areas inland of the coastal zone. The Coast Guard has designated, as Areas, those portions of the Captain of the Port (COTP) zones that are within the coastal zone and for which area committees will prepare area contingency plans. COTP zones are described in Coast Guard regulations (33 CFR Part 3). This is the ACP for Coast Guard COTP zone New Orleans.

1120.2 State of Louisiana

The Louisiana Oil Spill Coordinator (LOSC), in consultation with the Louisiana Department of Environmental Quality, is authorized to administer the Louisiana Oil Spill Prevention and Response Act of 1991 (OSPRA, LRS 30:2451 et seq.) and direct all state discharge response and cleanup operations resulting from unauthorized or threatened discharges of oil, affecting or potentially affecting the land, coastal waters, or any other waters of Louisiana, as directed by the Governor or upon a declaration of emergency by the Governor.

The Hazardous Material and Explosives Control Unit, under the Louisiana Department of Public Safety and Corrections, has the responsibility for response and investigation of all chemical emergencies occurring within the State of Louisiana. The Hazardous Material and Explosives Control Unit is the SOSC for all Hazardous Substance releases.

1120.3 Other Federal, State, and Local Agencies

Other Federal, State, and Local agencies have varying authorities in the event of an environmental response depending on their jurisdiction and laws.

1130 Transition of OSCs

There are occasions when command responsibilities must transition from one On-Scene Coordinator (OSC) to another, from one federal or state OSC (FOSC or SOSC) to another, or from a SOSC to a FOSC. The transition in FOSCs is often necessitated by a determination of where the greatest impact of a spill is likely to take place. For example, a spill may originate in the inland zone where EPA has primary responsibility, but the majority of the impact from the spill may occur in the coastal zone where the USCG has responsibility.

Regardless of the circumstances that necessitate a transition in jurisdictional agency, clear and effective communications are essential to an efficient and safe response. Every effort must be made to share all pertinent information. This exchange of information could involve multiple issues and various amounts of detail, depending on the complexity of the spill. It should include, but is not limited to:

Current Situation

- Status of the source & spill
- Review of the Incident Action Plan (IAP) & Site Safety Plan
- Review of Site Communications
- Discuss Resources En-route & On-scene

- Note territory, exposures, safety concerns, etc.
- Incident Potential

Organizational Structure

- Unified Command & RP Representation
- ICS Organizational Chart Review
- Schedule of Meetings

Objectives and Priorities

Current and Planned Actions

- Resources Assignments
- Resources En-route and/or ordered
- Facilities Established

Site Visit and Walk Through

Spill Investigation/Legal Issues

- Cause of spill
    - Investigation & Evidence

Notifications

- What notifications have been made?
    - Stakeholders? Tribes?
    - Local Issues and Economics?

Wildlife and Environment

- Wildlife Impact Issues
- Endangered Species
    - Environmentally Sensitive Areas

It is preferred that both OSCs are present through one complete operational period and planning cycle. The transition from one OSC to another should not be considered complete until the on-coming OSC acknowledges they are comfortable and the transition is documented. Further, when transition between federal agencies is necessary after the Oil Spill Liability Trust Fund is opened and a Federal Project Number (FPN/CPN) assigned, it should be documented in a Pollution Report (POLREP). Both OSCs must also submit cost documentation to account for funds expended during their tenure as the OSC.

1200 Geographical Boundaries

1210 Area Cov

The geographical boundaries of this plan are defined as the New Orleans Captain of the Port zone described in 33 CFR Part 3.40-15. The Sector New Orleans Marine Inspection Zone and Captain of the Port Zone starts at latitude 30°10’00” N, longitude 89°10’00” W; thence west along latitude 30°10’00” N to longitude 89°31’48” W; thence north along longitude 89°31’48” W to the west bank of the Pearl River (at the mouth of the river); thence north along the west bank of the Pearl River to latitude 31°00’00” N; thence west along latitude 31°00’00” N to the east bank of the Mississippi River; thence south along the east bank of the Mississippi River to mile 303.0; thence west to the west bank at mile 303.0; thence north to the southern boundary of the Old River Lock Structure, thence west along the south bank of the Lower Old River; thence west along the south bank of the Red River to Rapides Parish, thence south along the western boundaries of Avoyelles, Evangeline, Acadia, and Vermillion Parishes to the intersection of the sea and longitude 92°37’00” W; thence south along longitude 92°37’00” W to the outermost extent of the EEZ, thence east along the outermost extent of the EEZ to longitude 88°00’00” W; thence north along longitude 88°00’00” W to latitude 29°00’00” N; thence northwest to latitude 30°10’00” N, longitude 89°10’00” W. Marine Safety Unit Morgan City will maintain a separate Area Committee and Area Contingency Plan.

The boundary of the MSU Morgan City Marine Inspection and Captain of the Port Zone starts at latitude 28°50’00” N, longitude 88°00’00” W.; thence west to latitude 28°50’00” N., longitude 89°27’06” W.; thence northwest to latitude 29°18’00” N, longitude90°00’00” W; thence northwest along the northern boundaries of Lafource, Assumption, Iberia, and St. Martin Parishes, Louisiana; thence northwest along the northern boundary of Lafayette and Acadia Parishes, Louisiana; thence south along the west boundary of Acadia and Vermillion Parishes, Louisiana to the Louisiana Coast at longitude 92°37’00” W, thence south along longitude 92°37’00” W to the outermost extent of the EEZ to longitude 88°00’00” W.; thence north to latitude 28°50’00” N, longitude 88°00’00” W.

New Orleans Captain of the Port Zone

New Orleans COTP Zone Boundaries Quick Reference

Lower Mississippi (LMR)	Sea Buoy (MM 20)- 303
Gulf Intracoastal Waterway	MM44.2 EHL- 20 WHL
Inner Harbor Navigational Canal (IHNC)) (Industrial Canal)	Entire Canal
Port Allen Route	MM0-64.1
Atchafalaya River	MM0-45 and shared jurisdiction W/ Morgan City MM45.5-49.5
Mississippi River Gulf Outlet	MM10-66
Tiger Pass	Entire Pass

Inland/Coastal Zone Delineation

The purple line in the map above marks the delineation between the USCG and EPA jurisdictions, Inland and Coastal Zones as defined in the NCP (40 CFR Part 300).

1210 Federal

The USCG Captain of the Port, New Orleans is the pre-designated OSC for pollution response in the Coastal Zone in accordance with 40 CFR Part 300.120(a)(1).

The Coastal Zone as defined for the purposes of the NCP and the NOACP means, all 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.

The EPA Region VI provides the pre-designated OSC for pollution response in the Inland Zone in the State of Louisiana. Responses conducted in the Inland zone shall be conducted in accordance with Region VI Regional Integrated Contingency Plan.

The Inland Zone as defined for the purposes of the NCP and the NOACP means, the environment inland of the coastal zone excluding the Great Lakes and specified ports and harbors on inland rivers. The term inland zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans.

Specific response boundaries are identified in the Memorandum of Understanding between EPA and USCG Eighth District. This document can be found in Chapter 9000, Appendix T.

For spills originating on land impacting or threatening to impact navigable water, the determination of the appropriate federal agency (EPA or USCG) for response shall be made by considering the AOR to which the largest impact may occur.

According to Section 300.140(b) of the NCP, if a discharge or release affects more than one zone (inland/coastal/COTP), determination of the FOSC shall be based on the area vulnerable to the greatest threat. If the area vulnerable to the greatest threat cannot be determined, the Unified Command shall establish an Incident Command System that adequately accounts for effective response in both zones. If transition of FOSC from one agency to another is necessary, the transition shall follow the guidelines outlined in Section 1140 of this chapter.

1210.1 First Federal Official On-Scene

According to Section 300.135(b) of the NCP, the first federal official affiliated with a National Response Team member agency to arrive on scene of a discharge or release should coordinate activities under the NCP and is authorized to initiate, in consultation with the pre-designated FOSC and prior to his/her arrival on scene, any necessary actions normally carried out by the FOSC. Arrival of the first federal official on scene does not affect the designation of the appropriate FOSC.

1210.2 Trans-Boundary Jurisdictions

The following FOSC/COTP Zones border the New Orleans FOSC Zone.

North- U.S Coast Guard Sector Upper Mississippi River- (866) 360-3386

West- U.S. Coast Guard MSU Morgan City- (985) 380-5320

East- U.S. Coast Guard Mobile- (251) 441-6211

Inland Zone- U.S. Environmental Protection Agency- 1866-EPA-SPILL (372-7745)

1220 State

The state of Louisiana will respond within its jurisdiction and laws within the state's boundaries.

1230 Tribal

The following Federally Recognized Tribes are contained within the geographical area covered under this plan.

- Chitimacha Tribe of Louisiana
- Coushatta Tribe of Louisiana
- Jena Band of Choctaw Indians
- Tunica-Biloxi Indian Tribe of Louisiana
- Alabama-Coushatta Tribe of Texas
- Choctaw Nation of Oklahoma
- Quapaw Tribe of Oklahoma
- Seminole Nation of Oklahoma
- Seminole Tribe of Florida
- Mississippi Band of Choctaw Indians

1240 Local

The following Parishes/Counties are contained within the geographical area covered under this plan. Parish/County agencies will respond within their jurisdiction and laws within the appropriate Parish/County boundaries.

- Orleans Parish
- Plaquemines Parish
- St. James Parish
- St. Bernard Parish
- Jefferson Parish

- St. Charles Parish
- St. Tammany Parish
- St. John the Baptist Parish
- St. James
- St. Landry
- Ascension
- Iberville
- Pointe Coupe
- West Feliciana
- East Feliciana
- West Baton Rouge
- East Baton Rouge
- Tangipahoa Parish

1250 Memorandums of Understanding/Agreement

All Memorandums of Understanding (MOUs)/Agreement (MOAs) applicable to this plan can be found in Chapter 9000, Appendix T.

1300 Area Committee Purpose and Objectives

The New Orleans Area Committee (NOAC) is a spill preparedness and planning body made up of federal, state, and local agency, industry, and non-governmental organization representation. The NOAC, under the direction of the New Orleans COTP/FOSC, is responsible for developing an Area Contingency Plan. The NOAC is also responsible for working with state and local officials to plan for joint response efforts, including appropriate procedures for mechanical recovery, dispersant use, shoreline cleanup, protection of sensitive environmental areas, and protection, rescue, and rehabilitation of fisheries and wildlife. The NOAC is also required to work with state and local officials to expedite decisions for the use of dispersants and other mitigating substances and devices.

The Area Committee’s primary objective is to plan for a safe, appropriate, and timely response to all reports of oil or hazardous substance spills.

1310 Area Committee Standing Membership

A list of all NOAC members and contact information can be found in Chapter 9000, Appendix A.

1320 Incident Specific Objectives

Incident Commanders/Unified Commands are responsible for providing direction and guidance to the Incident Management Team/Responders. The Command must analyze the overall requirements of the incident and determine the most appropriate direction for the Management Team/Responders to follow during an incident. This is in part accomplished by developing response objectives. The following are example objectives applicable to this plan; they can be used as is or modified in response specific risk applications. Also, incident specific objectives may be needed that are not represented in the below examples.

Safety

- Provide for the safety and welfare of citizens and response personnel
- Provide for the safety and security of responders as well as maximize the protection of the public health and welfare
- Identify safety and risk management factors and monitor for compliance for both the public and responders
- Implement practices that allow for the safety and welfare of vessel passengers and non-essential crew
- Conduct Operational Risk Assessment and ensure controls are in place to protect the responders and the public

Fire/Salvage

- Conduct damage/stability assessment; develop and implement a salvage plan
- Implement the salvage and tow plan

Waterways Management

- Conduct port assessment and establish priorities to facilitate commerce
- Develop/implement transit plan to include final destination/berth(s) for vessels
- Identify safe refuge/berth for effected vessels
- Reopen effected waterways as soon as is practicable

Oil/Haz Substance

- Control the source and minimize the volume discharges/released
- Determine oil/haz substance fate and effect (trajectories)
- Identify sensitive areas, develop strategies for protection and conduct pre-impact shoreline debris removal
- Contain and recover spilled product(s)
- Conduct an assessment and initiate shoreline cleanup efforts
- Remove product from effected area
- Conduct efforts to effectively contain, cleanup, recover, and dispose of spilled product

Environmental

- Provide protection of environmentally sensitive areas including wildlife and historic properties
- Identify and maximize the protection of environmentally sensitive areas
- Identify threatened species and prepare to recover and rehabilitate injured wildlife
- Investigate the potential for and if feasible, utilize alternative technologies to support response effort

Management

- Manage a coordinated interagency response effort that reflects the makeup of the Unified Command

- Establish an appropriate Incident Management Team organization that can effectively meet the initial and long term challenges required to mitigate the incident
- Identify all appropriate agency/organization mandates, practices, and protocols for inclusion in the overall response effort
- Identify and minimize social, political, and economical adverse effects
- Implement a coordinated response with other response agencies
- Evaluate all planned actions to determine potential impacts to social, political, and economic entities
- Identify competing response activities (SAR and Pollution mitigation) to ensure that they are closely coordinated
- Identify and establish incident support facilities to support interagency response efforts
- Keep the public, stakeholders, and the media informed of response activities
- Ensure appropriate financial accounting practices are established and adhered to
- Ensure internal/external resource ordering procedures are established and adhered to
- Establish an incident document system
- Establish an appropriate structure to facilitate communications with stakeholders and agency/organization coordination facilities

1400 National Response System

1410 National Response Structure

The National Response System (NRS) coordinates all government agencies with responsibility for human health and environmental protection in a focused response strategy for the immediate and effective cleanup of an oil or hazardous substance spill. It is a three tiered federal response and preparedness system that supports the pre-designated FOSC and SOSC in coordinating national, regional, state, tribal, and local government agencies, industry, and the responsible party during a response.

The three tiers are the National Response Team, Regional Response Team, and the OSC. The NRS is described in the NCP (40 CFR Part 300). The NRS does not remove the primary responsibility of initiating and completing a proper response by the responsible party. The NRS is used for all spills. When appropriate, the NRS is designed to incorporate a unified command and control support mechanism consisting of the FOSC, the SOSC, and the Responsible Party's Incident Manager and, when appropriate, tribal and local representatives.

1410.1 Incident/Spill of National Significance

A Spill of National Significance (SONS) classification provides additional support at the national level to the FOSC. Per 40 CFR 300.323 the Commandant for the Coast Guard holds the authority for declaring a SONS. Some or all of the conditions below will exist when classifying a spill a SONS:

- A spill of size, magnitude and/or complexity that presents a significant challenge(s) to the Coast Guard FOSC and the RRT.
- Local and regional resource coordination or the Unified Commands incident management capability is exceeded.
    - Unified Command resource coordination capability is exceeded
    - The pre-designated FOSC is requesting regional support from the Coast Guard District
    - The Regional Response Team (RRT) is supporting the pre-designated FOSC in accordance with the Regional Contingency Plan
    - The Coast Guard LANTAREA is coordinating requests for Coast Guard resources and support through Coast Guard PACAREA
    - The Coast Guard Office of Incident Management and Preparedness is coordinating with the National Response Team for interagency and international support.
- Multiple unified incident command posts (ICPs) have been established

- One or more Area Command(s) (UACs) has/have been established
    - Each UAC has established communication with regional level agencies, tribal, and territorial emergency and environmental response management personnel, and regional level non-governmental stakeholders to help establish response priorities
    - The UAC organization will already include the elements of the Coast Guard National Strike Force, RRT Co-Chairs, and the Coast Guard District Response Advisory Teams (DRATs).

The Coast Guard Commandant may choose to and has the authority to name a National Incident Commander (NIC) to assist the FOSC with interagency and governmental/public affairs coordination.

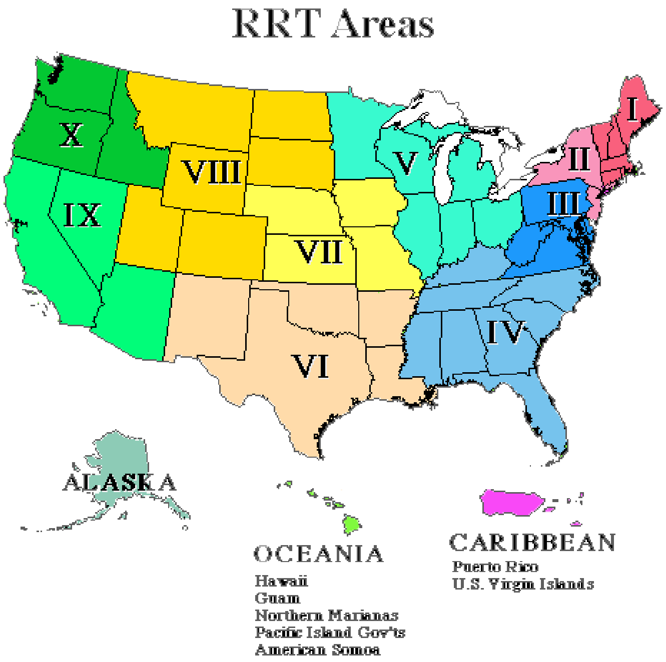
When an oil spill incident is an element of a larger response governed by a Stafford Act Presidential disaster declaration, it is unlikely that a SONS classification would be necessary. The national level response support will be coordinated by the Federal Emergency Support Function (ESF #10) within a Joint Field Office (JFO).
For more information regarding a SONS please refer to Coast Guard COMDTNIST 16465.1A

1410.2 National Response Team

The National Response Team (NRT) consists of 16 federal agencies with responsibilities, interests, and expertise in various aspects of emergency response to pollution incidents. The EPA serves as chair and the Coast Guard as vice-chair of the NRT, except when activated for a specific incident, when the lead agency representative serves as chair. The NRT is primarily a national planning, policy and coordination body and does not respond directly to incidents. The NRT provides policy guidance prior to an incident and assistance usually takes the form of technical advice, access to additional resources/equipment, or coordination with other RRTs.

1420 Regional Response Team

There are 13 Regional Response Teams (RRTs), one for each of the ten federal regions and Alaska, the Caribbean, and the Pacific Basin. Each RRT has federal and state representation. EPA and the Coast Guard co-chair the RRTs. The RRTs are planning, policy, and coordinating bodies, and may be activated during a major incident to assist the FOSC with resources. The RRT also provides guidance support and approval for pursuing certain response strategies.



RRTs may be activated for specific incidents when requested by the FOSC. If the assistance requested by a FOSC exceeds a RRTs capability, the RRT may request assistance from the National Response Team (NRT). During an incident the RRT may either be alerted by telephone or convened. The applicable RRT will be consulted by the FOSC on the approval/disapproval of the use of alternative response technologies (i.e. in-situ burning, dispersants, bio-remediation, and other chemical counter-measures) when that decision has not been pre-approved. The NOACP geographical boundaries fall within the jurisdiction of RRT VI

1430 Area Response Structure

The New Orleans Area Committee member agencies will manage spill incidents according to the following principles;

- **Incident Command System** The signatory agencies will use the National Incident Management System (NIMS) model Incident Command System (ICS);

- **Unified Incident Command** When more than one of the signatory agencies arrive on-scene to participate in managing a response action, the agencies will utilize a unified command structure to jointly manage the spill incident. In the Unified Incident Command (UC). Whenever possible, decisions with regards to the response will be made by consensus and documented through a single Incident Action Plan (IAP). When a consensus cannot be reached, the FOSC has the ultimate decision-making authority.

Members of the Unified Command shall have jurisdiction over the incident, capability to respond, and on-scene decision making authority.

- **Unified Area Command** For a very large single incident or multiple, simultaneous incidents involving a large number of resources and/or impacting a large geographical area, a Unified Command may be established. The Unified Area Command has the responsibility to: set overall incident-related objectives and priorities, allocate critical resources based on those priorities, ensure the incident/incidents are properly managed, and ensure that incident objectives are met and do no conflict with each other. The Unified Area Command has overall responsibility for setting response priorities and objectives, which are then carried out by field ICS/UC organization(s);

- **Tribal and Local Government On Scene Coordinators** The Unified command may incorporate additional tribal or local government on scene coordinator into the command structure as appropriate;

- **Responsible Party Command Structure** The person or persons responsible for a spill incident shall utilize an incident command system, which is capable of rapidly, and readily integrating into the NIMS based ICS/US organization utilized by the NOACP signatory agencies; and

- **Response Plan Approval** The National Oil and Hazardous Substance Contingency Plan (NCP, 40 CFR Part 300) requires that vessel, onshore facility, offshore facility, and pipeline response plans be compatible with the applicable Area Plan. Therefore, it is the policy of the Area Committee that vessel and facility contingency plans be consistent with the NOACP.

1430.1 Federal On-Scene Coordinator

USCG Sector New Orleans maintains and manages emergency response teams for response to discharges of oil and releases of hazardous substances in the coastal zone. These teams vary in size based on the nature of the incident. In all cases, they are tasked with assessing the discharge to determine response measures, monitor and supervise pollution countermeasures, document all phases of the response, conduct investigations to determine source, determine cause and responsible party, initiate enforcement actions, and act for the FOSC as an on-scene representative or until their arrival. Additional responsibilities include ensuring containment cleanup and disposal are carried out adequately, notification of all Natural Resource Trustees, and coordination of activities with federal, state, tribal, and local agencies.

The EPA Emergency Response Program consists of emergency response FOSCs located in the region office in Dallas, Texas, but they may respond to any location throughout the region, or throughout the country, as needed. The FOSCs are responsible for determining the source, cause, and responsible party, as well as initiating source control and enforcement actions as appropriate. Additional responsibilities include ensuring containment cleanup and disposal are carried out adequately, notification of all Natural Resource Trustees, and coordination of activities with federal, state, tribal, and local agencies. EPA also has access to technical assistance contractors who can provide technical oversight and other resources at spill and uncontrolled hazardous waste sites. In some cases, EPA's technical assistance contractor may arrive on scene prior to the FOSC. Prior to the arrival of the EPA OSC, the EPA contractor will cooperate with on-site agencies but will take direction through the EPA OSC only.

1430.2 Louisiana Response Structure

The Louisiana Oil Spill Prevention and Response Act of 1991 has pre-designated the Louisiana Oil Spill Coordinators Office (LOSCO) to act as the lead state agency/ State On-Scene Coordinator (SOSC) for all oil spills or threatened oil spills affecting the land, coastal waters, or any other waters of Louisiana. The coordinator shall provide clear designation of the responsibilities and jurisdictions and avoid unnecessary duplication and expense. A complete list of the responsibilities for each state trustee agency as defined in the Louisiana State Oil Spill Contingency Plan can be found at http://www.losco.state.la.us/LOSCOuploads/Newsflash/SCP_pub95_update96_02202008_Final.pdf.

For hazardous substance releases, the Louisiana Department of Public Safety serves as the SOSC.

1430.3 Local Response Structure

The local response structure consists of the agencies below the state level, including Parishes, Cities, etc. When a local jurisdiction holds interest in an incident they may be represented by the Liaison Officer, in the command staff, or may have response personnel integrate into position in the general staff. In larger incidents local jurisdictions may be incorporated as branch directors.

1430.4 Industry Response Plans/Worst Case Discharges

The Oil Pollution Act of 1990 (OPA 90) amended section 311(j) of the Federal Water Pollution Control Act (FWPCA) to require the preparation and submission of oil spill response plans by the owners or operators of certain facilities and vessels. It also requires that the vessel or facility be operated in compliance with its submitted response plan. Failure to have submitted a response plan, and to have received approval of that plan, results in the prohibition of that vessel or facility from the handling, storing, or transporting of oil.

A major feature of the OPA90 spill response plans is the requirement for vessel and facility owners and operators to identify and ensure the availability of, by contract or other approved means, personnel and equipment necessary to remove the “worst case discharge” to the “maximum extent practicable”.

Chapter 9000, Appendix B contains planning scenarios for the Worst Case Discharges within the NOAC boundaries.

1430.4.1 Offshore Facility Oil Spill Response Plan

Owners and/or Operators of an oil handling, storage, or transportation facility, located seaward of the coast line, must submit a spill-response plan to BSEE for approval. The spill-response plan must demonstrate that the owner/operator can respond quickly and effectively whenever oil is discharged from their facility. The requirements for Off-shore Oil Spill Response Plans can be found in 30 CFR Part 254.

1430.4.2 Onshore Facility Response Plans

33 CFR Part 154 requires that the owner or operator of a “substantial harm” or “significant and substantial harm” facility, as defined in 33 CFR Part 155, submit a Facility Response Plan (FRP) to the local Captain of the Port. Section 4202(b)(4)(B) of OPA 90 precludes a facility from handling, storing, or transporting oil unless a FRP has been submitted to the Coast Guard. For all marine transportation-related facilities, reviews and approvals will be done by the local Coast Guard Captain of the Port. Information contained in the FRPs is based upon national planning standards and the response scenarios are intended to be used to develop a planning document and not establish a performance document of standard.

1430.4.3 Vessel Response Plans

Due to the transitory nature of vessel operations, all Vessel Response Plans (VRPs) are reviewed at the national level. Information contained in the VRPs is based upon national planning standards and the response scenarios are intended to be used to develop a planning document and not establish a performance document of standard.

UC/ICs can utilize these plans to assist with a response to a Tank or Non-tank vessel. The following information should be available in a VRP.

- Tank Diagrams
- Emergency Contacts
- Contracted Response Resources
- Salvage and Marine Firefighting Plan
- Emergency Lightering Procedures

1430.4.4 Tank Vessel Response Plans

Vessel Response Plans (VRPs) are required for all Tank Vessels that are constructed or adapted to carry oil in bulk as cargo or cargo residue except: vessels exempted in 33 CFR Part 155.1015 and fishing and fish tender vessels of not more than 750 gross tons when engages only in the fishing industry. The requirements for these plans can be found in 33 CFR Part 155 Subpart D

1430.4.5 Non-Tank Vessel Response Plans

On August 9, 2004, the President signed the Coast Guard Maritime Transportation Act of 2004 (CGMTA 2004). Section 701(a) and (b) of the CGMTS amend sections 311(a) and (j) of the FWPCA to require the Coast Guard to issue regulations that require an owner or operator of a non-tank vessel to prepare and submit to the Coast Guard a plan for responding to the maximum extent practicable to a worst case discharge, of oil, and to a substantial threat of such discharge.

NVIC 01-05, Change 1 provides voluntary guidance to owners and operators of non-tank vessels for preparing and submitting plans for responding to a discharge or threat of a discharge of oil from their vessel and for receiving interim operating authorization from the Coast Guard.

1430.4.6 Shipboard Oil Pollution Emergency Plan (SOPEP)

The Act to Prevent Pollution from Ships was amended to incorporate the requirements regarding Shipboard Oil Pollution Emergency Plan (SOPEPs) of Annex I of the International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978, as amended (MARPOL 73/78).

SOPEPs are required to be carried on board all oceangoing oil tankers of 150 gross tons and above and all other vessels of 400 gross tons and above. SOPEPs are required to be reviewed and approved by the vessel's flag state (country) administration. For U.S. flag vessels 33 CFR Part 151.27 requires that the Coast Guard and approve the plan. To provide consistency the review of SOPEPs, all plans will be reviewed nationally by the Coast Guard.

The purpose of a SOPEP is different than that of the vessel and facility response plans mandated by OPA 90. A SOPEP provides guidance to the ship's master and officers with respect to the onboard emergency procedures followed when a pollution incident has occurred or is likely to occur. These plans will often be in a checklist type format.

1430.4.7 Pipeline Response Plans

Owners and/or Operators of an onshore oil pipeline that, because of its location, could reasonably be expected to cause substantial harm to the environment by discharging oil into or on the a navigable waterway of the United States or adjoining shoreline must poses a Oil Spill Response Plan. The requirements for Pipeline Oil Spill Response Plans can be found in 49 CFR Part 194.

1430.5 National Responsible Party Policy

Under the FWPCA as amended by OPA 90, the responsible party has primary responsibility for cleanup of a discharge. Per FWPCA Section 311 and OPA90 Section 4201, an owner or operator of a tank vessel or facility participating in removal efforts shall act in accordance with the NCP and the applicable response plan. FWPCA Section 311(j)(5)(C) as implemented by OPA90 Section 4202 states that these response plans ***SHALL***:

- Be consistent with the requirements of the National Contingency Plan and Area Contingency Plans;

- Identify the qualified individual having full authority to implement removal actions, and require immediate communications between that individual and the appropriate UC official and the persons providing personnel and equipment pursuant to this clause;

- Identify, and ensure by contract or other means approved by the President, the availability of private personnel and equipment necessary to remove to the maximum extent practicable a worst-case discharge (including a discharge resulting from fire or explosion), and to mitigate or prevent a substantial threat of such a discharge;

- Describe the training, equipment testing, periodic unannounced drills, and response actions of persons on the vessel or facility, to be carried out under the plan to ensure the safety of the vessel or facility and to mitigate or prevent a substantial threat of such a discharge;

- Be updated periodically; and

- Be resubmitted for approval of each significant change.

Each owner or operator of a tank vessel or facility required by OPA90 to submit a response plan shall do so in accordance with applicable regulations. Facility and tank vessel response plan regulations, including plan requirements for the Coastal Zone, are located in 33 CFR Parts 154 and 155, respectively; 30 CFR Part 254 for Off-shore facilities, and 49 CFR Part 194 for Pipeline. Facility response plan regulations for the inland zone are located in 40 CFR Part 112.

Each responsible party for a vessel or a facility from which oil is discharged, or which poses a substantial threat of a discharge, into or upon the navigable waters, adjoining shorelines or the Exclusive Economic Zone of the United States, is liable for the removal costs and damages specified in Subsection (b) of Section 1002 of OPA90. Any removal activity undertaken by a responsible party must be consistent with the provisions of the NCP, the Regional Contingency Plan (RCP), the New Orleans Area Contingency Plan (NOACP), and the applicable response plan required by OPA90. If directed by the Unified Command at any time during removal activities, the responsible party must act accordingly.

1430.5.1 Responsible Party Compliance Guidance

Specific responsibilities of the RP include, but are not limited to:

- Assessment of discharge or release;

- Establishment of a command post, in concurrence with the other On-Scene Coordinators (OSCs)

- Documentation/identification of type and quantity of oil or hazardous substance discharged or released;

- Containment of the oil or hazardous substance spilled or released and protection of the environment, with a particular emphasis on sensitive areas, natural resources, wildlife and areas of historic significance.

- Provisions of input relative to cleanup priorities (i.e. waste minimization)
- Timely and effective cleanup;
- Disposal of oil, oily waste, and Hazardous substances;
- Restoration of damaged environmental/natural resources;
- Communication with local, state, and federal response agencies and organizations;
- Communication with the media;
- Payment for damages;
- Steps to prevent reoccurrence of discharges or releases; and
- Wildlife collection and care in conjunction with responsible state, local, and federal agencies.

The RP has the opportunity to conduct damage assessments when required by the state/federal agencies and/or when appropriate given the RP's available resources as determined by the UC.

1430.5.2 Responsible Party Conformation with the NOACP

The NCP requires that response plan holders "prepare and submit a plan for responding, to the maximum extent practicable, to a worst case discharge, and to a substantial threat of such discharge, of oil or a hazardous substance. These response plans are required to be consistent with the NOACP.

The requirement for vessel, on-shore facility, offshore facility, and pipeline response plans to be consistent with the NOACP applies to:

- Contingency Plan: content, review, and approval;
- The execution and evaluation of spill drills and exercises; and
- The management of spill response actions.

Failure to adequately conform to the NOACP may result in: rejection of a spill contingency/response plan; non-credit for a drill; or federal and/or state agencies assuming direct control of a spill response action. However, it is also the policy of the NOAC that the unified command will encourage the party responsible for a spill incident, to maintain the primary responsibility for managing the response action so long as they:

- Actively and cooperatively participate in the unified command structure;
- Provide an organization which is compatible with NIMS ICS;
- Provide regular communication and documentation that assures adequate response resources are bring rapidly mobilized in proportion to the size of the incident as discussed in the following section; and
- Follow their approved spill contingency/response plan (if applicable) unless otherwise directed, or a deviation is agreed to, by the unified command.

1430.5.3 Requirement for a Full and Rapid Response

The NOAC shall plan for an aggressive, timely, and efficient, response to an incident to provide adequate equipment and trained personnel to effectively respond to the highest quantity of product that can be released. If it is determined that excessive response resources are ordered or mustered they may be canceled or demobilized to help control the cost of the response action to the responsible party and responding agencies.

In launching an aggressive, timely, and efficient response take the following into account:

- It is often difficult to obtain precise information on the quantity of oil or hazardous material, which has actually been released and is likely to continue to be released until the source is controlled;
- Notification may be delayed;
- There is a tendency of some responsible parties to be very conservative in estimating the quantity of oil spilled due to liability considerations;
- Miscommunication can occur as to the actual extent of personnel and equipment which has been ordered, and as to the estimated time of arrival. Similarly, estimates are sometimes overly optimistic;
- Response contractors may experience difficulty in mobilization in a timely fashion a portion of their response resources for various reasons; and

- In some cases, state and federal on-scene coordinators are cautious in making sure responsible parties do not mobilize unnecessary resources, which would needlessly increase the cost of the response action.

However, adequate response resources must be rapidly mobilized if initial source control, containment, and cleanup efforts are to be successful. Spill response is more cost-effective and far less damaging to natural resources to contain a spill rather than to remove it from the water and beaches.

If the responsible party fails to respond in a manner deemed reasonably consistent with this policy and the NOACP, the FOSC or SOSC may assume the lead for a portion or of the entire spill. The agency proposing to assume lead for the cleanup will closely coordinate with other members of the unified command prior to taking such action.

Another reason that rapid response and containment is important is that, there are certain weaknesses in the response community's ability to mount a fully effective response. These weaknesses are:

- **Coastal Response.** During certain times of the year, it is very difficult to mount an effective response action for spills in the outer coastal environment. Once equipment arrives on-scene in the coastal environment, sea state and meteorological conditions (such as fog, wind, and rain) may dramatically limit or preclude effective oil booming and on-water recovery efforts;

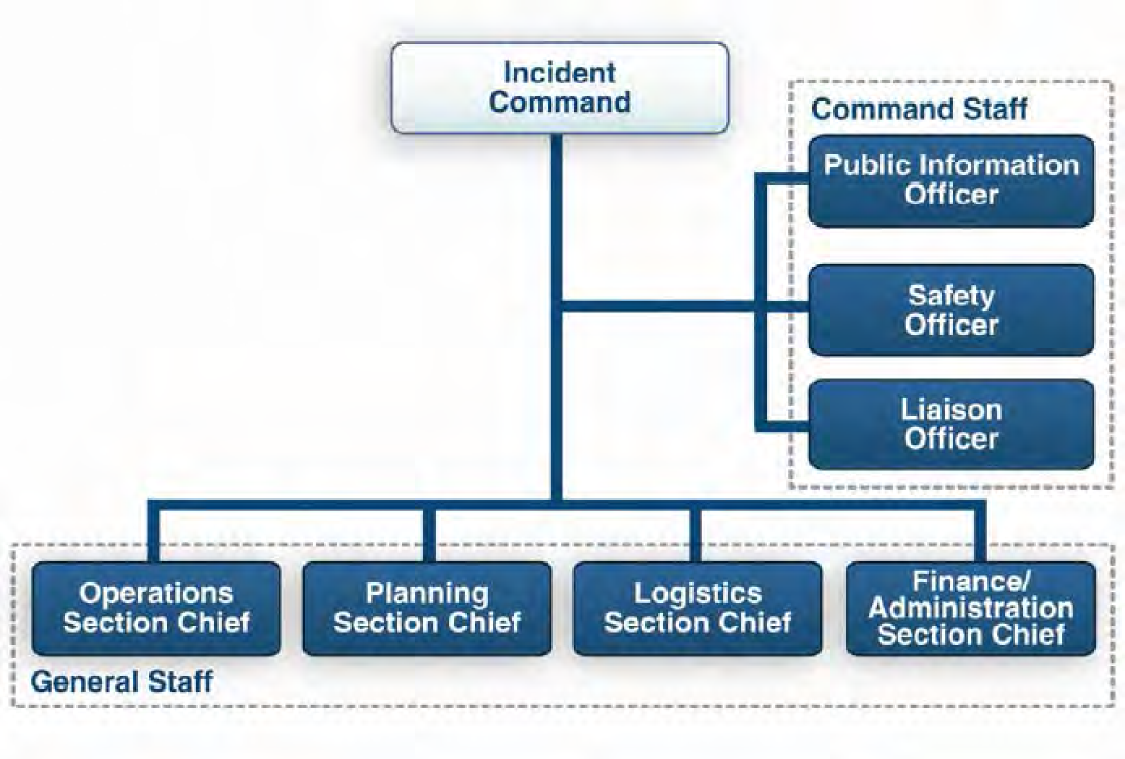
- **Response in Shallow Marine Embayments.** Diversions and containment booming and intertidal shoreline cleanup is very difficult in many of the New Orleans' areas sensitive shallow marine estuaries. Once oil enters these intertidal areas, extensive environmental damage is likely and recovery technology has minimal effectiveness. In these environments, conventional shoreline clean-up activities themselves can cause extensive damage and are therefore seldom used; and

- **Response to Catastrophic Oil Spills** Should a catastrophic oil spill occur, it is likely that there will not be adequate response resources in the New Orleans area to manage and clean-up the spill. Therefore, the New Orleans area will rely in part on mutual aid from Gulf Coast States, and other jurisdictions to provide much of the necessary response resources in the event of a catastrophic spill.

1440 Incident Command System

The unified incident command structure allows for a coordinated response, which takes into account the federal, state, tribal, local and responsible party concerns and interests when implementing the response strategy. The FOSC has the ultimate authority in a response operation and will only exert this authority, consistent with the NCP, if the other members of the unified incident command are not present or are unable to reach consensus quickly.

During responses to oil and hazardous substance spills, local agencies may be involved as part of the incident response, and may provide agency representatives who interface with the command structure through the Liaison Officer or the SOSC, or within the incident structure itself. When a UC is used, an Incident Command Post (ICP) and Joint Information Center (JIC) shall be established. The ICP shall be as near as practicable to the spill site. All responders (federal, state, tribal, local, and private) should be incorporated into the response organization at the appropriate level.



1450 Area Exercise Mechanism

The FOSC shall periodically conduct drills of removal capability, without prior notice, in areas for which ACPs are required. This action will allow effective assessments of such plans and relevant vessel, and facility response plans.

These drills may include participation by federal, state, local agencies, owners and operators of vessels and facilities in the area, and private industry. The National Strike Force Coordination Center (NSFCC) will act as a clearinghouse for exercises, participating in the development, execution, and evaluation to the fullest extent practicable, with the cognizant program managers of the USCG and EPA. The NSFCC may, in conjunction with the cognizant program managers of the USCG and EPA, impose unannounced area or multi-area exercises. [NOTE: The NSFCC is responsible for executing the National Preparedness for Response Exercise Program (PREP). All USCG participation in exercises will be coordinated with and/or through the NSFCC.]

1450.1 National Preparedness for Response Exercise Program (NPREP)

The National Preparedness for Response Exercise Program (NPREP) was developed to establish a workable exercise program which meets the intent of Section 4204(a) of OPA 90, amending Section 311 (j) of the FWPCA, by adding a new subsection (6) and a new subsection (7) for spill response preparedness.

The NPREP was developed to provide a mechanism for compliance with the exercise requirements, while being economically feasible for the government and oil industry to adopt and sustain. The NPREP is a unified federal effort and satisfies the exercise requirements of the Coast Guard, the EPA, the Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety, and the Bureau of Safety and Environmental Enforcement (BSEE). Completion of the NPREP exercise will satisfy all OPA 90 mandated federal oil pollution response exercise requirements.

NPREP addresses the exercise requirements for oil pollution response. There are additional industry planning and exercise requirements contained in other federal statutes, which are not address in the NPREP Guidelines. The NPREP represents the minimum guidelines for ensuring adequate response preparedness. If personnel with an organization believe additional exercises or an expansion of the scope of the NPREP exercises are warranted to ensure enhanced preparedness, they are highly encouraged to conduct these exercises.

The NPREP exercise should be viewed as an opportunity for continuous improvement of the contingency/response plans and the response system. Plan holders are responsible for addressing any issue that arises from evaluation of the exercise and for making changes to the contingency/response plans necessary to ensure the highest level of preparedness.

1450.1.2 Participation in NPREP

Industry Plan holders are required to meet the pollution response exercise requirements mandated by the federal agency with regulatory oversight for the specific type of industry involved (e.g., vessel, marine transportation-related facilities, onshore and certain off-shore non transportation-related facilities, pipelines, offshore facilities). The NPREP satisfies these requirements. The NPREP is a voluntary program. Plan holders are not required to follow the NPREP guidelines and, if they choose not to, may develop their own exercise program that complies with the regulatory exercise requirements. The NPREP guidelines can be found online at http://www.uscg.mil/hq/nsfweb/download/PREP/PREP_GLNS_Aug_02.pdf

Applicability

The NPREP is applicable to all industry response plan holders who elect to follow these guidelines.

Industry plan holders electing not to adopt the NPREP as their exercise program will be responsible for developing and documenting an exercise program that satisfies the appropriate federal oversight agency. If an industry plan holder has developed one response plan that covers a fleet of vessels or regional operations of offshore platforms, this plan holder would only be required to conduct one "set" of exercises for the plan, with the exception of the Qualified Individual notification exercises and the emergency procedure exercises, which are required for all manned vessels and unmanned barges as specified in 33 CFR Part 155.1060

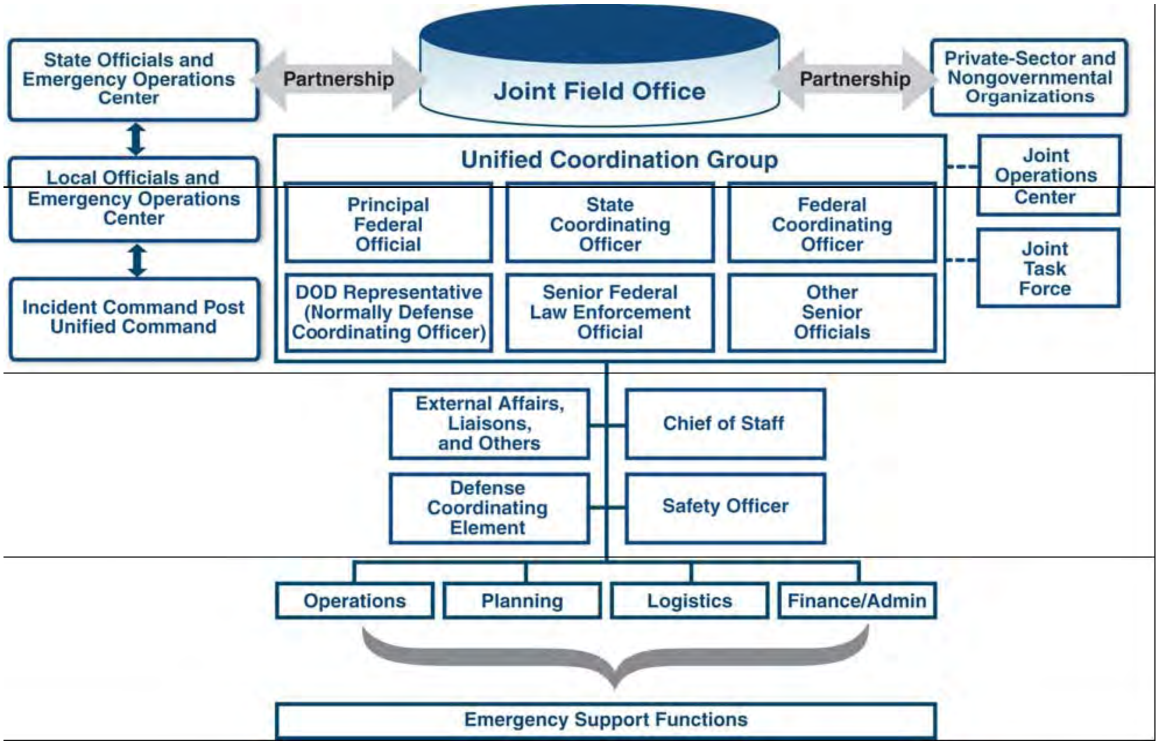
The Eighth Coast Guard District coordinates the NPREP. For detailed information on the NPREP, the National Preparedness for Response Exercise Program (NPREP) handbook can be found online at: http://www.uscg.mil/hq/g-m/nmc/response/msprep.pdf.

A three year NPREP Schedule for both the coastal and inland zones can be found on the National Strike Force Coordination Center (NSFCC) Webpage at: http://www.uscg.mil/hq/nsfweb/nsfcc/prep/prepexerciseske05.html .

1460 National Response Framework

After close collaboration with state and local government officials and representatives from a wide range of public safety organizations, The U.S. Department of Homeland Security (DHS) issued the National Incident Management System (NIMS) which provides a consistent nationwide approach for Federal, State, local, and local governments and private sector and non-governmental organizations (NGOs) to work effectively and efficiently together to prepare for, prevent, response to, and recover from domestic incidents, regardless of cause, size, or complexity. The incident management system outlined in the NOACP is consistent with NIMS.

The National Response Framework and NIMS documents may be accessed at http:www.fema.gov/emergency/nrf/mainindex.htm



Note: Per Notice of Change of the National Response Plan to the National Response Framework the Interagency Incident Management Group is now the Unified Coordination Group and the Homeland Security Operations Center is not the National Operations Center.

Initial response to an act of terrorism from chemical warfare agents or radiological materials may not likely differ greatly from a response to other hazardous material incidents. Terrorism response for biological agents and explosives may differ significantly from typical hazardous materials incidents. It may be unclear at the initial on-set of a response whether the cause was accidental or an act of terrorism. Local responders will be the first to arrive on scene to assess the situation and possibly take initial response measures to contain or stop the release. A terrorist incident will always be treated as a crime scene and preservation of evidence is critical. Coordination is required between law enforcement who view the incident as a crime scene, and other first responders who view the incident as a hazardous materials problem or disaster site. Although protection of life remains paramount, the protection and processing of the crime scene is imperative so that perpetrators may be identified and apprehended.

The responsibilities for response to a WMD incident lie with multiple agencies and the NOAC should be prepared to provide resources under the National Response Framework (NRF) during a response to a terrorist incident. It is possible that a major public health and environmental incident could be the result, perhaps the intent, of this type of incident. The NOACP may be needed to address critical short-term issues while a larger response infrastructure is developed under the full National Response Framework. Parallel response actions by NOAC member agencies may be on-going under the NRS prior to and during NRF activation.

Unique information regarding hazardous substance incidents, including Radiological and WMD incidents, can be found in Chapter 7000 Hazardous Substance Unique Information.

1470 Nuclear/Radiological Incident Annex to the NRF

The Nuclear/Radiological Incident Annex (NRIA) to the NRF describes the policies, situations, concepts of operations, and responsibilities of the Federal departments and agencies governing immediate response and short-term recovery activities for incidents involving release of radioactive materials to address the consequences of the event. These incidents may occur on Federal-owned or –licensed facilities, privately owned property, urban centers, or other areas and may vary in severity from the small to the catastrophic. The incidents may result from inadvertent or deliberate acts. The NRIA applies to incidents where the nature and scope of the incident requires Federal response to supplement the State, Tribal, and/or Local incident response.

There are two Nuclear Power Plants located within the New Orleans Captain of the Port Zone.

River Bend Nuclear Generating Station

The River Bend Nuclear Generating Station is a nuclear power station on a 3,300 acre site near St. Francisville, Louisiana, approximately 30 miles north of Baton Rouge, in West Feliciana Parish. River Bend is operated by Entergy Nuclear and owned by Entergy Gulf States, Inc.

Waterford Nuclear Generating Station

The Waterford Nuclear Generating Station Unit 3, also known as Waterford 3, is a nuclear power plant located on a 3000 acre site in Killona, Louisiana, in St. Charles Parish. The Station site is immediately adjacent to the Mississippi River between MM 129 and 130. Waterford 3 is operated by Entergy Nuclear and owned by Entergy Gulf States, Inc.

1500 Area Response Policy

1510 National Response Policy

The National Response Policy is to ensure that all applicable laws and regulations are carried out. Those laws and regulations are intended to ensure effective and immediate removal of a discharge/release, mitigation or prevention of a substantial threat of a discharge of oil or release of hazardous substances, and overall protection of human health and the environment.

1520 Coast Guard Policy

The Coast Guard will respond consistent with the policy outlined in the NCP and this Area Contingency Plan. The Coast Guard may elect not to dispatch representatives to reported discharges where representatives of another cognizant government agency are responding. However, if Federal removal is indicated within the coastal zone, the Coast Guard will respond. If the responsible party is conducting proper removal, the Coast Guard FOSC will use best judgment in determining the need for the presence of Coast Guard personnel on scene. In the event of a spill where there is no responsible party or their response efforts are inadequate, Coast Guard responsibilities may include assuming the response actions, partial response actions, or assuming a joint leadership in a unified command with state and local responders. General Coast Guard policy for pollution response is provided in Volume VI of the Coast Guard Marine Safety Manual.

1530 Environmental Protection Agency Policy

By statute, the EPA is the FOSC for inland spills of oil or hazardous substances. In most instances, EPA is not the first responder on scene. EPA works in cooperation with other responders, but has not delegated their responsibility as FOSC. In all spill situations, it is EPA’s intent to contribute to the response by working with the local, state, tribal authorities, general public and Federal agencies to ensure the information needed to maximize the effectiveness of the response effort is easily accessible. During a response to a release, the potential responsible party (PRP), if known, available, and willing, is generally given the opportunity to adequately respond. The EPA works closely with PRPs when they are known and willing to take action to ensure that the release reaches and adequate and rapid conclusion with a minimum impact on the environment. In the event of a spill where the PRP is not identified, does not respond to contain or clean up the spill, or does an inadequate job responding, EPA responsibilities may include taking over the response or assuming a co-lead role in a unified command with state and local responders.

1540 Bureau of Safety and Environmental Enforcement

The Bureau of Safety and Environmental Enforcement (BSEE) is responsible for ensuring comprehensive oversight, safety, and environmental protection in all offshore energy activities. BSEE handles safety and environmental enforcement functions including, but not limited to, the authority to inspect, investigate, summon witnesses and produce evidence, levy penalties, cancel or suspend activities, and oversee safety, response, and removal preparedness.

1550 Department of Defense and Department of Energy Policies

In the case of the Departments of Defense (DOD) or Department of Energy (DOE), when a response to a release or threat of release of a hazardous substance, pollutant, or contamination is on DOD or DOE property, or the sole source of the release is from any facility or vessel under the jurisdiction, custody, or control of DOD or DOE, those agencies shall provide FOSCs responsible for taking all response actions. DOD will be the removal response authority with respects to incidents involving DOD military weapons or munitions or weapons and munitions under the jurisdiction, custody, or control of the DOD.

1550.1 Department of Defense Facilities

U.S. Navy
Naval Air Station, Joint Reserve Base New Orleans

Military Sealift Command
MV CAPE KENNEDY
MV CAPE KNOX

Marine Corp
Marine Corps Support Facility New Orleans

Army Corp of Engineers
New Orleans District

Army National Guard
Camp Villere- Slidell, Louisiana

Hammond Airport- Hammond, Louisiana

Jackson Barracks- New Orleans, Louisiana

Gillis W. Long Center- Carville Louisiana

1550.2 Department of Energy Regulated Facilities

River Bend Nuclear Generating Station- St. Francisville, Louisiana

Waterford Nuclear Generating Station- Killona, Louisiana

1600 National Policy & Doctrine

1610 National Response Doctrine

The National Incident Management System (NIMS) Incident Command System is the recognized standard with which management systems must demonstrate compatibility and is the measure by which regulatory agency plan reviewers, exercise evaluators, and spill responders will gauge the adequacy of response actions. While this system allows considerable operational flexibility, it includes a collaborative planning process that delineates key management position responsibilities, common use of forms, essential Incident Action Plan elements and response personnel and equipment resource tracking methods.

Under the NIMS Guidance, Incident Resource typing, for both equipment and overhead personnel typing protocols will be forthcoming. Resource typing, which is based upon capability, will provide a basis for which resources can be requested to support response to incidents nationwide. For example, the Coast Guard Sector will provide trained and qualified Type III Command and General Staff personnel, with some key Type III Unit Leader Positions within the Sections.

Section 4201 of OPA 90 amended Subsection I of Section 311 of the FWPCA, to require the Federal OSC to “in accordance with the National Contingency Plan and any appropriate Area Contingency Plan, ensure effective and immediate removal of a discharge, and mitigation or prevention of a substantial threat of a discharge, of oil or a hazardous substance – (i) into or on the navigable waters; (ii) on the adjoining shorelines to the navigable waters; (iii) into or on the waters of the exclusive economic zone; or (iv) that may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States.” “In carrying out these functions, the OSC may: (i) remove or arrange for the removal of a discharge, and mitigate or prevent a substantial threat of a discharge, at any time; (ii) direct or monitor all Federal, State, and private actions to remove a discharge; and (iii) recommend to the Commandant that a vessel discharging or threatening to discharge, be removed and, if necessary, destroyed.” If the discharge or substantial threat of discharge of oil or hazardous substance is of such size or character as to be a substantial threat to the public health or welfare of the United States (including but not limited to fish, shellfish, wildlife, other natural resources, and the public and private beaches and shorelines of the United States), the OSC shall direct all Federal, State, and private actions to remove the discharge or to mitigate or prevent the threat of the discharge.

1620 Regional Response Doctrine

The Regional Response Doctrine is comprised of two principle components. These are a standing team which consists of designated representatives from each participating federal agency, state government, and local governments (as agreed upon by the state) of the RRT; 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.

The RRT VI Standard Operating Procedures can be found in the Texas General Land Office's (TGLO) Oil Spill Tool Kit at www.glo.texas.gov/caring-for-the-coast/.

1630 Area Response Doctrine

Pursuant to the National Contingency Plan (NCP; 40 CFR Part 300), area committees have been established for each area of the United States that has been designated by the President. The area committees are comprised of personnel from Federal and state agencies who coordinate response actions with tribal and local governments and with the private sector. Area committees, under the coordinated direction of Federal On-Scene Coordinators (FOSC), are responsible for developing Area Contingency Plans (ACPs). Area committees are also required to work with the response community to develop procedures to expedite decisions for the use of alternative response measures.

This plan serves as the New Orleans Area Committees Area Contingency Plan, and the Area Response Doctrine in regards to Oil discharges and Hazardous Substance releases.

1640 Public vs. Private Resource Utilization

The Oil Pollution Act of 1990 (OPA 90) reaffirmed the basic principle that the primary source of an oil spill preparedness and response system in the U.S. should be implemented and maintained by the private sector. It is not, nor should it be, the Coast Guard's intent to compete with the commercial oil and hazardous materials pollution response industry. The utilization of government resources in lieu of commercial resources can place the government in a competitive environment. This is not the intent of OPA 90, as it defeats the incentive for commercial enterprise to maintain equipment and trained personnel in a competitive market. The Coast Guard’s pre-positioned response equipment, other publicly owned response equipment, and other initiatives under the Coast Guard’s oil spill response program are only intended to supplement the oil and clean-up industry’s response program or be used if the commercial industry does not have readily available resources, and only until such time that the Federal On-Scene Coordinator (FOSC) or the Unified Command decides to release the resources.

The FOSC has the authority and responsibility in accordance with the National Contingency Plan to contain, control, and carry out response activities for the removal of a discharge where a substantial threat to public health or welfare, or where natural resources are endangered. At the direction and discretion of the FOSC and the Unified Command, when the responsible party executes a suitable response, any government equipment deployed should be withdrawn as commercial equipment becomes available and is placed into service.
The FOSC may consider using Coast Guard/Department of Defense (DOD) or Oil Spill Cooperative resources in such instances when the spill has been federalized and/or private sector resources cannot respond to the incident in a timely manner, or there are certain specific resources not available from the private sector.

While it is the policy of the Commandant to mount an aggressive, timely, efficient response, the FOSC must be mindful that the use of government-owned equipment and resources is not to compete with the use of commercial resources. Government resources should only be used under specific circumstances:

- For “first aid” spill response until contracted commercial resources arrive on-scene and are operating.

- When commercial resources are not available. This assumes that the RP, Qualified Individual, Incident Commander, or cleanup contractor has sought commercial resources but they are not available.

- Government resources can supplement commercial resources. Government resources are not to be used for the convenience of the responsible party.

1650 Best Response Concept

Best Response depends on the best efforts of the three components of the National Response System.

- Companies – those responsible for producing, handling, storing, and transporting oil and hazardous materials, and for arranging for mitigation of an accidental discharge or release;

- Contractors – those who carry out response and cleanup in the event of a discharge or release; and

- Government – those Federal, state, and local agencies with oversight responsibility for the safe handling of oil and hazardous materials and for ensuring protection of the public and the environment in the event of a discharge or release.

Best Response protects our national interests. Each component must act responsibly, effectively, and cooperatively to accomplish the shared goal of minimizing the consequences of pollution incidents. Finally, Best Response demands that a response community builds a method to measure its own capability to achieve success. To do this kind of self-assessment the community must be able to recognize success. Key Business Drivers are the major categories within a Best Response model of things that have to be done if we are to accomplish the goal of Best Response – minimize the consequence of pollution incidents – and to be perceived as successful. Critical Success Factors are the specific things that a response must accomplish to be considered successful. There are a number of critical success factors for each Key Business Driver. An oil spill response that achieves all or most of these factors will, according to the Best Response precepts, be judged as a success.

1660 Cleanup Assessment Protocol

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 planning stages, responders' specific cleanup recommendations must utilize field data on shoreline habitats, type and degree of shoreline contamination, and spill-specific physical processes. 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.

The Shoreline Assessment Manual, August 2000, NOAA/HAZMAT outlines methods for conducting shoreline assessments. Shoreline assessment is a function conducted under the Planning Section of the Incident Command System (ICS).

NOAA’s Shoreline Assessment Manual outlines methods that can be used to plan and conduct shoreline assessment after an oil spill; and can then be incorporated into assessment results of the UC’s decision-making process for shoreline cleanup. The Shoreline Assessment Job Aid is a supplement to the manual. It contains visual examples of many of the terms you would use during shoreline assessments.

When to terminate specific oil spill cleanup actions can be a difficult decision; When is clean, clean enough? The increasing cost of the cleanup and the damage to the environment caused by cleanup activities must be weighed against the ecological and economic effects of leaving the remaining oil in place. The decision to terminate cleanup operations is site-specific. Cleanup usually cannot be terminated while the one of the following conditions exist:

- Recoverable quantities of oil remain on water or shores.
- Contamination of shore by fresh oil continues.
- Oil remaining on shore is mobile and may be refloated to contaminate adjacent areas and near shore waters.

Cleanup may normally be terminated when the following conditions exist:

- The environmental damage caused by the cleanup efforts is greater than the damage caused by leaving the remaining oil or residue in place.
- The cost of cleanup operations significantly outweighs the environmental or economic benefits of continued cleanup.

FOSC, after consultation with the members of the Unified Command, determines that the cleanup should be terminated.

1670 Response Technologies

1670.1 Dispersant Use

The dispersant pre-approval is designed to provide for the timely use of dispersants along with mechanical techniques and in-situ burning for offshore oil spill response. No single response method is 100% effective, thereby establishing a need to consider the use of all available methods from the start of the spill response. Initially, the assumption needs to be made that all three methods (mechanical, in-situ burn, and dispersants) may be used and then adjustments are made to that assumption as information concerning the spill is received by the Federal On-Scene Coordinator (FOSC). The objective of the Regional Response Team VI (RRT VI) FOSC Dispersant Pre-approval Guidelines and Checklist is to provide for meaningful, environmentally safe, and effective dispersant operation. The programmed checklist approach allows the FOSC to quickly arrive at a logical “GO/NO GO” decision. This gives the dispersant operation the opportunity to begin in a timely manner that is consistent with attempting to maximize the effectiveness of dispersant use as a countermeasure to reduce the impact of oil spills. In this document the RRT VI Dispersant Pre-approval Overview, the FOSC Dispersant Use Checklist and the FOSC Dispersant Use Flowchart define the dispersant pre-approval requirements. If the dispersant pre-approval requirements are not met, the request for use of dispersant must follow the approval process as specified in the RRT VI Regional Contingency Plan Subpart H Authorization. VI (RRT VI) FOSC Dispersant Pre-approval Guidelines and Checklist is to provide for meaningful, environmentally safe, and effective dispersant operation. The programmed checklist approach allows the FOSC to quickly arrive at a logical “GO/NO GO” decision. This gives the dispersant operation the opportunity to begin in a timely manner that is consistent with attempting to maximize the effectiveness of dispersant use as a countermeasure to reduce the impact of oil spills. In this document the RRT VI Dispersant Pre-approval Overview, the FOSC Dispersant Use Checklist and the FOSC Dispersant Use Flowchart define the dispersant pre-approval requirements. If the dispersant pre-approval requirements are not met, the request for use of dispersant must follow the approval process as specified in the RRT 6 Regional Contingency Plan Subpart H Authorization. The RRT VI FOSC Dispersant Pre-Approval Guidelines and Checklist are found at http://www.glo.state.tx.us/oilspill/

Specific information regarding the use of dispersants in the New Orleans COTP Zone can be found in Appendix D of this plan.

1670.2 In-situ Burn Approval/Monitoring/Decision Protocol

RRT VI In-Situ Burn Preapproval Guidelines are only available in hardcopy at this time. A checklist can be found at http://www.glo.state.tx.us/oilspill/

Specific information regarding the use of In-Situ Burn can be found in Appendix C.

1670.3 Bioremediation Approval/Monitoring/Decision Protocol

RRT 6 Position Paper on Bioremediation (Adopted January 24-25, 2001) can be found at http://www.glo.state.tx.us/oilspill/

Specific information regarding the use of Bioremediation can be found in Chapter 9000, Appendix Z Bioremediation Policy.

1670.4 Special Monitoring of Applied Response Technologies (SMART)

Special Monitoring of Applied Response Technologies (SMART) is a cooperatively designed monitoring program for in situ 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 in situ burning operations. Data are channeled to the Unified Command (UC) (representatives of the spiller and the state and federal governments who are in charge of the spill response) to address critical questions:

- Are particulate concentration trends at sensitive locations exceeding the level of concern?
- Are dispersants effective in dispersing the oil?

Having monitoring data can assist the Unified Command with decision-making for dispersant and in situ burning operations.

The SMART program is a joint project of these agencies:

- U.S. Coast Guard
- NOAA
- U.S. Environmental Protection Agency
- Centers for Disease Control and Prevention
- Bureau of Safety and Environmental Enforcement

More information regarding SMART may be found in Chapter 9000, Appendix I.

1670.5 Alternative Response Tool Evaluation System (ARTES)

During an oil spill or hazardous substance release, the OSC may consider using non-conventional alternative countermeasures (a method, device, or product that has not been typically used for spill response). To assess whether a proposed countermeasure could be a useful response tool, it is necessary to quickly collect and evaluate the available information about it.

To aid in evaluating non-conventional alternative countermeasures in particular, the Alternative Response Tool Evaluation System (ARTES) was developed. ARTES can also be used to evaluate proposed conventional countermeasures. It is designed to evaluate potential response tools on their technical merits, rather than on economic factors. ARTES is designed to work in concert with the National Contingency Plan Product Schedule and the Selection Guide for Oil Spill Applied Technologies.

For more information regarding ARTES refer to the NOAA Office of Response and Restoration Website.

1680 Statutory Guidance Federal

1680.1 Comprehensive Environmental Response, Compensation and Liability Act, 1980

Enacted by Congress in 1980, it is also known as the Hazardous Substance Superfund as defined by 42 U.S.C. 9601 et seq. Its purpose is to provide for liability, compensation, cleanup, and emergency response for hazardous substances, pollutants, or contaminates (as defined by the statute) released into the environment and the cleanup of inactive hazardous waste disposal sites. Emergency and time critical actions for pollutants or contaminates may only be taken when these releases pose an imminent and substantial threat to human health or the environment. The NCP outlines factors which shall be considered in determining the appropriateness of an emergency or time-critical response action. These factors include:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminates;
- Actual or potential contamination of drinking water supplies or sensitive ecosystems;
- Hazardous substance, pollutant, or contaminates in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
- High levels of Hazardous substance, pollutant, or contaminates in soils largely at or near the surface, that may pose a threat of release;
- Weather conditions that may cause hazardous substance, pollutant, or contaminates to migrate or be released;
- Threat of fire or explosion;

- The availability of other appropriate federal or state response mechanisms to response to the release; and
- Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

1680.2 Federal Water Pollution Control Action as amended by the Clean Water Act and the Oil Pollution Act of 1990

As listed in 33 U.S.C. 1251 et seq., the objective of the act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The goals of the Act include:

- The elimination of pollutants discharged into navigable waters;
- Attain water quality, which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and around those waters;
- Prohibits the discharge of toxic pollutants;
- Provides Federal financial assistance to construct publicly owned waste treatment works;
- Requires States to provide waste treatment management plans;
- Conducts research to develop technology in order to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and oceans; and
- Develop national policy for the control of non-point sources of pollution.

1680.3 National Historic Preservation Act

The National Historic Preservation Act of 1966 (Public Law 89-665) requires agencies using federal funds to identify, evaluate, and where significant, protect historic, archaeological, and traditional cultural properties. This Act also authorized the National Register of Historic Places (NRHP) and the National Historic Landmarks programs, expanding Federal recognition to historic properties of local and State significance. The National Park Service in the DOI administers both programs. Regulations for these programs are contained in 36 CFR Part 60, National Register of Historic Places, and 36 CFR Part 65, national

Historic Landmarks Program. Oil can contaminate archaeological, historic, and culturally sensitive resources. Such contamination can prevent carbon dating, damage the fragile artifacts, and make restoration and preservation extremely difficult or impossible. In addition, oil spill response activities (e.g., mechanical cleanup and staging area constriction) can physically disturb or destroy artifacts and sites.

The primary contact for responders seeking information and expertise on local culturally sensitive areas is the State Archeologist in the State Historic Preservation Office for the State or the Tribal Historic Preservation Officer for the affected tribal lands. It is important that responders be aware of the types of archaeological, cultural, or historic materials that they are likely to encounter while responding to an incident and that they will immediately notify the FOSC/UC in the event that these types of materials are discovered.

The NOAC will regularly review response strategies outlined in the GRPs to identify and revise any strategies that may adversely impact archaeological, cultural, or historic resources. These resources are protected under Federal, Tribal and State laws. In order to avoid any inadvertent impacts to cultural and historic resources, the SHPO/THPO should be contacted to ascertain the presence/absence of cultural resources in an impacted area prior to initiation of cleanup activities. The SHPO/THPO can advise on appropriate cleanup strategies to avoid or minimize impacts to cultural resources; archaeological monitors may be required to accompany cleanup crews. In addition, responders are required to utilize existing hardened access paths and paved areas, if available, when approaching shorelines and cleanup teams are to remain on beaches.

1680.4 Endangered Species Act

Oil spills or hazardous substance release response actions may impact species listed as “endangered” or “threatened” under the Endangered Species Act (ESA), 50 CFR Part 402.02, and in accordance with Section 7 of the ESA, Federal agencies must consult with NOAA’s National Marine Fisheries Service (NOAA Fisheries) and/or the U.S. Fish and Wildlife Service (USFWS) on activities that may affect a listed species. The FOSC is responsible for initiating consultation.

In 2001, the USCG, EPA, DOI’s Office of Environmental Policy and Compliance, USFWS, NOAA Fisheries, and the National Oceans Service (NOS) signed an Interagency Memorandum of Agreement (MOA) (http://www.nrt.org/Production/NRT/NRTWeb.nsf/PagesByLevelCat/Level2ESAMOU?Opendocument) regarding Oil Spill Planning and Response Activities under the Federal Water Pollution Control Act’s National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the ESA. In the MOA, NOAA

Fisheries and USFWS determined that oil spill response activities qualify as an emergency action as defined by regulations implementing the ESA in 50 CFR Part 402.02. NOAA Fisheries and USFWS have developed emergency consultation procedures to allow action agencies to incorporate endangered species concerns into emergency response activities. Emergency consultation is initiated with a telephone call to NOAA Fisheries or USFWS to describe the emergency response and seek recommendations on any measures that could be implemented during the response to reduce or avoid impacts to listed species, the paperwork associated with emergency consultation under the ESA is completed after the removal actions are completed. NOAA Fisheries and USFWS are ready to assist the FOSC comply with section 7 of the ESA, and the NOAA SSC and DOI Regional Environmental Officer can help identify appropriate ESA section 7 consultation contacts for their respective Departments.

For Endangered Species Act Consultation Contacts:

- U.S. Department of the Interior
    - Regional Environmental Officer
      24-Hour (505) 766-3565

- National Oceanic & Atmospheric Administration
    - Scientific Support Coordinator
      24-Hour (206) 526-4911

Please refer to Appendix H for the NOAC Wildlife Response Plan.

1680.5 Resource Conservation and Recovery Act

Also known as the Solid Waste Disposal Act, it was enacted by congress as 42 U.S.C. 6901 et seq. The Congress declared it to be the national policy of the United States that, whenever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of as to minimize the present and future threat to human health and the environment.

1680.6 National Environmental Policy Act

As defined in 42 U.S.C. 4321 et seq., the purposes of this act are:

- To declare a national policy which will encourage productive and enjoyable harmony between man and his environment;

- To promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man;

- To enrich the understanding of the ecological systems and natural resources important to the Nation; and

- To establish a Council on Environmental Quality.

1690 High-Seas Policy

Application of the Intervention on the High Seas Act (33 USC 1471 et seq.): Under authority of the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969, governments party to the present convention may take such measures on the high seas as may be necessary to prevent, mitigate, or eliminate grave and imminent danger to their coastline or related interests from oil or hazardous substance pollution or threat of pollution. The pollution or threat of pollution may result from a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences. In the event of a ship outside U.S. Territorial waters which creates a potential threat of pollution by oil or hazardous substances, all available information shall be relayed to the Coast Guard which will determine whether or not grave and imminent danger to the U.S. coastline or related interests exists. Once that determination is made, the designated FOSC shall take measures to prevent, mitigate, or eliminate the threat.

1700 Reserved

1800 Reserved

1900 Reserved for Area/District

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New Orleans Area Contingency Plan

Chapter 2000
Command

New Orleans Area Contingency Plan

Chapter 2000 Command

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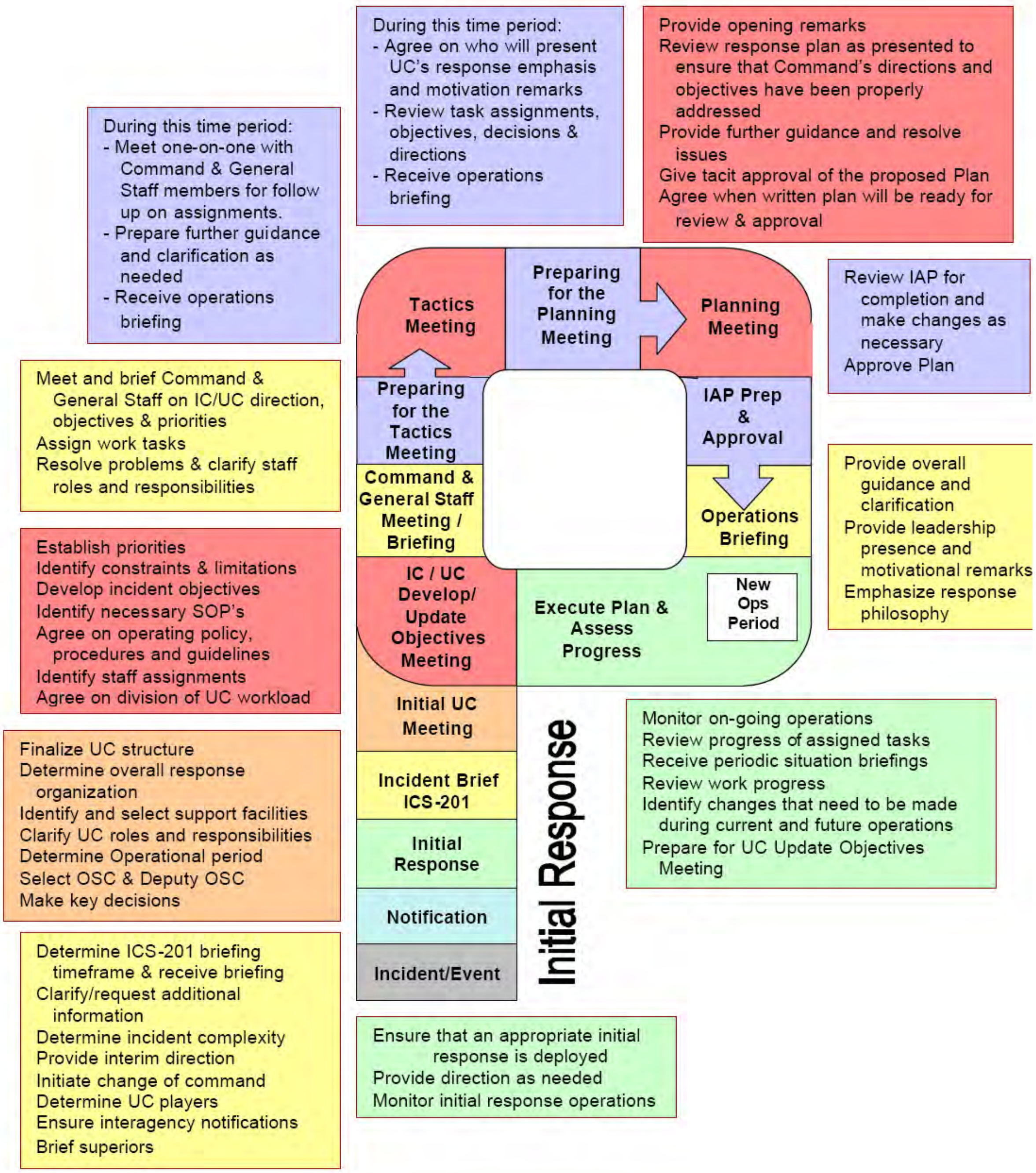
Chapter 2000 Command

Operational Planning "P" For Command Activities



During this time period:
- Agree on who will present UC's response emphasis and motivation remarks
- Review task assignments, objectives, decisions & directions
- Receive operations briefing

Provide opening remarks
Review response plan as presented to ensure that Command's directions and objectives have been properly addressed
Provide further guidance and resolve issues
Give tacit approval of the proposed Plan
Agree when written plan will be ready for review & approval

During this time period:
- Meet one-on-one with Command & General Staff members for follow up on assignments.
- Prepare further guidance and clarification as needed
- Receive operations briefing

Review IAP for completion and make changes as necessary
Approve Plan

Meet and brief Command & General Staff on IC/UC direction, objectives & priorities
Assign work tasks
Resolve problems & clarify staff roles and responsibilities

Provide overall guidance and clarification
Provide leadership presence and motivational remarks
Emphasize response philosophy

Establish priorities
Identify constraints & limitations
Develop incident objectives
Identify necessary SOP's
Agree on operating policy, procedures and guidelines
Identify staff assignments
Agree on division of UC workload

Monitor on-going operations
Review progress of assigned tasks
Receive periodic situation briefings
Review work progress
Identify changes that need to be made during current and future operations
Prepare for UC Update Objectives Meeting

Finalize UC structure
Determine overall response organization
Identify and select support facilities
Clarify UC roles and responsibilities
Determine Operational period
Select OSC & Deputy OSC
Make key decisions

Determine ICS-201 briefing timeframe & receive briefing
Clarify/request additional information
Determine incident complexity
Provide interim direction
Initiate change of command
Determine UC players
Ensure interagency notifications
Brief superiors

Ensure that an appropriate initial response is deployed
Provide direction as needed
Monitor initial response operations

2000 Command

2100 Unified Command

It is the policy of the New Orleans Area Committee to plan for spill incidents according to the following principles:

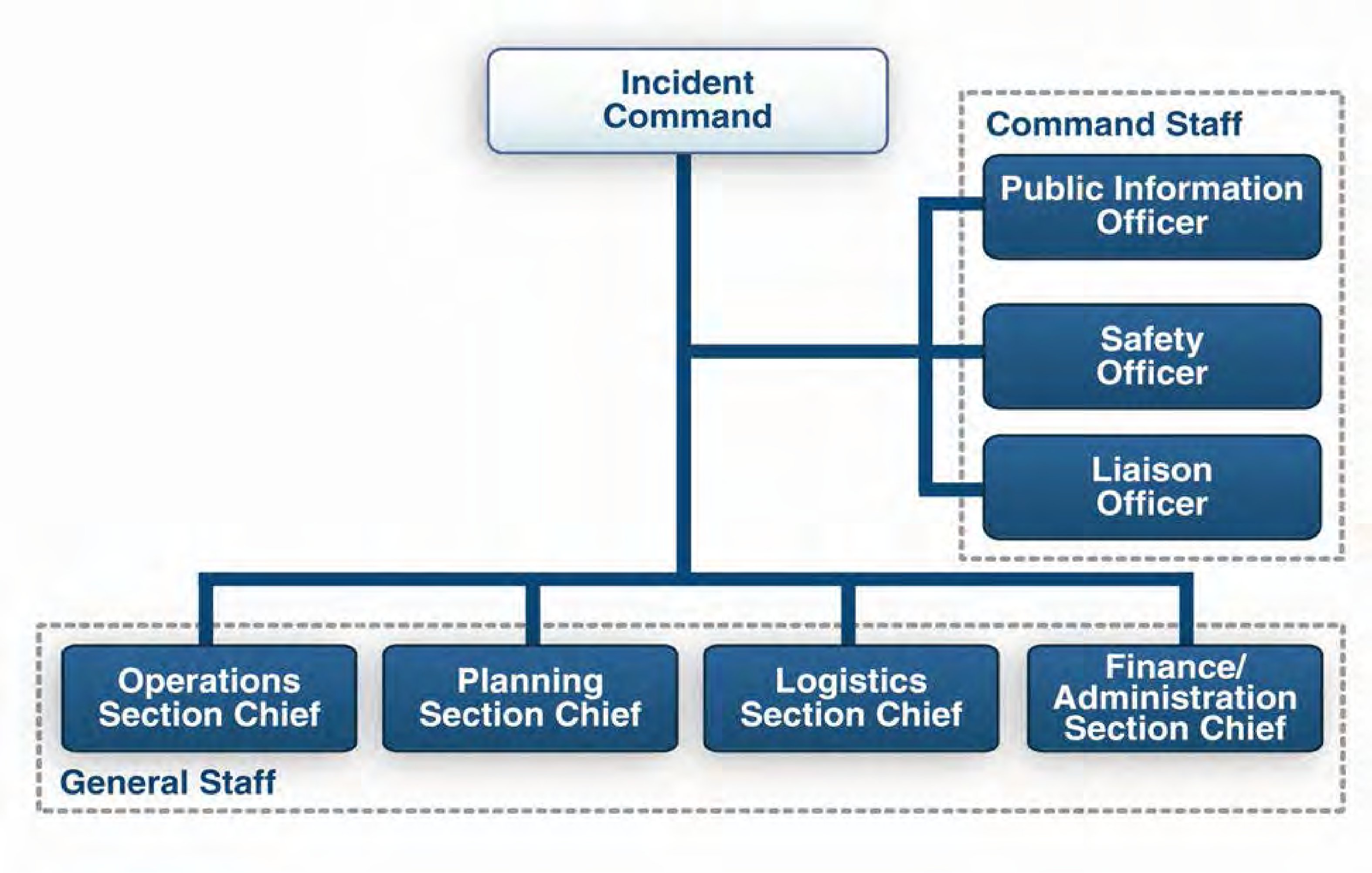
Incident Command System The signatory agencies will use the National Incident Management System (NIMS) model Incident Command System. While Vessel Response Plans, On-shore Facility Response Plans, Pipeline Response Plans, and Off-shore Facility Plans are required to have a management plan compatible with the ACP, there is no requirement for these plans to strictly follow ICS

Unified Command When federal and/or state agencies arrive on-scene to participate in managing a response action, the agencies will utilize a unified command structure to jointly manage the spill incident. In the unified command, decisions with regard to the response will be made by consensus and documented through a single Incident Action Plan (IAP) for each operational period. When a consensus cannot be reached, the FOSC has the ultimate decision-making authority.

Tribal or Local Government On-Scene Coordinators The unified command may incorporate additional tribal or local government on-scene coordinators into the command structure as appropriate.

Organizational charts for the Unified Command Staff and subordinate units are shown in figures below. They serve as examples and are not meant to be all-inclusive. The functions of the Unified Command and Command Staff must be accomplished during an incident; however, they can be performed by one individual or can be expanded, as needed, into additional organizational units with appropriate delegation of authority.

Incident Command System: Command and General Staff



2110 Incident Commander/Unified Command

The Area Committee has adopted the NIMS based Incident Command System (ICS) as the basic model for managing a coordinated response. Under the Unified Command Structure, the Federal government, state, and responsible party will each provide an On-Scene Coordinator (OSC) or Incident Commander (IC), who will consult each other and share decision-making authority regarding spill response and clean-up management issues depending on the circumstances of the incident, a local or tribal entity may also provide an OSC. Together, these OSCs will jointly serve as the Unified Command.

Incident Commanders for oil discharges and hazardous substance releases will, whenever possible and practical be organized under the Unified Command Structure which includes, but is not limited to:

- The pre-designated Federal On-Scene Coordinator (FOSC);
- The State On-Scene Coordinator (SOSC); and
- The representative of the Responsible Party (RP).

To be considered for inclusion as a UC member, the following criteria must be met:

- The organization must have jurisdictional authority and functional responsibility under a law or ordinance for the incident;
- The organization must be specifically charged by law or ordinance with commanding, coordinating, or managing a major aspect of the incident response;
- The incident or response operations must have an impact on the organization’s Area of Responsibility (AOR); and
- The organization should have the resources to support participation in the response organization.

Agencies not meeting the above criteria, but whose geographical boundaries are impacted by an incident and/or response, may provide a representative who will interface with the command structure through the Liaison Officer, the SOSC, or who may be assigned to another position in the response organization.

Actual Unified Command makeup for a specific incident will be determined on a case-by-case basis, taking into account:

- The specifics of the incident;
- Determinations outlined in the four criteria listed above; and
- Decisions reached during the initial meeting of the Unified Command.

The makeup of the Unified Command may change as the incident progresses, in order to account for changes in the situation.

The Unified Command is responsible for the overall management of the incident. The Unified Command directs incident activities including the development and implementation of strategic decisions, approval of the incident action plan, and approves the ordering and releasing of resources. It is expected that each Unified Command member will have the authority to make decisions and commit resources on behalf of their organization.

2110.1 Federal On-Scene Coordinator Representative

USCG Sector New Orleans maintains and manages emergency response teams for response to discharges of oil and releases of hazardous substances in the coastal zone. These teams vary in size based on the nature of the incident. In all cases, they are tasked with assessing the discharge to determine response measures, monitor and supervise pollution countermeasures, document all phases of the response, conduct investigations to determine source, cause and responsible party, initiate enforcement actions, and act for the FOSC as an on-scene representative or until their arrival.

The EPA Emergency Response Program consists of emergency response FOSCs located in the region office in Dallas, Texas, but they may respond to any location throughout the region, or throughout the country, as needed. The FOSCs are responsible for determining the source, cause, and responsible party, as well as initiating source control and enforcement actions as appropriate. Additional responsibilities include ensuring containment cleanup and disposal are carried out adequately, notification of all Natural Resource Trustees, and coordination of activities with federal, state, tribal, and local agencies. EPA also has access to technical assistance contractors who can provide technical oversight and other resources at spill and uncontrolled hazardous waste sites. In some cases, EPA's technical assistance contractor may arrive on scene prior to the FOSC. Prior to the arrival of the EPA OSC, the EPA contractor will cooperate with on-site agencies but will take direction through the EPA OSC only.

2110.2 State On-Scene Coordinator

The Louisiana Oil Spill Prevention and Response Act of 1991 has pre-designated the Louisiana Oil Spill Coordinators Office (LOSCO) of the Governor to act as the lead state agency/ State On-Scene Coordinator (SOSC) for all oil spills or threatened oil spills affecting the land, coastal waters, or any other waters of Louisiana.

For hazardous substance releases, the Louisiana Department of Public Safety serves as the SOSC.

2110.3 Local Representation to the Unified Command

When a local jurisdiction holds interest in an incident they will communicate concerns to the Unified Command via the Liaison Officer or the SOSC, or they may be assigned to another position in the response organization.

2110.4 Responsible Party

The Spiller, or responsible party, has the primary responsibility to conduct spill cleanup. This makes them a key member of a Unified Command.

2120 Area ICS Command

An Area Command is established when the complexity of the incident and incident management span-of-control considerations so dictate. Generally, the administrator(s) of the agency having jurisdictional responsibility for the incident makes the decision to establish an Area Command. The purpose of an Area Command is either to oversee the management of multiple incidents that are each being handled by a separate ICS organization or to oversee the management of a very large or complex incident that has multiple incident management teams engaged. This type of command is generally used when there are a number of incidents in the same area and of the same type, such as two or more oil spills. These are usually the kinds of incidents that may compete for the same resources. When incidents are of different types and/or do not have similar resource demands, they are usually handled as separate incidents or are coordinated through an EOC. If the incidents under the authority of the Area Command span multiple jurisdictions, a Unified Area Command should be established. This allows each jurisdiction involved to have appropriate representation in the Area Command.

The structure of the Area Command follows standard ICS organization except there is no operations section. An example is provided on the next page.

Area Command

2130 General Response Priorities

The four general response priorities of the NCP (40 CFR Part 300.317), and this ACP are as follows:

- To give safety and human health top priority during every response action;
- To stabilize the situation in order to prevent the event from worsening;
- To use all necessary containment and removal tactics in a coordinated manner to ensure timely, effective response; and
- To take action to minimize further environmental impact from environmental discharges.

2140 Area Specific Response Objectives

The following are example objectives applicable to this plan; they can be used as is or modified in response specific risk applications. Objectives need to be specific, measurable, achievable, reasonable, and time-specific to be affective. Also, incident specific objectives may be needed that are not represented in the below examples.

Safety

- Provide for the safety and welfare of citizens and response personnel
- Provide for the safety and security of responders as well as maximize the protection of the public health and welfare
- Identify safety and risk management factors and monitor for compliance for both the public and responders
- Implement practices that allow for the safety and welfare of vessel passengers and non-essential crew
- Conduct Operational Risk Assessment and ensure controls are in place to protect the responders and the public

Fire/Salvage

- Assess damage/stability; develop and implement a salvage plan
- Implement the salvage and tow plan
- Extinguish fire

- Stabilize and salvage vessel(s)

Waterways Management

- Conduct port assessment and establish priorities to facilitate commerce
- Develop/implement transit plan to include final destination/berth(s) for vessels
- Identify safe refuge/berth for impacted vessels.

Oil/Haz Substance

- Initial action to control the source and minimize the volume discharges/released
- Determine oil/haz substance fate and effect (trajectories)
- Identify sensitive areas, develop strategies for protection and conduct pre-impact shoreline debris removal
- Conduct an assessment and initiate shoreline cleanup efforts
- Remove product from impacted area
- Contain, cleanup, recover, and dispose of spilled product(s)

Environmental

- Protect environmentally sensitive areas including wildlife and non-environmental properties
- Identify threatened species and recover and rehabilitate injured wildlife
- Examine efficacy and, if appropriate, utilize alternative technologies to support response effort

Management

- Manage a coordinated interagency response effort
- Establish an appropriate Incident Management Team organization that can effectively meet the initial and long term challenges required to mitigate the incident
- Identify all appropriate agency/organization mandates, practices, and protocols for inclusion in the overall response effort

- Identify and minimize social, political, and economical adverse effects
- Implement a coordinated response with other response agencies
- Evaluate all planned actions to determine potential impacts to social, political, and economic entities
- Identify competing response activities (SAR and Pollution mitigation) to ensure that they are closely coordinated
- Identify and establish incident support facilities to support interagency response efforts
- Keep the public, stakeholders, and the media informed of response activities
- Ensure appropriate financial accounting practices are established and adhered to
- Establish internal/external resource ordering procedures are established and adhered to
- Establish an incident document system
- Establish an appropriate structure to facilities communications with stakeholders and agency/organization coordination facilities

2150 ICS Position Specific Job Aids

Available ICS position specific job aids can be found in Chapter 9000, Appendix V.

2200 Safety Officer

All spill response activities pose varying dangers to responders. The priority of any response activity is to protect the health and safety of the responders and the public. To do this, the chemical and physical hazards associated with each operation must be assessed, and methods implemented to eliminate or reduce those hazards. The Safety Officer (SOFR) function is to develop and recommend measures for assuring personnel safety and to assess and/or anticipate hazardous and unsafe situations from compounding the incident.

Chapter 9000 Appendix K contains the NOAC Health and Safety Policy.

Information regarding Incident Volunteers and minimum OSHA training can be found in Chapter 9000, Appendix L NOAC Volunteer Plan.

The SOFR may have assistants, as necessary, and the assistants may also represent assisting agencies or jurisdictions. Safety assistants may have specific responsibilities, such as air operations, hazardous materials, etc.

2300 Information Officer

The Information Officer (PIO) is responsible for developing and releasing information, with Unified Command's approval, about the incident to the news media, to incident personnel, and to other appropriate agencies and organizations in as timely a manner as possible. The PIO will obtain information from technical experts to provide to the press and other interested parties. The PIO is also responsible for controlling direct media access to staff within the Unified Command structure.

Chapter 9000, Appendix M contains the NOAC Joint Information Center Manual, including a list and contact information for area media outlets.

Keeping the public and other interested parties informed is always a primary incident objective. Staff members responsible for meeting this objective ensure the community is well informed of the status of the incident, the decisions made and actions taken by the Unified Command. The ultimate purpose of public information efforts conducted during an environmental emergency is to ensure the public is well informed by issuing timely, credible, and coordinated releases of accurate information to the news media, government officials, and the public. Information may come from flyover or other video coverage, phone calls, on-site interviews, web site posting, public meetings, or other methods.

The NOAC prefers that the spiller not fill the PIO position. This applies to both government agency and private industry spillers. However, the NOAC recognizes that a Unified Command holds the discretion to fill the position with whomever it chooses. The Unified Command should consider credibility with the media and public, as well as previous experience in drills or actual spills and, familiarity with the New Orleans plan tools and policies with emergency support functions (ESF) #15. Upon concurrence of the Unified Command, the spiller may fill the PIO position. The NOAC also encourage responsible parties to designate an Assistant Information Officer, who will participate in all the meetings attended by and briefings made by the PIO.

2310 Pre-JIC Initial Public Information Officer

When an incident occurs, there is a high demand for information. Public perception is often shaped by impressions formed in the first few hours of a response. It is critical that timely, accurate information be disseminated to media in a coordinated fashion.

When a state environmental or emergency management agency, the Coast Guard, or other applicable agency first learns about a spill, the respective public information officer should quickly contact one another to share information in an effort to release a joint statement to the media. Initial media releases should be approved by the FOSC or his/her designated representative and the SOSC prior to release.

Until a Joint Information Center (JIC) is established, communication with the media and other key audiences is carried out by a lead agency's information office, either remotely or on-site. This Initial PIO carries out activities with or without assistance. The time needed to travel to the command post and have basic JIC operations in place will affect decisions about how and by whom communications are conducted. For example, issuing the initial press release within a couple of hours of notification may require the facts be provided over the phone or electronically to an agency PIO operating from the office or a remote location.

The initial PIO is concerned with both communications (who to communicate with, both media and public, and logistics (how to communicate), if operating from the command post or remote locations. Initial media releases should be approved by the FOSC and SOSC or their delegates prior to release. This may entail sending the text by email, fax or by reading the text over the phone.

In order to build trust with the public and among agencies that are responding to the incident, every press release should include a "cooperative response statement". This statement should include, by name, all the primary participating agencies who are responding to the spill.

The volume of material spilled is an important piece of information that the public and media are generally interested in during the early hours of an incident. Unless responding agencies have accurate information regarding the volume spilled,(and this is rarely the case during initial response) that has been approved through the Unified Command for release, initial press releases should not release a spill volume estimate and should instead state that this information is yet to be determined. If the Unified Command agrees, the worst case discharge scenario for the spill (total tank capacity, worst case discharge flow rates, etc.) may be released with an explanation of how this was calculated. The following are U.S. Coast Guard Public Information Officers available in the New Orleans area.

- Sector New Orleans Duty PIO (504) 365-2533
- District 8 External Affairs (504) 671-2020
- Public Information Assist Team (252) 331-6000

U. S. Coast Guard PIOs shall always refer to the most recent District 8 Public Affairs Guidance for release authorities and information.

2400 Liaison Officer

Incidents that are multi-jurisdictional, or involve several agencies, may require the establishment of the Liaison Officer (LNO) position on the Command Staff. The LNO may have assistants as necessary.

Keeping the public and other interested parties informed is a primary incident objective. Staff members responsible for meeting this objective ensure that elected officials and stakeholders are well informed of the status of the incident, the decisions made and actions taken by the Unified Command. The ultimate purpose of public information efforts conducted during an environmental emergency is to ensure the public is well informed by issuing timely, credible, and coordinated releases of accurate information to the news media, government officials, and the public.

The NOAC recognizes there is a shared responsibility among the Unified Command representatives to ensure accurate and credible information is made available. It is also the shared role of the Unified Command representatives to ensure appropriate staffing in all positions within the Incident Management System. This position is particularly important within the NOAC response AOR given the public safety authority of the Parishes and the multijurisdictional nature of river and coastal spills in Louisiana. Given the importance of the Liaison Officer duties, and to ensure public confidence and trust, it is the policy of the NOAC for the LNO position to be filled by a qualified representative of a federal, state, tribal, or local agency, if available. If no such agency representative is initially available, qualified, or willing to be the LNO, a responsible party representative may, upon the Unified Command's concurrence, fill the role. Furthermore, a transition to a responsible party designated LNO may occur with the concurrence of the Unified Command. The NOAC also encourage responsible parties to designated an Assistant LNO, who will participate in all the meetings attended by and briefings made by the LNO.

A list of contacts for Federal, State, and Local Trustees can be found in Chapter 9000.

A list of areas of interest can be found in Chapter 9000, Appendix S Geographic Response Plans.

2410 Natural Resource Damage Assessment

Natural Resource Damage Assessment (NRDA) is outside the sphere of most emergency spill response actions. NRDA activities generally do not occur within the structure, processes, and control of the Incident Command System. However, particularly in the early phase of a spill response, many NRDA activities overlap with environmental assessments performed for the sake of spill response. Because spill response and NRDA activities might be performed in the same location, NRDA staff should remain coordinated with the spill response organization, and need to work with the LNO to coordinate with the Unified Command, Environmental Unit, Wildlife Rescue/Rehabilitation Branch, and the Scientific Support Coordinator to resolve any problems or address areas of overlap. While NRDA resource requirements and cost fall outside the responsibility of the Logistics and Finance sections, coordination is again important.

2420 Incident Investigation

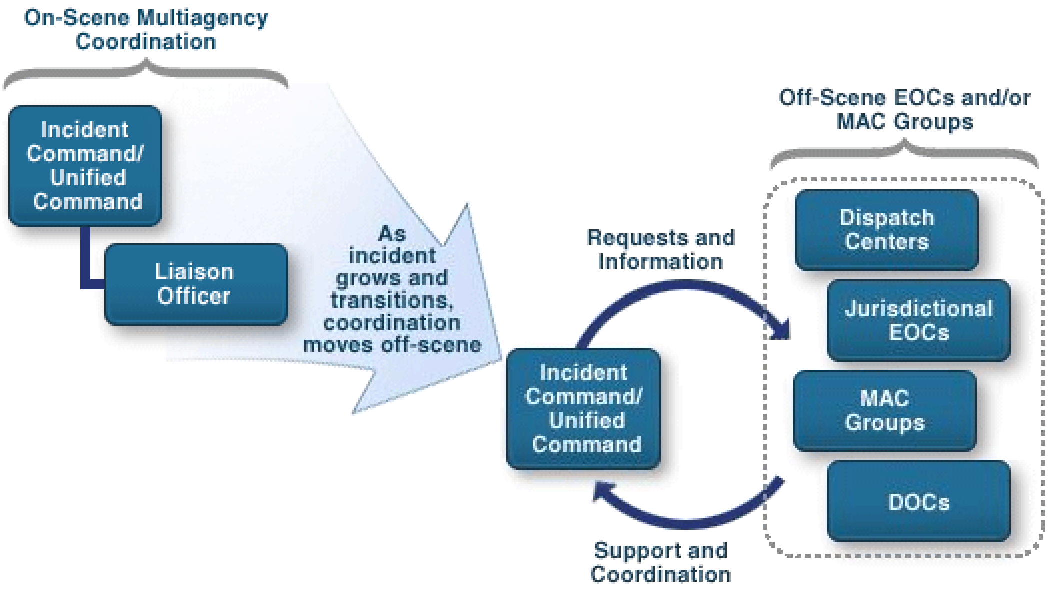
Investigators from Federal and state agencies will not normally be a part of the Unified Command. While personnel may report to individuals that are part of the Unified Command in their day-to-day chain of command, the investigators should be separate so as not to introduce polarized forces into the Unified Command system. Coordination with Unified Command may be done through the Liaison Officer.

2430 Multiagency Coordination System

Multiagency coordination is a ***process*** that allows all levels of government and all disciplines to work together more efficiently and effectively. Multiagency coordination occurs across the different disciplines involved in incident management, across jurisdictional lines, or across levels of government. Multiagency coordination can and does occur on a regular basis whenever personnel from different agencies interact in such activities as preparedness, prevention, response, recovery, and mitigation.

Often, cooperating agencies develop a Multiagency Coordination System (MACS) to better define how they will work together and to work together more efficiently; however, multiagency coordination can take place without established protocols. MACS may be put in motion regardless of the location, personnel titles, or organizational structure.

Initially the Incident Command/Unified Command and the Liaison Officer may be able to provide all needed multiagency coordination at the scene. However, as the incident grows in size and complexity, off-site support and coordination may be required.



Integral elements of MACS are dispatch procedures and protocols, the incident command structure, and the coordination and support activities taking place within an activated Emergency Operations Center. Fundamentally, MACS provide support, coordination, and assistance with policy-level decisions to the ICS structure managing an incident.

More information on MACS can be found on the FEMA NIMS website.

2500 Agencies and Teams

2510 Federal Agencies and Teams

2510.1 EPA Environmental Response Team

The EPA has three Environmental Response Teams stationed around the country (Edison, NJ, Cincinnati, OH, and Las Vegas, NV) which provide EPA regional and Headquarters Offices, the U.S. Coast Guard, other local, State, and Federal agencies, and foreign governments with technical assistance in responding to environmental emergencies such as spills of oil and hazardous substances and in assessing and cleaning up hazardous waste sites. The ERT, mandated as one of the Special Teams under the NCP, functions in an advisory capacity to OSCs and other Federal, State, and local officials concerned with spills and hazardous waste sites.

The ERT is also utilized in recommending remedial actions for immediate and long-term activities at oil spill sites and for designing and implementing plans for monitoring air, water, and sensitive habitats. The ERT maintains an around-the-clock emergency response activation system for responding to environmental emergencies and uncontrolled oil and hazardous waste sites, consulting on water and air quality criteria, health and safety protocols, ecological risk assessment, interpretation and evaluation of analytical data, and engineering and scientific studies, and developing and implementing site specific safety programs.

The ERT also provides specialized equipment to meet specific site requirements for monitoring, analytical support, waste treatment, and containment and control, and develops technical manuals, policies and Standard Operating Procedures (SOPs) for specialized equipment, computer systems, and analytical process. The ERT assists in the development of innovative technologies for use at environmental emergencies and uncontrolled hazardous waste sites, and trains Federal, State, and local government officials and private industry representatives in the latest oil and hazardous substance response technology.

For more information visit: http://www.ert.org/

2510.2 EPA Radiological Emergency Response Teams

The EPA has two Radiological Emergency Response Teams (RERT); one based in Las Vegas, NV and one in Montgomery, AL. The RERT responds to emergencies involving releases of radioactive materials. Working closely with EPA’s Superfund program as well as federal, state, and local agencies, the RERT responds to emergencies that can range from accidents at nuclear power plants, to transportation accidents involving shipments of radioactive materials, to deliberate acts of nuclear terrorism.

For more information visit: http://www.epa.gov/radiation/rert/rert/html.

2510.3 U.S. Department of Health and Human Services

The U.S. Department of Health and Human Services (HHS), through the Agency for Toxic Substance 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 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.

For more information visit: http://www.atsdr.cdc.gov/atsdrhome.html

2510.3.1 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 conduction on-site environmental sampling, epidemiologic surveys, and medical testing.

2510.4 U.S. Department of Agriculture

The U.S Department of Agriculture (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. Other Agencies within the USDA that have relevant capabilities and expertise are:

- The U.S. Forest Service;
- The Agriculture Research Service (ARS);
- The Animal and Plant Health Inspection Service (APHIS); and
- The Food Safety and Inspection Service (FSIS).

Details on the capabilities and expertise for the above agencies are outlined in the NCP (40 CFR Part 300.175(b)(6)).

2510.5 U.S. Department of Commerce

The U.S. Department of Commerce (DOC), through the National Oceanic and Atmospheric Administration (NOAA) provides scientific support for response 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 and hazardous substances. In addition, NOAA provides expertise on living marine resources and their habitats, including endangered species, marine mammals, and National Marine Sanctuaries.

2510.6 U.S. Department of Defense

The U.S. Department of Defense (DOD) has responsibility to take all action necessary with respect to releases where either the release is on, or the sole source of the release is from, any facility or vessel under DOD jurisdiction, custody, or control. The DOD may also provide, consistent with it operational requirements and upon request of the OSC, locally deployed Navy oil spill equipment and assistance to other federal agencies.

2510.6.1 U.S. Navy/ SUPSALV

The U.S. Navy (USN) provides expertise in ship salvage, shipboard damage control and diving. The USN has an array of specialized equipment and personnel that can be used for collection, containment, and removal of oil and hazardous substances. Mandated as one of the special teams under the NCP, the U.S. Navy Supervisor of Salvage (SUPSALV) provides an extensive salvage/search and recovery equipment inventory as well as specialized containment, collection, and removal equipment specifically designed for salvage related and open-sea pollution incidents, with the requisite knowledge and expertise to support such operations.

2510.6.2 U.S Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) provide expertise in specialized equipment and personnel for managing navigation channels, removing navigation obstructions, and maintaining hydroelectric facilities. USACE oversees the permitting of moorage sites for response vessels. USACE can also provide design services, perform construction, and provide contract writing and contract administration services for other federal agencies.

2510.7 U.S. Department of Energy

The U.S. Department of Energy (DOE) has responsibility to take all action necessary with respect to releases where either the release is on, or the sole source of the release is from any facility or vessel under DOE jurisdiction. DOE also provides advice and assistance to other OSCs for emergency actions essential for the control of immediate radiological hazards. Incidents that qualify for DOE radiological advice are those believed to involve source, by-products, or specialized nuclear material or other ionizing radiation sources, including radium, and other naturally occurring radionuclides, as well as particle accelerators. Assistance is available through direct contact with the DOE Radiological Assistance Program regional office.

2510.8 U.S. Department of Homeland Security

2510.8.1 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) provides advice and assistance to the OSC on coordinating civil emergency planning and mitigation efforts to other federal agencies, state, and local governments, and the private sector. FEMA’s Mobile Emergency Response System (MERS) also provides extensive rapid deployment mobile communications capabilities for use in oil/ hazardous substance response on a no-to-interfere basis with other emergent situations. An MOU is being developed with FEMA's MERS to specify the level and type of support available in a response. In the event of a major disaster declaration or emergency determination by the President, FEMA will coordinate all federal disaster or emergency action with the FOSC.

2510.8.2 U.S. Coast Guard

The U. S. Coast Guard (USCG) is a military, multi-mission, maritime service and one of the nation's five Armed Services. As such, the Coast Guard protects vital interests of the United States, the personal safety and security of our population; our natural and economic resources; and the territorial integrity of our nation from both internal and external threats, natural and man-made. The USCG protects these interests in America's ports and inland waterways, along the coasts, on international waters, or in any other maritime region where U.S. interests may be at risk.

In partnership with other federal agencies, state and local governments, marine industries, and individual mariners, the USCG preserves safety at sea through a focused program of prevention, preparedness, and response. The USCG actively protects sensitive marine habitats, marine mammals, and endangered marine species, and enforces laws protecting U.S. waters from the discharge of oil and other hazardous substances. It conducts a wide range of activities, education and preventions, enforcement, response and containment, and recovery in support of our primary environmental protection mission areas: maritime pollution enforcement, offshore lightering zone enforcement, domestic fisheries enforcement, and foreign vessel inspection. The USCG also provides mission critical command and control support and usually is the first responding force to environmental disasters in the coastal maritime area. In addition the USCG is typically the lead agency for any maritime response effort. Under the NCP the USCG Captains of the Port (COTP) are the pre-designated Federal On-Scene Coordinator (FOSC) for the Coastal Zone. USCG Eight District Officer is the RRT Co-Chair for Regions IV and VI.

2510.8.2.1 USCG National Strike Force

The National Strike Force's (NSF) mission is to provide highly trained, experienced personnel and specialized equipment to 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 covers all Coast Guard Districts and Federal Response Regions.

The National Strike Force totals over 200 active duty, civilian, reserve and auxiliary personnel and includes the National Strike Force Coordination Center (NSFCC); the Atlantic Strike Team, Fort Dix, NJ; the Gulf Strike Team, Mobile, AL; the Pacific Strike Team, Novato, Ca; and the Public Information Assist Team (PIAT) located at the NSFCC. The NSF is one of the available Special Teams mandated under the NCP to provide assistance to OSCs.

2510.8.2.2 USCG Incident Management Assist Teams

The Incident Management Assist Teams (IMAT) were developed by the USCG to supply a ready-made team for the Incident Command System, highly trained individuals to assist the local Incident Commander in dealing with a major incident. There are four IMATs, two on the east coast and two on the west coast accessed through the two USCG Areas. They are trained for initial quick response to a regional or nationally significant event. The team consists of ICS process experts that can quickly set up and develop the incident from the initial response to the ICS proactive operational planning process. Each IMAT has a limited amount of equipment that they can bring with them to set up the initial ICS process at the Incident Command Post (ICP).

2510.9 U.S. Department of Interior

The U.S. Department of Interior (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 materials spills and oversees the department's responsibilities as a trustee for natural resources. Trustee responsibilities include devising and carrying a plan for restoration, rehabilitation, or acquisition of equivalent natural resources and to carry out damage assessments. The DOI may become involved in spill response once contacted through the REOs who are designated members of the RRT. In addition, bureaus and offices of the DOI that possess relevant capabilities and/or expertise are:

- United States Fish and Wildlife Service (USFWS)
- National Biological Survey
- United States Geological Survey (USGS)
- Bureau of Land Management (BLM)
- BSEE
- Bureau of Mines
- National Park Service
- Bureau of Reclamation
- Bureau of Indian Affairs

Details on the capabilities and expertise for the above agencies are outlined in the NCP (40 CFR Part 300.175).

2510.10 U.S. Department of Justice

The U.S. Department of Justice (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 it agencies, in litigation relating to discharges.

2510.11 U.S. Department of Labor

The U.S. Department of Labor, through the Occupational Safety and Health Administration (OSHA) provides advice and assistance to National Response Team (NRT)/RRT agencies as well as to the OSC regarding hazards to persons engaged in response activities. Technical assistance may include review of safety plans and work practices, and help with other compliance questions. OSHA may also take any other action necessary to ensure that employees are properly protected at response activities. Questions about occupational safety and health at these sites should be referred to the appropriate OSHA regional office.

2510.12 U.S. Department of Transportation

The U.S. Department of Transportation (DOT) provides response expertise pertaining to transportation of oil or hazardous substances by all modes of transport.

2520 State Resources/Agencies

The following information regarding the resources/agencies of the state of Louisiana has been taken from the Louisiana Oil Spill Contingency Plan. The responsibilities of the listed agencies are as stated in that plan.

2520.1 The Louisiana Oil Spill Coordinator

The Louisiana Oil Spill Coordinator (LOSC), in consultation with the Louisiana Department of Environmental Quality (LDEQ), is authorized to administer the Louisiana Oil Spill Prevention and Response Act and direct all state discharge response and cleanup operations resulting from unauthorized or threatened discharges of oil, affecting or potentially affecting the land, coastal waters, or any other waters of Louisiana, as directed by the Governor or upon a declaration of emergency by the Governor.

It is the responsibility of the LOSC to ensure that all Louisiana state agencies are carrying out their legislated mandates in a coordinated fashion without duplication. It is the LOSC’s responsibility to see that all agencies, local, state, and parish as well as interested parties, e.g. the responsible parties have a single point of reference with respect to the state’s response efforts. The LOSC may appoint a state designated on-scene coordinator to act in their absence.

2520.2 Louisiana Department of Environmental Quality

The LDEQ, under the direction of the LOSC, is the lead technical agency of the state of Louisiana for response to actual or threatened discharges of oil and for cleanup of pollution from unauthorized discharges of oil. The LDEQ is the primary state agency in regards to environmental policies and regulations. The LEDQ responds to all reported unauthorized discharges, emissions, or other releases to the water, air, and soil with the intent of providing protection of these natural resources to maintain a healthful environment for the citizens of the State. Specific response activities of the LDEQ relative to the Louisiana OSPRA may vary according to the size, extent, and composition of a spill, and the degree of involvement of responsible party, local, state, and federal agencies. The LDEQ has trained all response personnel to the 40-hour Hazardous Waste Operations and Management level for activities relative to oil and hazardous substance releases. In addition to spill response duties, the LDEQ personnel review industry spill prevention and control plans, assist in oil and hazardous substance spill drills, and inspect permitted facilities for compliance with applicable rules and regulations pursuant to the Louisiana Environmental Quality Act. The following are LDEQ duties relative to this plan:

- Maintain a notification system for receipt of information on anticipated and actual unauthorized discharges;
- Activate spill response procedures as necessary, including secondary notification;
- Act as the Louisiana State On-Scene Coordinator in lieu of the LOSC;
- Determine the nature, extent, and location of the spill;
- Seek to locate the source and cause of the spill and to identify the responsible party;
- Track and predict spill movement;
- Evaluate the environmental implications of the spill and identify priority areas for protection and cleanup in consultation with other State, Federal, and local agencies;
- Provide technical assistance to local emergency responders and advise on necessary protective actions;
- Provide logistical support to other State, Federal and local agencies to the extent that resources allow;
- Advise industry to ensure the cleanup is conducted appropriately;

- Collect and analyze air, water, soil, vegetation and/or tissue samples for assessing environmental damage and pursuing enforcement actions;

- Monitor adequacy of response;

- Document aspects of the incident and subsequent response activities of involved parties;

- Act as a State Natural Resource Trustee for the protection of the designated resources of surface waters, ground waters, air, and soil within the jurisdictional boundaries of Louisiana;

- Provide liaison with Federal, State, and local agencies, adjacent countries, the private sector, and the public as appropriate;

- Participate in the formulation of contingency plans for the preparedness of given local, State, or Federal agencies or regulated entity to abate impacts due to a spill; and

- Participate in spill drills for the purpose of assisting in the evaluation of adequacy of a given contingency plan.

2520.3 Louisiana Department of Wildlife and Fisheries

The Louisiana Department of Wildlife and Fisheries (LDWF) is responsible for the control, supervision, management, protection, and conservation of wildlife of the state, including all aquatic life; control over the beds and bottoms of certain water bodies; and control, protection, management of certain land owned or managed by LDWF. The following are LDWF duties relative to this plan:

- Serve as joint public trustee, designated by the Governor, for natural resources under the Oil Pollution Act of 1990;

- Assess damages to natural resources under LDWF’s trusteeship following an oil spill;

- Work with the SOSC in response to unauthorized or threatened discharge of oil affecting or potentially affecting the land, coastal waters, or any other waters of Louisiana;

- Serve on the interagency council chaired by the LOSC;

- Recommend provisions of the state oil spill contingency plan relative to the protection, rescue, and rehabilitation of aquatic life and wildlife and appropriate habitats on which they depend;

- Cooperate with the LOSC in establishing procedures for the oil spill contingency plan for the assessment of natural resource damages and plans for mitigation of damage to and restoration, protection, rehabilitation, or replacement of damaged natural resources;

- Prohibit, through commission action, the discharge of petroleum wastes into any waters off the coastline of Louisiana and extending there from three miles of more into the Gulf of Mexico to prevent damage to the aquatic life in the waters of the state;

- Maintain general, overall control, supervision, conservation, protection, and management authority over wildlife of the state, including all aquatic life;

- Participate in wetland conservation and coastal area management, restoration, and protection;

- Manage and protects public wildlife lands and natural areas and habitats, including water bottoms and river basins;

- Manage, regulate, and enforce the taking of wildlife resources;

- Conduct research and permit the conduct of research regarding fishery and wildlife resources;

- Advise/regulate water pollution and habitat destruction;

- Participate in the development of the State’s natural resources, including operating fish hatcheries;

- Monitor collisions, accidents, or other casualties involving vessels;

- Conserve resident, threatened, and endangered species of wildlife, and prohibit the taking of any threatened or endangered species in the state; and

- Review and comment to the LDEQ regarding environmental impact statements relative to fish and wildlife resources or their habitat.

2520.4 Louisiana Department of Natural Resources

Office of Coastal Management

The Office of Coastal Management is responsible for the maintenance and protection of the state's coastal wetlands. The main function of the Office of Coastal Management is the regulation of uses in the Louisiana coastal zone, especially those which have a direct and significant impact on coastal waters. It is the goal of the Office of Coastal Management to protect, develop, and restore or enhance the resources for the state's coastal zone. The office is comprised of two closely related divisions: the Permits/Mitigation Division and the Interagency Affairs & Field Services Division (IAFSD).

Interagency Affairs & Field Services Division (IAFSD)

The Interagency Affairs & Field Services Division of the Louisiana Department of Natural Resources is charged with implementing the Louisiana Coastal Resources Program (LCRP). The division supports coastal Parishes in implementing approved Local Coastal Programs, and serves as a State trustee for natural resource damage assessment for oil spills. The division also provides programs for the compensation of commercial fisherman, reduction of coastal non-point source pollution, acquisition of coastal and estuarine lands, and coastal community resilience.

Permits and Mitigation Division

The Permits and Mitigation Division of the Louisiana Department of Natural Resources is charges with implementing the Louisiana Coastal Resources Program (LCRP). The Permits/Mitigation Division regulated development activities and manages the resources of the Coastal Zone. A Coastal Use Permit (CUP) Program has been established as part of the LCRP to help ensure the management and reasonable use for the state's coastal wetlands. The Coastal Use Permit is the basic regulatory tool of Permits and Mitigation Division and is required for certain projects in the Coastal Zone, including but not limited to dredge and fill work, bulkhead construction, shoreline maintenance, and other development projects. The Permits and Mitigation Division is responsible for insuring that there is "no net loss" of wetlands in the Cost Zone of Louisiana through its regulatory programs.

The following are LDNR/OC duties relative to this plan:

- Act, in cooperation with the LOSC, as the lead office within LDNR in recommending provisions of the State Oil Spill Contingency Plan providing for protection and rehabilitation of appropriate resources under its jurisdiction;

- Cooperate in the establishment of procedures for assessment of natural resource damages and plans for mitigation of damage to and restoration, protection, rehabilitation, or replacement of damaged natural resources;

- Assist other responding agencies by providing expertise, knowledge, and information about critical areas; resources, and best alternative cleanup methods;

- Provide logistical assistance of equipment and personnel to support the response, damage assessment, and restoration operation and ensure the protection of resources;

- Issue and enforce state permits in the coastal area in accordance with established guidelines in connection with:
    - Levee construction,
    - Linear facilities,
    - Dredged spoil deposition,
    - Shoreline modification,
    - Surface alterations,
    - Hydrological and sediment transport modifications,
    - Disposal of waste,
    - Alterations of waters draining into coastal waters,
    - Oil, gas, and other mineral activities, and
    - Avoiding adverse impacts to the coastal area for any activity.

- Require effective environmental protection and emergency or contingency plans be developed and complied with for all mineral operations;

- Require that the use of dispersants, emulsifiers, and other similar chemical agents on oil spill be prohibited without prior approval of the FOSC;

- Provide consistency reviews for any direct federal actions or permitted licensed, or funded federal actions carried out by other persons;

- Ensure that any governmental body undertaking, conducting, to supporting activities directly affecting the Louisiana coastal area shall make certain that such activities shall be consistent with the Louisiana Coastal Management Program and any affected approved local coastal management program having geographical jurisdiction over the action;

- Notify the appropriate representative of any parish that has an authorized local program in the event of an emergency brought about by natural or man-made causes that would result in hazard to like, loss of property, or damage to the environment if immediate actions were not taken;

- Issue emergency authorization for uses necessary to correct emergency situations brought about by natural or man-made causes that would result in hazard to life, loss of property, or damage to the environment is immediate actions were not taken;

- Receive all monies appropriated from the Wetlands Conservation and Restoration Fund and shall implement all programs and projects in the Coastal Vegetated Wetlands Conservation and Restoration Plan;

- Develop procedures to evaluate new and improved coastal restoration and preservation technologies; and

- Operate and maintain structural projects.

2520.5 Louisiana Department of Health and Hospitals

The Department of Health and Hospitals (LDHH) directs and coordinates the state's emergency medical and health services. The authority of LDHH is found in the Sanitary Code of the state of Louisiana. The following are LDHH duties relative to this plan:

- Evaluate incident implication for public health;

- Recommend public health protection methods;

- Determine status of medical services;

- Determine availability and condition of health facilities;

- Coordinate public health information;

- Issues public health news releases and advisories;

- Advise on response activities as they relate to public health;
- Collect and analyzes samples to identify human health problems in coordination with LDEQ, LDWF, LDAF, as well as other State and Federal agencies;
- Assess damages to human health;
- Respond to disease and sanitation problems caused by overcrowding and stress on facilities and systems; and
- Provide disaster mental health systems.

2520.6 Louisiana Department of Public Safety and Corrections, Hazardous Material and Explosives Control Unit

The Hazardous Material and Explosives Control Unit has the responsibility for response and investigation of all chemical emergencies occurring within the State of Louisiana. The Hazardous Material and Explosives Control Unit is the SOSC for all Hazardous Substance releases.

2520.7 Louisiana Department of Agriculture and Forestry

The Louisiana Department of Agriculture and Forestry is responsible for administering many of the programs and enforcing the regulations that impact every aspect of Louisiana’s agriculture and forestry. At the farm and forest levels, these industries contribute $10 billion annually to the state’s economy. When the many support industries are added in, agriculture and forestry touch the lives of everyone in Louisiana, making them critical to the economic growth and prosperity of the state.

2520.8 Louisiana Coastal Protection and Restoration Authority

Because of the devastation of hurricanes Katrina and Rita, the Louisiana Legislature restructured the State’s Wetland Conservation and Restoration Authority to form the Louisiana Coastal Protection and Restoration Authority (CPRA).

The CPRA’s mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration master plan. Member agencies include Louisiana’s Department of Natural Resources, Department of Transportation and Development, and other state agencies. Working with federal, state, and local subdivisions, including levee districts, the CPRA works to establish a safe and sustainable coast.

The Louisiana 2012 Coastal Master Plan can be accessed at:

http://www.coastalmasterplan.louisiana.gov/2012-master-plan/draft-2012-master-plan/.

2520.9 Louisiana Division of Archaeology

The Louisiana Division of Archaeology is responsible for the supervision, management, conservation and protection of prehistoric and historic archaeological properties on state lands, including submerged resources on state rivers, water bodies and territorial waters. The Division also has responsibility for all unmarked and abandoned cemeteries in Louisiana that might be impacted by a spill or response activities.

2520.10 State Historic Preservation Office

The State Historic Preservation Office, under the National Historic Preservation Act (1966, as amended, *et seq)* and 36 CFR 800, consults with federal agencies concerning any direct federal action, or any federally funded, permitted or licensed activity undertaken by other agencies or organizations that may affect cultural resources during the spill or response activities.

2530 Louisiana State Emergency Management

2530.1 Louisiana Governor's Office of Homeland Security and Emergency Preparedness

The Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) operated the state's Emergency Operations Center. The GOHSEP coordinates and provides logistic support during disaster emergencies, including communications, air, ground, and water transportation support, equipment and supplies, facilities, fuel, food, and assists with these functions for smaller spills at the request of the SOSC. The following are GOHSEP duties relative to this plan:

- GOHSEP maintains and staffs emergency depots, including the establishment and training of a volunteer corps;
- Maintain the Louisiana Emergency Operations Plan;
- Participate and oversee the development of local and inter-jurisdictional disaster plans;
- Maintain a roster of trained personnel, skilled in disaster prevention, preparedness, response, and recovery;
- Provide direct emergency support to local communities in declared emergencies including spills; and
- Provide emergency notification and conference call capability with local Parish Emergency Operations Centers.

2530.2 Louisiana State Military Department/ National Guard

2530.2.1 62nd Civil Support Team

The 62nd Civil Support Team (CST) is a federally funded Louisiana National Guard unit established under Presidential Directive 39. This full time unit is comprised of active duty Army and Air Force personnel.

The CST organization was designed to augment local and regional terrorism response capabilities in events known or suspected to involve WMDs. WMD events are incidents involving hostile use of chemical, biological, or radiological agents. The team can be en-route within one to two hours to support civil authorities in the event of suspicion of a WMD attack. Specifically the CST is designed to deploy to an area of operations to:

- Assess a suspected nuclear, biological, chemical, or radiological event in support of an Incident Commander
- Advise responders regarding appropriate response actions; and
- Facilitate requests for assistance to expedite arrival of additional state and federal assets to help save lives, prevent human suffering, and mitigate great property damage.

The CST provides rapid confirmatory analysis of chemical or radiological hazards, and presumptive identification of biological agents at a WMD incident. The team uses special military and commercial detection and communications equipment and is trained for WMD response. The CST can also provide the Incident Command/Unified Command with advice on event mitigation, medical treatment, follow-on resources, and other response concerns.

For more information visit the 62nd CST website at http://www.la.ngb.army.mil/62nd/cst.htm

2540 Tribes

Spills may affect tribes by either occurring on or near a reservation, or by threatening treaty reserved resources (including habitat) or cultural areas. There are 09 federally recognized Indian Tribes in the NOACP geographical boundary. There are additional state recognized tribes. The federally recognized tribes are listed below with their applicable areas of interest.

- Chitimacha Tribe of Louisiana
    - Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, and St. John the Baptist Parishes.

- Coushatta Tribe of Louisiana
    - All Parishes

- Jena Band of Choctaw Indians
    - All Parishes

- Tunica-Biloxi Indian Tribe of Louisiana
    - All Parishes

- Alabama-Coushatta Tribe of Texas
    - All Parishes

- Choctaw Nation of Oklahoma

    - All Parishes

- Quapaw Tribe of Oklahoma
    - Orleans Parish

- Seminole Nation of Oklahoma
    - Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, and St. John the Baptist Parishes.

- Seminole Tribe of Florida
    - Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, and St. John the Baptist Parishes.

- Mississippi Band of Choctaw Indians

    - All Parishes

2550 Local Resources/Agencies

The following responsibilities are typically shared among local fire, law enforcement, emergency medical, public works, health departments, etc., for incidents involving oil or hazardous substances:

- Notification;

- Initial hazard determination and containment;

- Communications;

- Search and rescue (SAR);
- Liaison with other local officials; and
- Provide evacuation, shelter, and mutual aid.

A list of local response resources can be found in The Area Resource Response Resource Inventory, Chapter 9000, Appendix R.

2550.1 Emergency Management Agencies

Local Emergency Management Agencies may be involved with planning, training, and assisting with interagency coordination. During incidents, may activate the community Emergency Operations Center (EOC) to support on-scene operations and requests for resources assistance. Local emergency management agencies may support each other under mutual aid to augment staff or provide liaison. They also may be involved with the Local Emergency Planning Committee under Title III or SARA.

The responsibilities of local government EMDs may include:

- Acting as the coordinator for the various local emergency organizations and as the local liaison to Louisiana Office of Emergency Preparedness when that agency is involved;
- Contacting local landowners (may also be performed by local Health Department);
- Establishing a Joint Information Center (JIC);
- Coordinating and maintaining liaison with local government units (fire, medical, public works, sheriff-law enforcement); and
- Providing communications with local government and industry.

Most jurisdictions have identified an EOC from which local operations are coordinated and supported. Some are fixed facilities and are managed by the local EMD. Field Command Posts are established by Incident Command Agencies to direct operations from the field.

The size of the local government, its resources, and available personnel will greatly influence the existence and scope of local plans. Local Emergency Management Directors and staff may assist each other under mutual aid to augment local responses staff and to provide liaison with other response agencies.

2550.2 Fire Departments

Generally, a primary local response agency may have designated them the “Incident Command Agency”. As capabilities differ, this may range from fully equipped teams which do most response actions to just fire command personnel providing incident management.

2550.3 HAZMAT Response Teams

Federal, State, local, and private Response Teams provide specialized technical support to the UC. Contact each team to determine its capability and qualifications.

Under the direction of the UC these teams may verify of help establish the following:

- Spill contamination;
- Hazard determination;
- Measurements of concentrations of materials;
- Contamination Control;
- Control of exposure for emergency workers and the public;
- On-scene liaison;
- Initial decontamination (if necessary);
- Environmental protection measures; and
- Support to hospital emergency room (if possible and necessary) for contamination control.

See additional HAZMAT information in section 7000. A list of area HAZMAT Response Teams can be found in The Area Response Resource Inventory Chapter 9000, Appendix R.

2600 Reserved

2700 Reserved

2800 Reserved

2009 Reserved for Area/District

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New Orleans Area Contingency Plan

Chapter 3000 Operations

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New Orleans Area Contingency Plan

Chapter 3000 Operations

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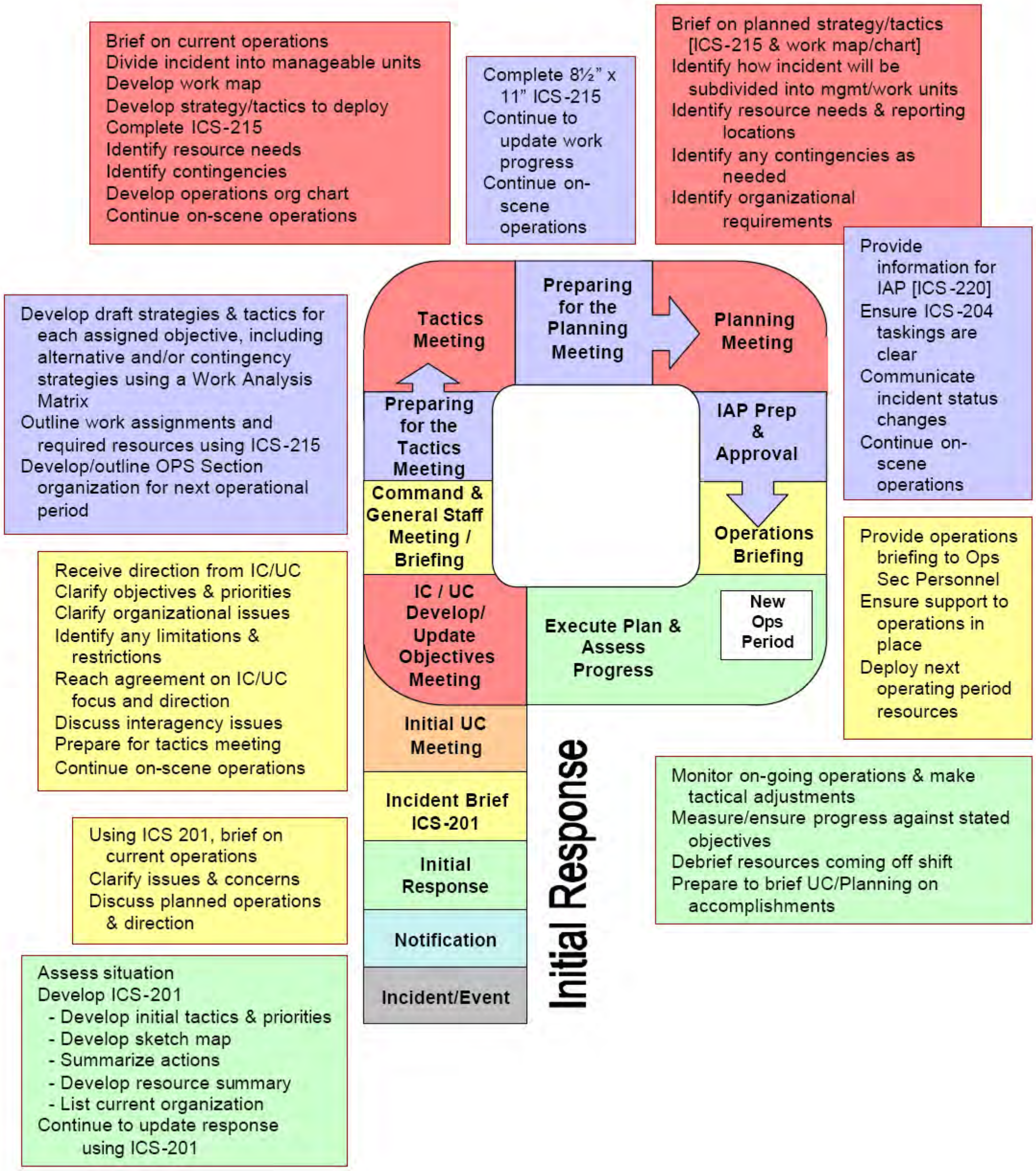
Operational Planning "P" For Operations Section Activities



Brief on current operations
Divide incident into manageable units
Develop work map
Develop strategy/tactics to deploy
Complete ICS-215
Identify resource needs
Identify contingencies
Develop operations org chart
Continue on-scene operations

Complete 8½" x 11" ICS-215
Continue to update work progress
Continue on-scene operations

Brief on planned strategy/tactics [ICS-215 & work map/chart]
Identify how incident will be subdivided into mgmt/work units
Identify resource needs & reporting locations
Identify any contingencies as needed
Identify organizational requirements

Develop draft strategies & tactics for each assigned objective, including alternative and/or contingency strategies using a Work Analysis Matrix
Outline work assignments and required resources using ICS-215
Develop/outline OPS Section organization for next operational period

Provide information for IAP [ICS-220]
Ensure ICS-204 taskings are clear
Communicate incident status changes
Continue on-scene operations

Receive direction from IC/UC
Clarify objectives & priorities
Clarify organizational issues
Identify any limitations & restrictions
Reach agreement on IC/UC focus and direction
Discuss interagency issues
Prepare for tactics meeting
Continue on-scene operations

Provide operations briefing to Ops Sec Personnel
Ensure support to operations in place
Deploy next operating period resources

Using ICS 201, brief on current operations
Clarify issues & concerns
Discuss planned operations & direction

Monitor on-going operations & make tactical adjustments
Measure/ensure progress against stated objectives
Debrief resources coming off shift
Prepare to brief UC/Planning on accomplishments

Assess situation
Develop ICS-201
- Develop initial tactics & priorities
- Develop sketch map
- Summarize actions
- Develop resource summary
- List current organization
Continue to update response using ICS-201

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3000 Operations

All incidents begin with operations. The Operations Section Chief (OSC) must be both tactically competent in responding to the incident and possess a thorough understanding of the Incident Command System (ICS). Some of the primary responsibilities of the OSC include:

- Manage tactical operations,
- Ensure tactical operations are conducted safely,
- Maintain close communications with the Incident Commander/Unified Command,
- Identify required tactical resources to accomplish response objectives,
- Identify staging areas,
- Assemble & disassemble strike teams and task forces, and
- Assist in the development of the Incident Action Plan (IAP).

This section of the ACP provides guidance on Operations that can apply to any type of incident. It addresses Operations from the actions of initial responders up to the activities required in supporting the ICS planning process.

The guidance in this section includes:

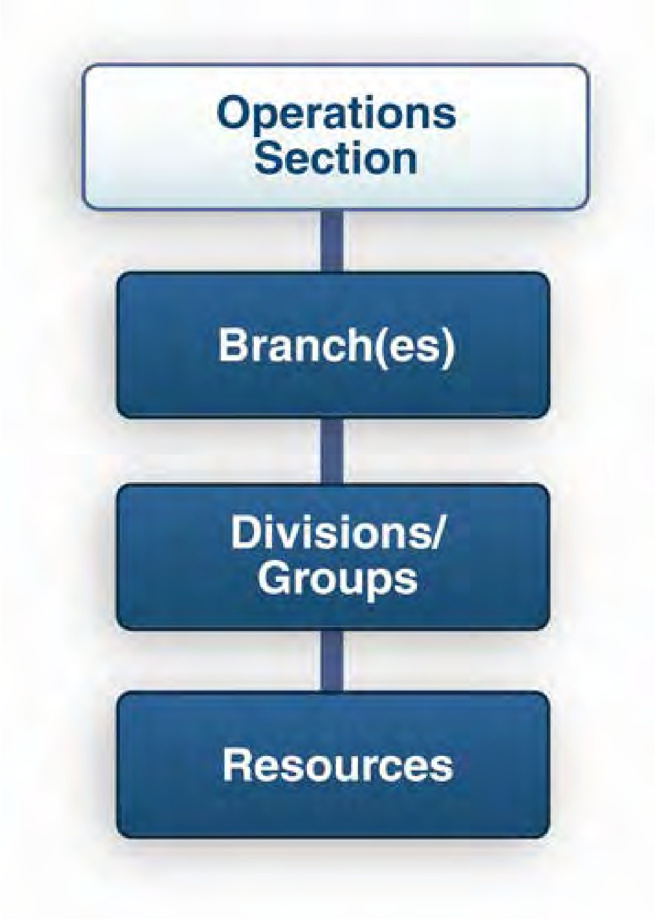
- The Operations Section Organization
- Considerations for building the Operations Section
  - Deputies
  - Divisions
  - Groups
  - Branches
  - Staging Areas

3100 Operations Section Organization

The operations organization is designed to be highly flexible so that it can be used during any type of emergency. Unlike other sections of ICS organization, Operations builds from the bottom up, only adding layers of management to maintain span of control when the size of the Operations Sections requires more focused oversight.

The below figure is a general organization chart of the Operations Section and its subordinate units. Operations Section organization information regarding the Operations Section and staff positions with the commands can be found in the National Incident Management System (NIMS) guidance and the National Response Framework. The pattern for response will follow the NIMS Incident Command System (ICS) process and position descriptions. Where NIMS ICS does not describe a process or organizational requirement the incident specific need will be addressed.

Organizational Elements of the Operations Section



3110 ICS Position Specific Job Aids

Available ICS position specific job aids can be found in Chapter 9000, Appendix V.

3120 Considerations for Building the Operations Section

To effectively manage an incident, the OSC must divide the incident into manageable work units. Some things to consider when dividing the incident are:

- Incident priorities,
- Size of the affected area,
- Complexity of the incident and number of tasks,
- Amount of work to be accomplished,
- Span of control,
- Open water versus shoreline activities,
- Topography of the affected area,
- Logistics requirements,
- Kind of functions to be accomplished,
- Contingencies,
- Need for staging areas, and
- Jurisdiction.

Deputies

When an incident is particularly large and complex, deputies should be employed to ensure effective operations. Deputies can be assigned to augment operations in several ways:

- Provide more focused oversight of a particular aspect of operations,
- Provide relief during the evening shift,
- Provide support during the critical planning process, and
- Perform specific tasks that require their level of knowledge and expertise.

Divisions

Divisions are used to divide an incident geographically. Some considerations for creating divisions are:

- Determine the geographic area each Division will cover,
- Designate the Division(s) using letters (ex. Division A),
- Every Division must have a supervisor, and
- In river environments, use a different letter to designate each side of the water body in order to avoid confusion.

Groups

Groups are used to divide an incident along functional lines. Operations are often divided functionally in the beginning of an incident. Some considerations for creating groups are:

- Determine the functions that will be conducted during the response (ex. Fire-fighting, on-water recovery),
- Designate each Group by their functional assignment (ex. Triage group), and
- Every Group must have a supervisor.

Branches

Branches are primarily used for span of control. Branches can designate an incident geographically or functionally. Some considerations for creating Branches are:

- If designating a Branch for geographic area, designate each Branch by Roman numerals for geographic area (ex. Branch III), or if the branch corresponds to a political jurisdiction (e.g. parish), then use the name of the jurisdiction.
- If designating a Branch for function, designate each Branch by the function that will be conducted during the response (ex. Search & Rescue Branch).
- Every Branch must have a Branch Director.

The responsibilities of a Division/Group Supervisor and Branch Director can be found in U.S. Coast Guard Incident Management Handbook, COMDTPUB P3120.17A.

Strike Teams/Task Forces

Strike Teams are specified combinations of the same kind and type of resource with common communications and a leader. Task Forces are a group of resources with common communications and a leader assembled for a specific mission. The responsibilities of a Strike Team/Task Force Leader can be found in U.S. Coast Guard Incident Management Handbook, COMDTPUB P3120.17A.

Staging Areas

Staging Areas are temporary locations to hold tactical resources for immediate deployment. Some considerations for creating a Staging Area are:

- Determine most feasible locations to establish a Staging Area,
- Designate Staging Areas by their physical location (ex. Basin Ave. Staging), and
- Every Staging Area must have a manager.

3130 Operations Section Chief

The OSC, a member of the General Staff, is responsible for the management of all tactical operations directly applicable to the primary mission of the Incident/Unified Command. The OSC will normally be selected from the Responsible Party or the agency with the most jurisdictional responsibility for the incident.

The OSC activates and supervises organization elements in accordance with the IAP, and directs its execution. The OSC also directs the preparation of operational plans; requests or releases resources, monitors operational progress, and makes expedient changes to the IAP, as necessary, and reports to the Incident/Unified Command. Specific duties of the OSC can be found in the U.S. Coast Guard Incident Management Handbook, COMDTPUB P3120.17A

3140 Expectations of Division and Group Supervisors

Personnel assigned as a Division or Group Supervisor must carry out the tactical assignments outlined in the IAP. To be successful they must possess both the leadership qualities and expertise to ensure the operations under their control are conducted safely and efficiently. There are certain expectations that the OSC should have for Division and Group Supervisors such as providing information on work accomplished, remaining work to be done, recommendations for the next operational period, estimated completion time for primary objectives and any unusual logistical support needs.

3200 Recovery and Protection Branch

The Recovery and Protection Branch Director and the Protection Group Supervisor are responsible for the deployment of containment, diversion, collection, protection and absorbing boom in designated locations. Depending on the size of the incident, the Protection group may be further divided into teams, task forces, and single resources.

Chapter 3000 Operations

The goal of most containment and recovery strategies is to collect the spilled oil from the water and prevent it from reaching sensitive resources. Frequently, this is not possible and sensitive resources are oiled in spite of response efforts, especially during large oil spills. Often the goal will be to minimize environmental impact using a variety of booming, containment, and recovery techniques. These techniques are discussed in Chapter 9000, Appendix F Oil Spill Best Management Practices.

Sensitive Sites in the NOAC area of responsibility are organized by parish in Chapter 9000, Appendix Y, Sensitive Site Index.

3210 General Hierarchy of Response Priorities

In general, Federal law establishes three priority levels for dedication of emergency oil spill response resources.

- First Priority- Protection of human health and safety,
- Second Priority- Protection of environmental resources, and
- Third- Protection of economic resources.

Examples of resources that will receive a first priority response (human health and safety) include:

- Drinking water intakes- other health/safety intakes,
- Power plant intakes- desalinization plants, and
- Critical public use areas at risk (e.g. hazardous vapors).

The second priority group is thoroughly identified in the area Geographic Response Plans (GRPs) and the applicable Environmental Sensitivity Index.

The IC/UC should utilize the predetermined response strategies outlined in the applicable GRP. However, the UC/IC and responders should remain flexible and be receptive to additional information when implementing the booming plan or other countermeasures. Factors such as unusually high winds, strong tidal currents, equipment limitations, bottom conditions, and the type of oil can have a significant effect on the proposed strategy. Modifications to the preplanned strategies should be expected.

In addition to the seasonal variances, the protection priority of an entire area could change. For example, if the Scientific Support Coordinator (SSC) or a U.S. Fish and Wildlife Service (USFWS) biologist determined that a certain section of marshland or coastline previously categorized as a lower priority is currently a breeding ground for an endangered species, then protection of that site may be afforded the utmost priority. Sensitive locales which may be already impacted or inevitably impacted may be used to collect or retain oil so that other nearby sites can be protected.

3210.1 Response Prioritization

The initial response is focused on minimizing impacts through the strategic objectives of:

- Stopping the Source,
- Containment,
- Recovery, and
- Protection of Sensitive Areas.

In a spill event, sensitive area protection prioritization should be determined by three considerations: which sites are at risk (how soon the oil product will get to each sensitive site?), the predefined hierarchy of protection priorities, and the time and response resources available to implement protection. Responders should not assume that sensitive locales equidistant from the source of a spill are at equal risk from the oil. For the purpose of prioritization, “risk” is defined as “the probability of spilled oil reaching the vicinity of a sensitive site of concern”. This means that the urgency to protect key resource is first determined by the likelihood that it will be impacted in the near future and mobilization time for requisite response staff and equipment (can the sites at risk be protected by available resources before oil arrives?). If the sites are too numerous to protect with the response resources available within projected times of impact, then triage of protection follows as the prescribed general hierarchy below or those identified for a specific area in the GRP.

During an actual incident, the relative likelihood of a site coming into contact with the oil is a function of the proximity of the spill to the site and whether prevailing conditions (wind, current, and tides) at the time of the incident will move the oil toward or away from it. At a minimum, first responders to a spill in the marine environment should obtain an initial forecast of oil movement speed and direction from a reliable source such as the NOAA SSC, or forecast it based on present and impingent tides, currents, winds, and rainfall runoff conditions. This requires responders to use best information (optimally, real time information) about the local weather, tides, and currents to make the best prediction possible about the movement of the oil from the discharge location. This information can be used to model the probable trajectory.

3220 Tactical Response Options

The Operations Section in coordination with the Planning Section develops the specific tactics for response strategy implementation.

Proposed containment and protection strategies are organize by parish in Chapter 9000, Appendix S, Geographic Response Plans.

3220.1 Situation Assessment

Note: At any release where the lead agency determines that there is a threat to the public health or welfare or the environment, the lead agency may take appropriate removal actions to abate, prevent, minimize, stabilize, mitigate, or eliminate the discharge/release, or the threat resulting from that discharge/release (NCP, 40 CFR Part 300.415(b)(1)). At discharges/releases determined to pose a substantial threat to the public health or welfare, the FOSC must direct a response to the incident.

The following checklist is intended to be used as a guideline of considerations to be referred to when developing tactical response options/strategies. This list is NOT in order of importance and may not apply to every situation. The Checklist does not limit the Operations Section from choosing response options/strategies that are not listed.

Situations Assessment Checklist

- Evaluate if special circumstances exist requiring section action
- Health and safety issues
- Fire and/or explosions (see Gasoline and Other Flammable Liquids Response, Section 3270.7)
- Requirements for access limitations (barricades, security fences, etc.)
- Vessel collision
- Vessel grounding
- Lightering operations
- Salvage operations
- Vessel traffic blockages
- Sample collection and analysis for evaluation or source determination
- Implement support infrastructure
- Determine response structure consistent with the Incident Command System principles that will be used, and from there determine level of support needed to fill positions in the structure which include Finance/Admin, Logistics, Operations, and Planning.
- Implement Geographical Response Plan for location based on real time information and protection strategy effectiveness. (See Section 3250 of this Chapter and Chapter 9000, Appendix S)
- Determine and mobilize personnel necessary for initial response efforts
- Mobilize equipment
- Coordinate Volunteers (See Chapter 9000 Appendix L)
- Identify initial resources at risk using GRPs or any other source information available

- Natural resources- fish, wildlife, habitats, and Endangered Species Act (ESA) issues (See Chapter 1000, Section 1680.4)

- Cultural resources- Initiate contact with a State Historic Preservation Officer (See Chapter 9000, Section 9220.6), NHPA: http://www.achp.gov/overview.html#top

- Socio-economic resources:
    - Critical Infrastructure
        - Drinking water
        - Energy/power generation intakes, Lock and Dams
        - Federal/State irrigation agricultural channels and water projects
    - Water dependent commercial areas
        - Industrial intakes
        - Agricultural irrigation intakes
        - Aquaculture
        - Marinas
        - Commercial fishing and shellfish harvest areas
        - Federal/State and private fish hatcheries
        - Specially designed residential, commercial, and industrial areas (ex. Floating homes and love aboard marinas)
    - Water dependent recreational areas
        - Boating
        - Public recreational areas
        - Sport fishing
        - National/State/local parks and beaches
        - National seashore recreational areas
        - National river reach designated as recreational

- Notify and coordinate with Natural Resource Trustees (See notification section for contact information)

- Coordinate with Federal, State Natural Resource Damage Assessment (NRDA) personnel (see notification section for contact information.)

3220.2 Containment and Cleanup

The priority for all countermeasures is safety of personnel and protection of the environment. A number of cleanup techniques are available for response to a pollution incident. Single or multiple techniques may be utilized in abating a spill. The determining factors in method selection usually depend on the type of product spilled, current state of product, size of the incident, location, weather, and site impact.

Some volatile materials may create hazards if a containment boom is utilized (See Gasoline and Other Flammable Liquids Response, Section 3270.7). Other defensive countermeasures may be more appropriate as conditions warrant. Each spill of a volatile product should be assessed individually and due consideration given to the most suitable actions for a given situation.

Weather and other circumstances permitting, every effort should be made to collect oil as close as possible to the source of the incident (e.g. in the case of a grounded tanker, lighter the vessel). Even as oil spreads across a water surface, collection on this medium is preferable to beach cleanup. If the weather conditions at the beginning of an incident response are unfavorable for certain operations, these solutions may become feasible at a later time in the response.

The following is a list intended to be used as a guideline of considerations to be referred to when developing tactical response options/strategies. This list is NOT in order of importance and may not apply to every situation. The list does not limit the Operations Section from choosing response options/strategies that are not listed.

Refer to “Characteristic Coastal Habitats: Choosing Spill Response Alternatives”, equivalent NOAA Inland waters job aids, and Chapter 9000 Appendix F Oil Spill Best Management Practices for detailed information on listed options/strategies.

- Natural recovery (which may include setting aside areas for research purposes and countermeasures effectiveness determination. Recognize that identifying set-aside sites involves a complex matrix of scientific, logistical, legal, and public relations issues.);

- Booming and containment (See Gasoline and Other Flammable Liquids Response, Section 3270.7);

- Skimming (See Gasoline and Other Flammable Liquids Response, Section 3270.7);

- Barriers and berms;

- Physical herding;

- Manual oil removal/cleanup;

- Mechanical oil removal;

- Sorbents;

- Vacuuming;
- Debris removal;
- Sediment reworking/tilling;
- Vegetation cutting/removal;
- Flood/deluge;
- Dispersants (Section 3270.1 , Chapter 9000 Appendix D Dispersant Policy, and http://response.restoration.noaa.gov/disp_aid/disp_aid.html);
- In-Situ Burning (Section 3270.2 and Chapter 9000 Appendix C In-Situ Burn Policy;
- Decanting (Chapter 9000 Appendix E);
- Sub-sea containment strategies (Section 3220.4.1; Chapter 9000, Appendix U, “Spills of Nonfloating Oils: Risk and Response”); and
- NMFS Biological Opinion for oil response.

A critical element to containment and cleanup is to monitor the strategies/tactics that have been implemented for effectiveness and efficiency. It is also important to discuss and develop criteria/guidance for terminating the cleanup (e.g., how clean is clean?).

3220.3 Protection

The goal of most oil containment and recovery strategies is to collect the spilled oil from the water and prevent it from reaching sensitive resources. Frequently, this is not possible and sensitive resources are oiled in spite of response efforts, especially during large oil spills. Often the goal will be to minimize environmental impact using a variety of booming, containment, and recovery techniques.

The following are techniques that can be implemented by the Operations Section to contain spilled oil on the water or as a means to direct it away from sensitive natural resources or cultural amenities. Shoreline cleanup and treatment methods are discussed in more detail later in this Chapter. For swift current environments, the USCG publication, “Oil Spill Response in Fast Currents- A Field Guide” (Hansen & Coe, 2001) provides an excellent summary of techniques and equipment which have success in such challenging environments.

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3220.3.1 Containment and Protection Options

As oil escapes containment it becomes increasingly difficult to recover. Inevitably oil does escape containment, and additional measures must be included to deal with the escaping oil. This is particularly necessary where oil booming is subjected to winds, waves, and strong currents; oil entrains or is splashed over boom. To counter oil escapement, deployments should include preplanning to anticipate and control escapement.

Before spilled oil can be effectively recovered, the spreading of the oil must be controlled and the oil contained in an area accessible to oil recovery devices. Generally, spilled oil is contained using oil containment boom. Typical boom has a floatation section that provides a barrier on and above the water surface and a skirt section that provides a barrier below the surface. The physical dimensions of the boom to be used for a particular spill will be dependent on local conditions. In the open water it may be necessary to use a boom that is several feet tall. In a protected marsh, a boom that is only a few inches tall may be appropriate.

There are limitations on the effectiveness of any boom. Oil will be lost if the conditions are such that there is splash-over from breaking waves. Oil will also be carried under the boom skirt if it is deployed in such a way that currents cause the oil to impact the boom with a velocity perpendicular to the boom of greater that 0.7 knots. Once a boom has been deployed, it may be necessary to reposition it due to changing tides and currents. It is desirable to have personnel available to readjust the boom as required. In all cases of boom deployment, consideration must be given to protecting the safety of those involved in the activity.

Hard/Containment booming is used to prevent spreading and to concentrate the oil so it can be skimmed or vacuumed. Factors that need to be considered are: type and size of boom required for weather, winds, tides, and currents in the vicinity of potential spill areas; the type of deployment vessel needed; the amount of boom needed for effective containment and available skimming capabilities. Fixed or natural anchor points should be selected.

Sorbent booming is useful when the amount of oil is minimal, when tides and currents are light, or when shorelines require protection. Heavier oil can be recovered using absorbent (oil “sticks” to the boom) and lighter fuels generally are recovered using adsorbents (sausage, sweep, or diapers). Sorbent booming can also be used as a backup for other types of booming to recover product that may have entrained past the primary barrier.

3220.3.2 Shoreline Protection Options

Southeastern Louisiana is home to a large expanse of mud flat and marsh systems. These areas are particularly difficult to protectively boom and every effort should be made to contain and recover the oil before it approaches any of these areas. If the on-water recovery operations are not entirely effective and oil still threatens the marsh areas, intertidal barrier boom may be used to protect the mud flats.

A recommended deployment strategy is as follows: Place intertidal boom along the entire front of the mud flat, with the boom being anchored just off shore of the low –low tide line. In areas where wave entrainment of the boom at high tide is considered to be a problem, place a line of boom across the upper mud flat near enough to the marsh to be away from the threat of wave entrainment. The boom positioned on the mud flat would rest on the flat at low tide and be of the type of construction that would prohibit oil from passing under it on the rising tide. The boom would eventually lift up off the tidal flat surface as the tide continues to rise.

Deployment of this type of boom and it supporting arrangement is extremely manpower intensive. It should only be implemented if there is a high probability that oil will reach the marsh areas. It is envisioned that these resources would not be available until equipment began to cascade into the area sometime after the initial response. Other factors to consider in this of this type of booming are:

- Water body type,
- Water current velocity,
- Water depth,
- Wave height, and
- Shore type.

Generally, sediment berms, dikes and dams will most often be used to protect small coastal inlets or perhaps tidal channels serving wetlands and marshes when these channels are accessible. The object of berms, dikes and dams is to keep oil outside an inlet because there are often abundant natural resources and economically significant areas that use the sheltered waters within.

Occasionally, dikes and dams have been used across a channel to contain the oil within a portion of marsh in order to prevent widespread contamination of other resources.

Dikes and Dams are not practical when currents are great, waters are deep, and waves are large. Also, beaches with abundant sand are generally the most suitable for building dikes and dams. Berms can be built above the active beach face to prevent oil contamination of high beach during spring tides. Alternative strategies should be prepared and the necessary supplies and equipment in place should a berm, dike, or dam fail.

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3220.4 On-Water Recovery

Oil removal/recovery in open water is accomplished through the use of skimming devices once the oil has been contained. Skimmers can be freestanding in which the skimmer is a separate piece of equipment which pumps the oil-water mixture from the contained surface into tanks on a vessel. These skimmers are usually driven by hydraulic units on board a vessel. Self-propelled skimmers have a skimmer as an integral part of the vessel. The skimming vessel positions itself at the head of a concentrated or contained pool of oil and recovers the oil into tanks on board the vessel. There is also a type of skimmer in which the weir or collection zone of the skimmer is an integral part of the boom which is close to the skimmer.

Vessels of Opportunity (VOO), such as fishing vessels, may be used to deploy or tow boom and, depending on the size of the vessel, be equipped with skimming equipment. They need to have adequate deck space and lifting cranes to carry the necessary equipment. The Coast Guard’s Vessel of Opportunity Skimming System (VOSS) can be deployed on a variety of vessels.

In the New Orleans area FOSC zone it is not uncommon to encounter currents in excess of three miles per hour. With appropriate skimmer operations, it is possible to recover spilled oil in these high current areas. Standard skimming techniques must be modified somewhat to optimize oil recovery.

High Current Environments

To be successful, most containment and skimming systems must encounter oil at speeds of less than one knot. Typically skimmers are operated in conjunction with containment boom. If oil encounters the boom/skimming system with a perpendicular velocity greater than 0.7 knots, the oil will carry under the boom and be lost. Therefore, the most important consideration for skimming in high currents is to keep the speed of the skimming system below one knot relative to the water’s surface. As a basic example: A skimmer pointed upstream in a 5 knot current would actually be proceeding downstream or backwards at four knots to keep its velocity relative to the water’s surface at one knot. Gauging a skimmers velocity relative to the water’s surface can be somewhat difficult. Often the most reliable method is for the skimmer operator to closely monitor the skimming system. They should look for signs of oil entrainment as well as ensuring the integrity of the containment system. As current speeds change so must the speed of the skimmer. The skimmer monitoring can be aided by using a helicopter observer. The Observer can tell is oil is being lost by the skimmer as well as direct the skimmer to the best skimming location.

Boom is often deployed in front of the skimmers forming a V thus directing oil into the skimmer. The practice increases the area being covered by the skimmer. Ideally this V should be as wide as possible. In high currents, as the V width is increased the speed of the oil encountering the boom perpendicularly is increased.

Oil will spread more quickly in the direction of the current flow; skimmers should operate in an up and down stream orientation. The oil slick will be elongated in the direction of the currents. Skimmers will encounter the most oil as they proceed up and down stream within the slick. Operating back and forth across stream and across the slick will result in sub-optimal recovery efficiency.

Near-Shore/Shallow Water

Oil recovery techniques and equipment are different in near-shore/shallow water locations that open water. Shallow draft vessels and smaller boom and skimmers are used in these situations. These vessels can maneuver into tight places behind and under wharfs or in sloughs and can actually skim next to shore in many near-shore locations.

Strategies for near-shore cleanup can differ depending on the depth of the water and the location. Near-shore operations, within a bay or inlet, will also require shallow draft vessels, workboats, and skimmers. However, the vessels may only be operable at high tide. At or near low tide, the operation may evolve into a shoreline cleanup operation. Any boom towing boats or skimmers must be able to withstand going aground without sustaining major damage.

Coastal shallow water or near-shore strategies will differ in certain respects. In addition to the need for small, shallow draft vessels and/or specialized vessels may also be needed. The safety of personnel involved in these operations is the IC/UC’s paramount concern.

3220.4.1 Non-floating Oils Recovery and Protection

Non-floating oil that is spilled and transported subsurface either remains suspended in the water column or is deposited on the seabed, usually after interaction with suspended sediments or sand. Different strategies for containing these oils can depend on the location of the oil.

The recovery of sunken oil has proven to be very difficult and expensive because the oil is usually widely dispersed. Several of the most widely used recovery methods are manual removal, pump and vacuum systems, nets and trawls, dredging, and onshore recovery.

For specific containment and recovery methods refer to Chapter 3 of the National Academy of Sciences (NAS) “Spills of Nonfloating Oils: Risk and Response” contained in Chapter 9000 Appendix U.

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3220.4.2 Shore-Side Recovery

There are predictable locales where recovery efforts can be optimized at shorelines. There are two situations where oil collection should be vigorously attempted at the shoreline:

- Places where oil naturally collects at the shoreline because of winds and currents

- Diversion and capture of oil as it flows past or along the shoreline and points with low environmental sensitivity

Oil is a substance that spreads primarily in two dimensions on the water surface while water moves in three dimensions; oil will spread thin, but it will also accumulate at predictable locales; it will accumulate wherever water has downward currents: such as tide rips along mud flats, and at windward coves.

3220.4.2.1 Natural Collection Points

A list of pre-identified natural collection points are listed in the following table. Information not contained in the following table includes Barge Staging Areas which create natural collection areas for a spill on the Mississippi River. Responders are encouraged to also consider barge staging areas in the vicinity of a response for collection/pocketing of oil.

Natural Collection Points

ID	LOCATION	LAT DEG	LAT MIN	LONG DEG	LONG MIN	BANK	RIVER MILE	CHARACTERIZATION
1	Port of B.R. Dock 1	30	26.13	91	1 2.03	RDB	229	
2	Port of B.R. Dock 2	30	26.67	91	1 1.99	RDB	229.9	
3	Dow Chemical Dock	30	24.73	91	1 4.45	RDB	223	Missouri Bend
4	Dow Chemical Dock	30	24.41	91	1 4.65	RDB	213	
5	Not Named	30	12.46	91	4 .16	RDB	188	Across river from Rhone-Poulenc
6	Not named	30	9.33	91	0 .2	RDB	182	Across river from Shell Refinery
7	CF Industries	30	6.22	90	5 7.52	RDB	195	
8	Not named	30	8.57	90	5 9.97	LDB	180	
9	BCP	30	12.9	91	3 .16	LDB	185	
10	ENRON	30	12.99	91	4 .29	LDB	188.6	
11	Willow Glenn	30	16.25	91	7 .24	LDB	201.6	

ID	LOCATION	LAT DEG	LAT MIN	LONG DEG	LONG MIN	BANK	RIVER MILE	CHARACTERIZATION
12	Belle of Baton Rouge	30	26.555	91	1 1.561	LDB	229.5	
13	Casino Royal/Capitol	30	27.545	91	1 1.556	LDB	230.5	
14	Baton Rouge Harbor	30	31.539	91	1 2.474	LDB	235.3	
15	National Marine Tiger	30	30.592	91	1 5.272	LDB	239.1	
16	Springfield Bend	30	33.989	91	1 4.808	LDB	245.6	Springfield Light
17	Port Hudson Light	30	34.444	91	1 8.531	LDB	254.9	Upriver of Amoco Pipeline Co., Mangroves
18	Hermitage Light	30	38.674	91	1 7.574	RDB	257.6	
19	False River Light	30	35.365	91	1 9.047	RDB	251	
20	Devall Light	30	30.719	91	1 7.259	RDB	240.3	Mangroves, Inlet to mangroves
21	Greenville Johnny	30	30.59	91	1 4.394	RDB	237.3	Fleeting Area/ Shipyard
22	College Town Light	30	24.259	91	1 2.206	LDB	226.6	Slow Bend Low Probability
23	Longwood Plantation	30	20.177	91	8 .553	LDB	216.2	Horseshoe Bend
24	Plaquemine	30	17.62	91	1 3.648	LDB	208.5	

ID	LOCATION	LAT DEG	LAT MIN	LONG DEG	LONG MIN	BANK	RIVER MILE	CHARACTERIZATION
25	Belle Point	30	02.13	90	37.66	LDB	142.1	
26	Davis Crevasse	29	55.97	90	18.8	RDB	118.1	
27	Little Farms	29	58.0	90	14.51	LDB	112.2	
28	Governor Nichols	29	57.08	90	3.47	LDB	94.3	Wharf
29	Poydras Light	29	52.25	89	54.49	LDB	81.6	
30	Bayou Lamoque Light	29	25.85	89	35.9	LDB	33.0	
31	Fort Jackson Rev.	29	20.30	89	29.11	RDB	21.5	Revetment
32	Fort St. Phillips	29	21.81	89	26.80	LDB	20.3	Slow bend
33	North side Cubits Gap entrance	29	12	89	116	LBD	3.9	Sensitive Delta Area
34	Octave Pass Area	29	11	89	15	LDB	3.1	Sensitive Delta Area

3220.4.2.2 Diversion to Shore

Diversions to shores with low environmental sensitivities are a desirable alternative to the unmitigated spread of oil. As described above, oil spreads rapidly on open water and effectual on-water skimming is difficult in a high current environment. Diversion can shunt oil out of high current and into quiet water capture point at shore. It can be an effective addition to on-water skimming recovery.

The following are the operational considerations when establishing a shoreline collection site when oil is moving along or near shore. Boom should be position at an acute angle to the current to move oil toward the shore collection. Cascading boom arrangements may be necessary. Once oil is at the shoreline, it may be necessary to deploy additional boom to trap the accumulated oil at the shore collection site when the tide reverses. Good land accessibility an important part of selecting capture sites since it permits site support and easy removal of collected oil. Though some natural collection sites may have poor land access, they may be important accumulation points which can be exploited effectively via water.

Deployments of this type should only be made with the recommendation of a Resource at Risk Specialist and the direction of the IC/UC.

3220.4.2.3 Pre-Beach Cleanup

While it is generally not possible to avoid the generation of oily debris resulting from the contact of floating oil with waterborne solids, it is possible to avoid the generation of oily debris in the coastal inter-tidal zone if the anticipated area of oil impact can be cleaned prior to stranding of the spilled oil. Personnel can be deployed to remove debris from beach intertidal areas to above the high tide line in order to prevent oiling of stranded debris/trash. It is important to note that such crews are not likely to be certified as required for oiled debris recovery under OSHA, 29 CFR Part 1910.120 and can only perform this task prior to the stranding of spilled oil. A safety/industrial hygiene specialist should be consulted regarding limitations of these crews and the effective establishment of exclusion zones in the area of beach impact.

3230 Monitoring Oil Movement/ Forecasting Oil Trajectories

Oil trajectories may be effectively forecast by several means and should always be done by skilled staff. Usually trajectories are created and assessed by the Environmental Unit (See Chapter 4000 Section 4600). Each method can be limited by conditions or unforeseen patterns, and no method is guaranteed to accurately predict the future distribution of oil. Because success or failure of response to near-shore spills is usually determined by actions in the early timeframes, the IC/UC and on-scene responders must take immediate action using simple predictive methods rather than delaying action until more precise information becomes available. ***Spill responders must act on the best information available at the moment***. If time and resources permit, as many means as possible should be engaged to maximize the probability of accurately identifying slick movement and likely impacts, but this should never slow response. Regardless of the trajectory method used, it should always be recognized that such trajectories are helpful guidance but do not substitute for using on-scene information about currents and winds which determine slick movement.

If the Environmental Unit or other skilled trajectory analysis is not available, initial response may need to proceed based on simple mathematical calculations of oil movement commonly called “back-of-the-envelope” or “envelope” trajectories. “Envelope” trajectories provide a quick yet fairly accurate estimate of the trajectory using best available information (which may not be accurate enough for more sophisticated modeling). It can quickly be recalculated using improved information. (After initial response, trajectories will be developed by the Planning Section/Environmental Unit as part of the IAP.)

Envelope Trajectories

Envelope Trajectories are simple pencil and paper computations based on currents, tides, and winds. Although an envelope trajectory is only gross approximation which does not take into consideration spreading or local turbulence, it will often be used as the first estimate of oil trajectory until better information is available from computer modeling or aerial perspective. This method is quick as well as effective and is not restricted by visibility. It has wide effectiveness and provides gross projections. This method is based on the premise that oil moves at 100% of current velocity and 3% of wind velocity. In areas with strong tidal currents the location of the leading edge of the oil slick can be quite accurately predicted using current estimates or information available in many tide books. If real time measurements of currents and winds are available from internet sources, then such real time wind and current information can be used to significantly improve the predicted oil distribution. However, in bays and estuaries time is critical and an initial trajectory estimate should not be delayed to perfect winds and currents. There are several methods of estimating trajectories; the following is one method used to execute envelope trajectory calculations:

- Determine as nearly as possible the time and location of the incident

- Get best available prevailing tides and currents at the location from tide & current tables. (In bays and rivers, data may be affected by high runoff or rainy seasons.)

- Calculate the movement of oil. Movement of oil = max current velocity X time from spill to next slack water. Using ***max current*** provided a projections of ***least regret*** since it will maximize the oil trajectory.

- Using a nautical chart or similarly geographically accurate map, draw a vector on the map from the point of origin for the distance that the current moves for the elapsed time. This may be subdivided by hours to estimate the hourly incremental advance of the oil.

- Winds influence oil movement slightly: wind movement = 0.03 X wind velocity. So, in open ocean and at slack tides estuaries, wind adjustments become important (although some along coast currents can reach 2 knots.) From the end point of an interval of interest, draw a vector expressing the computer value in the direction of the wind.

- The resulting location is an approximation of the leading edge of the slick.

- Sites of concern which are proximal to (in or near) the projected slick should be added to the list of sites to be protected. This method can be used to forecast the time by which a site is likely to be threatened and draft a timetable for protection of sites at risk.

- When the tide phase shifts, this process is best started again from the point of origin, based on the presumption that oil is still discharging or escaping containment at that location, but remember that there is now an elongated smear of oil from the slick’s initial path which must also be accounted for.

Once a trajectory has been developed, the threat to significant resources must be assessed. The trajectory should be used to determine the probable sequence of impacts to shorelines and probable times of impacts. These calculations can be computed even if the person if not on-scene and information can be transmitted by email, fax, or phone to the command post. This would best be done by the SSC. If not available, responders should refer to the applicable GRP(s) for the projected impacted area.

3240 Remote Sensing During Oil Spill Response

To be most effective, oil spill recovery equipment must be directed to the location of the thickest oil accumulation. Observers on vessels at water level are unable to see a vast area and are unable to recognize the most optimum skimming locations. Skimming activities are best directed by trained observers aloft in helicopters. One observer may be able to direct several skimming units to optimum skimming locations. During hours of darkness or poor visibility, tracking devices that emit a radio location signal can be placed in the spilled oil to trace the oil movement. Remote sensing systems have been developed which can track oil movement even in darkness and poor visibility.

Many factors must be considered when contemplating the use of remote-sensing technology during an oil spill response. There are three basic arenas in which the sensors can operate.

Terrestrial platforms (land or water-based)

These platforms can support observers using visual means of detection, cameras (single frame, television, infrared, etc.), and/or radar.

Aircraft (manned helicopters, manned fixed wing, or drones)

These platforms can support visual observers, cameras (same as terrestrial), radar (of various types), infrared, lasers (of various types), microwave, and/or ultraviolet.

Satellites

These platforms typically use electronic detection means, mostly types of radar. All sensor/platform packages provide different spatial resolutions, dwell times, on scene (*"delivery"*) times, planning requirements for use, swath widths, detection thresholds, analysis times and difficulty of data interpretation, false detection rates, weather limitations, and cost. Additionally, there are dramatic differences in each sensor's capabilities to accomplish specific tasks. Of interest to the response effort are such things as plume size, description, and movement; relative oil thickness; location of the thickest oil; type of oil being observed; etc. Also, various environmental conditions have a bearing on the sensor. For example, darkness, fog, rain/snow, sun location, and cloud coverage, etc., are important considerations.

The geometry of the situation also plays an important role. A sensor at high altitude is able to "see" a larger area, but typically at a lower resolution than would be obtainable by a platform operating at a lower altitude. Also, many sensors, including visual, lose detection capability at certain acute angles.

In general, increased capability comes with increased cost. At the high end, these costs can be extraordinary. Also, no single sensor package will give all the information desired at a given spill under all conditions. At the high end, the very sophisticated laser based sensor packages MAY be able to give more information; however, most of the information is merely "nice to know" and is of little value to the actual response. For instance, absolute oil thickness is of little value added if a much less expensive sensor will provide a sufficiently reliable estimate of relative thickness for the purpose of guiding response actions. Also, classification of the oil type and characteristics would likely be of little value when such information can be easily obtained from the spiller or from the first responders on scene.

The New Orleans Area currently has access to the following remote sensing tools:

Terrestrial

In addition to visual observation (mostly from a vessel), USCG Sector New Orleans has the capability to view various camera feeds in limited areas throughout the marine waters applicable to this plan.

Aircraft

Resources available for visual observation from helicopters and fixed wing aircraft, including drones are listed in the Area Response Resource Inventory Chapter 9000, Section 9240.9.

Satellite

Both commercial and military platforms exist.

A literature search reveals the following sensor technologies, each with its own set of capabilities and limitations that could potentially be useful for oil spill response. These sensors will be studied in greater depth for inclusion in future updates to the NOACP.

- Next generation infrared,
- Ultraviolet,
- Microwave,
- Laser,
- Laser-acoustic, and
- Various satellite platforms.

3250 Geographic Response Plans

Geographic Response Plans (GRPs) are an annex to the NOAC and a key element of both facility and vessel contingency plans. GRPs have two main functions:

- From a planning perspective, the GRPs provide a description of sensitive biological, cultural, and economic resources that must be addressed to be in compliance with:
    - The National Oil and Hazardous Substance Pollution Contingency Plan (NCP, 40 CFR Part 300.210(3)(i).). Area Contingency Plans are required to describe areas of special economic and environmental importance that could be impacted during an oil spill.
    - The National Historic Preservation Act of 1966 contains applicable, relevant and appropriate requirements. The GRPs also address sensitive historic and prehistoric resources
- From an operational perspective, the GRPs guide responders in the first 24-48 hours of an oil spill by:
    - Providing a prioritized list of tactical response strategies to be implemented during the early hours of an oil spill (usually before the formation of the Unified Command);
    - Providing detailed information for booming strategies that could be utilized to minimize impacts to predetermined sensitive resources.

Once the Unified Command is formed, additional operational strategies and tactics will be relayed to the field in the form of the ICS-204 work assignment sheets.

Because the GRPs are the primary tool used during an initial phase of the response and fairly broad in their scope, they are not intended to minimize impacts to all possible sensitive areas that could be affected by an oil spill. Likewise, the GRPs are not intended to be an exhaustive list of all the tactical strategies that could, or should, be implemented during a spill.

3250.1Guiding Principles for GRPs

Safety and health of the responders always takes precedence over the protection of sensitive environmental resources.

Source control and containment are always a ***HIGER*** priority over GRP strategy deployments.

The protection strategies in the GRPs have been designed for the use with persistent oils and may not be suitable for other petroleum or hazardous substances. (See Section 3270.4 for Gasoline Policy).

Environmental conditions (winds, currents, and tides), together with the physical limitations of existing spill response technology, may preclude the effective protection of some areas.

Once a coordinated response has been established during an oil spill incident, booming strategy selection and prioritization are refined and supplemented based on real-time assessments. The UC has the authority to supersede the strategies proposed in the GRPs.

Response personnel may find it necessary to deviate from the exact details provided for deploying a particular strategy. An onsite evaluation of actual conditions is often needed to determine whether a strategy is safe to deploy, whether it will be effective under existing environmental conditions, or effective for the particular type of oil involved. Therefore, field personnel should use their best judgment to modify existing strategies based on real-time conditions and notify command accordingly. Field personnel are also encouraged to notify the command post regarding opportunities for deployment additional strategies that might be used to take advantage of incident-specific conditions.

The GRPs Include the Following Types of Response Strategies

Collection Booming with On-Water Recovery: Deploying various types of boom to collect oil for mechanical removal using sorbent materials, vacuum trucks, or near shore skimming devices;

Exclusion Booming: Deploying various types of boom to reduce oiling in sensitive areas;

Deflection Booming: Deploying various types of boom to divert oil away from a sensitive area and/or divert oil toward a collection point.

GRPs Do Not Include

In-Situ Burning: Burning oil on the water; usually requires containment by fire-resistant boom. Chapter 9000, Appendix C for additional NOAC policy on in-situ burning use;

Dispersants: Applying chemical agents, usually by aircraft, to aid in breaking up surface slicks and dispersing oil within the water column. See Chapter 9000, Appendix D for NOAC policy on dispersant use;

Shoreline Cleanup: Physical removal or chemical treatment of stranded oil. See Chapter 9000, Appendix G for the NOAA Shoreline Countermeasure Manual for Tropical Coastal Environments and Appendix F Oil Spill Best Management Practices for guidance on shoreline cleanup;

Open-Water Mechanical Recovery: Physical removal of oil using boats and/or vessels specifically outfitted with collection and separation equipment.

No Action: Appropriate when weather, sea, or other conditions make deployments unsafe and/or infeasible and when response actions or site access will cause further environmental damage (e.g., wetlands);

3250.1.1 Sensitive Resources Addressed by GRPs

The NCP, 40 CFR Part 300.120(3)(i) requires that Area Committees identify and prioritize sensitive areas requiring protection. In the NOACP, sensitive areas are broken into three main categories described below.

Environmentally Sensitive Resources

Key natural resource areas are identified using a wide of range data provided by resource trustees, tribes, plan holders, spill response organizations, contingency plan holders, and other interested stakeholders during the process of GRP development and review. The Environmental Sensitivity Index (ESI) maps developed by NOAA are one example of the type of natural resource information available (http://response.restoration.noaa.gov). When appropriate, tactical response strategies are designed for implementation during the early hours of an oil spill to reduce impacts to those areas, and trajectory models or other assessment techniques are used to establish initial response priorities.

Historically or Culturally Sensitive Resources

Information on sensitive historic and cultural sites is coordinated through contact with the various tribal governments, State Historic Preservation Office (SHPO), and the United States Department of the Interior may assist as needed. Due to the sensitive nature of this information, the specifics regarding the location and nature of such sites are not included in the GRP documents. However, in order to ensure that tactical response strategies do not inadvertently harm historical and culturally sensitive sites, historic preservation specialists are consulted to review the GRP documents prior to finalization. The Louisiana SHPO can be contacted at:

Physical Address: State Historic Preservation Office
Division of Archaeology
Capital Annex Building
1051 North Third Street
Baton Rouge, Louisiana 70804
Mailing Address: P.O. Box 44247
Baton Rouge LA, 70804

Phone: (225) 342-8160 (general office)
(225) 219-4598 (Division of Archaeology office)
Fax: (225) 342-4480

Socio-Economically Sensitive Resources

Economically sensitive areas are facilities or locations that rely on a body of water to be economically viable and that could be severely impacted by an oil spill. Economically sensitive areas are broken down into three separate categories: Critical infrastructure, water dependent commercial and recreational areas. Information on economic resources will be gathered for inclusion as an appendix to the GRPs.

3250.1.2 Geographic Scope of the GRPs

GRPs are currently under development for all coastal waters within the New Orleans Captain of the Port Zone, including the Mississippi River. The GRPs are divided by Parish. See Chapter 9000, Appendix S for Completed GRPs.

3250.2 Evaluation Criteria for Geographic Response Plans

Specific strategies for response to spills in the sensitive areas are detailed in the GRPs. Below is a list of some of the biological, cultural, and booming criteria used to determine whether it is appropriate to develop and maintain GRP strategies at specific locations. These criteria are not intended to be exhaustive, or ranked in order of priority, they are meant to help frame the evaluation of GRP strategies.

Key Criteria for Biological Sites, Species, and Habitats of Concern

- *Temporal considerations-*
    - What is the expected recovery time for habitats or fish and wildlife resources?
    - What is the residence time of the oil?

- *Substrate-*
    - What is the exposure risk? What is the likelihood that a habitat or species will be exposed to direct contact with surface oil or to dispersed/dissolved oil in the water column?
    - Given the substrate, is clean-up feasible?

- *Habitat quantity, quality, and pattern-*
    - Is the impacted habitat considered scarce at local, regional, or statewide scales?
    - Is the size of the impacted habitat significant compared to other sites in the region?
    - Is the species diversity or endemism high? Is this true year-round or is it seasonal?
    - Is abundance of fish and/or wildlife high? Is this true year-round or is it seasonal?
    - What life stages of organisms are present?
    - Is the habitat important to threatened or endangered species?

- What is the status of the habitat's integrity (i.e., is the area undeveloped or highly altered?)
- Does the habitat have a special designation or status (i.e., Marine Protected Area, biological research area, restoration site, etc.)?
- Are the habitat and/or its associated fish and wildlife resources especially susceptible to injury by oil?

Key Criteria for Archeological and Cultural Sites of Concern

Deployment- Does the act of deploying the GRP strategy threaten the archeological site (anchoring the boom, parking vehicles, etc.)

Purpose- Will implementing the GRP strategy type (collection, diversion, deflection) negatively impact the site?

Review- If either of the above is possible, then a review of the site records is necessary to determine the exact location and sensitivity of the site. If the site records are old or insufficient, then a field visit is necessary.

Significant developments- Are there significant developments that may make any concern about the impacts irrelevant (housing developments etc.)?

Additional criteria for archaeological sites without existing GRP strategies-

- Impacts- Does the site extend below the high tide line?
- Vulnerability- Will it be damaged or destroyed if oil were to hit the area (or by the placement of response equipment in the area, e.g., vacuum trucks, etc.)?
- Integrity- Has the site be disturbed yet, or is it still intact?
- Historic Importance- Is the site nominated for, or already on, the National Register of Historic Places or the State equivalent?
- Tribal Importance- Does the site hold special tribal importance?
- Parish Importance- Does the site hold special Parish importance?
- Feasibility- Is booming the site feasible?

Key Criteria for Socio-Economic Sites of Concern

Strictly economic resources are designated as the third priority for dedication of oil spill response resources, following human health and safety and environmental resources. The designation of economic resources is highly dependent upon the priorities of the local government. Each GRP contains detailed information of economic sites in each Parish or Geographical Response Area. This information includes geographic locations of resources, a brief description of the resource at risk, contact names and numbers, and the priority response ranking.

Key Criteria for the Use of Boom

Effectiveness- Is booming the most effective strategy for reducing oil spill impacts? Would other alternatives such as a phone call to an operator, shutting off a water intake, or closing a tidal gate be as effective?

Safety- Determine if safety of human responder will be put at risk for limited likelihood of strategy success.

Strategy- Determine what type of booming strategy would be the most effective at reducing oil impacts to the resource under prevailing conditions (collection, deflection, or exclusion).

Evaluation- Evaluate the site for advantageous characteristics based on:

- Anchoring substrate. Does the substrate allow responders to easily anchor the boom?

- Accessibility. Can the site be easily accessed by vessel or vehicles?

- Time to arrive on scene. How long will it take to get to the site?

- Potential for oiling. Is the site located near shipping activity or fueling operations?

- Beach substrate. Used Environmental Sensitivity Index (ESI) or Shore-Zone classification to determine vulnerability to oiling and likely oil longevity based on the shoreline type.

- Type and quantity of boom. How many sections of boom and what size anchors will be required for deployment? What is the anchoring depth? What type of boom tending will be required? Will this tending be complicated by the amount of time it takes to arrive at the site or the difficulty of access? Is the amount of boom required reasonable (< 1000 ft)?

- Prevailing weather- especially wind and waves. Is a booming strategy realistic for prevailing conditions?

- Tidal influence. At extreme lows will there be nothing but mud flats (very difficult to tend boom when it is stuck in the mud) or at extreme highs will the entire face of a coastal marsh be underwater (thus exposing the entire perimeter to oil)?

- Influence of currents. What velocities can be expected?

- Feasibility. Depends on: Boom size, boom length, the number and size of anchors, the capability of the recruited workboats (to tow boom, set and recover anchors, shelter boat crews, carry boom and associated equipment), the experience of the boat crew, and the effectiveness of the anchoring system (both on shore and in water).

3250.3 Sensitive Area Prioritization

The following prioritization should guide initial response efforts during the first 24-48 hours of an incident. Considerations include human health and safety, environmental sensitivity and economic and cultural importance. The Area Committee works with federal, state and local agencies and stakeholders to ensure that sensitive areas receive appropriate prioritization.

3250.3.1 Prioritization

Through the evaluation process, an area is broken down by type (human health and safety, environmental, economic and cultural) and sensitivity (high, medium, low). This evaluation process focuses on the sensitivities of areas and not jurisdictional boundaries. Once all areas have been evaluated and broken down, three levels of priority are generally all that is needed for pre-spill planning:

A – Protect First

B – Protect After A Areas

C – Protect After B Areas

These levels of priority can be applied to an area to determine the protection strategy during the initial response effort.

3250.3.2 Questions for Evaluating an Area

The following questions have been collected to help Area Committee and stakeholders evaluate the priority of an area.

- Is the area protectable?

- Are clean-up efforts for this area feasible?

- How persistent would oil be in this area or on this substrate?

- How vulnerable are the individual species in this area?
- What is the expected recovery time for habitats, fish or wildlife in this area?
- How would the oiling of this area affect human health and safety?
- Are there seasonal considerations (i.e. nesting, spawning, hibernation, etc.)?
- What parts of a protected areas are the most important to preserve?

The following prioritizations were determined by the Geographic Response Plan subcommittee:

PRIORITY A

- Public drinking water intakes;
- Industrial water intakes with public health and safety impacts (e.g. public utility intake, supported by state managed early warning network on MISS RIVER);
- Tidal Inlets – Primary Tidal Inlets that are protectable
- Secondary inlets inside bays that connect to extensive sensitive areas,
- Breaches, wash-overs, and other low areas where oil can enter sensitive habitats;
- Exceptional/Highly sensitive wetlands with high biodiversity site (e.g. NWR, State refuges); and
- Important Bird Areas,
    - Bird nesting islands (e.g. Raccoon Island, Queen Bess Island, Brush Island),
    - Other bird nesting concentrations including T&E species, and
    - Seasonal bird concentration areas onshore (e.g. South Pass).
- Freshwater Diversion (Manmade and Natural)

PRIORITY B

- Exceptional Oyster beds in the intertidal;
- Seagrass Beds in less than 1m H20;
- High use recreational sites;
- Important Industrial Areas (e.g. fishing ports, marinas, industrial corridors);
- Other water intakes not specified in Priority A; and
- Cultural/Historical sites of concern (e.g. contact SHPO/Tribes).

PRIORITY C

- Small tidal channels and canal openings;
- Sheltered tidal flats;
- Seagrass beds in greater than 1m water;
- Aquaculture sites and oyster lease areas;
- Wetland restoration areas;
- Other industrial areas; and
- Areas identified by local authorities not previously noted in Priority A or B.

The following areas were not included due to the initial protection difficulty:

- Open gulf beaches
- Exposed wetland shorelines (exposed to waves and currents) (as described in Appendix G), and
- Exposed rip-rap.

3260 Decontamination/Disposal

3261 Decontamination Group

Personnel, vehicles, vessels, etc. responding to hazardous substance incidents may become contaminated in a number of ways, including contacting vapors, gases, or particulates in the air; being splashed by materials while sampling, walking through puddles of liquid or contaminated soil; or through using/handling contaminated equipment. Decontamination consists of physically removing contaminates or changing their chemical nature to innocuous substances. How extensive decontamination must be depends on a number of factors, the most important being the type of contaminated involved.

The Decontamination Group is responsible for decontamination of personnel and equipment. Contaminated personnel entering contaminated areas shall be decontaminated in accordance with the Site Safety Plan. The following “minimum” actions shall be performed:

- Direct and coordinate decontamination activities,
- Determine resource needs, and
- Brief SOFR on conditions.

A personnel decontamination plan should be developed as part of the Site Safety Plan. The initial decontamination plan is based on a worst-case situation or assumes no information is available about this incident. Specific conditions (e.g., type of contaminate, amount of contamination, levels of protection required, type of protective clothing worn) are then evaluated, and the initial decontamination plan is modified to adapt as new information about site conditions becomes available. All materials and equipment used for decontamination must be disposed of properly (i.e., as waste).

In addition to routine decontamination procedures, emergency decontamination procedures must be established. In an emergency, the primary concern is to prevent loss of life and severe injury to site personnel. If immediate medical treatment is required to save a life, decontamination should be delayed until the victim is stabilized. If decontamination can be performed without interfering with essential life-saving techniques or first aid, or if a worker has been contaminated with an extremely toxic or corrosive material that could cause severe injury or loss of life, decontamination must be performed immediately. During an emergency, provisions must also be made for protecting medical personnel and disposing of contaminated clothing and equipment.

Refer to Form G of the Site Safety Plan in Chapter 9000 Appendix K, Safety and Health Policy for personnel decontamination.

A sample decontamination plan for commercial vessels that may have been affected and/or transited through oil slicks follows.

Sample Commercial Deep Draft Vessel Evaluation and Cleaning Plan

Purpose

This plan serves to identify general guidance procedures to be followed by commercial vessels that may have transited through oil slicks en route to Sector New Orleans, LA. It will be used for all commercial vessels, either contaminated or suspected of being contaminated with oil, to confirm they are non-oiled or return them to a non-oiled state.

Concept Overview

In view of the potential for vessels to be affected by oil from this incident, the Unified Command has approved a procedure for the pollution evaluation of deep draft commercial vessels and a method for decontamination. The Unified Command has established the Fairway Anchorage centered at location *xx-xx.x*N *xxx-xx.x*W as the decontamination site for any oiled vessels requesting entry into the Mississippi River.

The primary focus of the decontamination operation will be to expedite the cleanup of contaminated commercial vessels in a safe, organized, and efficient manner which will minimize environmental impact, damage and waste generation. Team leaders on scene conducting decontamination operations will be responsible for the coordination of operations with the Incident Command Post. Vessels are required to undergo decontamination if sheen emanates from the hull or if oil is visibly attached.

Safety

All required Personal Protective Equipment (PPE) shall be utilized at all times during decontamination operations. In addition to the normal safe work practices used on scene, when using water jet washing systems, full face shields and eye protection should be used. HAZCOM procedures will be followed while handling any chemicals per the MSDS. The Unified Command's Safety Officer will ensure that all site safety instructions are followed.

The Unified Command's on-scene representative (a qualified USCG member with input from the Site Safety Officer) will make a final "go / no-go" decision to include but not limited to safety of the personnel on-scene, weather concerns, sea state (generally operations will not take place in seas greater than 3 feet) and effects on wildlife (dolphins, whales, birds, etc).

Vessel Safety Concerns

In the event the vessel being decontaminated is not able to anchor and machinery is running the decontamination team leader shall use their discretion concerning the distance from the stern the crews can safely operate. The team leader shall contact the operations section chief to receive further guidance on a case by case basis.

Monitoring, Documentation, and Reporting

The Unified Command's on-scene representative should monitor for efficacy of cleaning, presence of marine species and/or birds in the operation area, and operational success of containment and recovery. The results of all monitoring elements should be documented by report using the Monitoring, Documentation, Reporting Form. That report and photos, if appropriate, should be submitted from the FOSC to the RRT-VI Co-Chairs upon conclusion of the cleaning activities within three working days.

Procedures

Prior to entering port, Deep Draft Commercial Vessels will undergo necessary decontamination screening procedures.

1. Deep Draft Commercial Vessels departing from any port from Houston, TX to Panama City, FL, should submit a self-evaluation form to the Sector New Orleans Notice of Arrivals Desk (504-365-2361/2362) no less than 24 hours prior to entering the New Orleans COTP Zone. Vessels that do not may encounter administrative delays in the processing of their Notice of Arrival.

2. Following the self inspection, the vessel master or agent will determine if the designated "clean" standard (vessel not/no longer sheening) established by the Unified Command is met.

3. If the vessel completes the self-examination and deems itself "clean", further verification will be made by the Louisiana River Pilots' Association. Pilots will conduct a brief sweep around the vessel to ensure the vessel does not pose a pollution risk.

4. If the vessel is deemed unclean by either the self-assessment or the pilot inspection an attempt will be made to decontaminate the vessel utilizing high volume saltwater from an offshore vessel platform fire monitor system. If unsuccessful a second method using a lift and float type product (*XXXX*) will be mixed on-scene and used via the same method. A boom will be used along with absorbent pads to capture, to the maximum extent possible, all products of the decontamination process when feasible given weather, sea conditions, and safety factors.

5. Once a vessel is deemed “unclean”, either by the master or pilot, a report will be made to New Orleans’s VTS and Sector New Orleans’s Command Center. The Command Center will pass the information to the Ops Section Chief who will notify *XXXXXXX*, the contracted Oil Spill Response Organization (OSRO).

6. *XXXX* will dispatch the necessary assets, along with a USCG representative to conduct the cleaning. The USCG representative on scene will determine when the vessel is “clean” and clear entry.

7. Upon completion of decontamination, *XXXX’s* team will allow final inspection by vessel representatives and the on-site verifying USCG representative. This does not preclude representatives from monitoring the cleaning of the vessel as it occurs.

8. A fixed or portable fire monitor will systematically clean contaminated surfaces of the vessel using water and dispersant.

9. Any solid oil on the hull will be pressure washed and recovered by response personnel using sorbent material and nets.

10. Where permissible, decontamination will be completed on all solid surfaces by jet washing. Non permissible areas are locations where safety could potentially be endangered, such as the stern of the vessel while engaged, or if environmental conditions exist that do not allow for safe operations.

11. Decon team leaders, safety observer, the USCG verifying representative, or any other involved parties are required to report any of the above conditions, or others, that do not allow for safe operations. Once unsafe operations are reported to a Site Safety Officer, cleaning operations shall be suspended until conditions change, or if alternate operations are approved by the Unified Command.

Surface Washing Agents

The only surface washing agent approved for vessel decontamination per this plan will be the lift and float agent *XXXX*. It, along with water, will be the only washing agents used during offshore decontamination operations.

Vessel Decontamination Equipment

The following identifies the minimum necessary equipment to be used while conducting hull decontamination of marine vessels.

Decontamination Task Forces are to be utilized with additional systems as needed. Each task force will consist of the following:

- Work boat(s)
- Fixed or portable fire monitor
- *XXXX*
- Cleaning personnel
- Sorbent Boom and pads
- Sorbent nets
- Site Safety Officer
- USCG representative who will determine when the vessel is clean and cleared for entry.

Vessel Assessment Reporting Form

Date and Time of Report: ______________________________

1) Name of vessel: ______________________________

2) IMO or Official No. : ______________________________

3) Type of vessel: ______________________________

4) Cargo: ______________________________

5) Tonnage: ______________________________

6) Draft: ______________________________

7) Origin: ______________________________

8) Destination (Facility): ______________________________

9) Vessel contact number (If available): ______________________________

10) Agent contact number: ______________________________

11) Was any oil or sheen sighted during the vessel's transit into port? ____
If so, where did your vessel sight this oil slick, sheen, or residue?
____

12) Did your vessel transit through any of the slick or sheen at any time?
____

13) Was there or is there now any evidence of oil on your vessel's hull/structure? ______________________________

a) Estimate how much and what percentage of the vessel’s hull/structure is oiled? ______________________________

b) Estimate distance from hull that silver sheen extends?
Less or greater than 5 meters out? Less or greater than 15 meters aft? If so, estimate how much and what percentage of the vessel's hull is covered by oil? ______________________________

14) What procedure was taken to determine if oil was present on your vessel's hull? ______________________________

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Monitoring, Documentation, Reporting Form

For use of surface washing agents offshore COTP New Orleans COTP Zone for DECON of vessels.

Date: ________________ Time: Start: ____________ Finish: ________________

Vessel Name: ________________________________ Vessel Length:__________

Total area to be cleaned (square feet): ___________________________________

Surface Washing Agent: ____

LAT/LONG of cleaning location: ____

On-scene weather and seas: ____

Lift & Float product? _______Yes _______ No

If "NO", reason(s) for selection of a dispersing product:
____
____

Presence/description of any observed wildlife in operating area: (Note: Operations not to affect species of birds, marine mammals, or sea turtles. Operations should cease, and presence of species in the area should be reported to the Wildlife Group of the Operations Section at phone: ____________)
____
____

Cleaning:
______ Effective
______ Partially Effective Estimated Percent Effectiveness: ______ %
______ Not Effective

Containment & Recovery:
______ Effective
______ Partially Effective Estimated Percent Effectiveness: ______ %
______ Not Effective

Estimated amount of oil and rinse water recovered: _____________ gallons

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Photos taken?

______ Yes Comments: ______________________________________

______ No ______________________________________

Wildlife affected?

______ Yes Comments: ______________________________________

______ No ______________________________________

Sheen or oil visible after operations complete?

______ Yes Comments: ______________________________________

______ No ______________________________________

Additional Comments/Observations:

____

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3262 Disposal Guidelines

It is critical for the OSC in an immediate removal operation to recognize that contaminated soils, dredge spoils, drums, tanks, refuse, water or other associated materials are to be considered hazardous wastes and must be disposed of as such in accordance with the Resource Conservation and Recovery Act (RCRA), as well as local and state regulations controlling the disposal of hazardous wastes. Many of the removal actions employed by the OSC will in fact create a situation in which the OSC has assumed the responsibility as a generator of hazardous wastes. These wastes then become subject to the “cradle to grave” manifesting procedures currently in effect under the governing RCRA regulations.

Recovered petroleum products that are not accepted by a refinery or that cannot be recycled must be managed as a waste. Waste classified as hazardous under either the Resource Conservation Recovery Act (RCRA) or state regulations must be transported to a permitted or interim status hazardous waste facility. Hauling of the waste must be done by a state hazardous materials hauler. The licensed hauler must have a U.S. EPA I.D. number. Prior to removal of the hazardous waste from on-site/temporary storage, a uniform hazardous waste manifest (DHS- 8022A) must be prepared by the generator (e.g. RP) for recovered petroleum and other contaminated materials.

The OSC must ensure that the hazardous wastes generated from his/her removal actions are transported by an approved hazardous waste hauler to an approved hazardous waste facility. All materials shipped off-site must be transported in compliance with applicable regulations. These include RCRA, 40 CFR Part 262-263, DOT Hazardous Materials Regulations, 49 CFR Part 171-178, and any applicable state regulations. The OSC should consider the possibility of employing on-site treatment (e.g. incineration, biological treatments, chemical treatments, waste stream treatment methods, etc.). Approved and effective on-site treatment will often eliminate the dilemma affiliated with hauling hazardous waste to a hazardous waste facility- the dilemma of simply relocating your problem to some other geographic area where it may eventually develop into someone else’s problem.

Depending upon climatic conditions and material compatibilities of personal protective equipment (PPE), waste can be minimized through the selection of reusable equipment, when possible. For instance, heavy gloves and boots which can be effectively decontaminated and reused can minimize the generation of oil-contaminated disposable gloves and boots as long as such equipment use is approved by the SOFR. Reusable rain gear may also be used instead of disposable suits, if approved. Such decisions should be made early in the response process in order to minimize generating containerized, contaminated, PPE.

Both oil and oily water recovered from skimmer operations should be offloaded to facilities where it can be effectively recycles/managed with established process and treatment streams. Such facilities would include terminals, refineries, and commercial re-refiners/re-claimers/recyclers. These facilities can often provide temporary tank storage, when necessary. Oil debris which is recovered with skimmed oil should be maintained in secure, temporary storage until it is sufficiently characterized for disposal (also see Decanting Policy Chapter 9000, Appendix E.)

Synthetic sorbents (i.e. pads, sweeps, and booms) have become standard response materials in the mechanical recovery of spilled oil. Their oleophilic, hydrophobic character makes them efficient at separating oil and water and they are routinely used to recover oil from solid surfaces as well (e.g.; rubble, cobble and boulder shorelines; equipment/gear, vessels' etc.) Since oiled sorbent material often constitutes a substantial percentage of the oily solid waste generated during spill response and cleanup, opportunities for minimizing this waste volume should be considered.

Some sorbents are designed to be reusable (i.e., mechanized rope-mop skimmers) or can be recycled onsite with inexpensive gear (e.g., appropriate barrel-mounted wringers). Sorbent manufacturers' instructions should be followed regarding the limits of effective reuse for their individual products. It is also possible to replace sorbent sweep and booms with recyclable boom and other appropriate gear in circumstances where floating oil can be efficiently recovered without generating oiled sorbents. For example, in good-access, low energy shoreline areas, it may be possible to use containment boom and recover the trapped oil with vacuum trucks instead of contaminating large volumes of sorbent.

Louisiana State Disposal Guidelines can be found in Chapter 9000, Appendix P. Disposal practices shall be in accordance with state disposal guidelines.

3270 Response Technologies for Oil Spills

Though mechanical cleanup and recovery is always the initial and primary response tool, other response technologies are considered by the NOAC to be integral components of effective spill response that should be available for use, as appropriate, in a timely and efficient manner. The use of response technologies such as in-situ burning, dispersants, and other oil spill cleanup agents should be considered when the environmental benefit of their use is expected to outweigh adverse effects.

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It is imperative that all response technologies are employed as soon as practicable following an oil spill. However, it is particularly important that materials are strategically stockpiled and decisions regarding the use of dispersants and in-situ burning be made as quickly are possible to increase their effectiveness on marine oil spills. Accordingly, Region VI RRT and the NOAC have established pre-approval zones, case-by-case zones, and no use zones for the use of dispersants. A policy has also been established to define the conditions under which in-situ burning may be conducted on a pre-approved or case-by-case basis and conditions under which burning will not be allowed. The FOSC, with the assistance of the UC, will determine if use of these response technologies meet the pre-approval criteria established by the Region VI RRT for the NOAC area of responsibility.

Our understanding of dispersant and in-situ burning efficacy and toxicity are evolving and the appropriateness of their application is subject to change based on field and laboratory testing. As new information becomes available, these policies will be revisited, modified, and enhanced as appropriate.

The NCP, 40 CFR Part 300.910 (Subpart J) outlines the circumstances under which chemical agents or other additives may be used to remove or control oil discharges. Part 300.910(a) allows RRTs and Area Committees, as part of their planning process, to address procedures for the use of these agents. This may include preauthorization plans. This gives the Natural Resource Trustees representatives to the RRT the ability to approve, disapprove, or approve with modifications and preauthorize plans developed by the RRTs and Area Committees for the use of chemicals and additives to remove and control oil discharges. Part 300.910(b) authorizes the FOSC, with the concurrence of the Unified Command and the RRT, to authorize the use of dispersing, surface-washing, surface-collection, bioremediation, or burning agents on a case-by-case basis.

It is the policy of the NOAC to also consult appropriate tribal governments with off reservation treaty rights in navigable waters threatened by a discharge of oil, when practicable. Part 300.910(d) further authorizes the FOSC to use any agent listed above without requesting permission if its use is necessary to prevent or substantially reduce a hazard to human life.

The Commandant of the USCG has pre-designated the USCG Captain of the Port under his/her jurisdiction as FOSC for oil spills, and has delegated authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act (Clean Water Act) to them. The Administrator of the EPA has designated EPA On-Scene Coordinators as FOSCs fort the inland zone and had delegated authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act (Clean Water Act) to them.

As required by the NCP, 40 CFR Part 300.905, in order for a FOSC to authorize the use of a dispersing, surface washing, surface collection, or bioremediation agent, it must be listed on the NCP Product Schedule. Burning agents are not listed on the NCP Product Schedule. The U.S. EPA maintains the NCP Product Schedule and it can be found at http://www.epa.gov/OEM/content/ncp. The Product Schedule does not authorize or pre-approve use of any of the listed products. However, the FOSC may not authorize use of a product that is not listed on the Product Schedule unless its use, in the judgment of the FOSC, is necessary to prevent or substantially reduce a hazard to human life.

3270.1 Dispersant Use

Areas within the New Orleans Area Committee area of responsibility fall into three different zones with respect to dispersant use: a pre-approval zone, case-by-case approval zones, or no dispersant use zones. The FOSC will determine whether to authorize the use of dispersants through the information gathering and decision-making process outlined in the NOAC Dispersant Use Policy found in Chapter 9000, Appendix D.

During the Deepwater Horizon Oil Spill in 2010, dispersants were used in unprecedented volumes and applications for any spill occurring within the waters of the United States. Due to the perceived uncertainties that surrounded using dispersant in such a manner, media visibility and scrutiny on the subject was greater than ever, and certain misinformation was ultimately circulated regarding the impacts. As a result of the scrutiny and ongoing litigation, it is unlikely that the FOSC, without the assistance of the RP, will be able to acquire the necessary permission to access and use a dispersant stockpile, absent relief from a dispersant manufacturer, on a federalized response. Therefore, the FOSC should plan for complications that are likely to preclude the usage of dispersants on spill where there is no viable RP.

Should the FOSC be approached by any Oil Spill Response Organization (OSRO) requesting certain language in any response documentation in order to bolster a derivative immunity defense, the FOSC should immediately seek assistance from the Coast Guard District Eight legal office and notify the Office of Maritime and International Law (CG-0941), Prevention Law Division duty attorney, through the National Command Center at (202) 372-2100. Access to the District Eight legal is available via the District Eight command center at (504) 589-6225. Additionally, the FOSC is requested to contact their servicing legal staffs and CG-0941, Prevention Law Division duty attorney as soon as it is contemplated that dispersants will be used on ANY oil spill.

3270.2 In-Situ Burning

In-situ is the Latin term for “in-place”. In-situ burning as it relates to oil spills is the controlled burning of oil on water at the spill site. While the focus of the policy is on open-water areas in the marine environment, it also applies to in-situ burning in inland areas. The NOAC In-Situ Burning Policy is found in Chapter 9000, Appendix C.

3270.3 Bioremediation

Bioremediation is a treatment technology that enhances existing biological processes to accelerate the decomposition of petroleum hydrocarbons and some hazardous wastes. Bioremediation has been used extensively in waste water treatment of spilled oil. The most extensive field research efforts have been the shoreline treatment studies in Alaska following the Exxon Valdez incident. This research suggested that shoreline treatment by nutrient enhancement significantly increased degradation rates of oil when compared to untreated shoreline areas. The benefits of bioremediation, however, have not been adequately demonstrated through field applications. Consequently, this technology should be considered more experimental than an accepted standard for clean-up of oil spills. The NOAC Bioremediation Policy is found in Chapter 9000, Appendix Z.

3270.4 Surface Washing Agents

Surface washing agents may be considered when conventional flushing techniques are inadequate in removing oil residues to the required cleanup standard or when cleanup times can be reduces such that a significant positive impact on overall cleanup goal is achieved. The RRT VI Surface Washing Pre-Approval Guidelines can be found at: http://www.epaosc.org/sites/5083/files/rrt6_surface_washing_preapproval_2003.pdf. The NOAC Surface Washing Policy is currently under development (ETA 2014).

3270.5 Surface Collection Equipment

Collection and containment equipment/tactics can be found in Chapter 9000, Appendix F, Best Management Practices.

3270.6 Special Monitoring of Applied Response Technologies (SMART)

Special Monitoring of Applied Response Technologies (SMART) is a cooperatively designed monitoring program for in situ 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 in situ burning operations. Data are channeled to the Unified Command (UC) (representatives of the spiller and the state and federal governments who are in charge of the spill response) to address critical questions:

- Are particulates concentration trends at sensitive locations exceeding the level of concern?
- Are dispersants effective in dispersing the oil?

Having monitoring data can assist the Unified Command with decision-making for dispersant and in situ burning operations.

The SMART program is a joint project of these agencies:

- U.S. Coast Guard
- NOAA
- U.S. Environmental Protection Agency
- Centers for Disease Control and Prevention
- Bureau of Safety and Environmental Enforcement

More information regarding SMART may be found in Chapter 9000, Appendix I.

3270.7 Gasoline and Other Flammable Liquids Response

Spills of gasoline and other flammable liquids, including many crude oils, pose significant response challenges as well as serious health and safety concerns for responders and communities downstream and downwind from the discharge/release. Gasoline range products are finished gasolines and volatile hydrocarbon fractions used for blending into finished gasoline, including straight-run naphtha, alkylate, reformate, benzene, toluene, xylene, and other refined petroleum products with a flash point below 100 degrees F (37.8 deg. C). When these types of products are spilled into the environment, it is imperative to take immediate steps to control the source of the release (where safe), to eliminate all possible ignition sources, to quickly establish isolation distances, to notify regulatory and local response agencies, and to initiate a preliminary site safety plan prior to any response activities. However, it is essential that no personnel enter a potentially unsafe environment prior to an initial safety assessment, including vapor monitoring for flammable, reduced oxygen, and toxic levels.

In many cases, highly flammable liquids should not be contained during spill response. Containing gasoline and other highly flammable liquids increases the risk of fire by delaying dispersion of vapors into the atmosphere. The risks posed by response techniques such as booming and applying foam to spilled gasoline and other flammable liquids are warranted only under very limited circumstances. However, in some cases and as judged by the FOSC, Incident Command, or Unified Command, containment and the use of foam may be appropriate and necessary in response to an imminent threat to the public health and safety, and the environment. Deflection and protection booming can be used to move flammable liquids away from sensitive areas but must be conducted in a safe manner, within safe atmospheric levels. In unaffected downstream or down current areas at risk, boom should be deployed prior to arrival of the product. Though mechanical recovery of flammable liquids on water can be an effective practice under some circumstances, often the more prudent response option is to allow flammable liquids to evaporate and dissipate.

Given the inherent danger of booming flammable liquids on water, as well as the products' rapid rates of evaporation and dissipation, the NOAC adopts the following guidelines for responding to gasoline and other flammable liquid discharge/releases on water. ***Note that these are only guidelines. Each release must be evaluated based on it particular circumstances. Safe work practices and professional judgment should always prevail:***

- Control the source of flammable liquids as quickly as possible, when safe to do so;

- Ensure that proper safety precautions are taken to prevent accidental ignition and risk to responding personnel and the general public. An evacuation may be warranted under some circumstances. In many cases, the best response option may be to allow the spilled product to spread and evaporate;

- Notify emergency and regulatory response agencies. Involve local fire jurisdictions ***immediately***;

- Ensure proper site hazard analysis and risk assessment are conducted to determine the scope of the discharge/release and initiate the development of a Site Safety Plan;

- Establish control zones as soon as possible. Track and predict movements of both liquid and vapors and re-establish control zones as appropriate;

- Eliminate all potential ignition sources within appropriate control zones;

- Prevent entry of the spilled product into waterways, sewers, or confined areas;

- Conduct air monitoring throughout the response;

Note: Air monitoring must be conducted with the greatest of care. Air monitoring both increases the exposure danger to responders and introduces possible accidental ignition sources. Nearby population centers should be monitored, as should the leading edge of the vapor cloud. However, in open water areas it MAY make more sense for responders to stay away from the concentrated area around the spilled material. In any area that is being monitored, the monitoring should be conducted continuously, if possible. Also, only direct reading, intrinsically-safe, continuously monitoring instruments should be used. Lower Explosive Limits (LEL), oxygen, H2S, and benzene levels should all be monitored. In addition, readings should be captures for record keeping in a database such as the EPA’s Scribe program.

- Coordinate response efforts with all agencies- work within a Unified Command;

- Identify and prioritize environmental concerns. Conduct exclusion, deflection, and protective booming downstream or down current as appropriate, outside of hazardous atmospheres and prior to the arrival of the released product;

- Workers should avoid touching, walking, or boating through the spilled product;

- Avoid prolonged inhalation exposure to fumes. Consult appropriate reference guides for exposure limits;

- Allow the product to evaporate and dissipate unless there is an imminent threat to public health and safety;

- When appropriate, use fire monitors/water fog spray to move product out from under docks and other collection areas where the product concentrates;

- Stage firefighting foam (appropriate to the type of flammable liquid discharged/released) and application equipment, if appropriate; and

- All equipment used when handling the product must be grounded.

3280 Decanting

When oil is spilled on the water, mechanical recovery of the oil is the principle approved method of responding. However, the mechanical recovery process and associated systems necessarily involve placing vessels and machinery in a floating oil environment. Incidental returns of oil into the response area, such as oil that falls back into the recovery area from vessels and machinery that are immersed and working in the oil, is an inevitable part of the mechanical recovery process. Similarly, separation or “decanting” of water from recovered oil and return of excess water into the response area can be vital to the efficient mechanical recovery of spilled oil because it allows maximum use of limited storage capacity, thereby increasing recovery operations.

This practice is currently recognized as a necessary and routine part of response operations. In addition, some activities, such as those associated with oil recovery vessels, small boats, and equipment cleaning operations may result in incidental discharges. These activities may be necessary to facilitate response operations on a continuing basis, and all of these activities are considered to be “incidental discharges”. The NOAC Decanting Policy is found in Chapter 9000, Appendix E.

3290 Natural Resource Damage Assessment

Natural Resource Damage Assessment (NRDA) are outside the sphere of most emergency spill response actions, NRDA, activities generally do not occur within the structure, processes, and control of the Incident Command System. However, particularly in the early phase of a spill response, many NRDA activities overlap with environmental assessments performed for the sake of spill response. Because NRDA is carried out by natural resource trustee agencies and/or their contractors, personnel limitations may require staff to perform NRDA and response activities simultaneously. Therefore, NRDA staff should remain coordinate with the spill response organization, and need to work with the LNO to coordinate with the Unified Command, Environmental Unit, Wildlife Rescue/Rehabilitation Branch, and the Scientific Support Coordinator to resolve any problems or address areas of overlap. While NRDA resource requirements and cost may fall outside the responsibility of the Logistics and Finance sections, coordination is again important.

3290.1 Natural Resource Trustee Notification Guidelines

Response agencies shall also ensure that all appropriate notifications are made. The OSC shall promptly notify Natural Resource Trustees of discharges or release according to the following Notification Guidelines under their jurisdiction. The OCSs shall coordinate all response activities with the Natural Resource Trustees.

Trustees are defined in the National Contingency Plan as Federal, State, or tribal officials who are to act on behalf of the public to manage and control natural resources. In addition to the operational notifications described above, trustees must be notified of oil spills and hazardous substance incidents that may impact or threaten natural resources under their care. When it is unclear if an incident meets a given trustee's notification threshold, the trustee should be notified.

3290.2 Tribes

Tribes with reservations and/or usual and accustomed hunting or fishing grounds within the state of Louisiana applicable to this plan, must be notified by the Federal On-Scene Coordinator in the event a spill may impact or threaten to impact any of their resources. Since boundaries for usual and accustomed hunting and fishing grounds may be complicated, it is recommended that the Department of the Interior and/or the Bureau of Indian Affairs (BIA) be consulted to ensure proper notifications are made. Tribes must also be notified if there may be potential impact from a spill or spill response operations to any tribal cultural resources. Again, DOI and BIA may assist in identification of tribes for notification; however, it remains the FOSC's responsibility to make all proper notifications to tribes.

For Tribal Lands/Usual and Accustomed Areas in Louisiana, the protocol is to first contact the Louisiana State Historic Preservation Office (SHPO). The SHPO will then provide a list of contacts for Tribes to be contacted based upon the geographic area of response activities. Thereafter, direct contact will be made with involved Tribes.

The following is a list of Tribes with areas of interest within the scope of this plan.

- Chitimacha Tribe of Louisiana
  - Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, and St. John the Baptist Parishes.

- Coushatta Tribe of Louisiana
  - All Parishes

- Jena Band of Choctaw Indians
  - All Parishes

- Tunica-Biloxi Indian Tribe of Louisiana
  - All Parishes

- Alabama-Coushatta Tribe of Texas
  - All Parishes

- Choctaw Nation of Oklahoma

    - All Parishes

- Quapaw Tribe of Oklahoma
    - Orleans Parish

- Seminole Nation of Oklahoma
    - Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, and St. John the Baptist Parishes.

- Seminole Tribe of Florida
    - Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, and St. John the Baptist Parishes.

- Mississippi Band of Choctaw Indians

    - All Parishes

3300 Emergency Response

3310 Salvage

Before, during and/or after an incident, or potential incident, salvage assistance may be required. A salvage plan may be developed within the response organization for, but not limited to, vessel stranding, vessel sinking, and rescues (towing). The IC/UC will review and approve or disapprove the salvage plan based on the resulting risk to human life, port security, and the environment. Area specific information regarding salvage is located in Chapter 8000.

Initial rescue efforts will have priority over pollution response efforts, to the extent that they may interfere. Subsequent to any rescue efforts, the pollution response effort and salvage efforts may be conducted concurrently. The OSC will prioritize actions when conflict between salvage and pollution response efforts cannot be eliminated.

The Sector New Orleans COTP has jurisdiction over vessel salvage; this does not preclude the involvement of any other agencies with respect to spill prevention or response.

For general guidelines to follow in responding to an incident that requires salvage operations refer to US Navy Salvage Manual Volume 1 – 6

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http://www.supsalv.org/00c2_publications.asp?destPage=00c2&pageId=2.6 and Chapter 8000, Salvage and Marine Firefighting Plan.

Many numerous salvers in the New Orleans area, many of which retain a Basic Ordering Agreement (BOA) with the Coast Guard. For more information regarding local salvers see Chapter 8000, Salvage and Marine Firefighting Plan.

Contacts for Salvage References and Support:

- U.S. Coast Guard Marine Safety Center Salvage Engineering Response Team (SERT)
  - During business hours: (202) 327-3985
  - Duty email: SERT.Duty@uscg.mil
  - After hours contact the USCG Headquarter Command Center: (202) 267-2100

The Marine Safety Center Salvage Engineering Response Team (SERT) is comprised of 8-10 staff engineers who are on call 24 hours a day, 7 days a week to provide immediate salvage engineering support to the Coast Guard Captains of the Port (COTP) and Federal On-Scene Coordinators (FOSC) in response to a variety of vessel casualties. Specifically, SERT can assist the COTP and FOSC manage and minimize the risk to people, the environment, and property when responding to vessels that have experienced a grounding, allision, collision, capsizing, or structural damage. SERT provides this assistance by performing numerous technical evaluations including: assessment and analysis of intact and damaged stability, hull stress and strength, grounding and freeing forces, prediction of oil/hazardous substance outflow, and expertise on passenger vessel construction, fire protection, and safety.

- Navy Supervisor of Salvage:
  - Supervisor of Salvage Operations (202) 781-2736
  - After hours and weekends (NAVSEA Duty Officer) (202) 781-3889
  - Switchboard (202) 781-1731
  - http://www.supsalv.org

SUPSALV can provide the services of naval architects, may provide the services of naval salvage vessels, and has access to contracts, which will provide the services of commercial salvers and equipment. SUPSALV developed and has available software for rapid analysis of longitudinal strength and intact/damaged stability; the software is known as Program of Ship Salvage Engineering (POSSE).

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3400 Air Operations Branch

The Air Operations Branch Director is responsible for all aspects of incident aircraft from supporting tactical operations to logistical support of the aircraft. The primary responsibilities of the Air Operations Branch Director include:

- Request declaration or cancellation of restricted air space,
- Establish air traffic control procedures between helibases & helispots, and
- Coordinate all over flight needs associated with the incident.

A list of Aviation resources located in the New Orleans Area can be found in Chapter 9000 Section 9240.9.

3410 Temporary Flight Restriction Zones:

A temporary Flight Restriction (TFR) Zone is similar in nature to a COTP safety zone in the maritime environment, and is normally used only when absolutely necessary. There are three situations in which it may be authorized:

- To protect persons and property in the air and on the surface hazards,
- To provide a safe environment for disaster relief aircraft, and
- To prevent an unsafe congestion of sightseeing and other aircraft above an incident or event that may generate a high degree of public interest.

To obtain a TFR, call the Area Manager at Houston Air Route Traffic Control Center; which supervises all FAA facilities in southern Texas, Louisiana, southern Mississippi, southwestern Alabama, and areas in the Gulf of Mexico.

The following information is required when requesting a TFR:

- Name and organization of person recommending or requesting TFR,
- Brief description of the situation,
- Location, size, and altitudes of the restricted area requested,
- Estimated duration of restrictions, and
- Name of agency responsible for on-scene emergency activities and telephone of other communication contact.

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3500 Staging Areas

The following table is a list of previously identified staging areas. The identification of potential staging areas is constantly on-going and updates will be added during the annual review process.

Staging Areas

ID	LOCATION	LAT DEG	LAT MIN	LON DEG	LON MIN	RIVER MILE	CHARACTERIZATION
1	ST. Francisville	30	45.827	91	23.745	266 LDB	Undeveloped paved road, sand & gravel bank
2	DT BR I-10 Bridge	30	26.318	91	11.465	229 LDB	Undeveloped paved road, mud bank
3	McKinney Towing	30	25.424	91	11.651	228LDB	Developed, barge fleeting co. Boat Crane
4	Old Hall-Buck Marine	30	23.256	91	12.878	226.5LDB	Undeveloped paved road, mud & rock bank, BR high w only
5	Kirby Fleet	30	22.525	91	13.626	225.5 LDB	Undeveloped, limited parking, boat ramp pending 7/98
6	Richfield Riversilt	30	20.614	91	13.604	221 LDB	Undeveloped, good staging, soft road, BR high water only
7	Plaquemine Point Shipyard	30	17.581	91	13.453	209 LDB	Developed, barge fleeting co. Boat Crane
8	Plaquemine Ferry	30	17.265	91	12.59	206.5 LDB	Ferry landing passable staging limited parking
9	Carline Fleet	30	16.988	91	8.8	203 LDB	Small fleeting area, limited parking, gravel road
10	Scurlock Oil Co.	30	15.36	91	6.349	200.5 LDB	Undeveloped, limited parking,

ID	LOCATION	LAT DEG	LAT MIN	LON DEG	LON MIN	RIVER MILE	CHARACTERIZATION
11	Novartis	30	14.732	91	6.396	199 LDB	Good staging area both sides of levee
12	ICOM	30	13.698	91	7.898	198 LDB	Undeveloped, good staging, low to mid river
13	Volks River Plant	30	12.885	91	2.715	197 LDB	Undeveloped, good staging, low to mid river
14	Trans Canada	30	12.625	91	2.249	186.1 LDB	Undeveloped, good staging, low to mid river
15	BASF	30	11.375	91	0.877	183.9 LDB	Developed, plant river frontage, limestone road
16	Hall Buck Gravel	30	10.514	91	0.137	182.8 LDB	Undeveloped, good staging, low to mid river
17	Carline Fleet Plant	30	10.281	91	0.066	182 LDB	Undeveloped, good staging, low to mid river
18	Cooper T. Smith	30	8.046	91	0.352	181.6 LDB	Undeveloped, good for low to mid river level,
19	Elmwood Marine Service	30	6.968	90	58.871	175.4 LDB	Undeveloped, good staging, low to mid river
20	Tim Babin /sand pit	30	7.035	90	57.024	173.0 LDB	Undeveloped, good staging, low to mid river, soft road
21	Weber Marine	30	7.646	90	57.188	172 LDB	Undeveloped, good staging, low to mid river, gravel road

ID	LOCATION	LAT DEG	LAT MIN	LON DEG	LON MIN	RIVER MILE	CHARACTERIZATION
22	Burnside Terminal	30	8.069	90	55.284	170 LDB	Undeveloped, good staging, low to mid river, gravel road
23	New Roads (ferry)	30	45.02	91	23.89	266.1 RDB	Undeveloped, good staging road side of levee
24	Big Cajun Power Plant	30	43.82	91	21.6	262.5 RDB	Undeveloped, good road, good staging, good collection point
25	Big Cajun 1	30	40.4	91	21.06	258.8 RDB	Good road, Good staging, Ideal location
26	Tiger Shipyard	30	30.73	91	13.62	238 RDB	Undeveloped, good staging crane to handle equipment
27	Tiger Shipyard	30	30.99	91	12.98	236.7 RDB	Undeveloped, small staging good small boat launch
28	Free Negro Point	30	30.63	91	12.22	234.6 RDB	Undeveloped, small staging good small boat launch
29	Cargo Carriers	30	25.49	91	12.4	227.4 RDB	Undeveloped, good staging, good small boat launch
30	Port of Baton Rouge	30	25.99	91	12.15	229 RDB	Developed area, good Staging, good small to med. Boat launch
31	Court St. Port Allen	30	27.15	91	12.08	230 RDB	Developed area, good Staging, good small to med. Boat launch

ID	LOCATION	LAT DEG	LAT MIN	LON DEG	LON MIN	RIVER MILE	CHARACTERIZATION
32	Placid Refining	30	28.48	91	12.08	231.8 RDB	Undeveloped, small staging good small boat launch
33	Brusly	30	22.84	91	14.33	224.5 RDB	Undeveloped, small staging good small boat launch
34	North Dow	30	20.36	91	14.45	221.8 RDB	Undeveloped, small staging good small boat launch
35	Georgia Gulf	30	16.41	91	11.09	205.3 RDB	Undeveloped, large staging good small boat launch
36	White Castle Ferry	30	11.24	91	7.26	191.5 RDB	Ferry Landing, possible staging and collection point
37	TT Barge Service	30	10.34	91	0.84	183 RDB	Barge fleeting service, crane for equipment deployment
38	Donaldsonville	30	6.43	91	59.21	175 RDB	Undeveloped, large staging good small boat launch
39	Triad Chem.	30	6.08	91	57.44	173.5 RDB	Undeveloped, large staging good small boat launch
40	End of Irene Rd.	30	35.93	91	16.78	252 LDB	Undeveloped good boat ramp
41	Delta Bulk Terminal	30	0.895	90	49.756	158.9 LDB	Boat crane, boat ramp, large open space for storage

ID	LOCATION	LAT DEG	LAT MIN	LON DEG	LON MIN	RIVER MILE	CHARACTERIZATION
42	Marathon Ashland Petroleum	30	2.98	90	35.915	140.5 LDB	large space for storage
43	Bonnet Carre Spillway	29	59.504	90	25.813	127.3 LDB	Boat ramp, forklift, large open space, parking
44	ASCO	29	57.59	90	13.58	112.2 LDB	Boat crane, dock facilities, environmental cleanup company
45	TOSCO	29	40.8	89	58.069	62.5 RDB	Very large open space, concrete slab for decon area
46	Fort Jackson	29	20.30	89	29.11	20.5 RDB	Boat ramp, large open space
47	USCG Station Venice	29	15.30	89	21.15	10.5 RDB	Cyprus Cove Boat Ramp

3600 Wildlife Branch Director

The primary purpose of the Wildlife Branch Director is to provide the best achievable care for impacted wildlife and to minimize wildlife losses, which includes preventing injury to wildlife or habitats from both a pollutant and from the implementation of response countermeasures. It is the New Orleans Area Committee policy that representatives of the U.S. Fish and Wildlife Service Regional Office (USFWS) or the Louisiana Department of Wildlife and Fisheries (LDWF) will assume the position of Director and Deputy Director of the Wildlife Branch. This position can be deferred to NOAA's National Marine Fisheries Service (NMFS) if USFWS or LDWF is unavailable, or USFWS and LDWF chooses to do so if NMFS will provide a more experienced Branch Director given the circumstances of the incident. The Wildlife Branch director position will be delegated to the LDWF for spills that occur within Louisiana state waters and/or in sensitive areas such as state refuges or wildlife management areas. Appointment of other parties, including the Responsible Parties representatives, to one or both of these positions may be made by a USFWS or LDWF representative, or their designee, at any time during an incident, and for such periods of time as may be deemed appropriate. Unless otherwise indicated by USFWS and LDWF, the Wildlife Branch Director position will be delegated to the Louisiana Department of Wildlife and Fisheries.

The Wildlife Branch is responsible for the implementation of the Wildlife Response Plan for the New Orleans area found in Chapter 9000, Appendix H of this plan. The Wildlife Response Plan describes the roles, responsibilities, and duties of the Wildlife Branch and associated personnel in detail. The Wildlife Branch is responsible for ensuring compliance with applicable Federal and State wildlife laws and mandates. Trustee agencies provide input into the selection of response methods used so that wildlife operations comply with each trustee's governing laws and their obligations to preserve and protect wildlife and habitat. During a spill response, the wildlife trustee agencies will advise the Wildlife Branch about local wildlife resources, sensitive species or habitat, logistical considerations, and other issues that arise. Indian Tribes retain sovereign authority to manage wildlife resource issues within reservation boundaries. Consultation and coordination is necessary with Tribal governments whose lands may be impacted by an oil spill.

The Wildlife Branch will be activated when either a Federal or State trustee agency, responsible party, or the Unified Command determines that an oil spill is in the vicinity of wildlife resources (mammals or birds), or has a trajectory that puts wildlife resources at risk. Activities associated with the activation of the branch will be appropriate to the size of the spill. Activation of personnel and equipment is based primarily to the size of the spill. Activation of personnel and equipment is based primarily on anticipated adverse effects on wildlife. On every spill response, the first action of the Wildlife Branch must be to deploy trained observers to the spill site to determine the extent of the initial and anticipated wildlife impacts in a timely manner. The ability to effectively determine the size and scale of the wildlife response is highly dependent on getting trained observers on-scene quickly. The Wildlife Response Plan describes specific response strategies for oiled Birds, Sea Turtles as well as hazing and monitoring options for larger Marine Mammals.

Depending on the size of the incident, the Wildlife Branch may range in size from just the Branch Director position to full activation of the organization described in the Wildlife Plan, including the associated equipment and personnel resources. Within the Wildlife Branch there are three groups: the Wildlife Reconnaissance Group, the Bird Recovery & Rehabilitation Group, and the Marine Mammal Recovery & Rehabilitation Group. The Wildlife Branch coordinates and manages the activities of all personnel in the Wildlife Branch who are under the authority of the Unified Command during a spill response. These include Federal, State, and local agencies, along with commercial and non-profit organizations responsible for wildlife.

The Wildlife Branch, working for the OSC, will develop operational strategies, tactics, and resource needs for operational activities for the Wildlife Branch in the Incident Action Plan. Wildlife Branch activities affect and interact with numerous other sections of the Incident Command and it is important that good communications are established and maintained between the Wildlife Branch and the Environmental Unit, a part of the Planning Section. The Wildlife Branch is responsible for providing information to the Incident/Unified Command, the Planning Section, and the Public Information Officer/Joint Information Center relative to the daily numbers of live and dead animals and their status.

Worker safety must be considered before any wildlife response effort is conducted. Therefore, all Wildlife Branch activities must conform to the Site Safety Plan for the response. Additional safety requirements may be included in an incident specific Wildlife Branch Safety Plan. Appropriate bio-safety measures will be utilized to reduce the risk of transmission of infectious disease between wildlife and personnel during an oiled wildlife response.

Upon conclusion of Wildlife Branch operations, its activities are demobilized following the standard checkout procedures identified through the ICS and the Unified Command. Demobilization of the Wildlife Branch often lags behind that of other response operations for several reasons, such as animals remaining in rehabilitative care, the presence of residual oil, and the presence of visibly oiled marine mammals and free-flying birds.

More detailed information concerning the responsibilities of the Wildlife Branch can be found in Chapter 9000 Appendix H: New Orleans Wildlife Response Plan.

3700 Reserved

3800 Reserved

3900 Reserved for Area/District

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New Orleans Area Contingency Plan

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Planning

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Chapter 4000 Planning

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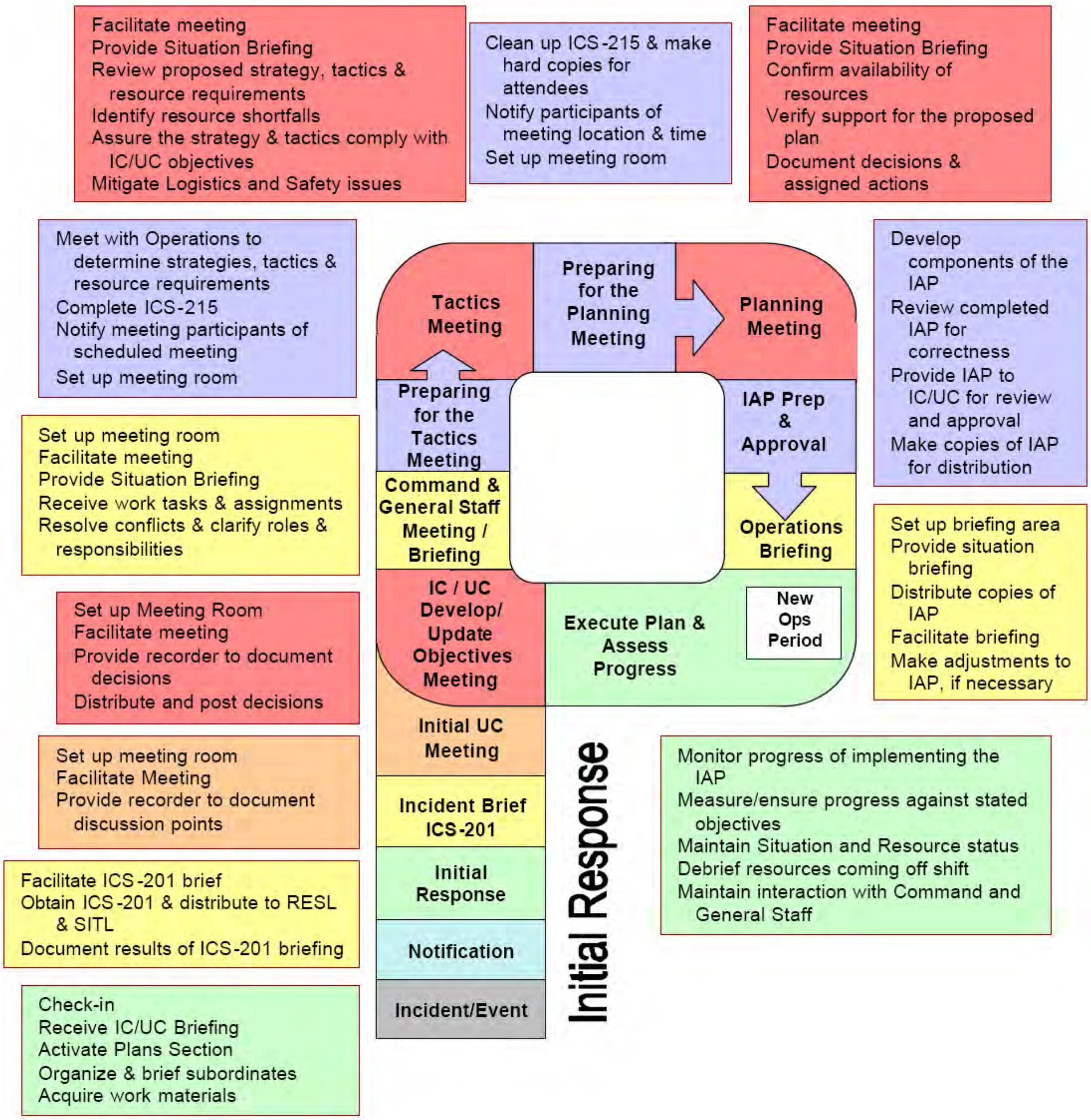
New Orleans Area Contingency Plan

Chapter 4000 Planning

Operational Planning “P” For Planning Section Activities



Facilitate meeting
Provide Situation Briefing
Review proposed strategy, tactics & resource requirements
Identify resource shortfalls
Assure the strategy & tactics comply with IC/UC objectives
Mitigate Logistics and Safety issues

Clean up ICS-215 & make hard copies for attendees
Notify participants of meeting location & time
Set up meeting room

Facilitate meeting
Provide Situation Briefing
Confirm availability of resources
Verify support for the proposed plan
Document decisions & assigned actions

Meet with Operations to determine strategies, tactics & resource requirements
Complete ICS-215
Notify meeting participants of scheduled meeting
Set up meeting room

Develop components of the IAP
Review completed IAP for correctness
Provide IAP to IC/UC for review and approval
Make copies of IAP for distribution

Set up meeting room
Facilitate meeting
Provide Situation Briefing
Receive work tasks & assignments
Resolve conflicts & clarify roles & responsibilities

Set up briefing area
Provide situation briefing
Distribute copies of IAP
Facilitate briefing
Make adjustments to IAP, if necessary

Set up Meeting Room
Facilitate meeting
Provide recorder to document decisions
Distribute and post decisions

Set up meeting room
Facilitate Meeting
Provide recorder to document discussion points

Monitor progress of implementing the IAP
Measure/ensure progress against stated objectives
Maintain Situation and Resource status
Debrief resources coming off shift
Maintain interaction with Command and General Staff

Facilitate ICS-201 brief
Obtain ICS-201 & distribute to RESL & SITL
Document results of ICS-201 briefing

Check-in
Receive IC/UC Briefing
Activate Plans Section
Organize & brief subordinates
Acquire work materials

4000 Planning

4100 Planning Section Organization

The following is an organizational chart of the Planning Section and its subordinate units. It serves as an example and is not meant to be all-inclusive. The functions of the Planning Section must be accomplished during an incident; however, they can be performed by one individual or can be expanded as needed into additional organizational units with appropriate delegation of responsibility.

Planning Section organization and staffing information within the command can be found in the National Incident Management System (NIMS) Guidance and the National Response Framework. The management of the response will follow NIMS Incident Command System (ICS) processes and position descriptions. Where NIMS/ICS does not describe a process or organization requirement, the incident specific need will be addressed by the Incident Management Team (IMT).

4110 ICS Position Specific Job Aids

Available ICS position specific job aids can be found in Chapter 9000, Appendix V.

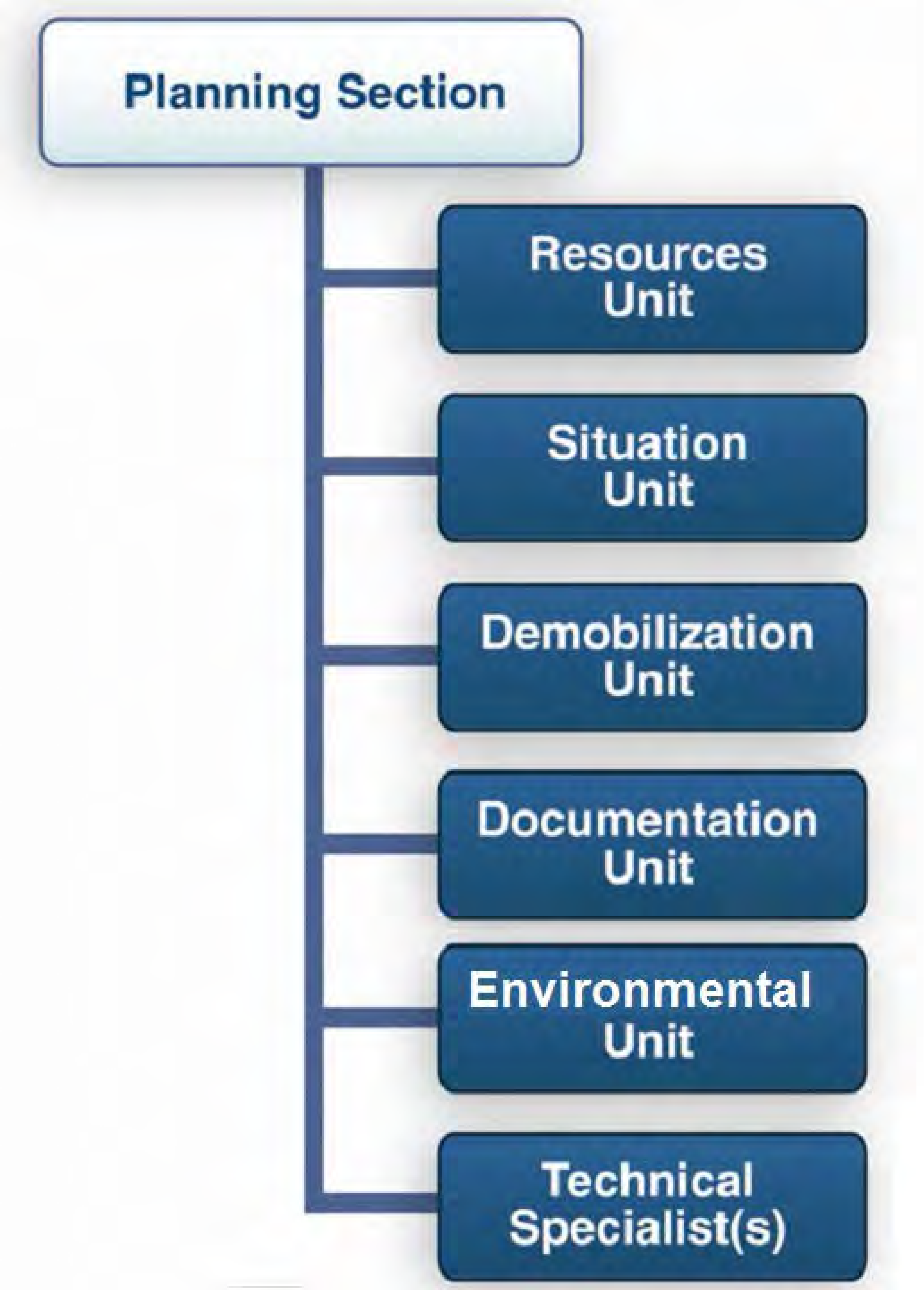
4120 Roles and Responsibilities

The Planning Section is responsible for the collection and evaluation of incident situation information, preparing situation status reports, displaying situation developments, maintaining the status of resources, developing an Incident Action Plan, and preparing required incident related documentation. This is done under the direction of the Planning Section Chief. All functions not assigned by the Section Chief remain the responsibility of the Section Chief.

4130 Planning Section Chief Responsibilities

The Planning Section Chief (PSC), a member of the General Staff, is responsible for the collection, evaluation, dissemination, and use of information about the development of the incident and status of resources. Information is needed to: 1) understand the current situation, 2) predict the probable course of incident events, 3) prepare alternative strategies for the incident, and 4) submit required incident status reports.

Planning Section Organization



4200 Situation

The Situation Unit (SITU) is responsible for collecting, maintaining, and evaluating information about the current/possible future status of the spill or release and the spill response operations as well as the maintenance of the command post displays. This responsibility includes the compilation of information regarding the type and amount of oil or hazardous substance discharged or released the amount of oil or hazardous substance recovered the oil or hazardous substances' current location and anticipated trajectory, and impacts on natural resources. This responsibility includes providing information to the GIS specialist(s) for the creation of maps to depict the current and possible future situation and the preparation of reports for the Planning Section Chief.

4210 Functions of the Situation Unit Leader (SITL)

- Provide Briefings

- Best Briefing Practices
  - Division of briefing duties between the following:
    - Operations Section Chief (OSC), Intelligence Officer (INTL), Situation Unit Leader (SITL), Technical Specialist (THSP)

- Provide Maps/Charts/Building Plans

- Submit Reports
  - ICS-209
  - Situation Reports

4210.1 Best Briefing Practices

The following practices should be of assistance for preparing and/or presenting a brief.

As the briefer:

- Plan ahead by arranging sources and display material in a logical sequence. Use the agenda specified for the type of meeting or brief in the Incident Management Handbook.

- A briefing should include
  - Current situation (note: territory, exposures, safety concerns, etc.)

  - Objectives and priorities.

  - Current and planned actions.

  - Current on-scene organization.

    - Number of injured and fatalities.
    - Resource assignments.
    - Resources en-route and/or ordered.
    - Facilities established.
    - Incident potential.
    - Map/Chart with all pertinent information (base/staging areas, divisions, etc.)

- Understand the target audience for the briefing and tailor the briefing to meet the information required.
    - If audience is mixed agency/organizations avoid acronyms.
- Anticipate potential questions in advance and have the answer ready.
- Check the presentation area for lighting, display area, seating, and size for the anticipated audience.
- Review preparations with the PSC for advice and guidance.
- Contact key presenters (e.g., OSC, INTL) informally prior to the briefing to ensure there is a clear understanding of who will be briefing what material so that the briefing is coordinated.
- Determine in advance if material is of a sensitive nature to be discussed, and if so, limit attendance according to presenter's direction
- Know how the PSC wants to work questions and answers. Will Q and A be allowed during the briefing or following?
- Use presentation technology (e.g., PowerPoint) as appropriate.
- At the conclusion of the brief, summarize key points as necessary.

4220 Guidelines for Setting up the Situation Unit

The SITU is located in the Planning Section of the ICP. When locating the SITU, remember that SITU will need to interact with the Environmental Unit, the Resources

Unit, and the Operations Section, among others. The SITU may need the most space of any function in the ICP due to the amount of wall area needed to create and maintain all maps, charts, and other incident display information. The SITL will need to plan for expansion of the Unit if the incident escalates or additional requests are placed on the SITU. Also, the space must be conducive to managing and displaying information. Wall space should be clear of light fixtures, mirrors, and pictures.

4220.1 Specialized Personnel

The following is a list of specialized positions that can assist the SITU.

Technical Specialists

Technical Specialists (THSP) can be valuable to the SITU in providing and briefing specialized information, truth checking information, interpreting data, and other information relevant to the incident. The SITL should consider requesting THSPs when they feel they need technical expertise not otherwise available on the incident. Specialist that could be of value include environmental experts (if not Environmental Unit), Geographic Information System (GIS) Specialists, situation report/briefing specialists, weather observers, scientific advisors, structural engineers, etc.

Field Observers

Field Observers (FOBS) work for the SITL and collect situational information from personal observation at the incident site and report this information back to the SITL. The SITL should consider requesting FOBS when verification is necessary for information such as location of trouble spots, weather conditions, hazards, Resources Unit information needs, and the progress of operations.

4230 Situation Reports/Information

The SITU is responsible for generating numerous incident reports including ICS-209 and U.S. Coast Guard Message Traffic (SITREP-POL/POLREP). An example of a SITREP-POL/POLREP can be found in Marine Safety Manual Vol 6, Chapter 7, COMDTINST 16000.11.

4230.1 Weather/Tides/Current Information:

For the purposes of the NOACP, all weather, tide, and current information shall be obtained from the NOAA Scientific Support Coordinator.

- National Oceanic & Atmospheric Administration
    - Scientific Support Coordinator
      24-Hour (206) 526-4911

4240 Area of Responsibility

New Orleans Captain of the Port Zone

New Orleans COTP Zone Boundaries Quick Reference

Waterway	New Orleans
Lower Mississippi (LMR)	Sea Buoy (MM 20)- 303
Gulf Intracoastal Waterway	MM44.2 EHL- 20 WHL
Inner Harbor Navigational Canal (IHNC)) (Industrial Canal)	Entire Canal
Port Allen Route	MM0-64.1
Atchafalaya River	MM0-45 and shared jurisdiction W/ Morgan City MM45.5-49.5
Mississippi River Gulf Outlet	MM10-66
Tiger Pass	Entire Pass

Inland/Coastal Zone Delineation

The purple line in the map above marks the delineation between the USCG and EPA jurisdictions, Inland and Coastal Zones as defined in the NCP (40 CFR Part 300).

4300 Resources

The Resource Unit (RESU) is responsible for maintaining the status of all resources (primary and support) at an incident. This is achieved through the tracking of all tactical resources, including check-in, status, current location, etc; enabling the RESU to assign available resources. The RESU is also responsible for the completion of ICS forms 203, 204, & 207; and the compiling of the Incident Action Plan.

4310 Setting up the Resource Unit

The Resources Unit work area in the ICP is the space for the management and tracking of all tactical resources and personnel. Therefore, the space must be conducive to tracking resources during current operations as well as supporting operational planning. It needs to be functional, and free of interruptions and distractions that detract from the RESL’s ability to lead the Resources Unit.

4310.1 Personnel

Personnel that provide assistance to the Resources Unit Leader are Status/Check-in recorders (SCKN). There are actually two distinct jobs that are embedded within the SCKN position, they include:

- Checking in and out resources
- Tracking resources during the incident

There are many different factors that determine the number of SCKN's that will be required but they include:

- Number of check-in locations established on the incident
- Number of Resources expected to be assigned to the incident
- Number of Division or Groups within the Operations organization
- Whether the incident is a 24 hour operation
- Expected duration of the incident
- Number of Incident Action Plans to be developed during each 24 hour period

4310.2 Check-in Locations

Resources may be checked in to an incident at a variety of locations including:

- Incident Command Post
- Incident Base or Camp(s)
- Helibase, boat ramp, marina
- Staging area
- Security Check Point

4400 Documentation Unit

The Documentation Unit (DOC) is responsible for the maintenance of accurate, up-to-date incident files. Examples of incident documentation include: Incident Action Plans, incident reports, communication logs, injury claims, situation status reports, etc. Thorough documentation is critical to post-incident analysis and litigation. Some of these documents may originate in other sections. This unit shall ensure each section is maintaining and providing appropriate documents. Incident files will be stored for legal, analytical, and historical purposes. DOC also provides duplication and copying services.

4500 Demobilization

The Demobilization Unit (DMOB) is responsible for developing the Incident Demobilization Plan, and assisting Sections/Units in ensuring an orderly, safe, and cost effective demobilization of personnel and equipment.
Resources should be demobilized in the same manner as they checked into the incident organization: as individuals, single resources, crews or teams. Demobilization planning needs to start early to establish procedures for the rotation of personnel and for emergency demobilizations.

The Operations Section sets the pace of demobilization. As operations begin to downsize, the rest of the organization should follow.

The following is a sample Demobilization Plan.

Sample Demobilization Plan

23 February 20XX
For the *XXXX* Incident

I. General Information

The response is rapidly transitioning from the emergency response phase to a planned recovery effort. The demobilization of incident resources must be conducted in a manner that is safe and efficient, and should not interfere with ongoing operations. Every Staff Officer and Section Chief shall ensure they maintain the appropriate level of staff to support the planned recovery phase. The following will be incorporated into the demobilization effort:

A. Responders that were operating within the *XXXX* will be offered the opportunity to undergo critical incident stress management.
B. Decontamination of personnel, personnel clothing and equipment will be undertaken under the direction of the safety officer.
C. All responders that are traveling by vehicle for more than 2hours must have a minimum of 6-hours rest, unless exempted by the Unified Command.
D. Driving between the hours of 2200-0600 will be limited to airport transport to facilitate demobilization. Point to point driving for returning responders will be limited to 12 hours with sufficient breaks outside of 2200-0600 rest hours.
E. All supervisors, leaders and chiefs will be thoroughly briefed prior to leaving the incident.

II. Responsibilities

A. The Planning Section Chief shall:
    a. Ensure that the demobilization process and expectations receive wide distribution and that there is an orderly release of resources.
    b. Ensure that all agency/industry specific requirements regarding the demobilization of the agency's/industry's resources are followed. Any deviations must have the approval of the agency/industry Incident Commander.
    c. Review the demobilization plan prepared by the Demobilization Unit Leader. Review Command and General Staff comments and make changes as appropriate prior to presenting the Plan to the Unified Command.

B. The Operations Section Chief shall:
    a. Identify any excess personnel and equipment available for demobilization and provide a list to the Planning Section Chief.

   b. Identify and decontaminate all tactical resources that require decontamination. Coordinate the decontamination effort with the Safety Officer and Logistics Section Chief.
   c. Where possible, release resources that have pre-established shared transportation together to facilitate demobilization.

C. The Logistics Section Chief shall:
   a. Coordinate all personnel and equipment transportation needs to designated locations to meet travel needs.
   b. Ensure that the Supply and Communications Units are prepared to accept and document the return of all equipment that was checked out through them.
   c. Provide courtesy vehicle safety inspections for all non-contracted vehicles.
   d. Coordinate all vehicle inspections with the Finance/Administration Section Chief.

D. The Finance/Administration Section Chief shall:
   a. Ensure that all personnel and equipment time reports are complete and accurate.
   b. Ensure that any injury and/or equipment claims are well documented and complete.
   c. Adjust Equipment and Time Recorder's schedules to meet demobilization needs.

III. Release Priorities

The following are the release priorities:

A. Federal Government response resources
B. State Government response resources
C. Local Government response resources
D. Industry resources
E. Release priorities may be adjusted to better serve the changing incident situation. Ensure that concurrence is obtained from the agency that provided the resource.

IV. Release Procedures

A. Sections Chiefs and Command Staff:
   a. Have the authority to approve the tentative release list of resources to the Demobilization Unit Leader.
   b. Submit tentative release list of supply resources to the Demobilization Unit Leader a minimum of **24 HOURS** prior to the resource's anticipated departure.

B. Demobilization Unit Leader:
  a. Prepare the Demobilization Checkout Form, ICS-221, when the tentative release list is approved by the Unified Command.
  b. Ensure that it is noted on the ICS-221 that the resources requiring decontamination were decontaminated.
  c. Ensure that a resource requiring critical incident stress debriefing is noted on the ICS-221.
  d. Effectively communicate with all staff members in order to identify any changes in the transportation needs of personnel. Ensure timely notification of anyone that will be impacted by changes in established transportation times.
  e. Note on the ICS-221 any travel checking and arrival notification procedures that were established between the resource provider and the resource.

C. Excess resources being demobilized are to follow the directions outlined on their respective Demobilization Checkout Form to ensure that all required signatures are obtained. Signatures include the following units:
  a. SPUL
  b. COML
  c. GSUL
  d. TIME
  e. DOCL

V. Phone Directory

Any time there is a concern over the status of a released resource contact the Demobilization Unit Leader at XXX-XXX-XXXX. Other points of contacts include:

- ***XXXX Parish Emergency Operations Center: XXX-XXX-XXXX***
- Coast Guard Sector New Orleans: 504-365-2200
- ***XXXX***

VI. Approval

Prepared by: ______________________________ ________________________
Demobilization Unit Leader Date

Reviewed by: ______________________________ ________________________
Planning Section Chief Date

Reviewed by: ______________________________ ________________________
Logistics Section Chief Date

Reviewed by: ______________________________ ________________________
Fin/Admin Section Chief Date

Reviewed by: ______________________________ ________________________
Operations Section Chief Date

Approved by: ______________________________ ________________________
Unified Command Date

Approved by: ______________________________ ________________________
Unified Command Date

Approved by: ______________________________ ________________________
Unified Command Date

Approved by: ______________________________ ________________________
Unified Command Date

4600 Environmental

After protecting human life and safety, the next highest priority in spill response is reducing impacts to public, natural, and cultural resources.

The Environmental Unit (ENV) is the central point within the Planning Section for determining how to best protect those resources. Specifically, the ENV is responsible for:

- Spill/plume trajectories
- Identifying all natural, cultural, and economic resources and historic properties likely to be affected by a discharge or release, and making recommendations for priorities to protect these resources;
- Providing guidance for the implementation of Geographical Response Plans (GRPs);
- Working with the Operations Section to establish any additional environmental protection strategies not indentified in GRPs;
- Establishing Shoreline Cleanup Assessment Teams (SCAT);
- Using SCAT information to recommend shoreline cleanup recommendations, priorities, and restrictions;
- Providing guidance regarding “how clean is clean” decisions;
- Providing technical review and recommendations regarding the use of alternative technologies;
- Developing a disposal plan (Note: Louisiana State Disposal Guidelines found in Chapter 9000, Appendix P)
- Providing information to JIC and IC/UC regarding natural resource concerns/impacts;
- Coordinating with NRDA activities; and
- Coordinating with Wildlife Branch and Air Operations Branch on issues involving wildlife hazing.

The NOAC recognizes that there is shared responsibility between the Unified Command Representatives. Plus, it is broadly recognized that the critical phase of any response, regardless of size, is the initial hours after the spill or release. Given the importance of the ENV's duties, and because the responsibility and knowledge base for public resources lies with trustee agencies, it is in everyone's best interests to ensure early critical response decisions are made by the most knowledgeable individuals. Therefore, it is the policy of the NOAC that the Environmental Unit Leader (ENVL) shall be a representative of a government natural resource trustee or environmental agency, if available. If no such agency representative is initially available or willing to lead the ENV, a responsible party representative may fill the role of ENVL. Furthermore, as the response action matures, a transition to a responsible party designated ENVL may occur with the concurrence of the UC. The NOAC also encourage spill response plan holders and responsible parties to designate a Deputy ENVL, who will participate in all meetings attended by and briefings made by the ENVL. These meetings and briefings include, but are not limited to, the following pre-identified ICS scheduled events:

- Initial ICS 201 Briefing;
- Tactics Meetings;
- Planning Meetings;
- Operations Meetings;
- Unified Command Briefings; and
- Press Conferences

All trustee resource agency staff with environmental information/expertise should initially report to the ENVL. This included technical specialists (e.g. Scientific Support Coordinator) identified elsewhere within the ICS organization. However, the SSC is an independent advisor to the FOSC.

The Resources at Risk (RAR) Summary provides information about locations in the incident area which are sensitive due to environmental, archaeo-cultural, or socio-economic resources at risk. Typically this process is conducted within the Environmental Unit. The ICS 232 form identifies and prioritizes incident-specific issues. This checklist is designed to aid in the process. There may be additional incident specific steps required. The steps in this process may vary by incident or operational period.

Getting Started

[ ] Environmental Unit Leader (ENVL) assigns the workgroup to complete the ICS 232 Form. RP should consider having representation on this workgroup

[ ] Participating agencies and organizations contribute expertise and data.

[ ] Are threatened and endangered species (ESA) present? If so, ESA consultation will be required.

Prioritize Resources and Finalize ICS 232 Form

[ ] Review and apply the prioritization policy in the NOACP

[ ] ENVL or designees guides consensus on final prioritization of RARs

Preparing For Tactics Meetings

[ ] ENVL or designee, coordinating through the PSCG, works with Operations to discuss the ICS 232 Form and design appropriate tactics to protect or mitigate listed resources on the 232. Permits may be required for certain tactics or areas.

4700 Technical Specialists

Technical Specialists are advisors with special skills needed to support the incident. Technical Specialists may be assigned anywhere in the ICS organization. If necessary, Technical Specialists may be formed into a separate unit. The Planning Section will maintain a list of available specialists and will assign them where needed.

A list of available Technical Specialists in the New Orleans area is located in Chapter 9000 Section 9250.

4800 Permits and Consultation

More information regarding permits and consultation is located in Chapter 9000, Appendix Q, New Orleans Area Permit and Consultation Guide.

4810 Permit requirements

No Federal, State, or local permits are required for on-site response actions conducted pursuant to CERCLA responses. The term on-site means the extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response activities. Permits, if required, shall be obtained for all response activities conducted off-site.

4820 Section 7 of the Endangered Species Act (ESA)

As soon as practicable after a response is under control, which may occur when the case is closed, the FOSC initiates consultation (either formal or informal, as appropriate) with the National Marine Fisheries and the U.S. Fish and Wildlife Service (t he Services) ESA listed species and/or critical habitat have been affected. The FOSC should ensure that the following information is completed before the case is closed. After the case is closed, the information and a cover letter requesting consultation will be sent to the Services.

- Provide a description of the emergency.
- 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 result of implementation in minimizing take.
- Provide a comparison of the emergency response actions as describes above with the pre-planned countermeasures and information in this ACP.

More guidance regarding Section 7 consultation can be found 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 Substance Pollution Contingency Plan and the Endangered Species Act in Chapter 9000, Appendix T, MOUs/MOAs.

4820.1 RRT Spill Response Emergency Endangered Species Consultation

4830 State Historic Preservation Office (SHPO) Consultation

In order to ensure that response actions do not inadvertently harm historical and culturally sensitive sites, the SHPO shall be consulted. The SHPO will evaluate areas where response actions are to be conducted for potential impact to historic and culturally sensitive sites.

The SHPO can be contacted via the State Historic Preservation Office, Division of Archaeology, at 225-219-4598.

4840 Applicable or Relevant and Appropriate Requirements (ARARs)

The lead and support agencies shall identify requirements applicable to the release based upon an objective determination of whether the requirements specifically address a hazardous substance, pollutant, contaminate, location, or other circumstance found at a CERCLA site.

4900 Reserved for Area/District

New Orleans Area Contingency Plan

Chapter 5000
Logistics

New Orleans Area Contingency Plan

Chapter 5000 Logistics

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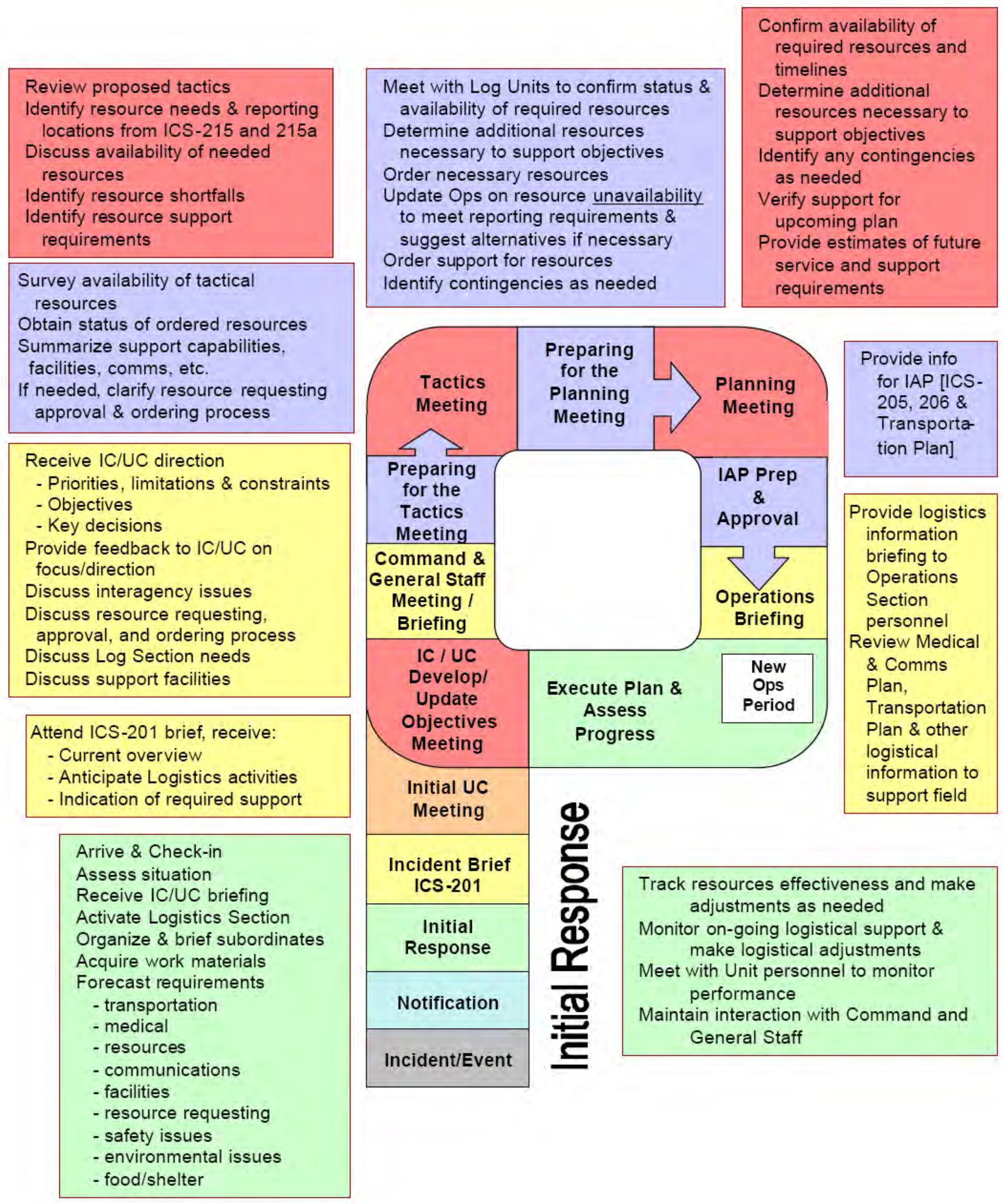


Review proposed tactics
Identify resource needs & reporting locations from ICS-215 and 215a
Discuss availability of needed resources
Identify resource shortfalls
Identify resource support requirements

Survey availability of tactical resources
Obtain status of ordered resources
Summarize support capabilities, facilities, comms, etc.
If needed, clarify resource requesting approval & ordering process

Receive IC/UC direction
- Priorities, limitations & constraints
- Objectives
- Key decisions

Provide feedback to IC/UC on focus/direction
Discuss interagency issues
Discuss resource requesting, approval, and ordering process
Discuss Log Section needs
Discuss support facilities

Attend ICS-201 brief, receive:
- Current overview
- Anticipate Logistics activities
- Indication of required support

Arrive & Check-in
Assess situation
Receive IC/UC briefing
Activate Logistics Section
Organize & brief subordinates
Acquire work materials
Forecast requirements
- transportation
- medical
- resources
- communications
- facilities
- resource requesting
- safety issues
- environmental issues
- food/shelter

Meet with Log Units to confirm status & availability of required resources
Determine additional resources necessary to support objectives
Order necessary resources
Update Ops on resource unavailability to meet reporting requirements & suggest alternatives if necessary
Order support for resources
Identify contingencies as needed

Confirm availability of required resources and timelines
Determine additional resources necessary to support objectives
Identify any contingencies as needed
Verify support for upcoming plan
Provide estimates of future service and support requirements

Provide info for IAP [ICS-205, 206 & Transportation Plan]

Provide logistics information briefing to Operations Section personnel
Review Medical & Comms Plan, Transportation Plan & other logistical information to support field

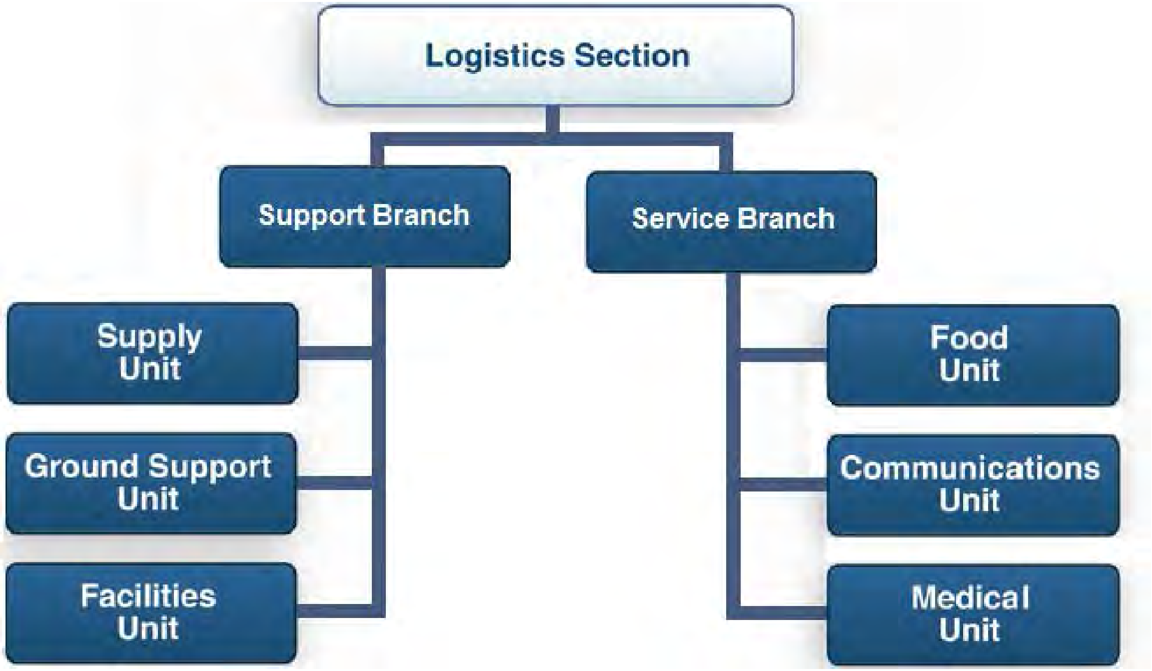
Track resources effectiveness and make adjustments as needed
Monitor on-going logistical support & make logistical adjustments
Meet with Unit personnel to monitor performance
Maintain interaction with Command and General Staff

5000 Logistics

5100 Logistics Section Organization

The following is an organizational chart of the Logistics Section and its subordinate units. It serves as an example and is not meant to be all-inclusive. The functions of the Logistics Section must be accomplished during an incident; however, they can be performed by one individual or can be expanded, as needed, into additional organizational units with appropriate delegation of authority.

Information regarding the Logistics Section and Staff position within the command can be found in the Oil Spill Field Operations Guide (FOG) ICS0SO-420-1 dated June 2000. For positions or incident types not address by the FOG, refer to the US Coast Guard Incident Management Handbook 2006 Edition, (COMDTPUB P 3120.17A Aug 2006).



5110 Roles and Responsibilities

The Logistics Section is responsible for providing services and support to meet all incident or event needs. This is accomplished under the direction of the Logistics Section Chief. Logistics service and support to an incident or event are important functions. Early recognition of the need for a separate logistics function and section can reduce time and money spent on an incident. All functions not assigned by the Section Chief remain the responsibility of the Section Chief.

5120 Logistics Section Chief Responsibilities

The Logistics Section Chief, a member of the General Staff, is responsible for providing facilities, services, and material in support of the of the incident. The Logistics Section Chief participates in development and implementation of the Incident Action Plan and activates and supervises branches and units within the Logistics Section.

5130 ICS Position Specific Job Aids

Available ICS position specific job aids can be found in Chapter 9000, Appendix V.

5200 Support Branch

The Support Branch Director, when activated, is under the direction of the Logistics Section Chief. The Support Branch Director is responsible for development and implementation of logistics plans in support of the Incident Action Plan to include providing personnel, equipment, facilities, and supplies to support incident operations. The Support Branch Director supervises the operations of the Supply, Facilities, Ground Support, and Vessel Support Units.

A Personnel and Service Directory can be found in Chapter 9000, Section 9200.

5210 Command Post Establishment Procedures

Several basic features must be considered when selecting incident command post sites. These considerations include:

- ***Location*** - The incident command post should be in the general area of the incident. It does not need to be at the incident site and for many reasons should be located away from the incident, including preventing the administrative activities surrounding a spill from interfering with operations.

- ***Size*** - The command post must be capable of accommodating the number of people anticipated. An estimated need of 50-sq. ft. /person will provide adequate workspace within the ICP. Additional support area for food service, etc. should be considered.

- ***Layout*** - The command post should be compatible with the NIMS organization. Individual spaces for the following are desirable:

    - Unified Commander Private Rooms

    - Unified Command Center

  - Planning Section
  - Logistics Section
  - Operations Section
  - Finance Section
  - Public Affairs (should be separated from the above)
  - Meeting Room (should be separated from the above)

- ***Parking*** - Parking for personnel plus visitors and command vehicles should be present.

- ***Electricity*** - Power demands at command posts are heavy. Computers, cell phones, and radios are becoming standard equipment for responders. Each person in the command post will likely have need for at least one outlet. Power strips can decrease the required number of building outlets provided the electrical supply is adequate for the load.

- ***Telephones*** - Telephones are critical. For planning purposes one phone line for every two people in the command post is used. Some of these phones should be designated "incoming only".

- ***Air Operations*** - Air over-flights will be a normal part of the incident response daily routine. Heliport/bases should be in close proximity to the command post. This will reduce staff and unified commanders' travel time to and from over-flights.

- ***Security*** - A security control station will be needed, along with sufficient security personnel to control access to the command center and associated peripheral equipment/facilities.

- ***Sanitary Facilities*** - Provisions should be made to accommodate large numbers of people on site around the clock.

5220 Staging Areas

A list of pre-identified staging areas can be found in Chapter 3000, Section 3500.

5230 Area Resources

Area Resource information can be found in the Area Response Resource Inventory in Chapter 9000, Appendix R.

5240 Supply Unit

The Supply Unit Leader is primarily responsible for ordering personnel, equipment and supplies; receiving and storing all supplies for the incident; maintaining an inventory of supplies; and servicing non-expendable supplies and equipment.

5250 Facilities Unit

The Facilities Unit Leader is primarily responsible for the layout and activation of incident facilities (e.g., Base, Camp(s), and Incident Command Post(s)). The Facilities Unit Provides sleeping and sanitation facilities for incident personnel and manages base and camp operations. Each facility (base or camp) is assigned a manager who reports to the Facilities Unit Leader and is responsible for managing the operations of the facility. The basic functions or activities of the Base or Camp Manager are to oversee all of the primary services and support activities that take place at the Base, including security services and general maintenance. The Facility Unit Leader reports to the Support Branch Director.

5260 Ground Support Unit Leader

The Ground Support Unit Leader is primarily responsible for 1) support out of service resources, 2) coordination of transportation of personnel, supplies, food, and equipment, 3) fueling, services, maintenance, and repair of vehicles and other ground support equipment, and 4) implementing the Traffic Plan for the incident.

5300 Service Branch

The Service Branch Director, when activated, is under the supervision of the Logistics Section Chief, and is responsible for the management of all service activities at the incident. The Branch Director supervises the operation of the Communication, Medical, and Food Units.

5310 Medical Unit Leader

The Medical Unit Leader, under the direction of the Service Branch Director or Logistics Section Chief, is primarily responsible for the development of the Medical Emergency Plan, obtaining medical aid and transportation for injured and ill incident personnel, and preparation of reports and records. The Medical Unit may also assist Operations in supplying medical care and assistance to civilian casualties at the incident, but is not intended to provide medical services to the public.

5320 Food Unit Leader

The Food Unit Leader, under the direction of the Service Branch Director or the Logistics Section Chief, is responsible for determining feeding requirements at all incident facilities, menu planning, determining cooking facilities required, food preparation, serving, providing potable water, and general maintenance of the food service areas.

5400 Communications Unit Leader

The Communications Unit Leader, under the direction of the Service Branch Director or Logistics Section Chief is responsible for developing plans for the effective use of incident communications equipment and facilities, installing and testing of communications equipment, supervision of the incident Communications Center, distribution of communications equipment to incident personnel, and the maintenance and repair of communications equipment. The NOAC Communication Manual can be found in Chapter 9000, Appendix O (Under development ETA 2015).

5500 Reserved

5600 Reserved

5700 Reserved

5800 Reserved

5900 Reserved for Area/District

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New Orleans Area Contingency Plan

Chapter 6000 Finance & Administration

New Orleans Area Contingency Plan

Chapter 6000 Finance and Administration

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Chapter 6000 Finance and Administration

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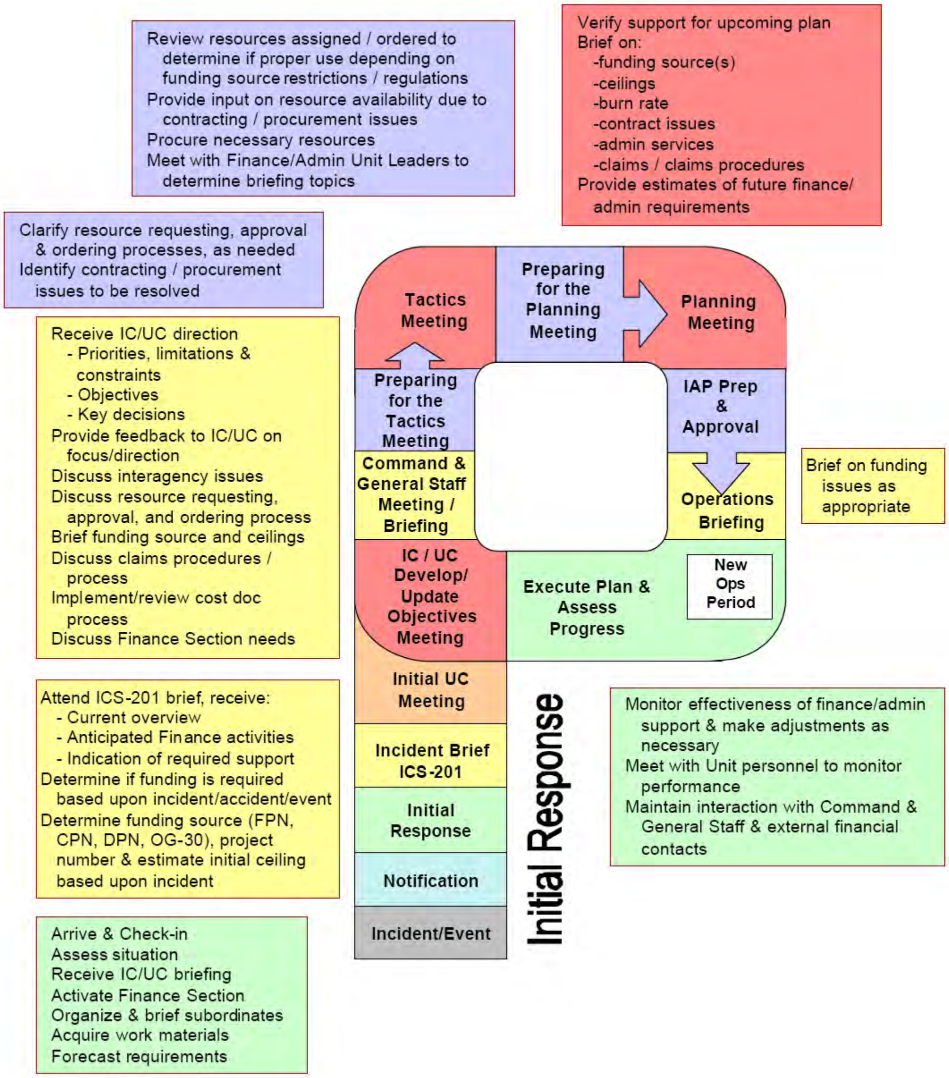

Review resources assigned / ordered to determine if proper use depending on funding source restrictions / regulations
Provide input on resource availability due to contracting / procurement issues
Procure necessary resources
Meet with Finance/Admin Unit Leaders to determine briefing topics

Verify support for upcoming plan
Brief on:
- funding source(s)
- ceilings
- burn rate
- contract issues
- admin services
- claims / claims procedures

Provide estimates of future finance/ admin requirements

Clarify resource requesting, approval & ordering processes, as needed
Identify contracting / procurement issues to be resolved

Receive IC/UC direction
- Priorities, limitations & constraints
- Objectives
- Key decisions

Provide feedback to IC/UC on focus/direction
Discuss interagency issues
Discuss resource requesting, approval, and ordering process
Brief funding source and ceilings
Discuss claims procedures / process
Implement/review cost doc process
Discuss Finance Section needs

Brief on funding issues as appropriate

Attend ICS-201 brief, receive:
- Current overview
- Anticipated Finance activities
- Indication of required support

Determine if funding is required based upon incident/accident/event
Determine funding source (FPN, CPN, DPN, OG-30), project number & estimate initial ceiling based upon incident

Monitor effectiveness of finance/admin support & make adjustments as necessary
Meet with Unit personnel to monitor performance
Maintain interaction with Command & General Staff & external financial contacts

Arrive & Check-in
Assess situation
Receive IC/UC briefing
Activate Finance Section
Organize & brief subordinates
Acquire work materials
Forecast requirements

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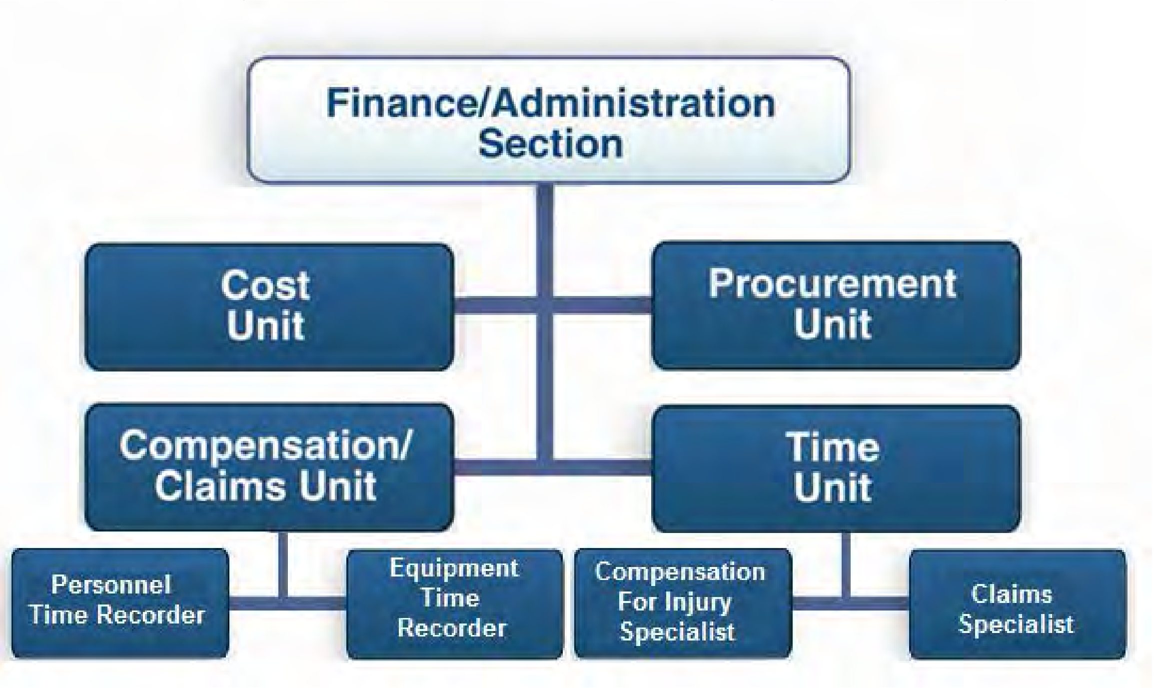
6000 Finance/Administration

6100 Finance/Administration Section Organization

The Finance/Administration Section Chief is a member of the General Staff. Responsibilities include all financial, administrative and cost analysis, and for supervising members of the Finance/Administrative Section.

The following is an organizational chart of the Finance/Administrative Section and its subordinate units. It serves as an example and is not meant to be all-inclusive. The functions of the Finance/Administrative Section must be accomplished during an incident; however, they can be performed by one individual or be expanded, as needed, into additional organization units with appropriate delegation of authority.



6110 Roles and Responsibilities

The Finance/Administration Section is usually staffed in large-scale or complex incidents. Since most of the activities of the Finance/Administration Section do not require face-to-face communication, these operations may be located remotely from the incident site. A description of the Finance/Administration Section with organizational chart and responsibilities of the Section and subordinate Units can be found in the U.S. Coast Guard Incident Management Handbook, COMDTPUB P3120.17A August 2006, Chapter 10.

6110. 1 Finance Section Chief Responsibilities

The Finance Section Chief (FSC) must provide documentation of all incident costs and guidance to the UC/IC on financial issues that may have an impact on incident operations. These responsibilities include:

- Manage all financial aspects of an incident including,
- Future Payments,
- Future budgeting,
- Payment and personnel costs,
- Cost recovery,
- Provide financial aspects of an incident,
- Gather pertinent information from briefings with response agencies,
- Develop an operating plan for the Finance/Administration Section,
- Fill supply and support needs,
- Determine the need to set up and operate an incident commissary,
- Meet with Assisting and Cooperating Agency Representatives as needed,
- Maintain daily contact with agency(s) administrative headquarters on Finance/Administrative matters,
- Ensure that all personnel time records are accurately completed and transmitted to home agencies according to policy,
- Provide financial input to demobilization planning,
- Ensure that all obligation documents initiated at the incident are properly prepared and completed,
- Brief agency administrative personnel on all incident-related financial issues needing attention or follow-up prior to leaving incident,

- Develop recommended list of Section resources to be demobilized and initial recommendation for release when appropriate, and
- Receive and implement applicable portions of the Incident Demobilization Plan
- Maintain status of response costs and “burn rate” of expenditures,
- Maintain awareness of Responsible Party’s limit of liability

The FSC is responsible for all finance functions needed for an incident. This individual should establish functional units when needed to maintain an acceptable workload and span of control. Subordinate Finance functions may be combined when workload permits.

The FSC should be assigned before implementation of subordinate units to prevent an excessive span of control or information overload for the ICS.

The FSC may have deputy FSCs, who may be from the same agency or from an assisting agency. The Deputy FSC must have the same qualifications as the person for whom they work, as they must be ready to take over that position at any time.

6110.2 Time Unit

The primary function of the Time Unit is to manage time for personnel working at an incident. To do this effectively each agency, responsible party, and all contractors will need to address this function to the degree where it is integrated into a similar format/procedure and the entire system will work more smoothly. To ensure this happens, each agency, responsible party, contractor, etc., should have some formalized method of checking in and out for all personnel. The Time Unit Leader responsibilities include:

- Equipment and personnel time records;
- Establish contact with appropriate company/agency personnel/representatives;
- Establish Time Unit Objectives;
- Ensure daily personnel and equipment time recording documents are prepared in compliance with time policies;
- Submit cost estimate data forms to Cost Unit, as required;
- Provide for records security; and

- Ensure all records are current or complete prior to demobilization.

The accurate reporting of time for personnel and equipment shall be conducted in the following manner:

Personnel

- Establish and maintain a file for personnel time reports within the first operational period. Initiate, gather, or update a time report from all applicable personnel assigned to the incident for each operational period. Maintain a log of excessive hours worked and give to the Time Unit Leader daily.

- Ensure that all personnel identification information is verified to be corrected on the time report

- Post personnel travel and work hours, transfers, promotions, specific pay provisions and terminations to personnel time documents

- Ensure that time reports are signed. Close out time documents prior to personnel leaving the incident. Distribute all time documents according to agency policy.

Equipment

- Advise Ground Support Unit, Facilities, and Air Support Group of the requirement to establish and maintain a file of daily records for equipment time reports. Assist units in establishing a system for collection these equipment time reports.

- Post all equipment time tickets within four hours after the end of each operational period.

- Prepare a use and summary invoice for equipment (as required) within 12 hours after equipment arrival at the incident

- Submit data to Time Unit Leader for cost effectiveness analysis

- Maintain current posting on all charges or credits for fuel, parts, services, and commissary

- Verify all time data and deductions with owner/operator of equipment

- Complete all forms according to agency specifications. Close out forms prior to demobilization. Distribute copies per agency and incident policy

The Logistics Section of the ICS can arrange to have meals purchased from local establishments (e.g., supermarket deli box lunch) and charge to the fund. All USCG that are TAD at the spill site must have these meals annotated on their orders.

6110.3 Procurement Unit

When incident operations require procurement of goods or services from vendors, the Procurement Unit manages the following functions:

- Administer all financial matters pertaining to vendor contracts;
- Coordinate with local jurisdictions on plans and supply sources;
- Prepare and sign contracts and land use agreements, as needed;
- Draft memorandums of understanding;
- Establish contracts with supply vendors, as required;
- Interpret contracts/agreements and resolve claims or disputes within delegated authority;
- Coordinate with Compensation/Claims Unit on procedures for handling claims;
- Finalize all agreements and contracts;
- Coordinate use of incident funds, as required;
- Complete final processing and send documents for payment; and
- Coordinate cost data in contracts with Cost Unit Leader.

6110.4 Compensation/Claims Unit

The function of the Compensation/Claims Unit involves record-keeping and financial claims related to damages created by an incident. The Compensation/Claims Unit Leader responsibilities include:

- Overall management and direction of all administrative matters pertaining to compensation-for-injury and claims-related activity for an incident;

- Establish contact with Safety Officer, Liaison Officer, and company/ agency representatives;
- Determine the need for compensation for injury and claims specialists and order personnel, as needed;
- If possible, co-locate compensation-for-injury work area with the Medical Unit;
- Coordinate with Procurement Unit on procedures for handling claims; and
- Ensure all compensation-for-injury and claims documents are up to date and routed to the proper company/agency.

6110. 5 Cost Unit

The principal functions of the Cost Unit are tracking costs, analyzing cost data, making cost estimates, contracts, and recommending cost-saving measures.

Note: It is critical that all parties in the Unified Command adopt consistent cost documentation for later cost recovery from the Responsible Party, Federal, and/or State funds.

The Cost Unit Leader responsibilities include:

- Collection of all cost data, performing cost-effectiveness analyses, and providing cost estimates/cost-saving recommendations for the incident;
- Coordinate with company/agency headquarters on cost-reporting procedures;
- Obtain and record all cost data;
- Prepare incident cost summaries;
- Prepare resource-use cost estimates for Planning;
- Make recommendations for cost-saving to Finance/Administration Section Chief;
- Maintain cumulative incident cost records;
- Ensure all cost documents are accurately prepared; and
- Complete all records prior to demobilization.

6200 Fund Access

6210 FOSC Access to the Federal Fund

Federal removal actions are authorized by the FWPCA and CERCLA as the required elements of jurisdiction exist. In the event of a discharge or release, if the responsible party is not acting promptly or is not known, the Federal On-Scene Coordinator (FOSC) may initiate federal removal under the authority of Section 311(o)(1) of the FWPCA or section 104(a) of the CERCLA. The responsible party is liable for government removal costs in accordance with Section 311(f) of the FWPCA and Section 107 of the CERCLA. The NCP, 40 CFR Part 300.58, outlines the types of funds which may be available to remove certain oil and hazardous substance discharges/releases.

6210.1 National Pollution Fund Center

The National Pollution Fund Center (NPFC) manages the Oil Spill Liability Trust Fund (OSLTF), a source for payment of removal costs and damages resulting for oil spills or incidents that threaten to spill oil into navigable waters of the United States, adjoining shorelines, or the Exclusive Economic Zone (EEZ). The NPFC:

- Acts as the fiduciary agency for the OSLTF and administers the Coast Guard portion of CERCLA;
- Provides 24-hour funding to FOSCs for immediate removal actions to an incident, to monitor Responsible Party’s actions, or to initiate an assessment of damages to natural resources; and
- Issues Federal Project Numbers (FPN/CPN) as requested by the FOSC.

The NPFC operates within a case team concept. There are four case teams: Southeast, Gulf Coast, West Coast, and Northeast. Each case team includes legal, financial, natural resource damage claims, and OSLTF claims specialists.

6210.2 Accessing the Oil Spill Liability Trust Fund

The OSLTF was established by Section 311(k) of the FWPCA and is administered by the Coast Guard. Title 33 CFR Subchapter M provides regulatory information on state access to the OSLTF, claims procedures, financial responsibility for vessels, and other topics. Additional information on the OSLTF can be found in the “NPFC User Reference Guide” and in Chapter 7 of the Coast Guard Marine Safety Manual Vol VI (COMDTINST M16000.11). The NPFC Users Reference Guide can be found at: http://www.uscg.mil/npfc/URG/default.asp.

In the event of an oil spill, the FOSC, states, claimants, and trustees can obtain access to federal funds. The FOSC can obtain immediate access to a funding account and ceiling for incident response by accessing the Ceiling and Number Assignment Processing System (CANAPS) on the internet: http://www.uscg.mil/npfc/Response/CANAPS/default.asp.

The following funding limitations exist in accessing the OSLTF:

The maximum, per case is $1 billion, or the balance in the OSLTF, whichever is less;

Removal funding (including response to a substantial threat) are limited to the funds available in the OSLTF Emergency Fund. However, the NPFC may transfer funds into the Emergency Fund to continue removal actions.

There is a maximum of $500 million per case to satisfy NRD claims and assessments;

Initiation of NRDA costs may be paid out of the Emergency Fund, subject to its availability and the process through which funding was requested.

The discharge (or substantial threat of discharge) must impact navigable waters of the United States (including the EEZ).

6210.3 Hazardous Substance Response Trust Fund

An MOU between the USCG and EPA allows the USCG to access the Hazardous Substance Trust Fund (Superfund) when the USCG undertakes response activities pursuant to CERCLA, Executive Order 12316, and the provisions of Subpart E of the NCP. When EPA provides the FOSC, the FOSC has the authority to spend up to $200,000 in emergency situations. The EPA Regional Administrator has authority to approve Trust Fund expenditures not to exceed $6,000,000. Expenditures exceeding $6,000,000 must be approved by EPA Headquarters.

When the USCG provides the FOSC, the FOSC has the authority to approve Trust Fund expenditures not to exceed $50,000. USCG FOSCs can receive approval for CERCLA Trust Fund expenditures up to $250,000 through the Commander, Eight Coast Guard District. For additional expenditures, approval from the EPA office of Emergency and Remedial Response (OERR) is necessary. To access the fund, an account number must be obtained from EPA Headquarters.

Other Federal agencies have authority to expend Trust Fund money in accordance with Interagency Agreements (IAG) and MOUs with EPA. Reimbursement of agency expenditures will be in accordance with the procedures specified in these IAGs and MOUs. The CERCLA statute allows state access to Superfund monies only through a Cooperative Agreement between EPA and the State.

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In accordance with 40 CFR Part 300.415(b)(2), Trust Funds may be used to undertake immediate removal actions when the agency providing the FOSC determines that such action will prevent or mitigate immediate and significant harm to human life or health or to the environment from such situations as:

- Human, animal, or food chain exposure to acutely toxic substances;
- Contamination of a drinking water supply;
- Fire and/or explosion; and
- Similar acute situations.

In the event of a hazardous substance release or imminent threat of a release, the FOSC can obtain access to federal funds through CERCLA.

- The FOSC determined if federal funds are required and requests a spending ceiling and CERCLA Project Number (CPN) for the NPFC Cast Officer/Region Manager. The FOSC can fund USCG resources contractors, OGAs, and contractor costs through the CPN, (NPFC User's Guide Chapter 2).

CERCLA Access Criteria and Limitations:

- The release or substantial threat of a release of a hazardous substance, pollutant, or contaminate must impact the environment. "Environment" is defined in CERCLA as waters of the U.S., other surface waters, ground water, drinking water supply, land surface or subsurface, or ambient air;
- Removal funding is limited to no more than $2,000,000 or 12 month duration. EPA may grant incident specific waivers to this requirement;
- FOSCs may only obligate less than $250,000 for an incident without an approved Action memorandum. (See NPFC User Guide, Chapter 2, section entitled "CERCLA Removal Cost TOPs");
- There is no provision for state access;
- There are no provisions for funding pre-assessment phase activities of NRDA;
- Compensation to claimants damaged by hazardous substances is not available; and

- The substance must not be oil as defined by 33 USC Section 2701(23).

6220 Other Access to Funds

6220.1 Access through Pollution Removal Funding Authorizations

Federal, state, local, and tribal governments assisting the FOSC may receive reimbursable funding authority through a Pollution Removal Funding Authorization (PRFA). The NPFC can be consulted regarding PRFAs, but authorization to establish and use this funding source is provided by the FOSC. PRFAs must be approved by the FOSC.

6220.2 Military Interdepartmental Purchase Request

When the responsible party is a federal agency owning/operating a public vessel or federal facility is capable of funding cleanup but lacks the resources to properly conduct the cleanup, the FOSC should attempt to establish a Military Interdepartmental Purchase Request (MIPR) or similar reimbursable agreement, to establish direct upfront funding of the removal activities.

MIPRS are also used in lieu of PRFAs when using a DOD agency to assist the FOSC (i.e. SUPSALV)

6220.3 State Access to the OSLTF

OPA 90 allows state Governors to request payment of up to $250,000 from the OSLTF for removal costs required for the immediate removal of a discharge, or the mitigation or prevention of a substantial threat of a discharge of oil. Requests are made directly to the FOSC who will determine eligibility. If a state anticipates the need to access the Fund, they must submit a request which shall include the person’s name, title, address, telephone number, and the capacity in which they are employed. FOSCs will provide initial coordination of the request and subsequent coordination and oversight.

6220.3.1 State Access to the CERCLA Fund

Expenditures of Superfund money by a State must be in accordance with a contract or cooperative agreement between the EPA and that State.

6220.3.1.1 Cost Recovery

The EPA will make all decisions regarding recovery of expenditures from the Superfund. All agencies expending Superfund money must submit an itemized account of all funds expended in accordance with provisions of contracts, Interagency Agreements (IAG), or Cooperative Agreements with EPA. These agreements must be in place prior to the expenditure of funds.

6220.3.2 Eligibility for State Access to the OSLTF

The following eligibility consideration will be evaluated by the FOSC when contacted by the State requesting OSLTF monies:

- Is the incident eligible for immediate removal under the CWA, as amended by OPA90;
- If the substance discharged/threatening discharge oil;
- Is the aggregate amount of the request equal to or less than $250,000;
- Are the proposed actions consistent with the NCP (including the requirement in 40 CFR Part 300.305(c) that a reasonable effort was voluntarily made by the discharger to promptly perform removal actions);
- Are the proposed level of response, proposed actions, and amounts requested appropriate for the circumstances; and
- Does the State have the means to complete immediate removal?

The FOSC will then notify the NPFC Director and the State of his/her decision.
More information regarding State access to the OSLTF is contained in the NPFC Instruction 16451.1, Technical Operating Procedures for State Access under Section 1012(d)(1) of the Oil Pollution Act of 1990 (http://www.uscg.mil/npfc/docs/PDFs/urg/Ch4/NPFCTOPSstate.pdf)

6220.3.3 Required Record Keeping

The State shall maintain records of expenditures for fund monies including:

- Daily expenditures for each individual worker, giving the individual’s name, title or position, activity performed, time on task, salary or hourly rate, travel costs, per diem, out-of-pocket or extraordinary expenses, and whether the individual is normally available for oil spill removal;
- Equipment purchased or rented each day, with the daily or hourly rate;
- Miscellaneous materials and expendables purchased each day; and
- Daily contractor of consultant fees, including costs for their personnel and contractor-owned or rented equipment, as well as that of any subcontractor.

The state shall submit a copy of these records and a summary document stating the total of all expenditures made to the NPFC within 30 days after completion of the removal actions. A copy of these documents shall also be submitted to the FOSC.

6220.3.4 Reimbursement Procedures

Reimbursement of agency expenditures will be in accordance with procedures specified in contracts, IAGs, or Cooperative Agreements with EPA.

Local governments may request reimbursement of costs to carry out temporary measures without a contract or cooperative agreement. All costs for which local governments are seeking reimbursement must be consistent with the NCP and Federal cost principles outlined by the Office of Management and Budget.

6220.4 Lead Administrative Trustee Access to the OSLTF

Section 6002(b) of OPA90 provides that the OSLTF Emergency Fund is available “to initiate the assessment of natural resource damages”. For the purpose of this agreement, initiate activities have been defined as those pre-assessment activities as outline in 15 CFR Part 990, Subpart D.

Executive Order 12777 limits funding for initiation to the Federal Trustees, who are as follows:

- Department of the Interior;
- Department of Commerce;
- Department of Agriculture;
- Department of Defense; and
- Department of Energy.

Executive Order 12777 introduced the Federal Lead Administrative Trustee (FLAT) concept to provide a focal point for addressing natural resource issues associated with a specific incident. The NPFC will only accept requests for initiation from, and normally work directly with the FLAT. State and Tribal Trustees must work through a FLAT. Those State and Tribal Trustees acting in the event of a spill may join with the designated Federal Trustees to name a FLAT.

Criteria for Initiation

Threshold initiation of a natural resource damage assessment (NRDA) must be in response to an OPA incident, i.e., a discharge or substantial threat of a discharge of oil into or upon the navigable waters or the adjoining shorelines or the exclusive economic zone of the United States.

6230 Local and Tribal Government Access to the Superfund

Local and federally recognized tribal governments may request reimbursement of cost to carry out temporary measures to protect human health and the environment without a contract or cooperative agreement. All costs for which local governments are seeking reimbursement must be consistent with the NCP and Federal cost principles outlined by the Office of Management and Budget. Reimbursements are limited to $25,000 per hazardous substance response. In addition, reimbursement must not supplement local government funds normally provided for emergency response. States are not eligible for reimbursement and no state may request reimbursement on behalf of political subdivisions within the state.

More information on the Local Government Reimbursement (LGR) program may be found at: www.epa.gov/osweroe1/content/1gr/.

6240 Louisiana State Oil Spill Contingency Fund

Pursuant to Section 2448(A) of the Louisiana Oil Spill Prevention and Response Act (OSPRA), and with respect to clean-up and response specifically, money in the Louisiana State Oil Spill Contingency Fund may be disbursed for the following purposes and no other:

- Removal costs related to abatement and containment of actual or threatened discharges of oil incidental to unauthorized discharges of hazardous substances;
- Removal costs and damages related to actual or threatened unauthorized discharges of oil as provided in the OSPRA;
- Protection, assessment, restoration, rehabilitation, or replacement of or mitigation of damage to natural resource damaged by an unauthorized discharge of oil as provided in the OSPRA;
- Operating costs and contracts for response and prevention as provided in the OSPRA not to exceed $600,000 in any fiscal year; and
- Other costs and damages authorized in the OSPRA.

The Louisiana Oil Spill Coordinator (LOSC) has set forth the procedures by which an entity eligible to receive funds from, or be reimbursed for expenditures made, is able to gain access to the state oil spill contingency fund. Any state trustee or local governing authority seeking funds from the state oil spill contingency fund must submit all claims to the LOSC on Louisiana Oil Spill Coordinator's Office (LOSCO) approved forms. Copies of these forms may be obtained from LOSCO.

Expenditures from the state oil spill contingency fund will not be authorized unless and until all Federal remedies have been exhausted. Access may only be used to pay for removal costs that are directly related to a specific incident. The Louisiana Department of Environmental Quality (LDEQ), which is the LOSC's lead technical advisor, will advise the LOSC of the standards/efforts necessary to complete clean-up. The Louisiana Department of Natural Resources/Office of Conservation will be the LOSC's lead technical advisor with respect to appropriate steps to abate the threat of a discharge or halt an ongoing release. Costs must generally be incurred at the site or in support of on-site activities. Access to the state oil spill contingency fund is for immediate removal costs only and will not be utilized for long-term removal or remediation costs.

6240.1 Documentation and Cost Recovery Procedures

In the event that an entity, entitled to reimbursement from the state oil spill contingency fund discovers or is notified of an actual/threat of an incident, they shall notify the U.S. Coast Guard/National Response Center and LOSCO. This entity must submit all appropriate necessary information for LOSCO to make determination on eligibility for funding. In order to make such a determination the following information must be provided:

- Evidence of notification;
- Evidence of federal unwillingness or inability to respond;
- Evidence of unwillingness or inability of the responsible party to respond;
- Evidence that costs are not reimbursable from the Fisherman's Gear compensation fund;
- A response plan is approved by the USCG and/or EPA, and/or LDEQ;
- Estimate of costs to be incurred;
- Proposed cleanup contactor(s). These organizations must all have appropriate certifications from the USCG unless the certifications are superseded by a process developed by the LOSC; and
- Estimate of costs necessary to complete response/cleanup.

Upon receipt of the above information, the LOSC will notify the entity seeking funds of the eligibility of its request for funding. This determination will consist of the LOSC's determination of eligibility, the limits of funds that can be expended, and any special conditions attached to the expenditures. The entity receiving the determination of eligibility will be responsible for the following:

- Contracting for all services needed according to all appropriate laws, rules, and regulations.
- Oversight of all contract deliverables and certification that all tasks are accomplished as set out in contract; and
- An administrative record which includes all documents relevant to the response.

In addition to performing contractual acquisition services, the entity receiving the determination of eligibility will provide all of the following documentation items. These will be due to the LOSC within 60 days of completion of the response actions which were included within the LOSC's determination of eligibility.

- Copies of all invoices received from the contactor, as well as a statement certifying all expenditures as necessary and within the constraints of the determination of eligibility;
- Reports detailing the progress of the response effort; and
- Any changes in the scope of the response effort that may be necessitated due to unforeseen or unpredicted events (before any monies are committed for these changes they must be, at a minimum, verbally approved by the LOSC).

6300 Cost Unit

6310 Federal Fund Documentation and Cost Recovery Procedures

Through Executive Orders the President has delegated certain functions and responsibilities vested to him by the FWPCA and CERCLA to the EPA and the USCG. Under CERCLA the Superfund has been set up to fund federal responses to hazardous substances, pollutants, or contaminates as defined by CERCLA, that may present an imminent or substantial threat to public health or the environment. Responses to discharges of petroleum products are specifically excluded from CERCLA. Section 311 of the CWA, as amended by OPA90, established the OSLTF for response to discharges of petroleum products. Response includes conducting Natural Resource Damage Assessments and paying claims for removal costs or damages. The EPA and USCG both have access to both funds through MOU/MOAs established between both agencies. Only costs incurred during containment, countermeasures, clean-up, and disposal during a Federal Response to an oil pollution incident are recoverable from the OSLTF and must be certified by the FOSC. The NCP contains information and procedures with regards to both the FWPCA and CERCLA, and contains sections regarding documentation and cost recovery for both acts.

6320 Reimbursable Expenses

OPA authorizes payment of removal costs, including the costs of monitoring removal actions consistent with the National Contingency Plan. This allows payment of incident-specific costs authorized by an FOSC, including costs of monitoring a responsible Party's cleanup, as well as actual Federal cleanup activities. The fund may reimburse:

- Costs of containment and removal of oil from water and shorelines;
- Costs to prevent, minimize, or mitigate oil pollution where there is a substantial threat of discharge of oil; and
- Costs of taking other related actions necessary to minimize or mitigate damage to the public health or welfare, including, but not limited to, damage to fish, shellfish, wildlife, public and private property, shorelines, and beaches

6320.1 Procedures for Reimbursement

To seek reimbursement from the Federal Fund, Federal agencies must submit their reimbursable expenses on Form SF 1080 “Voucher for Transfer between Appropriations and/or Funds,” to the FOSC for certification. The FOSC will submit certified requests for reimbursements to NPFC within 60 days after completion of the cleanup action (33 CFR Part 153.417). The USCG will effect transfer of funds to the agency requesting reimbursements, and prepare a billing for the discharger from information on recoverable expenditures on the USCG Form “Personnel Vehicle and Miscellaneous Cost Accounting Sheet” (available from the USCG).

State agencies that do not have a formal agreement must submit a letter to the OSC requesting reimbursement. This letter must include a detailed itemized statement of reimbursable expenditures. Refer to the USCG Marine Safety Manual for additional information.

6320.2 Recoverable Costs

The discharger incurs liability up to the discharger's legal limit of liability for all actual costs associated with Federal removal following Federal assumption of response activities. Recoverable costs include:

- Direct expenditures from the fund (i.e., payment of contractors or vendors);

- All reimbursable agency expenses;
- All personnel costs, including salaries of response personnel;
- Equipment costs, including depreciation and maintenance;
- Administrative overhead; and
- Pollution removal damage claims.

6320.3 Liability Limits

OPA sets limits of liability which apply to all removal costs and damages sought under the act. The limits may be adjusted for inflation every 3 years, based upon the consumer price index. The OPA sets the following limits:

- Tank vessels: $1,200 per gross ton; $10 million if 3,000 gross tons or greater; $2 million if less than 3,000 gross tons;
- Any other vessel: $600 per gross ton or $500,000;
- Offshore facility except Deep Water Ports: $75,000,000; and
- Onshore facility and Deep Water Ports: $350,000,000.

There are certain exceptions to these liability limits. These limits do not apply to the following situations:

- If the incident was caused by gross negligence or willful misconduct;
- If the incident was a result of a violation of applicable Federal safety, construction, or operating regulations; and
- If the responsible party fails to report the incident, provide all reasonable cooperation and assistance required by a response official, or comply with an order issued by the Federal OSC.

In addition, OPA does not preempt State laws regarding liability, so in areas where State law places a higher limit, compensation for damages up to the liability limit established by the State law may be pursued. Responsible Parties who exceed their limits of liability are highly encouraged to continue funding all removal actions.

6330 Letters

6330.1 Notice of Federal Interest for an Oil Pollution Incident (Form CG-5549)

The FOSC shall present a Notice of Federal Interest for an Oil Pollution Incident (NOFI) to every suspected discharger (Note: this requirement is internal direction only. The failure of an FOSC to present a NOFI in any given case does not affect any liability of any person which may arise in that case.) This informs the suspected discharger of a potential violation of the FWPCA, as amended and of his/her possible liability to a civil penalty per day per violation or up to three times the cost incurred by the OSLTF. Notice should also be made in potential incidents when the actions of the potential discharger to abate the threat are considered insufficient, and Federal action is contemplated. The FOSC shall retain a copy of the NOFI that is signed and dated by the suspected discharger. If the discharger refuses to sign, the NOFI will still be served. The circumstances will be noted on the NOFI and signed and dated by the FOSC (or representative). If the suspected discharger is unavailable, the NOFI shall be sent via certified mail, return receipt requested. As sample NOFI can be found in Marine Safety Manual Vol VI Chapter 7.B.3.a. COMDTINST 16000.11.

6330.2 Administrative Order

Administrative Orders are issued to protect public health and welfare under Section 106(a) of CERCLA or Section 311(e)(1)(B) of the FWPCA to a vessel (Note: CERCLA Administrative Orders cannot be issued to a vessel) or facility requiring corrective measures when there is a discharge/release or threat of discharge/release involving oil, hazardous substance, pollutant, or contaminate.

Any person directly affected by an Administrative Order may request reconsideration by the FOSC. If not satisfied with the decision of the FOSC, that person may appeal in writing to the Eighth Coast Guard District Commander. The District Commander’s decision is final.

6330.3 Notice of Federal Assumption

Under FWPCA Section 311 (c) (1), whenever a polluter is unknown or not acting responsibly, or when removal efforts are insufficient, or to prevent the substantial threat of a discharge, the FOSC may assume total or partial control of response activities. The FOSC must inform the polluter, if known, of this action by issuing a Notice of Federal Assumption, even if the polluter has not initiated any action. This notice references the NOFI and indicates the date and time the Federal response was initiated. The same procedures used for issuing and obtaining signatures for the NOFI apply. (Note: this requirement is for CG internal direction only. The failure of an FOSC to present a Notice of Federal Assumption in a given case does not affect any liability of any person which may arise in that case.) In some instances, the FOSC may determine that the polluter’s response efforts should continue, but that some Federal assistance is necessary to augment the clean-up (e.g., clean-up resources that the polluter cannot or will not provide). Whenever it is necessary for the operation, for the purposes other than monitoring, the FOSC should declare a Federal spill for the area(s) for which he/she is assuming control, activate the OSLTF to cover expenses and take whatever actions are necessary to ensure a proper cleanup. In these cases, the Notice of Federal Assumption shall clearly delineate those actions or areas for which the FOSC is assuming control or providing other resources. (Note: the term “declare a Federal spill” as used in this section means: in the case where a suspected polluter has been identified, the presentation of the Notice of Federal Assumption; or in other cases, the initiation of Federal Removal operations.)

6330.4 Letter of Designation of Source

The NPFC is responsible for the designation of source and notification of associated responsible parties and guarantors for an oil pollution incident. The USCG FOSC has also been delegated this authority for use in rare circumstances as outlined in the NPFC Instruction M5890.3, Technical Operating Procedures (TOPs) for Designation of Source under the Oil Pollution Act of 1990 (http://www.uscg.mil/npfc/docs/PDFs/urg/Ch3/NPFCTOPS.pdf).

6330.5 Reports

FOSC reports will be submitted as determined necessary by the RRT for a particular incident. Pollution Reports (POLREPS) shall be submitted for the coastal zone in accordance with the requirements outlined in Marine Safety Manual Vol VI, Chapter 7.B.5.b. For inland zone, POLREPS shall follow the format outlines in EPA’s Superfund Removal Procedures: Removal Response Reporting guidance.

6400 Time

The accurate reporting of time for personnel and equipment shall be conducted in the following manner:

Personnel

- Establish and maintain a file for personnel time reports within the first operational period. Initiate, gather, or update a time report from all applicable personnel assigned to the incident for each operational period. Maintain a log of excessive hours worked and give to the Time Unit Leader daily.

- Ensure that all personnel identification information is verified to be corrected on the time report

- Post personnel travel and work hours, transfers, promotions, specific pay provisions and terminations to personnel time documents

- Ensure that time reports are signed. Close out time documents prior to personnel leaving the incident. Distribute all time documents according to agency policy.

Equipment

- Advise Ground Support Unit, Facilities, and Air Support Group of the requirement to establish and maintain a file of daily records for equipment time reports. Assist units in establishing a system for collection these equipment time reports.
- Post all equipment time tickets within four hours after the end of each operational period.
- Prepare a use and summary invoice for equipment (as required) within 12 hours after equipment arrival at the incident
- Submit data to Time Unit Leader for cost effectiveness analysis
- Maintain current posting on all charges or credits for fuel, parts, services, and commissary
- Verify all time data and deductions with owner/operator of equipment
- Complete all forms according to agency specifications. Close out forms prior to demobilization. Distribute copies per agency and incident policy

The Logistics Section of the ICS can arrange to have meals purchased from local establishments (e.g., supermarket deli box lunch) and charge to the fund. All USCG that are TAD at the spill site must have these meals annotated on their orders.

6500 Compensation/Claims

6510 Claims Against the OSLTF

Claimants (individuals, corporations, and government entities) can submit claims for uncompensated removal costs or certain damages (natural resources, real/personal property, loss of profits, loss of subsistence use of natural resources, loss of government revenues, and increased cost of government services) caused by an oil spill to the NPFC if the Responsible Party for the Discharge does not satisfy their claim. This is in addition to the response cost recovery procedures covered in sections 6200 and 6300. The NPFC adjudicates claims and pays those with merit.

The Responsible Party can submit claims to the NPFC provided that:

- The total of all response costs and damage claims exceed the Responsible Party's statutory limit of liability; or

- The spill was solely caused by a third party, an Act of God, or an Act of War.

The categories of uncompensated losses covered by the OSLTF are:

- Removal costs,

- Real or personal property damages,

- Loss of profits or earning capacity,

- Loss of subsistence,

- Loss of government revenues,

- Cost of increases public services, and

- Damages to natural resources.

Generally, claims for all costs and damages resulting from an oil pollution incident must be presented first to the Responsible Party or its guarantor. The guarantor is typically the Responsible Party's insurer.
Reimbursements are limited to $250,000 per hazardous substance response. In addition, reimbursement must not supplant local government funds normally provided for emergency response. States are not eligible for reimbursement and no state may request reimbursement on its own behalf or on behalf of political subdivisions within the state.

The NPFC Claimant's Guide can be found at http://www.uscg.mil/npfc/docs/PDFs/urg/Ch6/NPFCClaimantGuide.pdf.

6520 Damage Assessment Procedures

The National Oceanic and Atmospheric Administration (NOAA) published a final rule to guide trustees in assessing damages to natural resources from discharges of oil. The rule provides a blueprint that enables natural resource trustees to focus on significant environmental injuries, to plan and implement efficient and effective restoration of the injured natural resources and services, and to encourage public and responsible party involvement in the restoration process.

Under the rule, the natural resource damage assessment (NRDA) process is divides into three phases:

- Pre-assessment: The trustees evaluate injury and determine whether they have the authority to pursue restoration and if it is appropriate to do so;
- Restoration Planning: The trustees evaluate and quantify potential injuries and use that information to determine the appropriate type and scale of restoration actions; and
- Restoration Implementation: The trustees and/or responsible parties implement restoration, including monitoring and corrective actions.

This process is designed to rapidly restore injured natural resources and services to the condition that would have existed had the spill not occurred and to compensate the public for the losses experienced from the date of the spill until the affected natural resources and services have been recovered.

6600 Procurement

6610 Contracting Officer Authority

When the USCG is accessing the OSLTF/Superfund, a BOA contractor must be selected over a non-BOA Contractor, if available. BOA contractors are initially hired by verbal order followed by a written contract (Authorization to Proceed) for each incident, which will include the specific number of personnel and equipment needed, estimated cost, and the FPN.

Unless the contractor cannot provide a timely and adequate response, selection of a non-BOA contractor by an FOSC is not authorized. A Shore Infrastructure Logistics Center (SILC) contracting officer is generally the only person authorized to hire a non-BOA contractor. If the contracting officer cannot be reached in a timely manner, the FOSC is authorized to issue non-BOA purchase orders, on an emergency basis only, with an initial limit not to exceed $5000, and a total limit not to exceed $25,000 per incident. The FOSC must contact the contracting officer within 24 hours after exercising this emergency authority. If the FOSC determines that another agency can assist in a removal effort, the FOSC may authorize that agency to perform removal actions, before executing a Pollution Removal Funding Authorization.

6700 Reserved

6800 Reserved

6900 Reserved for Area/District

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New Orleans Area Contingency Plan

Chapter 7000
Hazardous Substance Unique Information

New Orleans Area Contingency Plan

Chapter 7000 Hazardous Substance Unique Information

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Chapter 7000 Hazardous Substance Unique Information

7000 Hazardous Substance (Including Weapons of Mass Destruction) Unique Information

7100 Introduction/Purpose

While the basic Incident Command System/Unified Command (ICS/UC) is unchanged whether the response is to an oil discharge or hazardous substance release, including a Weapons of Mass Destruction (WMD) incident, there are a number of factors that are unique to hazardous substance releases. The purpose of this chapter is to provide NOACP users with information specific to responses to hazardous substance releases, including WMD incidents.

Many NOAC committee member agencies have specific responsibilities during and following a hazardous substance incident, including a WMD or other terrorist act (chemical, biological, or radiological). The NOACP is a good general guide for interagency coordination and resources during a response to any type of oil or hazardous substance incident. When an incident is large enough in scope to trigger a response structure governed by the National Response Framework, hazardous substance responses will be conducted under Emergency Support Function (ESF) 10, and may use this plan as a guide. For more information on Federal disaster and Homeland Security planning, please see the Introduction, Chapter 1000.

7110 Scope

This Chapter will focus on hazardous substance incidents with the following characteristics:

- Multi-agency and/or multi-jurisdictional response,
- Exceeds localized (city/county/state) response capacity,
- Response exceeds one operational period,
- Release or imminent release of hazardous substances, and
- Response phase of the incident, through stabilization.

7120 Definitions of Hazardous Substances

Before the process of planning for a hazardous substance incident response can begin, there has to be a clear understanding of the types of materials that are to be covered under this plan. The Comprehensive Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendment and Reauthorization Act (SARA) of 1986 defines hazardous substances as “hazardous waste” under the Resource Conservation and Recovery Act (RCRA), as well as hazardous substances regulated under the Clean Air Act, Clean Water Act, and the Toxic Substance Control Act. In addition, any element, compound, mixture, solution, or substance may also be specifically designated as a “hazardous substance” under CERCLA. This definition includes numerous hazardous chemicals as well as chemical warfare agents and radionuclides. CERCLA hazardous substances and associated Reportable Quantities (RQs) are listed in 40 CFR Part 302.4. CERCLA also applies to “pollutants or contaminant” that may present an imminent or substantial danger to public health or welfare. An imminent or substantial danger to public health or welfare is caused when the pollutant or contaminant will or may reasonably be anticipated to cause illness, death, or deformation in any organism. Most biological warfare agents have been determined to be pollutants or contaminates under CERCLA.

Petroleum products are specifically excluded from CERCLA and are not considered to be “hazardous substances” under Federal statute. State environmental statutes may, however, consider these materials hazardous substances. This chapter does not specifically deal with issues related to response to petroleum products.

7130 Authorities

7130.1 Federal

Federal authorities for response to hazardous substance, pollutant, or contaminate, including biological, chemical, and radiological warfare agent, releases are outlines in CERCLA (42 U.S.C. 9604) and the NCP, 40 CFR Part 300. FOSCs are the federal officials pre-designated by EPA and the USCG to coordinate response activities. The FOSC directs response efforts and coordinate all other response efforts at the scene of a release. As the state and local responder’s gateway to the resources of the National Response System, it is the FOSC’s responsibility to provide access to resources and technical assistance that may not be otherwise available to a community.

Similar to oil spills, federal response authorities are shared by the EPA and the USCG, with the EPA maintaining jurisdiction of hazardous substance releases in the inland zone and the USCG in the coastal zone. Please see Chapter 1000, Section 1510 for jurisdictional boundary details. The EPA also has the lead for longer-term hazardous substance and pollutant or contaminant cleanups in the coastal zone. Responsibility for radiological responses is more complex and is dependent on the source of the release.

Roles and responsibilities are outlined in the Nuclear/Radiological Annex to the National Response Framework.

7130.2 Louisiana State

The Hazardous Material and Explosives Control Unit, under the Louisiana Department of Public Safety and Corrections, has the responsibility for response and investigation of all chemical emergencies occurring within the State of Louisiana. The Hazardous Material and Explosives Control Unit is the SOSC for all Hazardous Substance releases.

7200 Command

The complexity and jurisdictional characteristics of the incident will determine the level of involvement of Federal, state, local, and tribal agencies, the Responsible Party, and other responders. It is expected that the UC participants will be determined based on each incident. Table 7000-1 below outlines the State and Federal lead agency for specific incident types. Please note that this chart only shows the agency with primary authority, it does not reflect the fact that multiple agencies typically coordinate on each incident.

	Oil	HazMat	Biological	Radiological	Disaster
Louisiana	LOSC/ LDEQ	LA HAZMAT/ LDEQ	LA HAZMAT	LA HAZMAT	LA HAZMAT
Federal	EPA/USCG	EPA/ USCG/ DOD	EPA/ USCG	EPA/USCG/ DOE/DOD/NRC /NASA	FEMA

The USCG has developed an All-Hazards Incident Management Handbook which provides some guidance as to organizational set-up and roles/responsibilities for hazardous substances as well as mass-casualty incidents. These are found in Chapter 20 (Hazardous Substance/Materials), Chapter 15 (Terrorism Incidents), and Chapter 22 (Multi-Casualty) of the Incident Management Handbook (IMH). It can be downloaded from: http://www.uscg.mil/hq/nsfweb/docs/FinalIMH18AUG2006.pdf.

7210 Hazardous Substance Incident/Unified Command Objectives

Primary Unified Command objectives:

- Identify the hazards;
- Isolate the hazard area, and secure the source
- Protect the safety of the public and responders;

- Mitigate impact to the environment;
- Remove contamination; and
- Activate response plans.

Other possible Unified Command objectives:

- Assess the threat of release,
- Environmental monitoring;
- Sample and forensic evidence collection/analysis; and

7220 Criminal Incident Management

It may be unclear at the initial onset of a response whether the cause of a release was accidental or criminal. Local responders will likely be the first to arrive on scene to assess the situation and possibly take initial response measures to contain or stop the release.

In instances where criminal activity is suspected, coordination is required between law enforcement, who view the incident as a crime scene, and other first responders who view the incident as a hazardous substance release or a disaster site. Although protection of life remains paramount, the protection and processing of the crime scene is imperative so perpetrators can be identified and apprehended. These dynamic objectives will be accounted for by forming a Unified Command with the applicable Law Enforcement Agency.

Since 9/11/01, much attention has been given to terrorist incidents. A nuclear, biological, or chemical WMD type terrorist incident is inherently a hazardous substance release with a criminal investigation component. As such, it should be responded to under the National Response Framework (NRF). The Terrorism Incident Law Enforcement and Investigation Annex to the NRF also provides guidance on response to criminal incidents with significant impacts. A terrorist incident will always be treated as a federal crime scene, thus giving the Federal Bureau of Investigation (FBI) and local/state law enforcement agencies the initial lead in each response. Be aware that the FBI can activate federal resources to assist in the response activities.

The UC responding to an incident where terrorism is involved must be acutely aware of the unique nature of the Federal Government’s response mechanisms for these types of incidents. HSPD-5 gave DHS the lead federal role for coordinating federal support to a state and local response, however, nothing in the NRF changes legal authorities or responsibilities outlined in other federal, state, or local laws and regulations. The UC may find themselves working with DHS, FBI, FEMA, or a number of other federal agencies under the NRF.

Terrorism Credible Threat Determination

If a responder suspects terrorism, the FBI and local/state law enforcement must be notified as soon as possible. Given available evidence, statements, scenario, and intelligence, the FBI/Law Enforcement agencies will make the determination on whether the incident is credible. The FOSC may be approached by the law enforcement agencies to assist in obtaining initial investigative samples to confirm their “credible threat” determination if local sampling resources are not identified or available.

The FOSC should share all available and applicable information with the law enforcement agencies to assist them in making these determinations.

7230 Notification Requirements

7230.1 Federal

See pages iii - iv of the NOACP Preface for notification phone numbers.

Releases of CERCLA hazardous substances, in quantities equal to or greater that their reportable quantity (RQ), are subject to reporting to the National Response Center under CERCLA, 40 CFR Part 300.125(c). Such releases are also subject to state and local reporting under Section 304 of SARA Title III (Emergency Planning and Community Right to Know Act (EPCRA)). CERCLA hazardous substances, and their RQs, are listed in 40 CFR Part 302.4. CERCLA and EPCRA RQs may also be found in the EPA’s “List of Lists” at http://www.epa.gov/ceppo/pubs/title3.pdf. Radionuclides listed under CERCLA are provided in a separate list, with RQs in Curies.

While there are no statutory reporting requirements for releases of “pollutants or contaminates” for terrorist-related threats, the National Response Center will accept all reports of potential terrorist incidents and pass the report along to the appropriate agencies. All emergencies should also be immediately reported to 911 to activate local law enforcement and response resources.

7230.2 Louisiana State

To report incidents involving hazardous materials, call the Louisiana HazMat Hotline at (877) 925- 6595.

7230.2.1 Hazardous Material and Explosives Control Unit

The Hazardous Material and Explosives Control Unit, under the Louisiana Department of Public Safety and Corrections, has the responsibility for response and investigation of all chemical emergencies occurring within the State of Louisiana. The Hazardous

Material and Explosives Control Unit is the SOSC for all Hazardous Substance releases.

7230.2.2 Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)

The Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) operates the state's Emergency Operations Center. The GOHSEP serves as the state's Multi Agency Coordination Center and has the responsibility of activating the appropriate Emergency Support Functions (ESF) to support the incident. The State Emergency Operations Plan (SEOP) is an all hazards plan and establishes roles and responsibilities for state partners ESF in disaster response. The following are GOHSEP duties relative to this plan:

- GOHSEP maintains and staffs emergency depots, including the establishment and training of a volunteer corps;

- Maintain the SEOP;

- Assist and provide guidance (when requested) for the development and maintenance of local and inter jurisdictional disaster plans;

- Maintain a roster of trained personnel, skilled in disaster prevention, preparedness, response, and recovery;

- Provide direct emergency support to local communities in declared emergencies including spills; and

- Provide emergency notification and conference call capability with local Parish Emergency Operations Centers.

7230.3 Public Information

Follow protocols laid out in JIC Manual (Chapter 9000, Appendix M)

7230.4 Health and Safety

Follow requirements of 29 CFR Part 1910.120. For hazardous substance specific information please see Section 7700 of this chapter for Reference materials to learn where you can find information specific to health and safety during hazardous substance incidents.

7230.5 Liaison

The following is a list of potential stakeholders who may be involved in addition to the agencies who are typically involved in an oil spill.

- Local/State hazmat and health departments;

- Local/State Emergency Management Agencies;
- Bomb squads or DOD Explosive Ordinance Detachments;
- Department of Health and Human Services (HHS), Center for Disease Control (CDC), or Agency for Toxic Substance and Disease Registry (ATSDR);
- Nuclear Regulatory Commission (NRC) or DOE;
- Department of Agriculture (USDA);
- National Guard Civil Support Teams;
- Private Sector Clean-up Companies;
- Laboratories/Transportable Laboratories; and/or
- Other stakeholders identified in this plan or other local plans.

7300 Operations

Operational activities for hazardous substance, pollutant, or contaminant releases are dependent upon the manner in which they are released (i.e., explosion, train derailment, fire, etc.) and the environment (air, water, soil) and/or structures impacted by the release. However, operational activities can be grouped into the following general steps.

- Determine threat to human health and the environment;
- Notification;
- Evacuate/shelter-in-place;
- Communicate the hazard warning to others;
- Removal of victims to safe area;
- Observe signs and symptoms of casualties;
- Determine extent of contamination;
- Establishment of exclusion, contamination reduction, and support zones;

- Control access to the area;
- Determine the contaminant/hazards involved;
- Control/stop further releases;
- Initiate decontamination procedures for response personnel/equipment;
- Sample water/soil/air/product;
- Contain material already released; and
- Implement countermeasures.

7310 Sampling Assistance and Resources

The following agencies can provide onsite sampling followed by laboratory analysis of hazardous substances. For each entity, we have identified their capabilities with these abbreviations: Toxic Industrial Chemicals (TIC), Chemical or Biological Warfare Agents (WMD), and Radiation (RAD).

Entity	Location	Phone Number	Capabilities
Federal			
US EPA- Region VI	Dallas, TX	(800) 887-6063	TIC, WMD, RAD
CG Gulf Strike Team	Mobile, AL	(251) 441-6601	TIC, WMD, RAD
FBI Hazardous Materials Response Unit	Washington, D.C.	(202) 324-3000	TIC, WMD, RAD
Louisiana State			
National Guard 62nd Civil Support Team	Carville, LA	(255) 319-4726	TIC, WMD, RAD

For a complete listing, see the following link to the: Hazardous Materials Response Special Teams Capabilities and Contact Handbook (2005). www.Nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=15552

7320 Laboratory Assistance and Resources

The following laboratory resources and networks can be used to identify appropriate sampling techniques, analytical methods, and available laboratories for the analysis of samples from various matrixes:

Laboratory	Description	Contact/Info

Source		
Center for Disease Control	Laboratory Response Network (LRN)- A collaborative effort of federal, state, military, and private labs to aid in response efforts of a TIC, WMD, or RAD event.	800-232-4636 http://www.bt.cdc.gov/lrn
EPA Environment Response Laboratory Network (ERLN)	A network of agency, State environmental, commercial and other Federal laboratories who will provide integrated, rapid analysis using standardized diagnostic protocols, and procedures.	http://www.epa.gov/erln/index.html
EPA Laboratory Compendium	Network of EPA national labs, state public health, and private labs to aid in a water security event, in addition to TIC, WMD, and RAD events.	703-818-4200 http://www.epa.gov/compendium
Association of Public Health Laboratories (APHL)	State Public Health Laboratories-Emergency Contact Directory.	http://www.aphl.org/aphlprograms/phpr/Documents/PHPR_EmergencyContactList.pdf
National Environmental Laboratory Accreditation Program (NELAP)	Current listing of accredited environmental labs and their primary accreditation body, in addition to types of sample media the labs can analyze.	http://www.nelac-institute.org/accred-labs.php
National Environmental Method Index (NEMI)	Search all chemical, biological, microbial, toxicity, and physical methods in NEMI.	https://www.nemi.gov/apex/f?p=237:1:2348558109063112
EPA Method Collection	Standard Analytical Methods (SAMs) for environmental measurement and regional EPA laboratory contact information.	http://www.epa.gov/fem/methcollectns.hrm

7400 Planning

7410 Coordination with other Hazardous Materials Planning

Planning for hazardous substance response happens at a number of levels throughout the New Orleans Area Committee's area of responsibility. As a result of the SARA Title III requirements, State Emergency Response Commissions (SERCs), Local Emergency Planning Committees (LEPCs), and Tribal Emergency Response Commissions (TERCs) were formed. Within Louisiana State, absent a formal TERC, the senior tribal representative is responsible for implementation of all SARA Title III provisions. The purpose of these groups is to develop local emergency response plans, participate in exercises to ensure preparedness at the local level, and arrange for training for local responders. In addition, local departments of emergency management (or similar groups) may assist with these functions as well as notification of hazardous substance incidents. The federal government provides very limited funding to SERCs, LEPCs, and TERCs through the Hazardous Materials Emergency Preparedness grant program. The level of SERC, TERC, and LEPC activity varies widely from across the region. The emergency management positions vary and may be a Department of Emergency Management, Emergency Services, Civil Defense, or Disaster Services.

The NOACP serves as the primary response planning document for the federal and state response agencies in the NOAC boundaries.

7420 Natural Resource Trustees

The following list outlines the Trustees for natural resources designated in Subpart G of the NCP, and provides a brief description of the resources that may be potentially impacted as a result of an oil spill or hazardous material release. Natural resources include land, fish, wildlife, biota, water, ground water, drinking water supplies, and other such resources. This list is provided for informational purposes and is not intended to be all-inclusive.

7420.1 Federal Trustees

Department of the Interior (through the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, National Park Service, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement.)

- Migratory birds and certain anadromous fish, endangered species, and marine mammals and their supporting ecosystems;

- Federally owned minerals;

- Federally managed water resources;

- Natural and cultural resources located on, over, or under land administered by DOI through its component bureaus;
- National Parks, National Wildlife Refuges, National Landscape Conservation Areas, etc; and
- Those natural resources for which an Indian tribe would otherwise act as trustee in those cases where the United States acts on behalf of the Indian tribe.

Department of Commerce (through the National Oceanic and Atmospheric Administration)

- Marine fishery resources and certain anadromous fish, endangered species, and marine mammals and their supporting ecosystem;
- National Marine Sanctuaries; and
- National Estuarine Reserves.

Department of Agriculture (through the U.S. Forest Service)

- Natural and cultural resources located on, over, or under land administered by USFS.

Department of Defense

- Natural and cultural resources located on, over, and under land administered by DOD.

Department of Energy

Natural and cultural resources located on, over, and under land administered by DOE.

7420.2 State Trustees

All unauthorized discharges of pollutants into Louisiana State water must be immediately reported to the Louisiana Emergency Hazardous Materials Hotline, 1-877-925-6595. The SOSC is responsible for notification to State Natural Resource Trustees. A complete list of the State Natural Resource Trustees can be found in the Louisiana State Oil Spill Contingency Plan.

7420.3 Tribes

Tribes with reservations and/or usual and accustomed hunting or fishing grounds within the state of Louisiana applicable to this plan, must be notified by the Federal On-Scene

Coordinator in the event an incident may impact or threaten to impact any of their resources. Since boundaries for usual and accustomed hunting and fishing grounds may be complicated, it is recommended that the Department of the Interior and/or the Bureau of Indian Affairs (BIA) be consulted to ensure proper notifications are made. Tribes must also be notified if there may be potential impact from a spill or spill response operations to any tribal cultural resources. Again, DOI and BIA may assist in identification of tribes for notification; however, it remains the FOSC's responsibility to make all proper notifications to tribes.

7430 Air Plume Modeling

The National Response Framework designated the Interagency Modeling and Atmospheric Assessment Center (IMAAC) as the single Federal source of airborne hazards predictions during incidents that involve multiple federal agencies. IMAAC is responsible for producing and disseminating predictions of the effects from hazardous chemical, biological, and radiological releases. IMAAC is not intended to replace or supplant dispersion modeling capabilities that Federal agencies currently have in place to meet agency-specific mission requirements. Rather, it provides interagency coordination to use the most appropriate model for a particular incident and for delivery of a single Federal prediction to all responders. An IMAAC fact sheet can be downloaded here: https://narac.llnl.gov/.

Emergency IMAAC assistance can be requested through IMAAC Operations at 925-424-6465 or through the DHS National Operations Center at 202-282-8101.

CAMEO (For direct air plume modeling):
The CAMEO Suite of applications (CAMEO- Computer-Aided Management of Emergency Operations, ALOHA- Aerial Locations of Hazardous Atmospheres, and MARPLOT- Mapping Application for Response, Planning, and Local Operational Tasks) is designed to allow the user to plan for and respond to hazardous substance incident.

The CAMEO Chemical Database has identification information and response recommendations for thousands of chemicals commonly transported in the United States. CAMEO also includes blank database templates that state and local organizations can enter information for facilities that store hazardous substances. The CAMEO software suite can be downloaded for free from: http://www.epa.gov/oem/content/cameo.

ALOHA can predict the movement of hazardous substances in the atmosphere and display this on a digital map via MARPLOT. ALOHA has almost a thousand chemicals in its database. MARPLOT uses electronic maps created by the Bureau of Census that cover the entire country and can be downloaded for free as part of the CAMEO software suite mentioned above. Local HazMat Teams are often proficient with ALOHA modeling.

7440 Transition to Long-Term Cleanup

At some point after the peak of the initial response phase, the nature of site activities may evolve into a long-term clean-up/remedial phase. Depending upon the scope of activities and the ability of the local responders, post-initial response and mitigation phase efforts may necessitate mobilization of additional resources. Also, it is possible that additional federal and/or state agency representatives may need to be involved with the long-term phase to ensure that regulatory mandates are followed. It is critical that the initial responders debrief the incoming clean-up staff prior to demobilizing. Standard long-term/remedial clean-up actions are:

- Evaluate clean-up/decontamination options;
- Implement cleanup alternatives; and
- Long-term monitoring or remediation of impacted area, if necessary.

7450 Disposal

A number of different hazardous wastes may be generated as a result of an incident. The Responsible Party or lead agency must address proper disposal of the wastes in accordance with the Resource Conservation and Recovery Act (RCRA), the NCP, and the NOACP, state, and local regulations. See Chapter 9000, Appendix P for Louisiana State Disposal Guidelines. Options for disposal of material connected to the emergency response action will be addressed by the State with support by the federal agencies for those agents, substances, or radioactive materials that need special care.

7450.1 Biological Waste (WMD)

The need to dispose of material contaminated with biological agents is rare, and therefore standard protocols do not exist. Often it is possible to neutralize the biological agent, after which the material may be treated as non-hazardous garbage. The appropriate disposal method for biological waste will be dependent on the specific situation, and will be influenced by politics. It will require consultation between local, state, and federal partners as well as agreement from the disposal site operator.

7500 Logistics

7510 Emergency Response Teams

Information regarding Hazardous Materials Response Teams can be found in Chapter 9000, Appendix R in the Area Response Resource Inventory.

7520 Contractor Support

There are a number of contractors in the New Orleans Area with expertise in responding to hazardous substance releases. It is essential that any contractor retained have the appropriate training to meet the OSHA 29 CFR Part 1910.120 health and safety requirements and be capable of responding in the appropriate level of protection

7600 Finance/Administration

As outlined in Chapter 6000 of this Plan, there are a number of federal and state funding sources that may be accessed to pay for costs incurred at an incident. These sources are set up as funding mechanisms in the event that the responsible party is unable/unwilling to provide funding of response actions. Access to these funding sources is possible through the federal or state agency that is responsible for administering the fund.

Under CERCLA, the Hazardous Substance Response Trust Fund (Superfund) was established to pay for cleanup of releases of hazardous substances and uncontrolled hazardous waste sites. EPA manages and administers this fund. In order for a response/clean-up to be initiated using Superfund monies, there must be a release or the threat of release of a CERCLA hazardous substance, pollutant, or contaminant. The release must cause a threat to public health or welfare or the environment based on the criteria outlined in the NCP, 40 CFR Part 300.415(b)(2). Pollutants or contaminates must meet a higher threshold of posing an “imminent and substantial endangerment” to human health or the environment. The FOSC makes these determinations.

The NCP 40 CFR Part 300.415(b)(2) criteria for accessing the Superfund:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminates;

- Actual or potential contamination of drinking water supplies or sensitive ecosystems;

- Hazardous substance or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of a release;

- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

- Weather conditions that may cause hazardous substances or pollutants or contaminants to or be released;

- Threat of fire or explosion;

- The availability of other appropriate federal or state response mechanisms to respond to the release; and

- Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

7610 Local Government Reimbursement

Local authorities (county, parish, city, municipality, township, or tribe) may apply for reimbursement of costs incurred in response to an incident through the EPA, which administers the Superfund. States are specifically excluded from seeking reimbursement from the Superfund. Local governments are eligible for reimbursement up to $25,000 per incident for costs such as overtime charges, response contractors, equipment purchased for the response, and replacement of damaged equipment. The EPA may accept only one request for reimbursement for each hazardous substance release incident. EPA cannot reimburse for costs previously budgeted for by the local government. On February 18, 1998, EPA published an Interim Final Rule simplifying the process for Local Government Reimbursement (LGR). Information on the rule and application forms may be obtained by calling EPA's LGR Helpline at:
(800) 431-9209 or http://www.epa.gov/superfund/programs/er/lgr

7620 Cost Documentation

All entities and agencies should document the full range of costs in responding to an incident. Since it may never be clear at the onset of an incident how costs might be recovered, it is important that records meet a very strict standard of accuracy and completeness.

Upon completion of all site activities and/or completion of each phase of an incident, the FOSC may be responsible for submitting letters and/or reports to other agencies. The NCP and NOACP require that an FOSC Report be submitted, if requested, to the National Response Team or the Regional Response Team. Also, those responders and agencies that accessed fund sources, or which to access fund sources for reimbursement, must provide written documentation and information to support the cost incurred. Costs must be fully and accurately documented throughout a response. Cost documentation should provide the source and circumstance of the release, the identity of the Responsible Parties, the response actions taken, accurate accounting of federal, state, or private party costs incurred for response actions, and impacts, and potential impacts to the public health and welfare and the environment.

7700 Reference Material

CERCLA hazardous substances, and their reportable quantities, are listed in 40 CFR Part 302.4. CERCLA and EPCRA RQs may also be found in EPA's "List of Lists" at:

http://www.epa.gov/ceppo/pubs/title3.pdf. Radionuclides listed under CERCLA are provided in a separate list, with RQs in Curies. http://nrt.org/Production/NRT/NRTWeb.nsf/PagesByLevelCat/Level2Hazards?Opendocument

Information Source	Description	Web Link
Code of Federal Regulations	29 CFR- Labor 33 CFR- Navigation and Navigable Waters 40CFR- Protection of the Environment 40CFR300- NCP 49CFR- Transportation	Titles can be found online at the following web address: http://www.gpoaccess.gov/cfr/index/html
Safety	NIOSH Manual of Analytical Methods	http://www.cdc.gov/niosh/docs/2003-154
	OSHA Guidance Manual for Hazardous Waste Site Activities	http://www.osha.gov/Publications/complinks/OSHG-HazWaste/4agency.html
	Quick Selection Guide to Chemical Protective Clothing	http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470146818.html
	3M Respirator Selection Guide and Odor Thresholds for respirators	http://solutions.3m.com/wps/portal/3M/en_US/Health/Safety/Resources/Four/
	ATSDR Medical Management Guidelines for Acute Chemical Exposures: includes information on physical properties, symptoms of exposure, standards and guidelines, personal protection, decontamination, and care for first responders, pre-hospital, and hospital providers	http://www.atsdr.cdc.gov/MMG/index.asp

Chemical Properties		
	ATSDR Chemical Specific Information	http://emergency.cdc.gov/agent/agentlistchem.asp
	ATSRD Chemical Specific 2-Page Info Sheet	http://www.atsdr.cdc.gov/toxfaqs/index.asp
	NIOSH Pocket Guide to Chemical Hazards	http://www.cdc.gov/niosh/npg/
	ACGIH TLVs and BEIs	http://www.acgih.org/tlv/
	Wiley Guide to Chemical Incompatibilities	http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470387637.html
	Chemical Properties Handbook, Thermodynamics- Environmental Transport, Safety and Health Related Properties for Organic and Inorganic Chemicals	http://www.amazon.com/Chemical-Properties-Handbook-Thermodynamics-Engironmental/dp/0070734011
	The Merck Index	http://www.merckbooks.com/mindex/
	Crop Protection Handbook (formerly the FARM and Chemical Handbook)	http://www.meistermedia.com/handbook/
First Responder References		
	EPA OCS Blue Book- A collection of field related resources	http://www.epaosc.org/_bluebook/bluebook.asp
	Hazardous Materials Guide for First	https://www.usfa.dhs.

	Responders	gov/applications/publications/display.cfm?sc=16&mc=33&ol=
	CSX Transportation Emergency Response to Railroad Incidents	http://csxhazmat.kor-tx.com/
	DOT Emergency Response Guidebook	http://www.phmsa.dot.gov/hazmat/library/erg
	ASTDR- HazMat Emergency Preparedness Training and Tools for Responders	http://www.atsdr.cdc.gov/hazmat-emergency-preparedness.html
Military References		
	USAMRIID Medical Management of Chemical Casualties Handbook USAMRIID Medical Management of Biological Casualties Textbook of Military Medicine (TMM) Defense against Toxin Weapons Manual Jane's Chem-Bio Handbook	http://www.usamriid.army.mil/education/instruct.htm

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New Orleans Salvage and Marine Fire Fighting Plan

U.S. Coast Guard
Sector New Orleans
200 Hendee Street
New Orleans, LA 70114

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New Orleans Area Contingency Plan

Chapter 8000 Salvage and Marine Firefighting

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References:

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(b) Navy Salvage Manual, Volume I, Section 8-2.6
(c) Security and Accountability for Every Port Act of 2006 (SAFE Port Act)
(d) 33 Code of Federal Regulations §165, Regulated navigation Areas and Limited Access Areas
(e) 40 Code of Federal Regulations §300, National Oil and Hazardous Substances Pollution Contingency Plan
(f) Sector New Orleans Area Maritime Security Plan (AMS PLAN)
(g) National Response Framework, May 2013
(h) Strategy to Enhance International Supply Chain Security, Department of Homeland Security (DHS), July 2007
(i) Memorandum of Agreement (MOA) between the Department of the Army and U.S. Coast Guard, October 1985
(j) Title 42 U.S.C. §5121 et. seq. as amended, the Robert T. Stafford Disaster Relief Act
(k) Recovery of Marine Transportation System for Resumption of Commerce, COMDTINST 16000.28
(l) USCG Incident Management Handbook (IMH), COMDTPUB P3120.17(series)
(m) Abandoned Vessels, COMDTINST M16465.43
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(o) 33 Code of Federal Regulations §64, USCG Marking of Obstructions
(p) 33 Code of Federal Regulations §2.63, USCG Jurisdiction (Navigable waters)
(q) Interagency Agreement (IAA) between the United States Navy and the United States Coast Guard for Cooperation in Oil Spill Clean-up Operations and Salvage Operations dated 15 SEP 1980
(r) OPNAV Instruction 4740.2 (series), Salvage and Recovery Program.
(s) U.S. Coast Guard Marine Safety Center http://www.uscg.mil/hq/msc/salvage.htm
(t) Naval Sea Systems Command letter dated October 28, 2004. Emergency Response Resources Available to Navy and Other Federal Agencies through the Navy Supervisor of Salvage. http://www.supsalv.org/.
(u) 46 Code of Federal Regulations §4, Marine Casualties and Investigations
(v) 33 Code of Federal Regulations §160.215, Ports and Waterways (Notice of Hazardous Conditions)
(w) The Federal Water Pollution Prevention and Control Act, 33 U.S.C. §1321, as amended by the Oil Pollution Act of 1990 (Public Law 101-380).
(x) USCG Marine Safety Manual (MSM), Vol. VI, Chapter 8, COMDTINST M16000.11
(y) Title 42 U.S.C. §1856, Definitions

(z) 33 Code of Federal Regulations §155, Subpart I, Salvage and Marine Firefighting
(aa) NFPA 1405, Land-Based Fire Fighters Who Respond to Marine Vessel Fires
(bb) 33 Code of Federal Regulations §3.40.15, Coast Guard Captain of the Port Zones
(cc) United States Coast Guard Places of Refuge Policy, COMDTINST 16451.9
(dd) 40 Code of Federal Regulations §229.3, Transportation and Disposal of Vessels
(ee) 33 Code of Federal Regulations §155, Subpart D, Response Plans
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(gg) Title 33 U.S.C. §81221, et. Seq, Ports and Waterways Safety Act

Chapter 8000 Salvage and Marine Firefighting

8000 Introduction

This plan provides a planning and coordination framework for salvage and firefighting response activities needed to facilitate the recovery of the United States (U.S.) Marine Transportation System (MTS) following a Transportation Security Incident or Marine Casualty. The plan further supports the clearing of the port navigation system in waterways to enable the resumption of maritime commerce in the Coast Guard Captain of the Port (COTP) New Orleans Zone in compliance with references (b) through (d).

This plan identifies and relies upon existing authorities, procedures, policies, funding mechanisms, sources of technical expertise, and salvage and firefighting resources for incident management activities and operations needed to facilitate resumption of maritime commerce following a TSI, threat of a TSI, or marine casualty. This plan does not create new policy or change existing salvage response policy, nor does it in any way substitute for the laws, regulations, maritime salvage precedents, and funding mechanisms that apply in any given situation.

This plan anticipates the establishment of a Unified Command (UC) under the National Incident Management System (NIMS) protocols and the use of a common salvage and firefighting response coordination framework as described in reference (l) and reference (ff).

This plan consolidates polices, responsibilities, and procedures for effective coordination of Federal, State, and local responders and should be used in conjunction with existing state, local, and commercial contingency and resource mobilization plans. This plan is not intended to supersede any existing mutual aid agreements. Incident scenarios are provided only to present possible courses of action during incident response and are not designed to limit an Incident Commander (IC) or UC setting its own specific objectives to address the unique challenges of an incident.

8000.1 Procedures for Reviewing, Updating, and Exercising

This plan is a living document and will continue to evolve, reflecting lessons learned from application, training and exercises. The Coast Guard COTP New Orleans is responsible for maintaining this plan by either consecutively numbering plan amendments or by issuing full plan revisions. Stakeholders should review and make recommendations to update this plan after each tabletop, full scale exercise, marine firefighting or salvage incident. After an exercise or real world event occurs, all involved parties should conduct a joint “hot wash” and forward any lessons learned to the Salvage and Marine Firefighting Subcommittee of the New Orleans Area Committee.

8000.1.1 Exercises and Training

Proper training and exercises are necessary to ensure smooth coordination and good working relationships in the event of an actual fire or incident. Realistic exercises also demonstrate the capabilities of the various organizations involved and reveal possible conflicts or weaknesses in the plan. This plan should be exercised triennially.

8010 Scope

This plan is incorporated as Chapter 8000 of the New Orleans Area Contingency Plan (ACP) and provides a framework for salvage response planning, coordination and support following a Transportation Security Incident (TSI) or marine casualty. This plan applies to vessels, wrecks, obstructions, and marine debris that are a physical impediment to the port navigation system within the waterway and are thereby preventing, interrupting, or otherwise impeding the flow of maritime commerce.

8020 Assumptions

The following provides the foundation for the all-hazards approach to response missions and successful implementation of this plan:

- Protection of human life and health are the most important considerations in plan development and execution.
- Maintaining continuity of operations and facilitating commerce in the port area are critical considerations.
- It is in the best interest of all to increase safety by establishing and improving communications among all response agencies including port stakeholders.
- The National Oil and Hazardous Material Contingency Plan, National Response Framework, and other response plans may be activated for the purpose of response and crisis management.
- Although local USCG units are not equipped to fight fires, the COTP is mandated with protecting and mitigating damage to vessels, ports and waterways within the COTP zone.
- There will be competing demands for security, response and recovery resources during incidents as they increase in scope, scale and complexity.
- The Alert Warning System (AWS) and HOMEPORT will be used as the primary means of communication with stakeholders.
- ESF positions at the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and at local Emergency Operation Center's (EOC's) will be staffed with USCG Liaison Officers (i.e. ESF-10, ESF-9) during an incident(s).

8100 Notifications

8110 Notifications of Marine Casualties

Regulations contained in reference (u) requires owners, agents, masters, operators, or persons in charge, immediately after addressing resultant safety concerns, to notify the nearest USCG Sector, Marine Safety Unit, Marine Inspection Office, whenever a vessel is involved in a marine casualty. The casualties include:

- An unintended grounding or an unintended strike of (allision with) a bridge;
- An intended grounding, or an intended strike of a bridge, that creates a hazard to navigation, the environment, or the safety of the vessel;
- A loss of main propulsion, primary steering, or any associated component or control system that reduces the maneuverability of the vessel;
- An occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, including but not limited to fire, flooding, or failure of or damage to fixed fire-extinguishing systems, lifesaving equipment, auxiliary power-generating equipment, or bilge-pumping systems;
- A loss of life;
- An injury that requires professional medical treatment (beyond first aid) and, if the person is engage or employed on board a vessel in commercial service, that renders the individual unfit to perform his or her routine duties;
- Any occurrence causing property damage in excess of $25,000, this damage including the cost of labor and material to restore the property to its condition before the occurrence, but not including the cost of salvage, cleaning, gas-freeing, dry docking, or demurrage;
- An occurrence involving significant harm to the environment.

Reference (v) requires owners, agents, masters, operators, or persons in charge of a vessel carrying hazardous materials to notify the nearest USCG Sector, Marine Safety Office (Marine Safety Unit, Marine Inspection Office) whenever a hazardous condition exists, either aboard a vessel or caused by a vessel or its operation.

8120 Incident Specific, Critical Information

Following a report of an incident, certain initial information must be gained to mount a successful response and salvage operation. This list is not all-inclusive, but may be used to ensure certain critical information is gathered from on-scene personnel as well as from response resources. Many of the ship design particulars may be retrieved from the vessel's Shipboard Oil Pollution Emergency Plan (SOPEP) and the Vessel

Response Plan (VRP). Coordination with vessel responders as identified in the VRP is crucial to obtaining this information promptly.

All Incidents

- Safety status of the crew
- Proximity to navigation hazard
- On-scene weather conditions
- Forecasted weather conditions
- Contracted resources
- Potential damage/breaches in hull
- Potential for spill or plume
- Status of ground tackle
- Communications nature and schedule
- Quantity/nature of cargo/fuel/ballast
- Status of propulsion and steering.

Grounding

- Pre-casualty drafts
- Post-casualty drafts
- Tide height at grounding
- Location
- Depths of soundings
- Time/height of next high tide
- Liquid level of all tanks
- Availability of salvage resources
- Bottom type.

Fire

- Status of shipboard fire pumps
- Status of fixed firefighting systems
- Risk of further damage to vessel
- Status of emergency electrical systems
- Availability of fire fighting resources.

Collision/Allision/Flooding

- Relative stability of each vessel
- Status of ships dewatering systems
- Department of Transportation/United States Coast Guard/United States Army Corps of Engineers/State notified.

8200 Authority and Responsibilities

Roles and responsibilities for marine firefighting and salvage response will depend upon the circumstances of the incident.

8210 Responsible Party

Under normal circumstances the primary responsibility for taking or arranging action to resolve an obstruction or other impediment to navigation is the identified owner, operator, or lessee of the vessel or wreck; or, the owner, operator or lessee of other obstructions in the waterway such as structures, trains, cars, and other vehicles. Where a discharge of oil, hazardous substance release or threat thereof is involved, primary responsibility belongs to the Responsible Party (RP) as defined by reference (w).

The identified owner, operator, or lessee of a sunken or grounded vessel or wreck bears lead responsibility in the event that the U.S. Army Corps of Engineers (USACE) and the USCG jointly determine that such a vessel or wreck is a hazard to navigation and must be removed expeditiously.

In the case of an incident, the RP must take adequate measures to mitigate and/or remove damage, or risk of damage, caused by the vessel or the release of any material from the vessel. The RP will pay for all legitimate response measures up to their limit of liability as stated on their Certificate of Financial Liability. If an RP cannot be identified, or the acting RP fails to adequately respond, the Federal On-scene Coordinator may take control of a particular aspect of, or the entire response. In this case funding will be provided by the federal government until an RP is identified and charged for the response.

8220 Federal

8220.1 Coast Guard Policy

The USCG cannot delegate its statutory authorities and shall not delegate mission responsibilities to state and local agencies. Sector New Orleans shall not be party to any agreement that relinquishes USCG authority, evades USCG responsibility, or places Sector military personnel under the command of any persons not part of the Federal military establishment. USCG forces and personnel will only be subject to the authority of their superiors in the within the chain of command or the COTP may delegate authorities as necessary.

8220.1.1 Fire Fighting

The USCG's fire fighting policy is set forth in reference (x). The USCG has no specific statutory responsibility to fight marine fires; but the COTP New Orleans is charged by reference (gg) with the responsibility for navigation and vessel safety, safety of waterfront facilities, and protection of the marine environment within the COTP's area of jurisdiction. This authority allows the COTP to:

- Direct the anchoring, mooring, or movement of a vessel;

- Specify times of vessel entry, movement, or departure to, from, or through ports, harbors, or other waters;

- Restrict vessel operations in hazardous areas; and

- Direct the handling, loading, discharge, storage, and movement- including emergency removal, control, and disposition of explosives or other dangerous cargo or substances, on any bridge or other structure on or in the navigable waters of the United States or any land structure immediately adjacent to those waters.

Reference (y) allows an agency charged with providing fire protection for any property of the United States to enter into reciprocal agreements with state and local firefighting organizations to provide for mutual aid. This statute further provides that emergency assistance may be rendered in the absence of reciprocal agreements, when it is determined by the head of that agency to be in the best interest of the United States.

The USCG has traditionally provided firefighting equipment and training to protect its vessels and property. Commanding Officers of Coast Guard units (Sector Commanders, Cutters, etc.) are routinely called upon to provide assistance at fires on board vessels and at waterfront facilities.

8220.1.2 Wreck Removal

The USCG works closely with the US Army Corps of Engineers (USACE) to ensure a coordinated approach to maintaining safety and the functionality of the port navigation system in U.S. ports and waterways. The USCG serves as the Federal Government's primary agency for responding to threatened or actual pollution incidents in the coastal zone. The USCG is one of two primary agencies for Emergency Support Function (ESF) #10 (Oil & Hazardous Materials Response), which includes mission-specific salvage response. The Coast Guard, upon the request of FEMA, may provide management and contract administration for certain Mission Assignments MAs under the authority and funding of reference (j). The COTP, as FOSC, is responsible for maintaining and implementing this wreck removal plan. Immediately upon discovery of an obstructing vessel or object, the USCG has responsibilities for marking and for making notifications as required by references (o).

8220.1.3 New Orleans Federal On Scene Coordinator/Captain of the Port

The FOSC/COTP will provide on-scene representatives that are familiar with shipboard construction, layout, common firefighting systems, and vessel stability. FOSC/COTP authority can be exercised as necessary to maintain safety of the port, associated waterways, and maritime related facilities. The degree to which that authority will be exercised will depend on a number of factors, but will generally be based on the nature of the incident, the degree of danger posed to the port and the information provided through the establishment of a Unified Command.

The COTP authority extends over the land-side areas of all waterfront facilities such as shipyards, terminals, piers, and wharves. Their responsibilities include:

- Coordinate firefighting and salvage activities under a Unified Command;

- Coordinate all Coast Guard forces and equipment responding to the incident;
- Coordinate port safety and vessel traffic management with maritime industry representatives;
- Control vessel traffic as necessary in the incident are to minimize the adverse impact of the incident on marine traffic and to facilitate firefighting and/or salvage operations;
- Establish safety or security zones as necessary;
- Provide information on the involved waterfront facilities;
- Provide information on the location of hazardous materials on the vessel or at the facility, if available;
- Provide technical data on ship's construction and stability;
- Respond to oil discharges or hazardous substance releases. Actual removal may be delayed until firefighting and/or salvage operations are complete, however containment and protective measures should be implemented immediately;
- Evaluate relocating moored and anchored vessels in vicinity of salvage operation, and
- Alert owner/operators of terminals and/or vessels at risk.

The COTP/FOSC's primary concern in responding to a vessel or facility fire is to ensure the safety of life and protection of the environment. Secondary concerns include vessel traffic and preserving property.

Paramount in preparing for vessel or waterfront fires is the need to integrate Coast Guard planning and training efforts with those of other responsible agencies, particularly local fire departments and port authorities, COTPs shall work closely with other Coast Guards units, municipal fire departments, vessel and facility owners, and operators, mutual aid groups and other interest organizations to ensure planning in each ports' Area contingency Plan for the COTP zone in accordance with federal law and Coast Guard regulations.

8220.1.4 Marine Safety Center Salvage Emergency Response Team

The U.S. Coast Guard's Marine Safety Center Salvage Emergency Response Team (SERT) is on call to provide immediate salvage engineering support to the COTP/FOSC in response to a variety of vessel casualties. Specifically, SERT can assist the COTP/FOSC manage and minimize the risk to people, the environment, and property when responding to vessels that have experienced as casualty. Refer to the USCG Marine Safety Center website listed in reference (s).

8220.1.5 National Strike Force

The National Strike Force (NSF) provides 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.

8220.2 Other Federal Agencies

8220.2.1 U.S. Army Corp of Engineers

The U.S. Army Corp of Engineers (USACE) serves as the Federal Government's primary agency for maintaining the navigability of federal channels in domestic ports and waterways. The USACE arranges for and conducts hydrographic surveys, assessments of navigation conditions, and dredging. The USACE also has authority that may be applicable for removing wrecks from federal navigable channels, and more limited authority to address obstructions that pose hazards to navigation as discussed in references (i) and (m) through (p).

8220.2.2 Navy Supervisor or Salvage

The Navy Supervisor of Salvage (SUPSALV) is the Department of Defense's principal source of salvage expertise. SUPSALV, upon request, may provide federal-to-federal support for salvage response. SUPSALV and the USCG cooperate in oil spill clean-up and salvage operations in accordance with the provisions of reference (p).

8220.2.3 National Oceanic Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) provides scientific support for response 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 and hazardous substances. In addition, NOAA provides expertise on living marine resources and their habitats, including endangered species, marine mammals, and National Marine Sanctuaries.

NOAA also provides aerial and hydrographic survey support and expertise. NOAA administers the Abandoned Vessel Program (AVP). The main objective of this program is to investigate problems posed by abandoned and derelict vessels in U.S. waters. The program maintains various information resources.

8220.2.4 Bureau of Safety and Environmental Enforcement

The Bureau of Safety and Environmental Enforcement (BSEE) is responsible for ensuring comprehensive oversight, safety, and environmental protection in all offshore energy activities. BSEE handles safety and environmental enforcement functions including, but not limited to, the authority to inspect, investigate, summon witnesses and produce evidence, levy penalties, cancel or suspend activities, and oversee safety, response, and removal preparedness.

8220.2.5 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) provides advice and assistance to the FOSC on coordinating civil emergency planning and mitigation efforts with other federal agencies, state, and local governments, and the private sector. FEMA's Mobile Emergency Response System (MERS) also provides extensive rapid deployment mobile communications capabilities for use in oil/ hazardous substance response on a not-to-interfere basis with other emergent situations. An MOU is being developed with FEMA's MERS to specify the level and type of support available in a response. In the event of a major disaster declaration or emergency determination by the President, FEMA will coordinate all federal disaster or emergency action with the FOSC.

8220.2.6 U.S. Department of Transportation

The U.S. Department of Transportation (DOT) provides response expertise pertaining to transportation of oil or hazardous substances by all modes of transport.

8220.2.7 National Transportation Safety Board

The National Transportation Safety Board (NTSB) has authority and responsibility for investigation of major transportation incidents and may engage in preservation of evidence and safety investigation in conjunction with salvage operations that have not been determined to be as a result of an act of terrorism.

8220.2.8 Federal Bureau of Investigation

The Federal Bureau of Investigation (FBI) has law enforcement investigation responsibility for acts of terrorism and may engage in preservation of evidence and law enforcement investigation in conjunction with salvage operations that are in response to acts of terrorism.

8230 State and Local Governments

8230.1 Louisiana Office of Coastal Management

The Office of Coastal Management is responsible for the maintenance and protection of the state's coastal wetlands. The main function of the Office of Coastal Management is the regulation of uses in the Louisiana coastal zone, especially those which have a direct and significant impact on coastal waters. It is the goal of the Office of Coastal Management to protect, develop, and restore or enhance the resources for the state's coastal zone.

8240 Vessels

In the case of a vessel fire or salvage operation, the Responsible Party is the vessel's Owner, Operator, Master, or Designees. The vessel's Master or Designee will maintain control over the vessel, crew, and passengers unless otherwise directed by the COTP. The presence of any Federal, State, and/or Local agencies does not relieve the vessel's Master of command or responsibility for overall safety on the vessel.

However, the Master of a vessel should not normally countermand any orders given by fire fighters in the performance of firefighting activities, unless the action taken or planned clearly endangers the safety of the vessel or crew. The Master, Officers, and Crew of the vessel shall assist in firefighting and salvage operations in accordance with the VRP and salvage company point of contact. The Master shall be the liaison between the Incident Commander/Unified Command and the Crew. The Master shall furnish, if possible, the Incident Commander/Unified Command with any information requested. The Master should provide the Incident Commander/Unified Command with members of the crew to act as guides. The Master shall control the actions of the crew. In the absence of the Master, the Chief Mate or Chief Engineer is expected to represent the vessel.

8240.1 Primary Resource Provider

The Primary Resource Provider as identified in the VRP will be the point of contact for the Responsible Party, the FOSC, and the Unified Command, in matters related to specific salvage and firefighting resources and services listed in the Vessel Response Plan.

8250 Waterfront Facilities

In the case of a Waterfront Facility, the Responsible Party is the Owner or Operator of the involved Waterfront Facility. The Responsible Party will normally be represented in a Unified Command through a facility designated “incident commander”. The waterfront facility owner or operator will maintain control over facility operations and access control. The presence of federal, state, and local agencies does not relieve the facility Owner or Operator of responsibility for the overall safety of the facility or its personnel.

8260 New Orleans Marine Fire Fighting and Salvage Subcommittee

The COTP/FOSC, under the New Orleans Area Committee, has established and convened a Salvage and Marine Firefighting Subcommittee to advise on maritime matters pursuant to reference (z) and in support of reference (e).

The Subcommittee brings together appropriately experienced representatives within the New Orleans FOSC/COTP zone to continually assess risks to the ports, document the variety of resources available to respond to an incident, determine appropriate risk mitigation strategies, and develop, revise, and implement the appropriate local plans. The Subcommittee will also serve as a mechanism by which threats are communicated to port stakeholders and other Committees (i.e. Area Maritime Security Committee, New Orleans Area Committee, Local Emergency Planning Committees, and Port Safety Council).

The objectives of the Subcommittee include:

- Assisting in the development, review, and update of the Salvage and Marine Firefighting Plan Annex, aimed at maintaining acceptable risk levels during normal operations and during incidents.

- Assisting with a comprehensive Risk Assessment. These assessments must detail the threats, vulnerabilities, and consequences associated with each port area within a COTP/FOSC zone.

- Soliciting stakeholder recommendations for continuing improvements of response measures.
- Developing and maintaining a Training & Exercise Program (i.e. consolidated list of training resources).
- Promoting effective incident response measures that maintain or enhance operational efficiencies and minimize impact to legitimate trade.

8260.1 Committee Interaction

The following is a description of other New Orleans Committees that the Subcommittee may interact with.

8260.1.1 New Orleans Area Committee

The New Orleans Area Committee (NOAC) is a spill preparedness and planning body made up of Federal, State, and Local agency representatives. Under the direction of the New Orleans FOSC, the NOAC responsible for developing The New Orleans Area Contingency Plan (NOACP) that, when implemented in conjunction with the National Contingency Plan (NCP), will be adequate to remove a worst case discharge of oil or release of a hazardous substance. The NOACP must also mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near the geographic area. The NOAC is chaired by the USCG FOSC New Orleans. The Area Committee is co-chaired by the Louisiana Oil Spill Coordinator.

8270 American Salvage Association

Leading U.S. salvage operators have formed the American Salvage Association (ASA). Created in response to the need for providing an identity and assisting in the professionalizing of the U.S. marine salvage and firefighting response, the intention of the ASA is to professionalize and improve marine casualty response in U.S. coastal and inland waters. The ASA meets with various federal and state agencies to exchange views on the improvement of salvage and firefighting response in the U.S.

8300 Situation

The complexity, scope, and potential consequences of an incident require that there be a coordinated effort between all MTS users and local state and federal agencies. This effort requires open communication, enhanced awareness of potential threats and coordinated procedures for preparedness, prevention, protection, response and recovery.

8310 Vessel Traffic Service

Vessel Traffic Service (VTS) Lower Mississippi (LMR) is a component of the Waterway Division of USCG Sector New Orleans. VTS LMR area of responsibility spans from twenty miles above the Port of Baton Rouge (Mile 255 above the Head of the Passes) to twelve miles offshore of Southwest Pass Light in the Gulf of Mexico. Within this VTS service area the VTS monitors the Eighty One Mile Point Regulated Navigation Area (Mile 187.9 to Mile 167 Ahead of Passes) and the New Orleans Harbor Sector (Mile 106 to Mile 88). The VTS provides advisory and navigational assistance services at all times in these areas of responsibility. When the river reaches high water levels of eight feet in New Orleans, the VTS controls traffic at the Algiers Point Special Area (Mile 93.5 to Mile 95). VTS LMR can transmit security information to vessels via marine radio.

The 24 hour telephone number for the VTS is **504-365-2777** or you may contact the Coast Guard SECTOR New Orleans Command Center at **504-365-2533.**

8320 Marine Transportation Infrastructure

There are multiple Marine Transportation System (MTS) infrastructures and systems throughout the New Orleans COTP zone. Appendix 9300 of reference (f) identifies and describes the following:

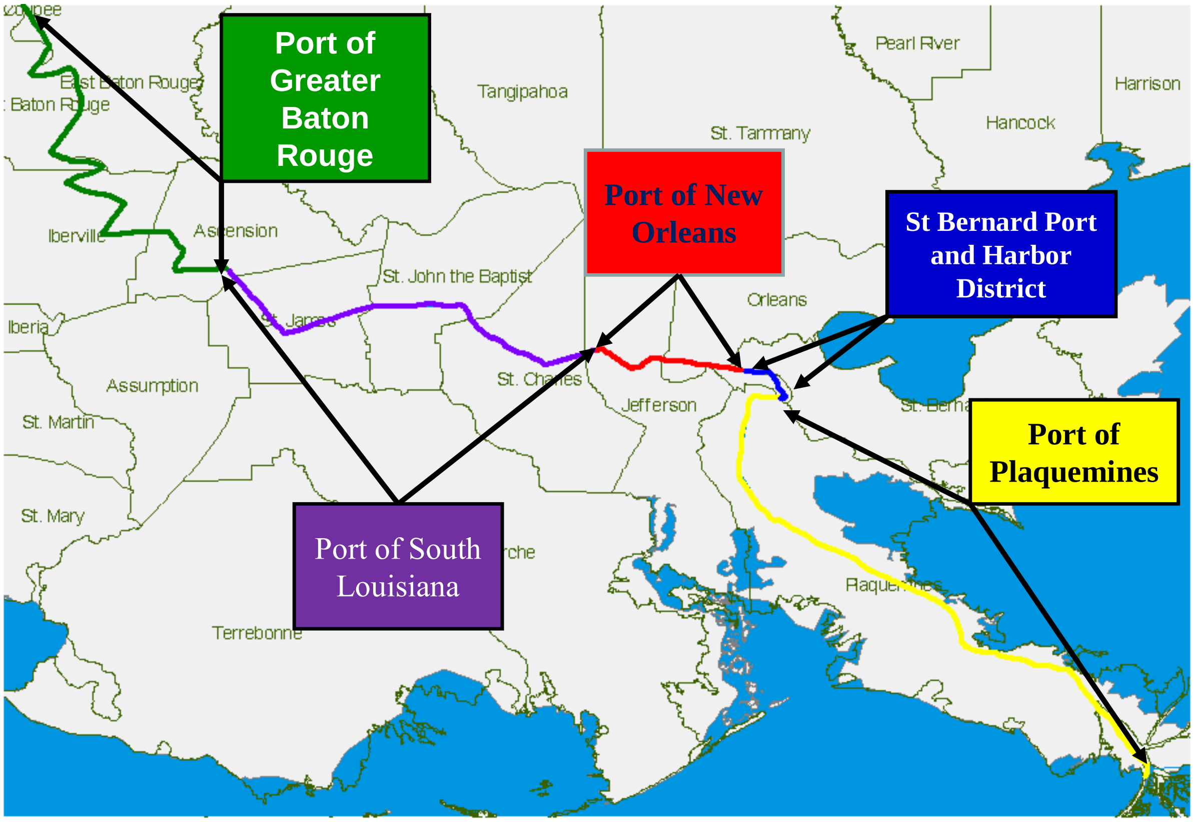
- Bodies of water and rivers, surrounding waterfronts and significant navigable waterways in Sector New Orleans COTP zone.
- Transportation modes, water intakes and infrastructure
- Vessel, cargo and facility interfaces and associated waterfront areas
- Vessel traffic in the port (type and volume)
- Ports located within Sector New Orleans COTP zone.
- Port operations critical to significant local area non-maritime functions, services or activities.

8320.1 Parishes

This plan covers areas in the following parishes: Plaquemines, Jefferson, Saint Bernard, Orleans, Saint Charles, Saint James, Saint John the Baptist, Saint Tammany, Tangipahoa, and Washington Parish.

8320.2 Ports

This plan covers the Port of Greater Baton Rouge, The Port of South Louisiana, Port of New Orleans, St. Bernard Port and Harbor District and Port of Plaquemine. The following map displays the ports and the geographic area covered by each.



8400 Federal, State, and Local Agencies

8410 Tier 1 Agencies

Tier 1 Agencies are those agencies that are classified as first responders such as police, fire and emergency medical units that are normally dispatched thru the Emergency-911 System and are capable of responding within minutes. Federal and state agencies are also included. Response time varies for these agencies. Most local first responder agencies average a response time of less than five minutes, while agencies located throughout and out of state can take as long as twenty four hours to respond.

8420 Tier 2 Agencies

Tier 2 Agencies are those with special recovery and containment capabilities for dealing with hazardous materials, rough terrain, or underwater search and recovery, and other agencies having excavation or heavy equipment capabilities (e.g., mobile heavy-lift cranes). Tier 2 agencies may take 24 to 48 hours to respond.

8430 Tier 3 Agencies

Tier 3 Agencies are the National Guard, military reserve, and other national level response elements. Tier 3 agencies may take up to several days to respond.

8500 Command

A major waterfront facility or vessel fire, or a salvage operation will involve response teams from federal, state, and local agencies. The nature and location of the incident will be the deciding element in determining which agency assumes overall command or lead agency in a unified command. Overall command or lead agency must be determined as early as possible in the incident to ensure the effective use of personnel and equipment.

8510 Command Interrelationships

The incident command system is the accepted organization system used by federal, state, and local response organizations and other involved parties. This system must be implemented in accordance with reference (g) and (t) for on-scene incident response operations.

8510.1 Unified Command

In instances when several jurisdictions are involved or several agencies have a significant management interest or responsibility, a Unified Command with a lead agency designation may be more appropriate for an incident than a single command response organization. Generally, a Unified Command structure is called for when the incident occurs that crosses jurisdictional boundaries, involves various government levels (e.g. federal, state, local), impacts functional responsibilities, or a combination thereof. Such circumstances would pertain for almost any fire at a facility or a vessel at pier side or anchorage located in the New Orleans COTP zone because of similar responsibilities of local fire departments, other emergency response organizations, and the Coast Guard for the saving of life, the environment, and property.

8510.2 Federal On-Scene Coordinator’s Representatives

The Federal On-Scene Coordinator’s Representative (FOSCR) acts as the primary on-scene liaison with response organizations during a marine fire or salvage response.

8520 Transfer of Command

The presence of local fire fighters or USCG personnel does not relieve the Master or Owner/Operator of command, or transfer their responsibility for overall safety on the vessel or facility. However, the Master should not normally countermand any orders given by local fire fighters in the performance of firefighting activities onboard the vessel or facility, unless the action taken or planned clearly endangers the safety of the vessel’s safety and crew.

8530 Command Posts

When an incident occurs there is an immediate need for a coordinated/integrated response effort, since federal, state, and local jurisdictions will be involved.

If this occurs a Command Post will be established on-scene by the lead responding agency. The USCG FOSC or FOSCR should be on hand and maintain communications with the USCG resources involved. Other key personnel that may be on hand at the on-scene command post include vessel's officers, marine chemist, facility operator, local responders, and port officials. The representatives present should have authority to make decisions to facilitate rapid and proper response.

8540 Incident Command System

The USCG has adopted the use of the National Incident Management System (NIMS)/ Incident Command System (ICS) for its response system. Standard USCG ICS forms can be found at http://homeport.uscg.mil/mycg/portal/ep/home.do.

8550 Incident Action Plan

Incident Actions Plans (IAPs) will be prepared by the Unified Command, as appropriate, to the situation and in accordance with the National Incident Management System/Incident Command System protocols.

Pre-incident IAP templates may be developed, adapted, and applied, as available and appropriate to the incident.

8600 Operations

Initial response operations will be the responsibility of the owner/operator of the vessel, platform, or facility. Owners and operators of vessels, platforms, or facilities must develop their own contingency plans to respond to marine fires.

8610 Firefighting

Local firefighting organizations (municipal, industrial, and contractor) must be prepared to respond within the limits of their training and capabilities. If firefighting resources are not trained or capable of handling a marine fire, they can take appropriate measures to prevent the fire from spreading to nearby exposures. The USCG cannot contract mutual aid organizations for vessel, platform, or facility owners/operators. Facility owners and operators must take additional steps to limit the spread of fire to or from their facility and any vessels docked nearby.

The USCG will provide assistance as available including:

- Active participation within a Unified Command;
- Establishing safety zones;
- Rerouting or restricting vessel traffic;
- Making marine broadcasts;
- Assistance with search and rescue or medical evacuation;
- Deployment of USCG resources;
- Pollution response

New Orleans Salvage and Marine Fire Fighting Plan

The New Orleans COTP will be prepared to continue in the role of FOSC (within the Unified Command) upon conclusion of firefighting operations to oversee salvage operations or pollution response. Other affected organizations, particularly pollution response or salvage organizations, will respond as directed by the Incident Commander or Unified Command (or the Responsible Party).

The Master of the Vessel may deny local firefighters access to his vessel. He will then utilize his resources to control and fight the fire. If the USCG determines that the Master's efforts are inadequate, actions may be taken to ensure a proper response. The designated Incident Commander or Unified Command will direct employment of responding resources. Firefighting resources will be employed based on:

- Rescue/life safety
- Location and extent of fire;
- Class of fire and cargo involved;
- Potential impact on local community;
- Additional exposure concerns (facilities, vessels, docks, structures, etc.);
- Possibility of explosion;
- Stability of the vessel or platform;
- Hazard to crew or other resources at location;
- Weather forecast;
- Maneuverability of vessel;
- Effects on bridges which must be transited;
- Alternatives if the vessel is not allowed entry to or movement within a port

The New Orleans COTP or representative of the COTP serving within the Operations Section will direct the employment of USCG resources (small boats, helicopters, USCG Strike Team, etc.) in accordance with established policies and the needs of the Incident Commander or Unified Command. Other responding agencies will report to the Incident Commander or Unified Command for assignment of duties. The Master of the Vessel or Platform supervisor will:

- Implement the initial response based on the fire control plan of the vessel or platform.
- Establish communications, both internal and external. Ensure that proper notifications are made to the appropriate fire department or contractor and the Coast Guard. If appropriate, notify the facility to which the vessel is docked, the port authority, and any nearby vessels.
- Control the operation and use of all fixed firefighting systems aboard the vessel or platform.
- Coordinate the efforts of shipboard or platform fire teams in responding to the fire.
- Decide if it is necessary to abandon ship/platform. If the crew is ordered to abandon ship/platform, the master or supervisor will ensure that the proper procedures are carried out and that the Coast Guard is immediately notified. The

Incident Commander or Unified Command will then coordinate the firefighting operations of all responding agencies.

Operational response will be based on the following tactical priorities:

- Rescue/Life Safety
- Protection of Exposures (facilities, vessels, docks, structures, etc.)
- Containment, Extinguishment, and Property Conservation
- Fire Salvage and Overhaul
- Environmental Protection

Vessel and Facility Salvage Marine Firefighting response considerations include:

- Establishment of a command post and appropriate implementation of ICS/Unified Command
- A complete size-up to determine potential for rescue operations and what is burning (class of fire and materials involved)
- Contact appropriate marine firefighting, environmental response, and marine salvage contractors (as necessary by Owner/Operator or COTP if necessary)
- Determination as to whether the fire main system is operating and the location of other firefighting resources on board
- Obtaining the fire control plan of the vessel, platform, or facility
- Hose lines taken aboard vessels should be large hose lines (4" to 6") with reducers for smaller hand lines and sufficient international shore connections (as appropriate)
- Maintaining two separate gangways to the vessel, one for personnel access and the other distinctly to serve as a hose conduit or support
- Determination as to whether the ventilation system is operable. If not, portable equipment may be required
- Consider need for additional lighting resources to support operations
- Planning for additional equipment to arrive on scene during early stages of the response. Establish appropriate staging areas for arriving equipment
- Recognition that a language barrier may exist. The vessel's agent, a vessel's officer, or other interpreter may be required

The Sector New Orleans COTP will:

- Be prepared to assume the role of Incident Commander or FOSC within a Unified Command if the firefighting response is inadequate or non-existent
- Provide USCG resources to support the Incident Action Plan established by the Incident Commander or Unified Command
- Assist the Unified Command in developing the Incident Action Plan and in integrating resources into the response
- Actively participate with representatives from the State of Louisiana, local municipalities, industrial mutual aid organizations, and appropriate fire response contractors

8610.1 Fire Control Plan

Vessel fire control plans are stored in a weather tight container at the topside of the gangway usually attached to the bulkhead or inside the access door to the superstructure. This plan is available for use by shore side firefighting personnel. The plan shows a layout of each deck, fire protection systems aboard the vessel, and other information important to firefighting responses.

8610.2 Shipboard Firefighting

Marine firefighting is substantially different from standard structural firefighting requiring specialized equipment and training. The Unified Command should follow some general guidelines for operational considerations:

- Muster the Crew- Remove all nonessential personnel off the vessel and away from the scene. Make sure the Master, Mates, and all engineering personnel remain where they can be used as an information resource.

- Rescue- Life safety must always be the first consideration in any fire or emergency situation. When lives are in danger, the Unified Command must quickly assess whether the situation necessitates immediate removal of personnel, the number of persons that need to extracted and the hazards to the rescue team.

- Exposure- The fire should be fought so as to prevent the spread of fire. Typical exposures include flammable liquid or gas tanks, open stairways, explosives, or any other substance that would accelerate or aid the spread of the fire. Provided there is no danger of water reactivity, exposures are best cooled by application of a fog pattern until no visible steam is generated. For some two dimensional surfaces foam may be an appropriate agent for exposure protection.

- Confinement- To accomplish proper containment, all closures and generally all ventilation (unless personnel are trapped inside the space) should be secured. Establish primary fire, smoke, and flooding boundaries. Primary boundaries are critical to the control of the fire. Monitor and cool the boundaries, as necessary, on all six sides of the fire (fore, aft, port, starboard, above, and below).

- Stability- During firefighting excess water onboard can create flooding and free surface effect. This could prove disastrous for the vessel leading to list and even sinking. Since local fire services do not typically have training in this field, there is a substantial risk that this could occur. This is the area of expertise that other response agencies will depend on the Coast Guard to contribute. The Salvage Engineering Response Team (SERT) is available 24/7 to provide professional advice and provide technical solutions. At a minimum, utilize reference (aa).

- Extinguishment- The fuel source, amount of fuel/surface area and the location of the fire will determine the tactics and agents to be used.

- Overhaul- Ensuring that the fire will not re-flash and determining the point of origin and source of ignition. A detailed photographic record of the fire scene prior to commencing overhaul is a necessity to aid in post fire investigation.

- Ventilation- Generally, all ventilation on a vessel will initially be secured upon receipt of a fire alarm. Utilization of ventilation tactics to aid in extinguishment should not begin until a coordinated attack is staged.

8610.2.1 Burning Vessel Movement Considerations

A crucial decision that must be made by the COTP is whether or not a burning vessel should be allowed to enter or move within the port. Types of vessel movements that may be required in an emergency include movement from sea to an anchorage or a pier; from an anchorage to a pier; from a pier to an anchorage; grounding a vessel; or scuttling a vessel offshore.

8610.2.1.1 Decision to Allow a Burning Vessel to Enter Port or Move within the Port

Due to the limited resources available to fight an offshore fire, the COTP may be forced to consider allowing a burning vessel to enter port. The numerous considerations that are part of this decision can be found below, as well as reference (x). Additionally, The NOACP Chapter 9000, Appendix J, Places of Refuge matrix serves as an additional guide while making these complex decisions.

There are numerous considerations that the COTP should evaluate when faced with the decision of whether or not to allow a burning vessel to enter or move within a port. The following information should be gathered and considered prior to making such a decision:

- Location and extent of fire;
- Status of shipboard firefighting equipment;
- Class and nature of cargo;
- Possibility of explosion;
- Possibility of vessel sinking/capsizing;
- Hazards to crew or other resources where vessel is present;
- Forecasted weather (including bar conditions if applicable);
- Maneuverability of the vessel (i.e. is it a dead ship, etc.);
- Availability (and willingness) of assist tugs;
- Effect on bridges under which the vessel must transit;
- Potential for the fire to spread to the pier or pier structures;
- Firefighting resources available ashore and offshore;
- Possibility of vessel sinking or capsizing thereby becoming an obstruction to navigation;
- Consequences/alternatives if the vessel is not allowed to enter or move;
- Potential for pollution

The above considerations should be investigated by the Lead Fire Department's Chief and/or the IC/UC by examining the vessel and cargo manifest before the vessel is allowed to enter port or move within the port. The COTP should make a decision only after consultation with the appropriate Fire Department Chief, Port Director, local government officials (i.e. Parish President, Mayor), Vessel Owner's Agent, and other experts depending on the circumstances.

In addition, the FOSC/COTP, in conjunction with the USCG Eighth District, and the Region VI Regional Response Team (RRT), shall assess the pollution risks and determine whether the vessel will be allowed to proceed to sea to reduce the risk of the pollution hazards.

Entry to port or movement may be permitted when:

- The fire is already contained or under control;
- There exists little likelihood that the fire would spread;
- A greater possibility exists that fire could and would be readily extinguished with available equipment in port before encountering any secondary hazards of explosion or spread of fire;
- All relevant parties have been consulted

Entry to port of movement may be denied when:

- There is greater danger that the fire will spread to other port facilities or vessels;
- The likelihood of the vessel sinking or capsizing within a navigation channel, and becoming an obstruction exists;
- The vessel may become derelict,
- Unfavorable weather conditions preclude either the safe movement of the vessel under complete control or would hamper firefighting (high winds, fog, strong currents, etc.); a
- Risk of a serious pollution incident by oil or hazardous substances exists

Additional considerations:

- Safety Broadcast and Notice to Mariners,
- Ordering the movement of other vessels or cargo that may be impacted;
- Locating the vessel to best facilitate the use of available resources

8610.2.1.2 Positioning a Vessel for Firefighting

This section addresses the positioning of a vessel that is on fire while underway or docked. No vessel on fire should be moved without the permission of the COTP, except under the most urgent conditions.

The probability of success or failure of a shipboard fire response effort will be significantly impacted by the vessel's location. The likelihood of successfully fighting a fire on a remotely located vessel is small compared to a vessel located near sufficient sources of firefighting resources.

8610.2.1.3 Fire Suppression Berths

Several considerations enter into the selection of piers as a location to fight a shipboard fire:

- Paramount is the combustibility/flammability of pier structures and contiguous facilities;
- Availability of adequate volumes and pressure of fire protection water;
- Access to response boats and vehicles;
- Minimizing risk of impeding navigation;
- Risk to nearby vessels and facilities

Much of the information needed to determine the suitability of a facility is in the facility file maintained by the Sector New Orleans Inspection Division.

8610.2.1.4 Anchorage and Grounding Site Selection

When choosing anchoring or grounding locations, some of the same factors must be considered, as well as it effects on navigation and minimizing the risk to surrounding communities and to the environment. The possibility of the vessel sinking or becoming a derelict is very real and could prove a greater harm to the marine system than the loss of a single vessel. Reference (cc) and the NOACP Chapter 9000 Appendix J, Places of Refuge provides additional considerations. The initial considerations are:

- Bottom material- Soft enough so that the ship’s hull will not be ruptured

- Water depth- Shallow enough so that the vessel could not sink below the main deck, yet deep enough so that fire boats, salvage barges, and tugs can approach; tides and other river level fluctuations must be considered

- Area weather- Accessibility to firefighting, spill response, and salvage assets

The location and suitability of boat ramps and piers to be used as staging areas must also be evaluated when considering grounding or anchoring sites.

8610.2.1.5 Reasons for Denial

Entry into a port or movement within a port may have to be denied when:

- There is danger that the fire will spread to other port facilities or vessels;

- The vessel is likely to sink or capsize within a channel, becoming an obstruction to navigation;

- The vessel might become a derelict;

- Unfavorable weather conditions preclude the safe movement of the vessel or would hamper firefighting (high winds, fog, strong currents, etc.);

- Risk of serious pollution incident by oil or hazardous substance exists

8610.2.2 Offshore Firefighting Considerations

In addition to the problems associated with any shipboard fire, an offshore incident is further complicated by the poor flow of information and difficulties in supplementing the vessel's firefighting resources. Reports from the vessel may be confusing due to language difficulties or the simple fact that the crew is too busy fighting the fire to provide detailed information. Until additional resources can be brought to bear, the vessel's firefighting equipment and crew will be the only resources available. The vessel's Primary Resource Provider is required to have firefighting and salvage assets and personnel on scene within the planning timelines listed in the Vessel Response Plan. Additional resources in the form of public or private vessels may not be close enough to respond in a timely manner and may be ill equipped to provide significant assistance.

8610.2.2.1 Coast Guard Offshore Resources

During an offshore fire, ships and aircraft become important resources. Coast Guard Aircraft may provide a timely source of information during the early stages of a response and can be used for personnel or equipment transfers. Coast Guard vessels are limited in their ability to assist in a shipboard fire, but are much better equipped than commercial vessels and have damage control teams that are drilled regularly in shipboard firefighting. In addition to improving communications, larger Coast Guard vessels with flight decks can be used to stage equipment flown to the scene.

8610.2.2.2 Department of Defense Offshore Resources

Firefighting equipment may be available from various Department of Defense (DOD) sources. In addition to the transportation capabilities, DOD aircraft and vessels can be invaluable in an offshore fire situation for the same reasons discussed for Coast Guard assets. The possibility of Naval or USACE vessels operating in the vicinity which can assist should not be overlooked. All requests for DOD assistance should be made through the USCG Eighth District Command Center.

8610.2.2.3 Other Offshore Resources

Any ship becomes a valuable resource during an offshore vessel fire, even those with small crews and minimal firefighting capability. At a minimum, another vessel can provide a means of escape for a burning vessel's crew should their efforts to control the fire fail.

Vessels in the area may be notified of a situation via Automated Mutual Assistance Vessel Rescue System (AMVER) or with a Broadcast Notice to Mariners.

Tug companies in the vicinity may assist in fighting the fire, moving a dead ship or transporting equipment. While few vessel operators would be reluctant to assist in a life-threatening situation, vessel owners may not be willing to respond to a fire-fighting situation that could risk their vessels or crew in order to protect a ship or cargo once the crew is safe.

8610.2.2.4 Offshore Scuttling Area Selection

If a vessel cannot be safely moved to a port, and it is possible that the vessel and cargo could be lost (either intentionally or not) the vessel should be moved to an area where environmental damage will be minimized. The information in this section should be reviewed to identify the best area to move the vessel. Depending on the positioning of the vessel, COTP should consult with BSEE, EPA, and NOAA on any decision concerning the scuttling of a vessel. Scuttling must be conducted in accordance with references (cc) and (dd).

8610.2.3 Shore side Incidents

For fires at a facility or on a vessel moored to a facility, there should be one command post. The Command Post should be established as close to the incident as safety permits. Ideally the command post would be located in an office at the facility. At a minimum, it should:

- Accommodate multiple telephone lines;
- Provide a large open area to permit status boards maintenance;
- Provide adequate lighting, heating, etc.

8610.3 Basic Priorities of Firefighting

It is impossible to anticipate every task or activity that will be required to effectively respond to major marine fires. There are, however, several basic priorities, that must be addressed, particularly in the case of a vessel fire at sea.

- Once initial notification is received, responders must determine the worst-case scenario and the urgency of the situation;
- The appropriate resources need to be informed and requested;
- If the incident appears imminent and substantial, response resources must be dispatched immediately before making routine notifications and obtaining additional information.

8610.4 Response Actions

Situation assessment is one of the initial and critical actions taken in a response to a marine fire. This involves evaluation of available facts and probabilities.

The assessment consists of at least the following six steps to rapidly form a deliberate plan of action:

1. Gather facts
2. Assess probabilities
3. Determine resources
4. Apply basic firefighting principles
5. Decide a course of action
6. Formulate a plan of operations

Pertinent facts might include location of fire, location of crew/personnel, acquiring vessel fire plan, vessel/facility condition, stability issues, type and condition of cargo, and response equipment available.

8610.4.1 Control of Vessels and Waterfront Areas

To secure the safety of waterfront facilities and vessels, the COTP may control or restrict vessel traffic in the affected area. Reference (d) sets forth procedures for establishing safety zones for the protection of vessels, waterfront facilities, and shore areas. The COTP has the sole authority to establish a Safety Zone.

Reference (v) describes the characteristics of limited access areas, including safety zones, security zones, restricted areas, and regulated navigation areas. A Safety Zone may be established around a burning vessel to facilitate access for fire or rescue units and to protect uninvolved persons or vessels, or it could be used to ensure the safer transit of a vessel carrying dangerous cargo. Safety Zones should be established on a temporary, and usually, emergency basis in response to a situation beyond the scope of normal safety measures.

8610.5 Investigations

After a fire involving a vessel or a facility, several agencies may become involved in an investigation to determine a cause.

8620 Salvage

Any salvage response will be characterized by the type of incident that required it and the salvage response will ensure waterways can support maritime commerce as a post-incident activity once initial response has been completed. Salvage response operations, for planning purposes, are considered an element of the short-term recovery phase (3-90 days post incident).

The following progression provides an orderly approach:

1. Perform an assessment to determine what has happened and what is needed (if anything) in terms of a salvage response.

2. Primary responsibility for salvage response belongs to the RP, and through the RP, to insurance underwriters. Determine if there is a RP or not, and whether or not the RP has accepted responsibility and is capable of performing the necessary salvage response within an acceptable period, as determined by applicable rules and regulations. If so, then determine oversight responsibility within the UC and coordinate oversight and support as may be appropriate consistent with applicable jurisdiction and authority. If not, or there is no RP, proceed to Step 3.

3. Determine the appropriate authority and funding source or combination of authority and funding sources that is/are available and will be needed to perform essential salvage response. Determine federal lead and supporting roles, and transitions in roles and responsibilities when multiple authorities and funding streams will be needed to complete salvage response. Once Authority and Funding are identified, a salvage plan specific to the incident should be

developed. The incident specific salvage plan should be prepared by technical specialists with the subject matter expertise necessary to conduct site-specific salvage assessments and to develop and implement procedures to resolve the obstruction(s) to navigation.

4. Once the arrangement for salvage support or contracting of commercial salvors to perform the salvage operation is made, the salvor will mobilize salvage response operations and conduct the necessary salvage operations.

5. Plan and conduct documentation and reporting to provide a record of salvage response and to track and monitor costs incurred by the Government. Periodic reporting will be required to keep the Unified Command posted on developments, and will follow the reporting schedule and protocols that are established for the incident.

8620.1 Identify Response Resources and Salvage Assets

The RP should immediately contract and set into motion adequate response and salvage resources. Historically, there has been reluctance on behalf of the vessel's representatives to engage a professional salvor. A decision to attempt operations without a professional salvor should be examined critically by the FOSC. To assist the RP in contracting a professional salvor, the FOSC may share information of proven response and salvage resources. In addition to ensuring that the RP has contracted adequate response resources, the FOSC should identify and deploy appropriate Coast Guard resources to respond to the incident. References (q) and (r) should be reviewed for further guidance. These response teams should include unit Pollution Responders, Casualty Investigators, and Marine Inspectors. Furthermore, the U.S. Coast Guard Salvage Emergency Response Team (SERT) at the Marine Safety Center should be engaged and, potentially the Navy's SUPSALV.

8620.2 Vessel/Cargo Salvage Plan

Working with the RP and a naval architect, the salvor must develop a salvage plan. The plan must detail actions to be taken and resources to be used, and it must set organizational responsibilities and the anticipated schedule. **After the plan is prepared and prior to initiating salvage operations, the RP must submit the plan to the FOSC or the FOSC designated representative, for review.** The FOSC will review the plan, and approve or disapprove it based on real or potential risks to port safety and the environment. Any plans for the intentional jettisoning of cargo will be reviewed as part of the salvage plan.
Upon arrival, the salvage ship or vessels and personnel, should conduct damage control and position stabilization. Damage control actions may range from augmenting the ship's crew, to conducting firefighting and flooding control. Position stabilization consists of securing the ship at the first opportunity to prevent it from broaching or being driven further ashore.

Prior to developing a salvage plan, the salvor must conduct a thorough salvage survey of the vessel and its immediate surroundings. The survey is defined in reference (t) as being comprised of: preliminary survey; the detailed hull survey; the topside survey; the interior survey; the diving survey; the hydrographic survey; and the safety survey. The salvor should refer to reference (t) and (ii) for further information. The information should be recorded on the salvage survey form included in Appendix I, of reference (ii), or an equivalent.

The salvage plan should be considered a flexible working plan with appropriate changes made in response to changing conditions.

Depending on the urgency and complexity of the operations, the detail of the plan may vary. All involved partied must ensure that the plan provided is appropriate given the constraints of the operation. Given optimal conditions, as well as time and resources available, a complete salvage plan may include the following elements:

All Incidents

- Pre-incident drafts fore and aft;
- Cargo listings/volumes;
- Fuel volume;
- Status of vessel propulsion and steering systems;
- Post casualty drafts;
- Contingency planning indentifying possible failure points;
- Lightering considerations;
- Clear understandings or contractual agreement of responsibility for control of the vessel;
- Strength of hull girder, damaged areas, attachment points, and rigging;
- Booming considerations;
- Means for controlling interference between pollution response and salvage efforts;
- Potential pollution risks and precautions to avoid or minimizing impact;
- Communications plan;
- Anticipated start time and predicted tides, currents and weather.

Grounding

- Post casualty drafts/locations. soundings;
- Bottom type;
- Estimated ground reaction;
- Force-to-free;
- Towing assets available/utilized and horse power of each;
- Predicted stability when re-floated;
- A summary of the engineering rational for retraction and re-floating techniques;
- Tow/rigging plan including attachment points.

Lightering

- Volume of cargo/fuel to be lightered;

- Type of cargo to be lightered;
- Identification of compatible receiving facilities;
- Special procedures to handle hazardous cargo/materials.

Flooding

- Identification and listing of all dewatering systems to be employed;
- Order of dewatering to ensure satisfactory stability of the vessel.

Transit Plan

- Identification of transit route and final destination;
- Means for controlling the vessel as it is freed;
- Route identified, with special attention to increase draft and beaching areas;
- Vessel escorts, if any, to be employed and horse power of each;
- Any preparation of the vessel necessary to gain permission for entry into destination.

8620.3 Salvage Plan Review

The following is designed to assist the FOSCR/ COTP Representative to evaluate the impact of a Salvage Plan.

1. Quickly gather all information needed during the response to a marine casualty,

2. Provide the Responsible Party (RP) with a guide for preparing and submitting a salvage plan,

3. Develop quick action response plans specific to their unit,

4. Evaluate Salvage Plan for impact on:

    - Personnel safety
    - The environment
    - Waterways and shipping,
    - Commercial facilities
    - Recreational areas
    - The overall response effort.

8620.4 Salvage Plan Implementation

During Salvage Plan implementation, all parties must be in close communication, and the process should be brought to a halt if significant safety problems develop. The salvor, RP, and the FOSC/COTP or the FOSCR have the authority to stop salvage operations in this case.

Conditions must be continually monitored during salvage operations to ensure no additional risk to personnel, the environment, or infrastructure. In the case of a heavily damaged vessel, the risk to the port and the environment may not warrant allowing the vessel to transit through or be brought into the harbor. In some cases, it may be desirable to allow the vessel to sink in deep water to mitigate environmental damage, or minimize risk to life. These are decisions that will involve all parties in the salvage effort, and the FOSC must take the lead to assure that the best management of the incident/threat is achieved.

8620.4.1 Salvage Response Considerations for other than Vessel Strandings

Salvage assistance may also be required for vessel sinking and rescues (towing). In these cases, the relationships between the various parties remain the same as for strandings. For sinking, the salvor must focus on methods for refloating the vessel, and vessel stability as it is refloated.

8620.5 Salvage Response Contractors

8620.5.1 Considerations in Evaluation Salvage Response Contractors

Often, the employment of professional salvage contractors during a marine casualty is critical to ensuring the safest and most expeditious resolution of an incident. The following guidelines assist the Incident Commander/Unified Command in determining if the salvage contractor hired by the RP/Affected Party has the knowledge and capability to undertake the salvage operation. The salvage contractor should:

- Currently provide salvage response services;
- Have a documented history in the business;
- Own response equipment;
- Have trained employees;
- Have 24 hour capability and a history of proven response capabilities;
- Have a training program for employees;
- Have a history of drills and exercises;
- Have a history of creating approved and successful salvage plans;
- Have membership in professional associations;
- Have employer’s liability and salvors liability insurance;
- Be well capitalized for the intended operation;
- Have local experience;
- Have proven logistical capability;
- Follow OSHA and CG rules and regulations regarding HAZWOPER and diving operations.

8630 Salvage Response Activities Impacting the Maritime Transportation System

This section provides a planning and coordination framework for salvage response activities impacting the Maritime Transportation System (MTS). Additionally, for post-Maritime Transportation Security Incident (TSI) salvage response, refer to reference (f), This section is for an incident involving the recovery of the U.S. MTS to support the clearing of the port navigation system in waterways to enable the resumption of maritime commerce in the New Orleans COTP zone identified in reference (k).

Marine salvage currently lacks a comprehensive framework for coordinating marine salvage across “all hazards” and all forms of marine transportation disruptions. Typically, there are many authorities and funding streams that may be applied to resolve incidents involving marine salvage or similar marine services (e.g. for removal of wet debris). The principal pathways for salvage authority and funding are summarized in the sections below. Marine salvage may encompass the formal definition of salvage (i.e. rescuing something of value from peril) as well as wreck, obstruction and debris removal and each related activity may have different authorities, funding sources, and levels of Federal agency involvement.

When there is a non-pollution event in which a vessel or other obstruction is creating a hazard to navigation within federally defined navigable waters, the USACE serves as the lead Federal agency for ensuring either removal of the obstruction from or immediately adjacent to the Federal channel by the owner, operator, or lessee, or by effecting removal using hired labor forces or a contractor. In the latter case, the USACE then seeks reimbursement from the identified owner, operator, or lessee for justified and documented removal expenditures. The USCG and the USACE cooperate in the removal of hazards to navigation in accordance with the provisions of reference (h). Unusual incidents have resulted in use of alternative authorities and funding sources such as highway funds, special authorizations, and appropriations by Congress (e.g., U.S. Department of Transportation-provided funding for the Interstate 35 (I-35) Highway Bridge collapse over the Mississippi River). In unusual situations, COTPs/FMSCs should seek program and legal guidance.

8630.1 Survey Coordination

When sunken vessels and other underwater obstructions inhibit vessel movement on the Lower Mississippi River (LMR) or other navigable waterways in the New Orleans COTP Zone, federal agencies, the responsible party, and other port partners must respond promptly, efficiently, and in a coordinated fashion to restore the Marine Transportation System. The U.S. Army Corps of Engineers (USACE) New Orleans District will coordinate all survey efforts to locate and identify waterway obstructions. The United States Coast Guard (USCG) and the National Oceanographic and Atmospheric Administration (NOAA) will assist these coordination efforts. The COTP, informed by the assessment and recommendations from the USACE and NOAA, will regulate waterways traffic in accordance with his statutory authorities.

8630.1.1 Survey Roles, Responsibilities & Capabilities

8630.1.1.1 U.S. Army Corps of Engineers (USACE)

The USACE New Orleans District will coordinate all survey efforts, locate obstructions, and advise the COTP as to whether waterways a) meet USACE project standards and b) are safe for vessel traffic. The USACE can direct responsible parties to conduct survey and salvage operations in some cases, and at times can provide federal funding for survey and salvage when no responsible party has been identified. The USACE maintains survey boats with multibeam sonar units and survey boats with single-beam sonar units along the Lower Mississippi River. These USACE vessels will strictly operate during daylight hours. The USACE survey team contact information and a complete list of USACE sonar capabilities located within the New Orleans COTP zone can be found in section 3310.4 of this plan.

8630.1.1.2 U.S. Coast Guard (USCG)

The USCG regulates all traffic on federal waterways and can communicate waterways status to the maritime community through written Marine Safety Information Bulletins and over VHF marine radio via Broadcast Notice to Mariners. The USCG has limited single-band sonar capabilities but generally does not have the equipment or expertise to locate underwater objects or the expertise to determine whether waterways meet USACE project standards. The USCG can direct responsible parties to conduct survey and salvage operations in some cases per reference (d) and can provide funding for survey and salvage operations when no responsible party has been identified in certain circumstances. All involved USCG personnel can be reached via the Sector New Orleans Command Center, at 504-365-2533.

8630.1.1.3 National Oceanographic and Atmospheric Administration (NOAA)

NOAA provides hydrographic technical expertise and is well qualified to evaluate survey data and approve survey plans. NOAA maintains standing contracts with several private companies, for which information can be found in 3310.4 of this plan.

8630.1.2 Survey Coordination Processes

8630.1.2.1 Initial Notification

When a sunken vessel or some other hazard to navigation has been reported and may obstruct vessel traffic in a major waterway within the New Orleans COTP Zone, the USACE New Orleans District shall be immediately notified.

8630.1.3 Conducting Surveys

Determining the status of sunken vessels and other waterway hazards requires two main components: technical data and interpretation of that data. Government agencies (USACE and NOAA) and some private entities within the New Orleans COTP zone can provide sonar resources and crews to gather technical data concerning underwater hazards. .

8630.1.3.1 Survey data

Technical data can be collected by any vessel with sufficient sonar capabilities. Sonar equipment varies greatly in its accuracy and thoroughness in mapping channels and detecting underwater objects. Sonar equipment available in the New Orleans COTP zone can be classified in two groups: multi-band and single-band sonar.

8630.1.3.2 Multibeam Sonar

Multibeam sonar units provide very detailed depictions of underwater objects, and can be used to confirm the specific location of a sunken vessel. Surveying a given area with multibeam sonar (as compared to single-beam sonar) is slow and time consuming.

Most multibeam sonar units available the New Orleans COTP zone are permanently affixed to specific vessels, are not portable, and cannot be transferred and mounted to different vessels. Capability and contact information for all known multibeam sonar resources available in the New Orleans COTP zone can be found in paragraph 3310.4 of this plan.

8630.1.3.3 Single-Beam Sonar

In comparison to multibeam sonar units, single-beam Sonar units can survey a large area in a short amount of time, but provide significantly less detail. Single-beam units typically cannot be relied upon to confirm the specific location of a sunken vessel. Many single-beam sonar units available within the New Orleans COTP zone are portable and can be rigged to tow behind various vessels. Capabilities and contact information for all known single-beam sonar resources available in the New Orleans COTP zone can be found in paragraph 3310.4 of this plan.

8630.1.3.4 Private Survey Resources

Numerous companies within the New Orleans COTP Zone own and operate sonar equipment. The capabilities of the equipment, how well the equipment is calibrated, the proficiency of their operators, and the helpfulness of their information may vary. The USACE, NOAA, the Coast Guard, and Port Coordination Team representatives are well served by maintaining familiarity with the capabilities and status of private survey equipment and crews.

8630.1.4 Survey Resources & Points of Contact

PRIVATE SURVEY RESOURCES			
COMPANY	**OVERVIEW**	**CONTACT INFORMATION**	**ASSETS**
EMC	EMC is a subcontractor to one of NOAA's prime contractors (David Evans). Their survey boats can work day and night in the LMR.	Josh Hardy Office: 504-862-1852 Joshua.T.Hardy@usace.army.mil Main Office: 2472 Sunset Drive, Grenada, MS 38901 Phone: 662-226-5166 Fax: 662-226-5170 www.emcsurvey.com Jake Mattox, Senior VP, EMC Inc. Cell 662.392.8393 tel:662.392.8393 Office 662.226.5166 Fax 662.226.5170 EMC, Inc, 2472 Sunset Drive Grenada, MS 38901	EMC has five multibeam systems, which can be rigged on any vessel of opportunity. EMC also owns and operates two dual frequency sidescan sonar systems: A Klein 3000 dual frequency sidescan sonar, 200 and 500 kHz and 3900 sidescan system capable of producing 900 KHZ images. **EMC vessels:** SEA SCANNER & SEA PROBE – 32' Armstrong Catamarans; range 400 miles. SEA BENEATH 30' Scullys Aluminum Cabin Boat Range: 200 miles SOUNDER 28' Sculys Aluminum Cabin Boat Range 200 miles CONSTRUCTOR 23' Lobell's Custom Boats Single Yamaha 200 4-stroke engine 100 miles SEA BELOW 26' Monark Cabin Boat Range: 150 miles HYDRO I 25' F&F Aluminum Cabin Boat Range: 150 miles

PRIVATE SURVEY RESOURCES			
COMPANY	**OVERVIEW**	**CONTACT INFORMATION**	**ASSETS**
David Evans and Associates (DEA)	DEA has one vessel located in Biloxi, MS, which can access the LMR. Under NOAA contract for Night & day operations.	Jon Dasler Director of Marine Services Mobile: 503-799-0168 Email: jld@deainc.com Biloxi, MS Field Office: Marine Services Division 691 Beach Boulevard, Suite 214-A Biloxi, MS 39533-1908 Phone: 228-207-6448 Corporate Office – Marine Division: 2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661 Office: 360.314.3202 Cell: 503.799.0168 Fax: 360.314.3250	WESTERLY Equipped with multibeam sonar & sidescan sonar. Vessel can reach the LMR (by way of Baptiste Collette) in approximately 3-4 hours. The vessel and crew can work day and night ops in the LMR.
Chustz Surveying Inc.		Damien French Office: 504-862-1865 Michael.D.French@usace.army.mil	
T Baker Smith	2 vessels in Lafayette with 3 hour response time 1 vessel in Houma with 2 hour response time Daytime operations only unless ideal conditions for nighttime.	Joshua Gillis 412 South Van Avenue Houma, LA 70363 337.501.1271 Cell 866.357.1050 josh.gillis@tbsmith.com	Equipped with side scan single bean fathometer and magnetometers
Johnson, McAdams Surveying		John Grunder Office: 504-862-1847 John.B.Grunder@usace.army.mil	
C&C Technologies	C&C owns and operates a variety of survey vessels capable of performing multibeam sonar, side scan sonar, and single-beam sonar. They are currently under NOAA contract for work in the Gulf of Mexico.	Tara Levy – Tara.Levy@cctechnol.com Scott Croft – Scott.Croft@cctechnol.com C&C Technologies, Inc 730 E. Kaliste Saloom Rd. Lafayette, LA 70508 337-261-0660 (Ext. 3518)- Main Number is 24 337-296-3029 (cell) 337-261-0192 (Fax)	R/V SEA SCOUT 134' catamaran, can conduct side scan sonar. C-WOLF 30' survey vessel Can be rigged for multibeam, singlebeam, and side-scan sonar. C-GHOST 30' survey vessel Can be rigged for singlebeam, side scan sonar, and multibeam.

Furgo Chance, Inc.	Under NOAA contract.	Joel W. Jones Jwjones@fugro.com Furgo Chance, Inc. 200 Dulles Drive Lafayette, LA 70506 Office: 337-238-3351 24/Hour: (337) 237-1300 or 1-800-858-5322	

US ARMY CORPS OF ENGINEERS - SURVEY RESOURCES

Contact Information: Survey Team Leader - Michael Sullivan
Office: 504-862-1865/2373 Cell: 504-258-1134
Email: Michael.D.Sullivan@usace.army.mil

VESSEL	DUTY STATION	SURVEY CAPABILITY	LENGTH/SWEEP AREA COVERAGE
LAFOURCHE	Port Allen Lock Baton Rouge, LA	Single Beam	**63'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
GRETNA	District Dock New Orleans, LA	Single Beam	**49'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
BURRWOOD	Bayou Bouef Lock Morgan City, LA	Single Beam	**58'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
TECHE	Bayou Bouef Lock Morgan City, LA	Single Beam	**63'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
LABORDE	Venice Sub Office Venice, LA	Single Beam	**45'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
BOPP	Venice Sub Office Venice, LA	Single Beam	**48'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
BLANCHARD	Venice Sub Office Venice, LA	Single Beam	**55'** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**

OB-167	District dock New Orleans, LA	Single Beam	**26’** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
OB-189	District Dock New Orleans, LA	Single Beam RESON 7125	**21’** **2:1 Ratio; sweep area coverage based on depth of water**
OB-169	District Dock New Orleans, LA	Multi-Beam Side Scan	**26’** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**
OB-173	Venice Sub Office Venice, LA	Single Beam	**26’** **Sweep area coverage is measured by multiplying half the time from the signal's outgoing pulse to its return, generally what is directly under the vessel**

8640 Oil/Hazardous Substance Release Mitigation and Lightering

Oil discharged, and hazardous substance releases are of the greater potential during groundings and almost a certainty during a major collision or other event when there is a breach in the hull. There are several ways to establish if there is an oil discharge or hazardous substance release. The primary method may be observation of a sheen emanating from the damaged vessel. However, this method may be of limited usefulness at night and is not indicative of damages inboard of the hull structure. Bunker and cargo tanks should be immediately sounded and monitored closely for changes that would indicate a breach. Given the high correlation between major marine casualties and pollution incidents, it is prudent to provide, at a minimum, containment boom to surround the vessel(s).

8640.1 Lightering

One of the most effective ways to mitigate or prevent an oil discharge is hazardous substance release is to remove all remaining cargo and unnecessary bunker fuel/cargo from the vessel. This is particularly useful when the risk of a hull breach is increasing due to changing environmental or physical conditions on the vessel. Vessels may be lightered to another vessel or a facility ashore. Choosing which is most appropriate will depend on the location of the vessel and availability of each. Whichever is chosen, it is important to ensure the receiving vessel or facility is qualified to handle the lightered material and that any cargo/residue in hoses and holding tanks are compatible with lightered material. Furthermore, the effects on the stability of the vessel should be taken into account when lightering a vessel. While lightering may present benefits when attempting to re-float a vessel, it may also present additional structural stresses upon the vessel. It is important to work with naval architects as well as the person in charge of cargo loading/offloading the vessel, who is frequently the Chief Officer or First Mate of the vessel.

8650 Places of Refuge

A ship in need of assistance may require a temporary place of refuge with adequate water depth for lightering or repairs in order to protect the marine environment. Ships may need to be brought into a harbor, anchored, or moored in protected waters, or temporarily beached in order the safely make repairs and stop the loss of oil or other hazardous substances. Disabled ships need to be repaired in order to resume safe navigation and prevent a shipwreck resulting in the loss of fuel and/or cargo. If leaking ships are not repaired, spilled oil and hazardous substances may affect the public health, environmental resources, and shorelines.

For more information regarding places of refuge and the Places of refuge decision making process please refer to the NOACP Annex J, Places of Refuge and reference (cc).

8660 Termination of Response Activities

The IC or UC will make the determination of when to terminate response activities after consulting with the COTP/FOSC and the Operations Section Chief.

Upon termination of the emergency phase of the operations the UC organization role will shift to mitigation, clean up, recovery, and restoration. This shift in objectives and priorities may require transfer of command to another agency(s) or departments of an already involved agency based on UC membership criteria listed in reference (l)

8700 Planning

The IC/UC is responsible for organizing and staffing the Planning Section. It is preferred that these resources are the combined talents of the vessel, platform, or facility personnel, along with local firefighting resources, contractor personnel, and federal, state, and local agencies.

8710 Maritime Transportation System Recovery Unit

The Coast Guard has adopted the inclusion of a Maritime Transportation System Recovery Unit (MTRSU) in the planning section of a Unified Command structure. MTSRU roles and tasks during an incident are identified in reference (l)

The MTSRU will be established as quickly as practicable by the COTP/FMSC/FOSC during an incident response so that the unit is available to utilize the Common Access Reporting Tool (CART) to identify and assist in populating the Essential Elements of Information (EEI) needed for the MTS Recovery Assessments. Advisory support will be coordinated with port stakeholders. Procedures for establishing and operating the MTSRU is outlined in Sector New Orleans Marine Transportation System Recovery Plan located in the AMSP.

8800 Logistics

Responding agencies and resources will be responsible for their own administrative and logistical support until such time as a Logistics section is established. The Logistics Section Chief will be appointed by the Incident Commander or Unified Command.

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8810 Resources

8810.1 Federal Agencies

AGENCY	LOCATION	CONTACT	ASSETS
Federal Emergency Management Agency (FEMA) Region VI	Denton, TX	(940) 898-5280 Fax: (940) 898-5512	Personnel
U.S. Bureau of Immigration and Customs Enforcement (ICE)	As directed	(800) 973-2867	Personnel
U.S. Bureau of Customs and Border Protection (CBP)	New Orleans	(504) 269-6154	Personnel
U.S. Marshals Service	New Orleans Baton Rouge	(504) 589-6079 (225) 389-0364	Personnel
Federal Bureau of Investigations (FBI)	New Orleans	(504) 816-3000	Personnel
U.S. Coast Guard (Local)	District Eight	(504) 589-6225	Personnel
	Sector New Orleans	(504) 365-2533	Personnel Water Borne
	MSU Baton Rouge	(225) 298-5400	Personnel Water Borne
	Air Station New Orleans	(504) 393-6032	Aircraft
	USCG Auxiliary Flotilla 04-09	(985) 727-2869	Personnel
AGENCY	LOCATION	CONTACT	ASSETS

U.S. Coast Guard (National)	Gulf Strike Team Mobile, AL	(251) 441-6601	Personnel Pollution Response
	District Response Advisory Team (DRAT) District Eight New Orleans, LA	504) 589-6901 (504) 589-6225 (24hr)	Personnel
	District Eight Public Affairs Office (PAO) New Orleans, LA	(504) 589-6287 Fax:(504) 589-2142 (504) 598-6225 (24hr)	Personnel
	Public Information Assist Team (PIAT) NSFCC - PIAT 1461 US Highway 17 N Elizabeth City, NC 27909	(252) 331-6000 x3025 Fax: (252) 331-6012	Personnel
Railroads	Burlington Northern Santa Fe Railroad	(888) 877-7267	
	Kansas City Southern Railroad	(800) 832-5452	
	Texas Mexican Railroad	(800) 892-6295	
U.S. Environmental Protection Agency (EPA) Response & Prevention Branch	1445 Ross, Mail Code 6SF-R Dallas, TX 75202	(214) 665-6428	Personnel Pollution Response
EPA Region 6 Public Affairs	1445 Ross Avenue Dallas, TX 75202	(214) 665-2208 (800) 887-6063 Fax: (214) 665-2118	Personnel Pollution Response
EPA Branch Offices	Baton Rouge	(225) 291-4698	Personnel Pollution Response
AGENCY	**LOCATION**	**CONTACT**	**ASSETS**

AGENCY	LOCATION	CONTACT	ASSETS
US Navy	US Navy Supervisor Salvage (SUPSALV) 2531 Jefferson Davis Hwy Arlington, VA 22242-5160	(202) 781-3889	Water Borne Salvage
	U.S. Naval Sea System (NAVSEASYS) Command	(703) 697-7403 Fax: (703) 697-7393	
	U.S. Naval Air Station (NAS) New Orleans	(504) 678-3472	
US Army	Army Diving Detachment Assistance U.S. Army Diving Company Fort Eustis, VA 23604	(757) 878-5780 / 5658 / 3500 / 5604	Water Borne Dive
U.S. Army Corps of Engineers	New Orleans, LA	504-862-2244 504-862-2358	
National Oceanic and Atmospheric Administration	National Oceanic and Atmospheric Administration Damage Assessment Center	(301) 713-3038	Water Borne
	WSC 1 Room 425, 6001 Executive Boulevard Rockville, MD 20852	(214) 665-2232 Pager: (800) 759-7243 PIN #185-4101 (206) 726-2148 (24hr)	Water Borne
	NOAA Scientific Support Coordinator (SSC) Eighth Coast Guard District Hale Boggs Federal Bldg	(504) 589-4414 (504) 589-4416 Fax: (206) 526-6329 (206) 526-6317 (24hr) (800) Sky-page (pin 5798819)	Water Borne
	NOAA Discharge and Release Trajectory Modeling 7600 Sand Point Way, NE	Pager: (800) 759-7243 PIN #2168798 Fax: (206) 526-6329 (206) 526-4911 (24hr)	Water Borne

U.S. Department of Transportation (DOT)		(504) 436-9130	
Federal Communications Commission (FCC)	New Orleans	(504) 219-8989	
	Washington, DC	(202) 418-1122	
Bureau of Safety and Environmental Enforcement		Primary: (504) 616-0147 Secondary: (504) 818-0949 Dispatch: (504) 736-0557 Fax: (504) 736-2426	Technical Expertise
Department of Energy (DOE)		(504) 734-4201 (504) 265-3073	Technical Expertise
Nuclear Regulatory Commission		(817) 860-8233 Fax: (817) 860-8210	Technical Expertise

8810.2 State Agencies

AGENCY	LOCATION	CONTACT	ASSETS
Louisiana Oil Spill Coordinator's Office	150 Third Street, Suite 405 Baton Rouge, LA 70801	Phone: (225) 219-5800 Fax: (225) 219-5802	Personnel
Wildlife and Fisheries	2000 Quail Drive Baton Rouge, La. 70808	(225) 765-2800	Water Borne
Louisiana State Police	Baton Rouge, LA	(225) 925-6424	Land/Air
Department of Environmental Quality (DEQ)	New Orleans, LA	Hotline (504) 342-1234	Personnel

8810.3 Local Agencies

8810.3.1 Local Law Enforcement

AGENCY	LOCATION	CONTACT	ASSETS
Baton Rouge PD	Baton Rouge	(225) 389-2000	Land
East Baton Rouge Sheriff Office	East Baton Rouge Parish	(225) 389-5093	Land Water Borne
West Baton Rouge Sheriff Office	West Baton Rouge Parish	(225) 343-9234	Land
Jefferson Parish Sheriff Office	Jefferson Parish	(504) 227-1400	Land/Air Water Borne
Kenner PD	Kenner	(504) 712-2222	Land
New Orleans PD	New Orleans	(504) 671-3650	Land
New Orleans Harbor Police	New Orleans	(504) 891-7585	Land Water Borne
Plaquemines Parish Sheriff Office	Plaquemines Parish	(504) 297-5600	
St Bernard Parish Sheriff Office	St Bernard Parish	(504) 271-2501	Land Water Borne
St Charles Parish Sheriff Office	St Charles Parish	(504) 783-6807	Land Water Borne
St James Parish Sheriff Office	St James Parish	(504) 562-2200	Land
St John Parish Sheriff Office	St John Parish	(504) 652-6338	Land
St Tammany Parish Sheriff Office	St Tammany Parish	(985) 898-2338	Land
Ascension Parish Sheriff Office	Ascension Parish	(225) 621-8300 Ext. 1	Land

8810.3.2 Local Fire Departments

AGENCY	CONTACT
Baton Rouge	(225) 383-4425
Belle Chasse	(504) 394-3541
Destrehan	(985) 783-6807
Donaldsonville	(225) 621-8301
West Baton Rouge	(225) 490-8599
East Carroll	(225) 389-4617
Jefferson	(504) 227-1407
Jesuit Bend	(504) 394-3541
Kenner	(504) 467-2211
New Orleans	(504) 671-3939
Plaquemines	(504) 297-5600
St Bernard	(504) 271-0411
St Charles	(985) 783-6807
St James	(225) 562-2364
St John	(985) 652-6338
St Tammany	(985) 898-2338

8810.3.3 Port Assets

PORT	ASSET	LOCATION	NUMBER	RESPONSE TIME
Port of Plaquemines 124 Edna LaFrance Rd Braithwaite, LA 70040	Belle Chase Ferry M/V LOUISIANA	Belle Chase	(504) 297-5660	10 Minutes – 3 Hours
	AUTHORITY I 50’ fireboat 2 crew Speed – 25 kts	Mile 75 AHP	(504) 912-3991	10 Minutes – 3 Hours
	AUTHORITY II 50’ fireboat 2 crew Speed – 25 kts	USCG Station Venice		10 Minutes – 3 Hours
	AUTHORITY III 90’ fireboat 2 crew Speed – 23 kts	Mile 75 AHP	(504) 715-6913	TBD
	17’ Diamondback Airboat w/ trailer Speed – 40 kts	Belle Chase VFD	N/A	TBD
	18’ Alumaweld Flatboat w/ trailer Speed – 35 kts	Belle Chase VFD	N/A	TBD
	30’ rescue / fireboat Speed – 40 kts	Mile 75 AHP Eastport	N/A	TBD
	30’ rescue / fireboat Speed – 40 kts	Mile 75 AHP Westport	N/A	TBD
	Tilt-bed Truck	Belle Chase VFD/Woodlawn	N/A	TBD
	Sunstrom 480B Helicopter w/ cargo hook; Spectra lab SX-5 searchlight; Gyrocam DS infrared camera	Sheriff’s Office	N/A	TBD
	Mobile Communications and Surveillance Unit	TBD	TBD	TBD
	4 pickup trucks	TBD	TBD	TBD

PORT	ASSET	LOCATION	NUMBER	RESPONSE TIME
Port of Plaquemines 124 Edna LaFrance Rd Braithwaite, LA 70040	80’ mobile communications tower	Mile 75 AHP	TBD	TBD
St. Bernard Port 100 Port Boulevard Chalmette, LA 70043	Admin & Security Complex Office Space; 20 person command center; 2000 sq ft command center as needed	89.5 AHP	(504) 277-8418	N/A
	Chalmette Slip (safe harbor)	90.7 AHP	N/A	N/A
	Tour Boat Dock at Battlefield (Chalmette National Park)	90.0 AHP	N/A	N/A
	Passenger Barge for Paddlewheels at Battlefield	90.0 AHP	N/A	N/A
	Maritime Security Operations Center (MSOC) for St. Bernard & Plaquemines Parish Accommodates 9 Unified Commanders and 16 personnel for 3 weeks w/o outside intervention	89.5 AHP	(504) 342-6289	N/A
	Chalmette Mid-Stream Mooring	89.5 AHP	N/A	N/A
	Meraux Mid-Stream Mooring (2)	86.5 AHP	N/A	N/A
	Underwater Inspection System	89.5 AHP	N/A	N/A
	80’ mobile communications tower	89.5 AHP	(504) 342-6289	N/A
Port of Jefferson	Harvey Canal Fire Boat		(504) 349-5317	<20 Minutes
Port Of New Orleans 1350 Port of New Orleans Place LA, 70130	Port of New Orleans Admin Building	95.7 AHP	TBD	N/A
	Mobile Command Center 45’X34’ 2007 Freightliner; 56 lbs; 300 H.P. turbo charged diesel 1 crew	95.4 AHP Julia Street Substation	(504) 891-7585	N/A

PORT	ASSET	LOCATION	NUMBER	RESPONSE TIME
Port Of New Orleans 1350 Port of New Orleans Place LA, 70130	CAPT KENNETH H. SCARBROUGH 50' Dauntless Class River Patrol Boat Speed: 30 kts 3 crew	98.0 AHP Harbor Police HQ #1 Third St. Wharf	(504) 891-7585	N/A
	GENERAL KELLEY 95' Multi-purpose public safety vessel 3600 H.P. Speed: 20 kts 3 crew	98.0 AHP Harbor Police HQ #1 Third St. Wharf	(504) 897-6844	N/A
	21' Boston Whaler w/ trailer 200 H.P Speed: 20 kts 3 crew	95.4 AHP Julia Street Substation	(504) 891-7585	N/A
	16' flat boat w/ trailer 90 H.P. Speed: 15 kts 2 crew	95.4 AHP Julia Street Substation	(504) 891-7585	N/A
Port of South Louisiana 171 Belle Terre Blvd LaPlace, LA 70068	JOHN JAMES CHARLES 80' fireboat; staging platform, firefighting (5,500 GPM) Speed: 12 kts 3 crew	164.0 AHP	(866) 536-3678 (985) 536-3678	10 Minutes – 3 Hours
	PSV ACCARDO 49' Dauntless class patrol boat; firefighting (1500 GPM) Speed: 30 kts 3 crew	138.0 AHP	(866) 536-3678 (985) 536-3678	10 Minutes – 3 Hours
	PSL RESPONDER 57' Security Command boat 4.5 ft draft; limited firefighting; echoscope 3D sonar Speed: 30 kts 1750 H.P. 3 crew	138.0 AHP	(866) 536-3678 (985) 536-3678	10 Minutes – 3 Hours
	27' Zodiac RHIC w/ trailer 3 crew; 6 passengers SAR/LE/echoscope 3D sonar	Reserve, LA	(866) 536-3678	TBD

PORT	ASSET	LOCATION	NUMBER	RESPONSE TIME
Port of South Louisiana 171 Belle Terre Blvd LaPlace, LA 70068	2 pickup trucks	Reserve, LA	(866) 536-3678 (985) 536-3678	TBD
Port of Greater Baton Rouge 2425 Ernest Wilson Drive Port Allen, LA 70767-6176	Maritime Security Operations Center (MSOC) for Port of Greater Baton Rouge	229.0 AHP	TBD	N/A
	THE VOLUNTEER (Exxon-Mobil) 150' Refinery Fire Barge (2000 GPM/1000 GPM/1250 GPM) 30 crew	Exxon-Mobil Refinery Dock, N. Baton Rouge, LA	(225) 931-3899	N/A

8810.4 Commercial Salvage Companies

8810.4.1 Companies with a USCG Basic Ordering Agreement

DIAMOND SERVICES CORPORATION
503 DEGRAVELLE RD.
AMELIA, LA. 70340
(985) 631-2187
*24 HR. SERVICE

CAL DIVE
254 FORD INDUSTRIAL RD.
AMELIA, LA 70340
(985) 631-0315
*24 HR. SERVICE
NO STANDARD RATES LIST, BIDS ARE ON EACH PARTICULAR JOB.

BISSO MARINE COMPANY, INC.
FOOT OF WALNUT STREET @ THE MISSISSIPPI RIVER
NEW ORLEANS, LA 70118
(504) 866-6341
(504) 865-8132 (FAX)

T&T SALVAGE, LLC
8717 HUMBLE WESTFIELD RD
HUMBLE, TX 77338
*24 HOUR NUMBER (713) 534-0700
(281) 446-4010

8810.4.2 Dive Companies

Dive Companies			
Name	**Address**	**Phone**	**Fax**
Bagala's Diving Service	506 Cutoff, LA 70345	(985) 632-5071	
Bisso Marine	P.O. Box 4113 New Orleans, LA 70178	(504) 866-6341	(504) 865-8132
Cal Dive International	P.O. Box 1016 Morgan City, LA 70381	(800) 237-5017	(504) 631-9708
Continental Diving Service	P.O. Box 2484 Morgan City, LA 70381	(985) 395-5251	
Eymard Roger Jr. Diving Service	Rt. , Box 281-A Galliano, LA 70354	(985)-475-7232	
Professional Divers, NOLA	2263 Telestar Harvey, LA 70058	(504) 391-1351	(504) 394-1414
U. S. Navy	Mobile Diving & Salvage Unit 2 Unit 60006, Little Creek, VA	(800) 464-7433 (800) 363-4136	
Underwater Services, Inc.	P. O. Box 80678 Baton Rouge, LA 70898	(225) 927-3483	

McKinney Towing & Fleeting	2500 River Road Baton Rouge, LA 70802	(225) 388-9846 (504) 523-1533	
National Marine, Inc.	5127 N. River Road Port Allen, LA 70767	(225) 343-9273 (504) 525-5018	
Val's Diving	P. O. Box 880 Marrero, LA 70072	(504) 371-6200	
Epic Divers	1556 McArthur Avenue Harvey, LA 70058	(504) 340-5252	
H. J. Merrihue Diving & Salvage	P. O. Box 23123 New Orleans, LA	(504) 466-2800 (225) 343-0077	
Bisso Marine Company, Inc.	P. O. Box 4113 New Orleans, LA 70178	(504) 866-6341	
E. N. Bisso & Son, Inc	P. O. Box 4370 New Orleans, LA 70178	(504) 872-9306	
Lea Diving & Salvage	P. O. Box 314 Mobile, AL 3660	(251) 432-4480	

8810.4.3 Private Firefighting

Williams Fire & Hazard Control Inc.
P.O. Box 1359
Mauriceville, Texas 77262
(409) 727-2347 (800) 231-4613
Fax: (409) 745-3021
24 hr. (713) 999-0276
Equipment: Williams has access to a network of firefighting resources throughout Southeastern Louisiana

SMIT Americas
400 North Sam Houston Parkway
Suite 310
Houston, Texas 77060
(713) 931-2150
Equipment: SMIT has two readily deployable firefighting kits located in Berwick, LA. These kits are capable of handling up to large deep draft vessel fires.

Resolve Marine
365 Canal Place, Suite 1550
New Orleans, LA 70130
(504) 301-9751
(954) 650-3188 (Mobile)

T&T BISSO, LLC
3110 East Pasadena Fwy
Pasadena, Texas
24 hr. (713) 534-0700

Equipment: Firefighting team based in New Iberia, LA. Portable pumps and equipment in New Iberia, LA, and Galveston, TX. Deep-draft capable.

Wild Well Control
22730 Gosling Road
Spring, TX 77389-4401
(281) 353-5481
(281) 353-5480 (Fax)

Boots & Coots, L.P.
Industrial and Marine Division
11615 N. Houston-Roslyn Road
Houston, Texas 77086
24 hr. (800) 256-9688
Day (713) 931-8884

OMI Environmental Solutions
131 Keating Drive
Belle Chasse, LA 70037
(504) 394-6110
24/7 (800) 645-6671

8900 Finance

The owner/operator of the source of fire (facility, vessel, or platform) is responsible for the financial costs associated with marine firefighting. During the initial phases of the fire response, each responding entity would maintain their own cost accounting using their established organizational procedures. In the event of a large incident that extends into a long period of response, a more unified Finance/Administration Section may be established.

8910 Protection and Indemnity (P&I) Insurance

Large commercial vessels and barges typically have Protection and Indemnity (P&I) Insurance to cover instances that result in salvage. This insurance provides coverage to ship-owner and characters against third-party liabilities encountered in their commercial operations. Responsibility for damage to cargo, for pollution, for the death, injury or illness of passengers or crew, and for damage to docks and other installations are examples of typical exposures under P & I insurance.

8920 Federal Funding

A marine fire may lead to the release of harmful quantities of oil or hazardous substances. Dependent on the severity of the fire, the FOSC can access either the Oil

Spill Liability Trust Fund (OSLTF) or the Superfund (CERCLA) to fund all appropriate measures of response to cleanup, mitigate, or prevent a release into the environment. In the most severe of circumstances, it may be appropriate for the FOSC to fund firefighting resource if the Responsible Party has not taken adequate or appropriate actions. See section 6000 of the New Orleans Area Contingency Plan for accessing either the OSLTF or CERCLA funds.

8930 Salvage Response Contracts

8930.1 Types of Salvage Contracts

Salvage companies may operate under several types of contracts when conducting salvage operations. Some contract types such as Lloyd's open form may influence the level of cooperation between the salvor and the Unified Command. Incident Commanders/Unified Command should be aware of the type of contract that a salvor is operating under and its potential influence on coordination.

Lloyd's Standard Agreement

Lloyd's Standard agreement- No Cure No Pay (aka Lloyd's Open Form) is a contract which encourages the salvor to immediately and actively pursue the work independently for a sum to be agreed upon only after delivery of the vessel to safety. The salvor receives no financial compensation if the vessel is not delivered safely or if there is no salved value.

Fixed Price, Lump Sums

Fixed price, lump sums are contract formats stipulating a scope of work to be accomplished for a pre-negotiated amount. Fixed price encourages fast action but can induce a salvor to pursue the least capital intensive, more risky alternative to save expenses.

Time and Materials or Cost Plus

Time and materials or cost plus contract usually refer to a rate sheet or actual invoices for all assets employed or expended and indicate bonuses and penalties for completion. The contracting party can assume a more active management responsibility while the salvor may be less motivate for the speedy completion of the work unless the contract includes meaningful incentives.

Appendix A Marine Firefighting

Marine Firefighting Checklist

Initial information			
Name of Reporting Person:		Phone: ( ) -	Address:
Reporting Person’s Relationship to Incident (check box): ☐ Agent ☐Master/CEO ☐Work Party title: ____________ ☐Other: ____________			
Nature of Incident (check box): ☐ Vessel Fire ☐ Facility Fire ☐ Explosion ☐ Collision ☐Other:____________			
Location of Incident			
Latitude:		Longitude:	
Vessel Fire			
Vessel Name:		Call Sign:	Exact location of fire (i.e., compartment, deck.)
Agent Name:		Agent Phone: ( ) -	Vessel Flag:
Marina:	Berth:	Anchorage:	Address (if applicable):
Facility Fire			
Facility Name:		Exact location of fire on facility:	
Facility Phone: ( ) -		Address (if applicable):	

Fire and Safety Information

Fire Details

Status of fire (circle one):

Extinguished **Contained** **Out of Control**

Class of Fire (check one):
☐ Alpha (paper, wood, etc.)
☐ Bravo (fuels)
☐ Charlie (electrical)
☐ Delta (metals)

Firefighting Efforts (check box):
☐ None taken at time of report
☐ In progress with vessel/facility crew
☐ In progress with outside assistance
Specify: ______________________________

____

Source of fire (check box):
Source known?
☐ No
☐ Yes
Source Secured?
☐ No
☐ Yes

Shipboard/Facility Firefighting Systems:

Type(s) Available:

____

____

Type(s) Expended:

____

____

Remaining Resources:

____

____

Safety Information

Personnel Status (check boxes):
Are there any personnel casualties?
☐ Yes
☐ No
Are there any personnel missing or trapped?
☐ Yes
☐ No
Location(s): ______________________________

____

Are there any injured personnel?
☐ Yes
☐ No
Injuries: _________________________________

____

Are there any deaths?
☐ Yes
☐ No

MEDIVAC requested?
☐ Yes
☐ No

Vessel Status: Can the vessel maneuver? ☐ Yes ☐ No	Does the Master wish to anchor/moor the vessel? ☐ Yes ☐ No

Surrounding Area Hazards

Cargo information:

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Type: ________ Quantity: ________ Distance from fire: ______ Location: _____

Nearby Vessels/Facilities:

Type: __________ Name: _______________ Distance from fire: ___________

Type: __________ Name: _______________ Distance from fire: ___________

Type: __________ Name: _______________ Distance from fire: ___________

Type: __________ Name: _______________ Distance from fire: ___________

Appendix B Salvage Response Checklist

Rapid Salvage Survey

Fill this sheet out as completely as possible, when seeking salvage engineering assistance, and contact the SERT duty member using the contact information listed on page 2 of this document. All fields marked with an "*" are necessary for increased accuracy of salvage calculations. This document can be found by searching for "Salvage Engineering" on the Coast Guard Homeport site at http://homeport.uscg.mil.

Vessel Name: ________________________ O.N. & Class Society: ________________

Dimensions: *Length: ___________ *Beam: ___________ *Depth: ____________
(keel to deck)

Vessel Specifics: *Full Load Draft: __________ *Service Speed: ___________

*Vessel Type:

☐ Barge Carrier ☐ Barge w/o rake ☐ Barge w/rake
☐ Tank Ship ☐ Bulk Carrier ☐ Break Bulk
☐ Containership ☐ RO/RO ☐ LPG/LNG Carrier
☐ OBO ☐ Other: ______________________

Type of Casualty: *(Check all that apply)*

☐ Fire ☐ Explosion ☐ Grounding ☐ Collision/Allision
☐ Flooding ☐ Sinking ☐ Capsizing ☐ Oil/HAZMAT spill
☐ Structural Damage ☐ Other: ______________________

Date/Time of Casualty: Position: Lat:
Long:

***Drafts**

Pre-Casualty Date/Time Taken:			Post- Casualty Date/Time Taken:	
Port	Starboard		Port	Starboard
		Forward		
		Midships		
		Aft		

***Bottom Type**

☐ Silt/mud ☐ Sand ☐ Coral ☐ Rock ☐ N/A

***Water Depth Information (Tide changes, River heights, Lake levels)**

Provide water depth information as applicable: ________________________________

At Time Of Incident ________High ________Low _______ Exp. Total Change _______

Reported Damage/Pollution

____

____

Description of Vessel Cargo

____

____

Aim/intent of Salvage Operation: *(Check all that apply)*

☐ Lighter/Transfer ☐ Dewatering ☐ Lifting ☐ Towing ☐ Patching
☐ Beach Gear ☐ Other _______________
Anticipated Date/Time of action: ______________________

Technical Assistance Requested: *(Check all that apply)*

What technical assistance would you like us to provide?
☐ Salvage Plan Review ☐ Oil Outflow Analysis ☐ Ground Reaction
☐ Force to Free ☐ Structural Analysis ☐ Stability Analysis
☐ Review Lightering Plan ☐ Other: ___________________________________

Salvage Information Available: *(Check all that apply)*

☐ General Arrangement Plan ☐ Loading Plan ☐ Trim & Stability Book
☐ Section Modulus ☐ Midship Section
☐ Computer Model (HECSALV, GHS, SHCP, Etc.) ☐ Other

Your Contact Information

CG Contact Name: _________________________ Phone:______________________
E-mail: _______________________________________ Fax: ______________________

SERT Contact Information

Contact Info (24/7):
Duty Member Cell: (202) 327-3985
Flag Plot 1-800-323-7233
E-mail: sert.duty@uscg.mil

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New Orleans Area Contingency Plan

Chapter 9000
Appendices

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Table of Contents

Appendices

9000 Appendices

This chapter contains additional guidance and policy referenced in the NOACP.

9100 Emergency Notification

Emergency notification information including Initial Assessment Checklist, Safety Consideration, etc can be found in the Preface of this plan.

9200 Personnel and Services Directory

9210 Federal Resources/Agencies

9210.1 U.S. Coast Guard

Sector New Orleans	(504) 365-2200
MSU Morgan City	(985) 380-5320
MSU Baton Rouge	(225) 298-5400
MSU Houma	(985) 851-1692
MSU Lake Charles	(337) 491-7800
MSU Port Arthur	(409) 723-6500
Sector Houston-Galveston	(713) 671-5100
Sector Corpus Christi	(361) 939-6393
Sector Mobile	(251) 441-5720
Air Station New Orleans	(504) 393-6033
Aviation Training Center (ACT) Mobile	(251) 441-6401
Recreational Boating Safety	(504) 671-2157
National Pollution Fund Center	(703) 872-6000
National Response Center	(800) 424-8802
District 8 Response Advisory Team	(504) 671-2231
District 8 External Affairs	(504) 671-2020

9210.1.1 U.S.C. G. National Strike Force (NSF)

National Strike Force Coordination Center	(252) 331-6000
Atlantic Strike Team	(609) 742-0008
Gulf Strike Team	(251) 441-6601
Pacific Strike Team	(415) 883-3311
Public Information Assist Team (PIAT)	(252) 331-6000

9210.1.2 Vessel Traffic Services

New Orleans, LA	(504) 589-2780
Berwick, LA	(225) 380-5300
Houston/Galveston, TX	(713) 678-9090

9210.2 National Oceanic and Atmospheric Administration

Scientific Support Coordinator	(206) 526-4911
Discharge and Release Trajectory Modeling*	(206) 526-4911
Atmospheric Modeling (National Weather Service)*	(504) 522-7330

* For the purposes of the NOACP, discharge and release trajectory and atmospheric modeling information shall be obtained from/ coordinated through the NOAA Scientific Support Coordinator.

9210.3 Department of Defense

U.S. Navy Supervisor of Salvage (SUPSALV)	(202) 781-1731
U.S. Army Corps of Engineers Orleans District	(504) 865-1121
JRB New Orleans	(504) 678-3260

9210.4 U.S. Environmental Protection Agency

EPA Region VI Response & Prevention Branch	(214) 665-6428
EPA Region VI Public Affairs	(214) 665-2208

9210.5 Agency for Toxic Substance and Diseases (ATSDR)

ATSDR Region 6	(214) 665-8361
CDC Emergency Response	(770) 448-7100
Poison Control Center	(800) 222-1222

9210.6 Department of Interior

DOI Regional Environmental Officer	(505) 563-3572

9210.6.1 Bureau of Safety and Environmental Enforcement (BSEE)

BSEE Gulf of Mexico OCS Region	(800) 200-4853

9210.7 Department of Energy

U.S. Department of Energy	(504) 734-4201

9210.8 Federal Law Enforcement

U.S. Bureau of Immigration and Customs Enforcement	(504) 310-8800
Federal Bureau of Investigation	(504) 816-3000
U.S. Marshal Service New Orleans	(504) 589-6079
U.S. Marshal Service Baton Rouge	(225) 389-0364

9210.9 Department of Transportation (DOT)

U.S. Department of Transportation	(504) 436-9100
PHMSA	(202) 366-3666

9210.10 Federal Emergency Management Agency (FEMA)

FEMA Region IV	(770) 220-5200

9210.11 Federal Communications Commission (FCC)

FCC 24/7 Operations Center	(202) 418-1122

9210.12 General Services Administration (GSA)

GSA	(866) 606-8220

9210.13 Occupational Safety and Health Administration (OSHA)

OSHA Emergency	(800) 321-6742
OSHA Baton Rouge	(225) 298-5458

9210.14 State Department

State Department Main Switchboard	(202) 674-400
State Department New Orleans Diplomatic Security)	(504) 589-2010

9220 State Resources/Agencies

9220.1 Louisiana Oil Spill Coordinators Office (LOSCO)

LOSCO	(225) 925-6606

9220.2 Louisiana Department of Environmental Quality (LDEQ)

Acadiana Regional Office	(337) 262-5584
Capital Regional Office	(225) 219-3600
Northeast Regional Office	(318) 362-5439
Kisatchie Central Office	(318) 487-5656
Northwest Regional Office	(318) 676-7227
Southeast Regional Office	(504) 736-7702
Bayou Lafourche Office	(985) 532-6206
Southwest Regional Office	(337) 491-2667

LDEQ	(225) 765-2800

9220.3 Louisiana Department of Wildlife and Fisheries (LDWF)

Hammond Field Office	(985) 543-4777
Lake Charles Field Office	(337) 491-2575
Minden Field Office	(318) 371-3050
Monroe Field Office	(318) 343-4044
New Iberia Field Office	(337) 373-0032
Opelousa Field Office	(337) 984-0255
Pineville Field Office	(318) 487-5885
Marine Fisheries Area 1(Slidell)	(985) 882-0027
Marine Fisheries Area 2 (New Orleans)	(504) 284-2030
Marine Fisheries Area 3 (Grand Isle)	(504) 284-2030
Marine Fisheries Area 4 and 5 (Bourg)	(985) 594-4139
Marine Fisheries Area 6 (New Iberia)	(337) 373-0032
Marine Fisheries Area 7 (Lake Charles)	(337) 491-2579
Enforcement Region 1 Minden Office	(318) 371-3049
Enforcement Region 2 Monroe Office	(318) 362-3102
Enforcement Region 3 Pineville Office	(318) 487-5634
Enforcement Region 4 Opelousas Office	(337) 948-0257
Enforcement Region 5 Lake Charles Office	(337) 491-2580
Enforcement Region 6 Thibodaux Office	(985) 447-0821
Enforcement Region 7 Baton Rouge Office	(225) 765-2999
Enforcement Region 8 New Orleans Office	(504) 284-2023
Enforcement Headquarters	(225) 765-2989

9220.4 Louisiana Department of Natural Resources (LDNR)

Oil and gas incidents	(225) 342-5540
Pipeline Incidents	(225) 342-5505
Injection well or E&P waste Incidents	(225) 342-5515

9220.5 Louisiana Department of Health and Hospitals

Louisiana Department of Health	(225) 342-9500
Emergency Lab	(504) 458-9537

9220.6 Louisiana State Historic Preservation Office (SHPO)

SHPO	(225) 342-8160

9220.7 State Law Enforcement

State Police Transportation and Environmental Safety Section	(225) 925-6113
State Police Hazardous Material and Explosives Control Unit	(225) 925-6113
Louisiana State Police Bomb Squad	(225) 925-6113

9230 Parish & Local Resources/Agencies

9230.1 Parish Homeland Security and Emergency Preparedness

Acadia	(337) 783-4357
Allen	(337) 300-9032
Ascension	(225) 621-8360
Assumption	(985) 369-7351
Avoyelles	(318) 240-9160
Beauregard	(337)460-5442
Bienville	(318)263-2019
Caddo/Bossier	(318) 425-5351
Calcasieu	(337) 721-3800
Caldwell	(318) 649-3764
Cameron	(337) 775-7048
Catahoula	(318) 744-5697
Claiborne	(318) 927-3575
Concordia	(318) 757-8248
DeSoto	(318) 872-3956
East Baton Rouge	(225) 389-2100
East Carroll	(318) 559-2256
East Feliciana	(225) 683-1014 (225) 244-5881
Evangeline	337) 363-3267
Franklin	(318) 435-6247
Grant	(318) 627-3041
Iberia	(337) 369-4427
Iberville	(225) 687-5140
Jackson	(318) 259-2361 ext 204
Jefferson	(504) 349-5360
Jefferson Davis	(337) 824-3850
Lafayette	(337 291-5075
Lafourche	(985) 532-8174
LaSalle	(318)992-2151
Lincoln	(318) 513-6202
Livingston	(225) 686-3066

Madison	(318) 574-6911
Morehouse	(318) 871-3907
	(318) 281-4141
Natchitoches	(318) 357-7802
Orleans	(504) 658-8700
Ouachita	(318) 322-2641
Plaquemines	(504) 274-2476
Pointe Coupee	(225 694-3737
Rapides	(318) 445-0396
Red River	(318) 932-5981
Richland	(318) 728-0453
Sabine	(318) 256-2675
St. Bernard	(504) 278-4268
St. Charles	(985) 783-5050
St. Helena	(225) 222-3544
St. James	(225) 562-2364
St. John the Baptist	(985) 652-2222
St. Landry	(337) 948-7177
St. Martin	(337)394-3071
St. Mary	(337) 828-4100 ext 135
St. Tammany	(985) 898-2359
Tangipahoa	(985) 748-3211
Tensas	(318) 766-3992
Terrebonne	(985) 873-6357
Union	(318) 368-3124
Vermilion	(337) 898-4308
Vernon	(337) 238-0815
Washington	(985) 839-0434
Webster	(318) 846-2454
West Baton Rouge	(225) 346-1577
West Carroll	(318) 428-8020
West Feliciana	(225) 635-6428
Winn	(318) 628-1160

9230.2 Port Authority/Harbor Master

Baton Rouge	(225) 342-1660
New Orleans	(504) 522-2551
Plaquemines	(504) 682-5660
Port of South Louisiana	(985) 652-9278

9230.2.1Port Services/Pilots

New Orleans Board of Trade	(504) 529-4601
Marine Exchange	(504) 528-7870

Port Chaplain	(504) 891-6677
Pilots Bar	(504) 831-6615
Crescent River Port Pilots	(504) 392-8801
New Orleans- Baton Rouge Steamship Pilots Association (NOBRA)	(504) 832-1199
Associated Federal Pilots	(504) 456-0787

9230.3 Fire Departments

The Louisiana Office of State Fire Marshall Public Safety Services has maintains a Fire Department Directory. The Fire Department Directory can be found at http://sfm.dps.louisiana.gov/sfm_directory.htm.

9230.4 Law Enforcement

Ascension Parish Sheriff	(225) 621-8300
Bossier Police	(318) 965-2203
Concordia Parish Sheriff	(318) 336-5231
Destrehan Parish Sheriff	(985) 783-6807
East Baton Rouge Parish Sheriff	(225) 389-5000
Grant Parish Sheriff	(318) 627-3261
Iberville Parish Sheriff	(225) 687-5100
Jefferson Parish Sheriff	(504) 363-5500
Kenner Police	(504) 712-2200
Livingston Parish Sheriff	(225) 686-2241
Natchitoches Parish Sheriff	(318) 357-7800
Orleans Parish Sheriff	(504) 827-8505
Plaquemines Parish Sheriff	(504) 564-2525
Red River Parish Sheriff	(318) 932-4354
St. Bernard Parish Sheriff	(504) 278-7725
St. Charles Parish Sheriff	(504) 712-7928
St. James Parish Sheriff	(225) 562-2200
St. John the Baptist Parish Sheriff	(985) 652-6338
St. Tammany	(504) 809-8200
Tangipahoa Parish Sheriff	(985) 419-8229
Tensas Parish Sheriff	(318) 467-5927
West Baton Rouge Parish Sheriff	(225) 343-9234
West Feliciana	(225) 635-3241

9230.5 Emergency Medical Services

Name	Phone	Capabilities
East Jefferson General Hospital	(504) 454-4000	HAZMAT and Decon, Helipad
Ascension Hospital	(225) 621-1200	Helipad
Baton Rouge General	(225) 387-7000	HAZMAT and Decon

Hospital		Helipad
Our Lady of the Lake	(225) 765-6834	HAZMAT and Decon, Helipad, Hyperbaric
River West Hospital	(504) 687-9222	HAZMAT and Decon, Helipad
West Jefferson Medical Center	(504) 347-5511	HAZMAT and Decon, Helipad
OCHSNER Medical Center	(800) 231-5257	HAZMAT and Decon, Helipad
Tulane Medical Center	(504) 988-5800	HAZMAT and Decon, Helipad
University Medical Center (LSU)	(504) 903-3000	
St. Charles Hospital	(985) 785-6242	HAZMAT and Decon
St. James Parish Hospital	(225) 869-5512	HAZMAT and Decon, Helipad
River Parish Hospital	(985) 652-7000	HAZMAT and Decon, Heliport

9230.5.1 Hyperbaric Chambers

Name	Phone	Capabilities
Jo Ellen Smith	(504) 363-7663	(1) Multiplace Chamber, (3) Monoplace Chambers
Ascension Hospital	(225) 621-1200	(2) Monoplace Chambers
Emergency Physicians' Center Marrero	(985) 796-0904	(4) Monoplace Chambers
Terrebonne General Medical Center	(985) 873-4141	(2) Monoplace Chambers
OSHNER Northshore Medical Center	(985) 649-7070	(2) Monoplace Chambers
Our Lady of the Lake	(225) 765-6834	(2) Multiplace Chambers

9230.5.2 Air Medical Services

Name	Phone
Air Med Services, L.L.C. (Acadian)	(800) 259-3333
Air Ambulance	(504) 522-3442
Air Care West Jefferson Medical Center	(504) 347-5511
Priority EMS Inc	(504) 366-2992

9230.6 Hazardous Substance Response Teams

HAZMAT Unit Jefferson Parish
New Orleans Fire Department HAZMAT Unit

9230.7 Explosive Ordinance Detachments

New Orleans Police Bomb Squad	(504) 827-8505
Jefferson Parish Bomb Squad	(504) 364-5300

9240 Private Resources

9240.1 Oil Spill Response Organizations (OSRO) and Management Organizations

Contractor	City	State	COTP Zone	Day Phone
American Pollution Control (AMPOL)	New Iberia/ Harvey	LA	New Orleans	(800) 482-6765
Bertucci Industrial Services	Jefferson	LA	New Orleans	(800) 966-0303
Bisso Marine Company, INC	New Orleans	LA	New Orleans	(504) 866-6341
Bodin Oil Recovery Inc./ B&B Fire & Safety	Abbeville	LA	Lake Charles	(877) 660-3473
Clean Channel Association	Houston	TX	Houston/Galveston	(713) 534-6195
Clean Harbors Environmental	Baton Rouge/ Sulphur/ New Iberia	LA	New Orleans	(800) 645-8265
Coral Marine Services Inc	Morgan City	LA	Morgan City	(800) 640-0829
Diamond Services Corporation	Amelia/Morgan City	LA	Morgan City	(800) 879-1162
Eagle/SWS Construction & Environmental Services	Panama City	FL	Mobile	(850) 234-8428
Environmental Equipment Inc	Houma	LA	Morgan City	(888) 998-3100
Environmental Safety & Health Consulting Services Inc (ES&H)	Lafayette/ Belle Chasse/ Morgan City/ Houma/ Golden City/	LA	New Orleans/ Morgan City	(877) 437-2634

	Sulphur/ LaPlace/ Bossier City			
First Responder Inc	Thibodaux	LA	Morgan City	(800) 914-9111
Ferguson Harbor Inc	Pearl	MS	Mobile	(601) 936-6321
Garner Environmental (GES)	New Orleans/ Port Arthur/Houston	LA/TX	New Orleans/ Port Arthur/ Houston-Galveston	(800) 424-1716
Heritage Environmental Services LLC	Houston	TX	Houston-Galveston	(877) 436-8778
Industrial Cleanup Inc	Garyville	LA	New Orleans	(225) 673-6847
Jones Environmental Inc	Bossier City	LA	New Orleans	(985) 876-0420
L&L Environmental Inc	Lake Charles	LA	Lake Charles	(337) 436-6385
Lawson Environmental Services LLC	Houma	LA	Morgan City	(985) 876-0420
Miller Environmental Services Inc	Sulphur	LA	Morgan City	(337) 882-9800
Marine Spill Response Corp. (MSRC)	Buras, Belle Chase, Morgan City, Leeville, Lake Charles, Golden Meadow, Venice, Harvey, New Orleans	LA	New Orleans/ Morgan City/ Lake Charles	(800) 645-7745
National Response Corp. (NRC)	New Orleans	LA	New Orleans	(800) 899-4672
O' Brien's Response Management Inc	Slidell	LA	New Orleans	(985) 781-0804
Oil Mop Environmental	Belle Chase/ Port Allen/	LA	New Orleans/ Morgan City	(800) 645-6671

Solutions	New Iberia/ Morgan City/ Houma/ St. Rose			
Petron Inc	Alexandria	LA	Morgan City	(800) 551-6678
Premier Industries	Harvey	LA	New Orleans	(504) 362-5440
Phillips Service Corp.	Reserve	LA	New Orleans	(985) 536-7612
The Shaw Group	Baton Rouge	LA	New Orleans	(800) 537-9540
SWS Environmental Services	Gonzales	LA	Morgan City	(877) 742-4215
TAS Environmental Services LP	Bossier City	LA	Lower Mississippi River	(888) 654-0111
T & T Marine Services	New Orleans	LA	New Orleans	(409) 744-1222
USA Environmental LA	Westlake	LA	Lake Charles	(337) 439-6700
U.S. Environmental Services	Meraux/ Venice/ Geismar/ New Orleans	LA	New Orleans	(888) 279-9930
Wild Well Control Inc	Spring	TX	Houston/ Galveston	(281) 353-5481
Wintex Construction	Port Arthur	TX	Port Arthur	(903) 342-3518
Worley Companies	Hammond	LA	New Orleans	(888) 887-2197

9240.2 Hazardous Substance Contractors

Contractor	Level	City	State	COTP Zone	Day Phone
American Pollution Control Inc	B	New Iberia	LA	New Orleans	(337) 365-7847
ES & H Environmental	A	Laplace	LA	New Orleans	(888) 422-3622
L&L Environmental Inc	A	Metairie	LA	(New Orleans	(337) 436-6385

Oil Mop Environmental Solutions	Belle Chase/ Port Allen/ New Iberia/ Morgan City/ Houma/ St. Rose	LA	New Orleans/ Morgan City	(800) 645-6671	Oil Mop Environmental Solutions
Phillips Service Corp.	Reserve	LA	New Orleans	(985) 536-7612	Phillips Service Corp.

9240.3 Media (Television, Radio, Newspaper)

Media contacts can be found in Appendix M, Joint Information Center Manual.

9240.4 Fire Fighting/Salvage Companies/Divers

Fire Fighting, Salvage, and Diving Companies can be found in the New Orleans Salvage and Marine Fire Fighting Plan.

9240.5 Wildlife Rescue Organization

A list of Wildlife Rescue Organizations located in Louisiana State can be found in Appendix H, Wildlife Response Plan.

9240.6 Volunteer Organizations

The NOAC Volunteer Plan can be found in Appendix L. The Volunteer plan contains Volunteer Organization contacts.

9240.7 Maritime Associations/Organizations/Cooperatives

American Waterways Operators	(504) 524-3366
Greater New Orleans Barge Fleeting Associations (GNOBFA)	(504) 737-6993
Steamship Association	(504) 522-9392
Clean Gulf Associates	(888) 242-2007

9240.8 Academic Institutions

Texas A&M Center for Marine Training and Safety (TEEX)
Louisiana State University
Tulane University
University of New Orleans

Delgado
Xavier

9240.9 Air Resources

Company Name	COTP	Phone
Central Dispatch	NO	(504) 362-3219
Air Cargo Service, Inc.	MC	(337) 981-9212
Pack Express	MC	(337) 234-1208
Twin Air	NO	(504) 467-1955
ERA Aviation	PA	(337) 478-6131
Industrial Helicopters, Inc.	MC	(337) 233-3356
Offshore Logistics, Inc.	MC	(337) 233-4774
Petroleum Helicopters, Inc.	MC	(337) 235-2452
Air Logistics, Inc.	NO	(504) 340-1300

9240.9.1 Helicopters

Company Name	City	Phone
Air Logistics	Amelia	(985) 631-0976
	Houma	(985) 851-6232
	New Iberia	
Industrial Helicopter	Lafayette	(337) 233-3356
Mayeaux Flying Service	New Orleans	(504) 394-5803
Pelican Air Group	New Iberia	(337) 367-1401
Petroleum Helicopters Inc.	Lafayette	(337) 235-2452
	Houma	(985) 868-1705
	Amelia	(985) 631-2131
Sea Air Service	Houma	(985) 879-1538
Sea Link Co.	New Orleans	(504) 393-7847

9240.9.2 Airports

Name	Phone
Louise Armstrong International Airport	(504) 751-1920
New Orleans Lakefront Airport	(504) 243-2800

9250 Technical Specialists

Name	Phone
Environmental Sciences Services, Inc.	(225) 927-7171
Robert Simmons, P.E.	(985) 643-4683 Cell: (985) 290-1030
BSEE	(504) 616-0147 Dispatch: (504) 736-0557
J. Connor Consulting, Inc.	(281) 578-3388 (Houston)
RPI	(803) 256-7322
Wildlife Rehab and Education, Inc.	(281) 332-8319

Entrix Environmental Consulting	(800) 476-5886
BBL, Inc.	(713) 785-1680
CT&E Environmental Services	(504) 469-6401

9300 Draft Incident Action Plan (IAP)

A draft IAP can be found in Appendix AA.

9400 Area Planning Documentation

Area Planning Documentation, including spill and discharge history can be found in Appendix B, Planning Scenarios.

9500 List of Agreements

Memorandums of Agreement/Understanding (MOA/MOU) can be found in Appendix T.

9600 Conversions

Conversions can be found at www.conversiontables.info/.

9700 List of Response References

A list of response references can be found in Appendix W, U.S. Coast Guard-Relevant Instructions, Guidelines, Procedures, and Practices List.

9800 Reserved

9900 Reserved for Area/District

New Orleans Area Contingency Plan

Appendix A
New Orleans Area Committee Membership and Administration

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix A New Orleans Area Committee Membership and Administration

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Background

The Oil Pollution Act of 1990 directed that Area Committees be established to plan for community responses to oil discharges and hazardous substance releases. The Federal Register Notice (FR5 15002) dated April 24th, 1992, designated coastal zone areas for AC responsibility. Each Captain of the Port Zone is designated as an area where an Area Committee must be established.

Area Committee Responsibilities

Each Area Committee, under the direction of the Federal On-Scene Coordinator (FOSC), shall:

- Prepare the Area Contingency Plan for their area.
- Work with State and local officials to enhance the contingency planning of those officials and to assure preplanning of joint response efforts, including appropriate procedures for:
    - Mechanical recovery
    - Dispersal
    - Shoreline cleanup
    - Protection of sensitive environmental areas
    - Rehabilitation of fisheries and wildlife
    - Marine salvage and firefighting
- Work with State and local officials to expedite decisions for the use of dispersants and other mitigating substances and devices including burning agents.

The AC shall address the desirability of using appropriate dispersants, surface washing agents, surface collecting agents, and bioremediation agents or miscellaneous oil spill control agents listed in the National Contingency Plan Product.

Composition of Area Committees

The pre-designated FOSC will chair the Area Committee, and direct and coordinate the Area Committee’s efforts.

The FOSC is responsible for appointing government officials to serve as members of the Area Committee.

New Orleans Area Committee Member Agencies

U.S. Coast Guard

U.S. Environmental Protection Agency

Bureau of Safety and Environmental Enforcement

National Oceanic and Atmospheric Administration

U.S. Fish and Wildlife

Department of Interior

State Government

Louisiana Oil Spill Coordinators Office

Louisiana Department of Fisheries and Wildlife

Louisiana Department of Environmental Quality

Governor’s Office of Homeland Security and Emergency Preparedness

Louisiana State Historical Preservation Officer

Louisiana Department of Natural Resources

Local Government

Ascension Parish

East Baton Rouge Parish

Iberville Parish

Jefferson Parish

Orleans Parish

Plaquemines Parish

Pointe Coupee Parish

St. Bernard Parish

St. Charles Parish

St. James Parish

St. John the Baptist

St. Tammany Parish

West Baton Rouge Parish

Industry and OSRO

Apache

BP

Chevron

Energy XXI

Forest Oil

MSRC

OMIES

Shell

The Response Group

USES

AMPOL

Cox Operating

Clean Harbor

ES&H

Hilcorp Energy

O'Brien's

Saratoga

Swift Energy

TPIC

National Response Corporation

New Orleans Area Committee Meetings

The New Orleans Area Committee shall meet on a quarterly basis.

New Orleans Area Committee Subcommittees and Charters

Community Outreach Subcommittee

Subcommittee Meetings: The Subcommittee will meet on a quarterly basis.

Mission Statement: Provide leadership in the development and implementation of a New Orleans Area Volunteer and Public Outreach policy to support responders at incidents and catastrophic events. Working cooperatively, we also intend to develop the next generation of outreach tools & methods for the best possible communication with the public.

Guidelines:

- The Subcommittee chair will forward proposed changes to the objectives to the

New Orleans Area Committee for approval.

- The Chair is responsible for regular communication with the designated New Orleans Committee contact, including providing meeting minutes, updates and recommendations. Meetings will be held at least quarterly, prior to each AC meeting.

- The Subcommittee chair will assign a member to oversee and coordinate the completion of each action item and identify a due date. This information will be included on the Subcommittee progress report provided for each AC meeting.

Scope:

The demands of an incident may exceed the resources of responding government agencies. During such events, affiliated and unaffiliated volunteers can support response efforts in many ways, but the use of volunteers during an oil spill event is *not* automatic. The decision to employ volunteers will require analyzing the benefits of implementing them in a response versus safety and liability issues associated with their participation. In any stage of the incident, the UC may make the decision whether volunteers will be employed and the capacities in which they can serve.

Objectives:

When the UC approves the use of volunteers, the UC will have the option of:

- Establishing a Volunteer Coordinator in the Planning Section if interest is low.

- Assigning a Volunteer Unit Leader in the Planning Section if there is moderate interest, or;

- Expanding the Command Staff to include a Volunteer Officer VO.

- Assuring proper registration, tracking, and implementing of volunteers, according to UC guidance.

- Identifying necessary skills and establishing appropriate training opportunities.

- Coordinating use of volunteers with the Resource Unit Leader.

- Coordinating with the JIC to advise the general public of:
    - Need (if any) for volunteers.

  - Upcoming volunteer information sessions.
  - Volunteer registration sites and processes.
  - Limited roles volunteers may fill during the response.
  - Needed professions (i.e., healthcare, veterinary, etc.)
  - Potential health risks to convergent volunteers (i.e., picking up oiled rocks and wildlife).
  - Potential for volunteers to hinder response operations.
- Identifying and securing equipment, materials and supplies to support volunteer operations.
- Activating standby contractors for various training needs, as necessary.
- Activating pre-identified and pre-trained volunteers, as necessary.
- Coordinating with the Logistics Section Chief for volunteer housing and meal accommodations.
- Assisting volunteers with special needs, as possible.
- Maintaining Unit/Activity Log (ICS Form 214).

Incident Deliverables: During the preparation for the tactics meeting phase of the planning "P", the Resource Unit Leader, Planning Section Chief, and Operations Section Chief will determine the specific roles, site locations, safety requirements and required number of volunteers needed in the applicable operational period from the VUL. Volunteers shall only be deployed through direct written tasking from the UC during the tactics meeting via the IAP process. The UC will supply logistical support to volunteers while operationally deployed (regardless of status or condition), engage in logistical support, and continue said relationship with volunteers regarding any issue resulting from volunteerism during a spill. Volunteers will not report directly to the Command Post for registration and training, but will be registered, trained and deployed from a pre-identified location.

Responders must be adequately trained in hazardous substance response and will operate within the level of their training, expertise, and capabilities as described in 29 Code of Federal Regulations, Part 1910.120.

Geographic Response Plan Subcommittee

Purpose: Provide a coordinated forum for the development and maintenance of Geographic Response Plan processes and products in the New Orleans area.

Mission Statement: Mitigate harm to resources at risk due to releases of oil through the development, testing, and periodic update of tactical geographic response strategies, designed for implementation during the an oil spill.

Guidelines:

Flexibility is provided to the Subcommittee to modify the objectives to best accomplish the Charter's mission.

The Chair/Co-Chair is responsible for regular communication with the designated Steering Committee POC, including providing meeting minutes, updates, and recommendations in changes to the New Orleans Area Contingency Plan.

Objectives:

- Coordinate the development and maintenance of GRPs to ensure consistency of form and content and to promote efficient GRP distribution to the response community.
- Help to educate the spill response community and public on the purpose, limitations, and role of GRPs.
- Utilize available geographic information relative to the Endangered Species Act, the National Historic Preservation Act, and other State and Federal laws as appropriate in the development of the GRPs.
- Incorporate information from other Subcommittees into the development of the GRPs where available and as appropriate.
- Develop procedures for review/revision and field verification of existing GRPs as required to address changes in risks, targeted resources, and maintain current information on response resources.

- Encourage the continued development of inland GRPs.

- Evaluate lessons learned during actual incidents or exercises and take appropriate actions in the development or revision of GRPs.

- Incorporate identified economic resources into the GRPs consistent with the policies/guidance present in the National Response Framework and the New Orleans Area Contingency Plan.

- Coordinate the review of sections of the New Orleans Area Contingency Plan pertaining to geographic response planning to address necessary changes (including Executive Committee approval where required) within the annual revision schedule.

Offshore Worst Case Discharge Subcommittee

Purpose: Provide a coordinated forum for the development and maintenance of offshore worst case discharge plan processes and products in the New Orleans Area Contingency Plan.

Mission Statement: Mitigate harm to resources at risk due to discharges of oil and release of hazardous materials through the development, testing, and periodic update of source control, containment and clean up strategies designed for implementation during a worst case discharge that affects the New Orleans FOSC zone.

Guidelines:

Revise the Sector New Orleans ACP to consider all actions necessary to mitigate a WCD from offshore facilities.

Key references to accomplish this are oil spill response plans (OSRPs) that may include multiple WCD scenarios, including procedures for responding to and supporting operations for an uncontrolled well blowout lasting 30 days. Begin the review process by first reviewing OSRPs containing the largest WCD volumes.

No later than 15 December 2011, edit the appropriate section of the ACP to address subsea containment strategies, protection of sensitive areas, waste disposal planning, dispersant options, response equipment and personnel capacity.

Objectives:

- Review offshore OSRPs containing the largest WCD volumes. (Already complete - spreadsheet attached.)
- Edit the appropriate section of the ACP to address:
    - subsea containment strategies

  - waste disposal planning
  - dispersant options
  - response equipment and personnel capacity

- No later than 15 December 2011, provide to NOLA Sector Commander completed draft edits for the appropriate sections of the ACP.

- With Sector Commander concurrence, assist the incorporation of these changes into all Gulf of Mexico Area Plans (the One Gulf Plan) and the Regional Response Plan as appropriate.

Response Science and Technology Subcommittee

Mission Statement: Provide overall leadership and technical assistance on improving the ability of responders to effectively use appropriate response technologies as oil spill response tools so that the environment and natural resources may be better protected.

Guidelines:

- The subcommittee Chair/Co-Chair will coordinate review and approval of proposed or modified response technologies by the RRT Chairs/Co-Chairs.
- The Chair/Co-Chair is responsible for providing meeting minutes, updates, and recommendations. Meetings will be held on a quarterly basis.
- The subcommittee Chair/Co-Chair will assign a member to oversee and coordinate the completion of each action item and identify a due date. This information will be included on the Subcommittee progress report provided for each RRT meeting

Subcommittee Charter Objectives:

- Recruit interested candidates with appropriate backgrounds to the response technologies subcommittee.
- Ensure response technology lessons learned during actual incidents and exercises are incorporated into contingency plans and regional training opportunities.
- Further the review of spill response tools in coordination with the RRT to help reduce environmental impacts.
- Facilitate the exchange of information on response equipment and response technologies within the regional response community.
- Support the standardization of response equipment terminology and encourage the testing and evaluation of new or innovative response equipment and technologies within the regional response community.

Marine Salvage and Firefighting

Purpose: Provide a coordinated forum for the development and maintenance of Marine Salvage and Firefighting plan processes and products in the New Orleans Area Contingency Plan.

Mission Statement:

Mitigate harm to resources at risk due to discharges of oil and release of hazardous materials through the development, testing, and periodic update of tactical geographic response strategies, designed for implementation during the an oil spill.

Guidelines:

Salvage and marine firefighting actions can save lives, property, and prevent the escalation of potential oil spills and hazardous material releases to worst case discharge scenarios. Flexibility is provided to the subcommittee to modify the objectives to best accomplish the Charter's mission.

Each subcommittee will have a point of contact (POC) from Sector New Orleans to assist in coordination between the subcommittee and the area committee.

The Chair/Co-Chair is responsible for regular communication with the designated Sector New Orleans POC, including providing meeting minutes, updates, and recommendations for changes to the New Orleans Area Contingency Plan.

Objectives:

- Review current draft to ensure that it meets the requirements of NVIC 2-10 and Title 33, Code of Federal Regulations, Part 155, Subpart I – Salvage and Marine Firefighting.
- Update resource list and contact information to ensure currency.
- Ensure that the plan is position and title specific.
- Work with stakeholders to identify a realistic exercise of the plan to ensure compliance with the National Preparedness for Response Exercise Program (PREP) guidelines.

Training and Exercise

Purpose: Provide a coordinated forum for the development and maintenance of the Training and Exercise plan processes and products in the New Orleans Area Contingency Plan.

Mission Statement: Our mission is to ensure the highest state of readiness of the spill response community within our area of responsibility. We will strive to accomplish this by developing comprehensive and useful contingency plans, preparing the response community through training and exercises, developing coordination mechanisms to facilitate effective responses, and educating our stakeholders and the public.

Guidelines:

The subcommittee will function as an efficient organization for ensuring effective implementation of the plan in our Area. Our regulatory members and non-regulatory participants will include all stakeholders representing the federal, state, and local levels and the maritime, natural resource and academic communities.

This subcommittee will ensure that the responders will be adequately trained in oil and hazardous substance response, at a minimum to OHSA first responder requirements found in Title 29 CFR Part 1910.120; and will operate within the level of their training, expertise, and capabilities as described in 29 Code of Federal Regulations, Part 1910.120.

The Chair/Co-Chair is responsible for regular communication with the designated Sector New Orleans POC, including providing meeting minutes, updates, and recommendations in changes to the New Orleans Area Contingency Plan.

Objectives:

- Recruit interested parties to serve on the subcommittee.
- Nominate a chair person to head the training subcommittee.
- Ensure all responders are adequately trained on 29 Code of Federal Regulations, Part 1910.120 and are knowledgeable in all hazards associated with a response.
- Ensure all subcommittee members are informed of future training.
- Update resource list and contact information to ensure currency.
- Ensure that the plan is position and title specific.
- Work with stakeholders to identify a realistic exercise of the plan to ensure compliance with the National Preparedness for Response Exercise Program (PREP) guidelines.

Contents of the New Orleans Area Contingency Plan

The New Orleans Area Contingency Plan (NOACP) is organized in alignment with the Incident Command System, but also has enough flexibility built within to accommodate incident specific needs while maintaining standardization and consistency.

The NOACP is required to contain sufficient guidance to ensure activities directed by the FOSC are conducted in compliance with applicable statutes and regulations. The NOACP shall:

- Be implemented in conjunction with the National Contingency Plan.
- Be adequate to guide actions to remove a worst-case discharge, and mitigate or prevent a substantial threat of such a discharge.
- Describe the area covered by the plan, including the areas of special economic or environmental importance.
- Describe the area covered by the plan, including the areas of special economic or environmental importance.
- Describe responsibilities of an owner or operator and Federal, state, and local agencies in removing, mitigating, or preventing a substantial threat of a discharge.
- List equipment available to an owner or operator and Federal, State, and local agencies.
- Describe the procedures to be followed for obtaining an expedited decision regarding the use of alternative response technologies, i.e. dispersants.

New Orleans Area Contingency Plan Revision Schedule

The NOACP is on a triennial plan review cycle. The NOACP shall be verified per Code of Federal Regulation Title 40 Part 300.210.

Participation in the National Preparedness for Response Exercise Program (PREP)

The New Orleans Area Committee is required to follow the PREP guidelines.

This section represents the **minimum** guidelines for ensuring adequate response preparedness of the New Orleans Area Committee and the NOACP. If the New Orleans Area Committee believes additional exercises or an expansion of the PREP exercises are warranted to ensure enhanced preparedness, they are **highly encouraged** to conduct these exercises.

The PREP exercises should be viewed as an opportunity for continuous improvement of the NOACP and the area response system. The New Orleans Area Committee is responsible for addressing any issue that arise from evaluation of the exercises and for making changes to the NOACP as necessary to ensure the highest level of preparedness.

New Orleans Area Contingency Plan Exercises

Notification Exercise

Frequency: Quarterly
Initiating Authority: FOSC

Participating Elements: Key elements of the unified command (appropriate federal, state, and government agencies).

Scope: Exercise and test communication between the FOSC and key elements of the unified command.

Objectives: Ensure that the key elements of the unified command know whom to call in the event of a discharge or release within the area.

Certification: Self-certification

Verification: Verification to be conducted by USCG Eighth District or the Region VI Regional Response Team (RRT).

Record retention: 3 Years (USCG), 5 Years (EPA)

Evaluation: New Orleans Area Committee

Credit: The New Orleans Area Committee should take credit for this exercise when conducted in conjunction with another exercise or for an actual event when all exercise objectives are met, the exercise/response is evaluated, and a proper record is generated.

Spill Management Tabletop Exercise

Frequency: Annually

Initiating authority: USCG Eighth District or Region VI RRT

Participating elements: Area spill management team (USCG and Louisiana state response team(s))

Scope: Exercise the spill management team's organization, communication, and decision-making in managing a spill response.

Objectives: Exercise the spill management team in a review of:

- Knowledge of the NOACP,
- Proper notification,
- Communication systems,
- Ability to access response equipment,
- Coordination of organization of agency personnel with responsibility for spill response,
- Ability to effectively coordinate spill response activity with the National Response Framework infrastructure,
- Ability to access information in the NOACP for location of sensitive areas, resources available within the area, unique conditions of the area, etc, and
- Exercise the response management system identified in the NOACP, and to the maximum extent possible, the unified command.

At least one spill management tabletop exercise in a triennial cycle should involve simulation of a worst-case discharge scenario.

Certification: Self-certification

Verification: Verification to be conducted by USCG Eighth District or the Region VI Regional Response Team (RRT).

Record retention: 3 Years (USCG), 5 Years (EPA)

Evaluation: New Orleans Area Committee

Credit: The New Orleans Area Committee should take credit for this exercise when conducted in conjunction with another exercise or for an actual event when all exercise objectives are met, the exercise/response is evaluated, and a proper record is generated.

Equipment Deployment Exercises

Frequency: Annually

Initiating authority: USCG Eighth District or Region VI RRT

Participating elements: Local area response community (appropriate federal, state, and local agencies)

Scope: Deploy and operate response equipment. The equipment must be in a quantity that would be necessary to respond to an average most probable discharge.

All response personnel must be included in a comprehensive training program, and all response equipment in a comprehensive maintenance program. Credit should be taken for deployment of equipment during training. The maintenance program must ensure that the equipment is periodically inspected and maintained in good operating condition in accordance with the manufacturer’s recommendations and best commercial practices.

Objectives: Demonstrate the ability of the response personnel to deploy and operate the equipment. Ensure the equipment is in proper working order.

Certification: Self-certification

Verification: Verification to be conducted by USCG Eighth District or the Region VI Regional Response Team (RRT).

Record retention: 3 Years (USCG), 5 Years (EPA)

Evaluation: New Orleans Area Committee

Credit: The New Orleans Area Committee should take credit for this exercise when conducted in conjunction with another exercise or for an actual event when all exercise objectives are met, the exercise/response is evaluated, and a proper record is generated.

Area Exercises

Frequency: Triennially

Initiating authority: USCG, EPA, or industry

Participating elements: Appropriate Federal, state, and local government, and industry, and other members of the response community

Scope: Area exercises will exercise the area Response Community.

Objectives:

- Exercise the NOACP, along with select industry response plans.
- Exercise the response management system identified in the NOACP and, to the extent possible, the unified command with the appropriate participants.
- Exercise the area and industry spill management teams.
- Deploy adequate response equipment for the exercise scenario. At a minimum, the scenario must involve exercise of Worst Case discharge capability.

Format: The total annual exercise schedule would consist of the following-

- 6 government-led exercises
- 14 industry –led exercises
- Total= 20 area exercises per year
- Area exercises should be approximately 8-12 hours in duration
- Exercise scenario shall be developed by the exercise design team.
- To simulate realism, the exercise should be conducted in the command post that would be utilized for a spill response, whenever possible.

- The exercise may be real or limited compressed time, and may start at any point during an incident, as determined by the Exercise Design Team. Flexibility should be allowed, to ensure the exercise objectives are met.
- Lessons learned from the exercise should be incorporated into the PREP Lessons Learned System (e.g. CGSAILS), whenever possible.

Certification: The FOSC will certify completion of the area exercise. In certifying the area exercise, the FOSC will consider the following:

- The area the exercise was conducted.
- The area exercise met the objectives outline in the PREP guidelines.
- The area response community was exercised for spill response preparedness.

Industry plan holders should take credit for all the exercises completed during the area exercise. These exercises shall be self-certified by the plan holder.

Verification: Verification will be done by the National Scheduling Coordinating Committee.

Record retention: 3 Years (USCG), 5 Years (EPA)

Evaluation: Joint evaluation team to be comprised of the federal government (USCG, EPA, PHMSA, BSEE).

Scheduling: Scheduling of area exercises will be done by the National Strike Force Coordination Center, utilizing input from the FOSC, Area Committee, and RRT VI, in consultation with industry. A three year schedule of PREP area exercises will be published in the federal register as a public forum for government and industry input to the scheduling process.

ACP Comments/Corrections/Suggestions

If you have any questions regarding this document or find any errors, please notify one of the following agencies:

- U.S. Coast Guard Sector New Orleans Contingency Planning.
- Louisiana State Oil Spill Coordinators Office.

Comments/Corrections/Suggestions Form

Directions:
Fill in your name, address, agency, and phone number. Fill in the blanks regarding the location of information in the plan being commented on. Make Comments in space provided. Add extra sheets as necessary. Submit to:

Address: Commander
U.S. Coast Guard
Sector New Orleans
Contingency Planning and Force Readiness
Attn: ACP Project Manager
200 Hendee Street
New Orleans, LA 70114

Email: SectorNewOrleansACP@uscg.mil

Name: ________________________ Title: ____________ Agency: ________________

Address: ____

City: ____________________ State/Province:____ Zip/Postal Code: ______________

Phone: (_____)____________ E-Mail: ____

Site: ____ Page: ____________

Location on page (Chapter, section, paragraph) (e.g. 2.1, paragraph 3):

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Comments: ____

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New Orleans Area Contingency Plan

Chapter 9000
Appendix B
Planning Scenarios

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix B Planning Scenarios

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix B Planning Scenarios

Planning Scenarios

Introduction

This Appendix of the New Orleans Area Contingency Plan has been developed by the New Orleans Federal On-Scene Coordinator (FOSC), in consultation with the New Orleans Area Committee, and is based on an assessment of all potential sources of discharges in this area meeting the provisions of 40 CFR Part 300.210(c) of the National Contingency Plan. The Area Contingency Plan is intended to be the fundamental element for building confidence that the plan addresses the necessary elements for planning a successful response within the area.

At a minimum, this Appendix will address the following area planning elements:

- Oil spill discharge and hazardous substance release history;
- A risk assessment of potential sources of discharges within the area;
- A description of planning assumptions describing a realistic assessment of the nature and size of possible threats and resources at risk;
- Planning scenarios that provide for a Worst Case Discharge (WCD), a Maximum Most Probable Discharge (MMPD), and an Average Most Probable Discharge (AMPD) from a vessel, offshore facility (outer continental shelf activity and near shore production fields), or onshore facility (fixed and mobile) in the area, as applicable.

Scenario Development

As required by the Oil Pollution Act of 1990, a most probable discharge, a maximum most probable discharge, and a worst case discharge are presented in this appendix of the New Orleans Area Contingency Plan. In addition, The Coast Guard requires inclusion of an offshore oil exploration/production WCD scenario be included in area contingency plans (Coast Guard General Message, Subject: Regional and Area Contingency Plan Preparedness for a Worst Case Discharge, COM COGARD Washington DC 112024Z Jan 11) where offshore continental shelf activity is present. The below definitions can be found in 33 CFR Parts 154 and 155, and 40 CFR Part 300.5, as appropriate.

Average Most Probable Discharge

The Coast Guard has determined Average Most Probable Discharge as the lesser of 50 barrels or 1% of a Worst Case Discharge for an offshore or onshore facility/pipeline/marine terminal, or the lesser of 50 barrels or 1% of cargo from a Tank Vessel during cargo transfer operations. This value was adopted for consistency with Federal Vessel and Facility Contingency Plans.

Maximum Most Probable Discharge

The Coast Guard has defined Maximum Most Probable Discharge as the lesser of 1,200 barrels or 10% of the volume of a Worst Case Discharge for an offshore facility or onshore facility/pipeline/marine terminal; 2,500 barrels of oil for a vessel with an oil cargo capacity equal to or greater than 25,000 barrels; or 10% of the vessel’s oil cargo capacity for vessels with a capacity less than 25,000 barrels for Tank Vessels. These values were adopted for consistency with Federal Vessel and Facility Contingency Plans.

Worst Case Discharge

As defined by section 311(a) (24) of the Clean Water Act, the definition of a Worst Case Discharge in the case of a vessel is a discharge in adverse weather conditions of its entire cargo, and in the case of an offshore facility or onshore facility/pipeline/marine facility, the largest foreseeable discharge in adverse weather conditions. This definition has been adopted for consistency with Federal Vessel and Facility Contingency Plans.

Discharge and Release History

The table on the next page provides an account of WCDs that occurred in the area, including substantial oil spills or hazardous substance releases which caused elements of this plan to be implemented.

Record of WCD and Releases

Date	Location	Source*	Product	Amount (bbls)	Responsible Party
07JUL08	MM 98, Mississippi River/ DM932	V	#6 Fuel Oil	>9,000	Tug MEL OLIVER
29AUG05	Murphy Oil (Valero), Meraux LA	ONF	Crude	25,110	Hurricane Katrina
20APR10	Gulf of Mexico- Mississippi Canyon 252/ Macondo Well	OSF	Crude	4.9 Million	British Petroleum
29JUL07	MP 21- Breton Sound	OSF	Crude	80	Unknown Vessel
28JUL10	Cedyco Mud Lake	OSF	Crude	100	Cvitanovic Boat Services
‘00	Tanker Westchester	V	Crude	13,500	Ermis Maritime Corp.
08APR26	Tanker Thomas Wheeler	V	Crude	Unknown	Collision with T/V SILVANUS
27FEB84	SS American Eagle	V	Unknown	Unknown	Explosion/ non-gas free atmosphere in cargo tank
2004	Taylor Energy	OSF	Crude	~28,500	Hurricane Ivan
10SEP88	LeBeouf Towing Company	V	Crude	3,000	Hurricane Florence

10APR93	Sunshine Bridge/MM 167 Mississippi River	V	#6 Fuel Oil	5,500	Tug DAVE BRASSEL
27FEB99	T/V Hyde Park/MM 92-76 Mississippi River	V	#6 Fuel Oil/Caustic Soda	50	T/V HYDE PARK

***V= Vessel, **OSF= Offshore Facility, ONF= Onshore Facility P= Pipeline**

*** ***Means 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. The term excludes deep-water ports and their associated pipelines defined by the Deepwater Port Act of 1974, but include other pipelines used for one or more of these purposes. A mobile offshore drilling unit (MODU) is classified as a facility when engaged in drilling or downhole operation

Risk Assessment

The possibility exists for a WCD to occur anywhere in the New Orleans Area (as defined in Chapter 1000, Section 1200) given the high volume of deep-draft vessels (tank and non-tank vessels), the prevalence of oil and gas support vessels, offshore facilities (drilling rigs), oil and petrochemical terminals, and tug/tank barge composites. In addition, the unpredictable and sudden severe weather during transitional seasons, river fog in the winter and afternoon thunderstorms during the summer increase the risk.

Possible Sources of WCD

The Lower Mississippi River port complex is one of the biggest and busiest ports in the world. The Port of New Orleans region accounts for much of the country's oil refining and petrochemical production, and is the World's third large port in regards to dry cargo volume, moving approximately 400 million tons a year. In the last six years, pollution incidents have accounted for almost half of the Reportable Marine Casualties in the New Orleans FOSC Zone, averaging 360 cases annually. There are numerous scenarios that may cause a WCD: human error, groundings, collisions, equipment failure, sabotage, natural disaster, offshore facility hazards such as fire/explosion, pipeline rupture or wellhead failure, and oil terminal situations such as a catastrophic tank collapse.

Offshore Facilities

There are over 150 Offshore Facilities in the New Orleans FOSC Zone, excluding those operating in the MSU Morgan City area of responsibility. These facilities are any structure, 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, and transferring, processing, or transporting oil offshore. A Mobile Offshore Drilling Unit is classified as an offshore facility when engaged in drilling or downhole operations as defined in 30 CFR Part 254.6. Oil exploration/drilling presents the greatest potential volume oil spill. A possible WCD scenario is the uncontrolled release with unknown potential volume from a crippled Drilling Rig/uncontrolled wellhead for a period of over thirty days. A similar incident occurred in April 2010 with the explosion and Sinking of the MODU DEEPWATER HORIZON, creating an estimated 65,000 barrel a day discharge. The wellhead was capped almost three months after the initial incident, and total discharge has been estimated at 4.9 million barrels of crude oil.

The New Orleans FOSC Zone also includes hundreds of nearshore oil production fields. Most of these were drilled by major oil companies decades ago and have been resold to smaller companies or abandoned. The infrastructure in these fields is often poorly documented and abandoned and provides a major source of oil spills.

Onshore Facilities/Pipelines/Marine Terminals

The New Orleans FOSC Zone is home to over 60 fixed, including 6 major refineries, and 13 Mobile Onshore Facilities transferring oil and/or hazardous materials in bulk. Onshore fixed oil storage facilities present the greatest potential volume oil spill: a possible scenario of a WCD at an Onshore Facility is multiple tank failures during hurricane conditions. A similar incident occurred at Murphy Oil during Hurricane Katrina, discharging over 25,000 barrels of crude oil. Some of the common products handled at the largest of these facilities are:

- Unleaded Gasoline
- Diesel Fuel
- Crude Oil
- #2 Fuel Oil
- #6 Oil

Tank and Non-Tank Vessels

Over the last decade, the New Orleans FOSC Zone has had an average of 6930 Non-Tank vessel and 2750 Tank Vessel arrivals each year. A WCD for a vessel is defined as loss of a vessel’s entire cargo in adverse weather conditions. There is a significant volume of oil that is transported, stored, or consumed as fuel within in the New Orleans area. The largest foreseeable vessel discharge could result from a collision between two vessels. Vessels account for approximately 80% of the Serious Marine Incidents in the New Orleans FOSC Zone over the last 6 years.

Spill Activity Statistics

For this report, the USCG MISLE database and local unit records were analyzed for the New Orleans FOSC Zone. Data extracted involved all potential sources of spills within the area. A data pool of 3,994 incidents was analyzed for a period of seven years based on current spill activity records. Mystery sheens were not included in this analysis.

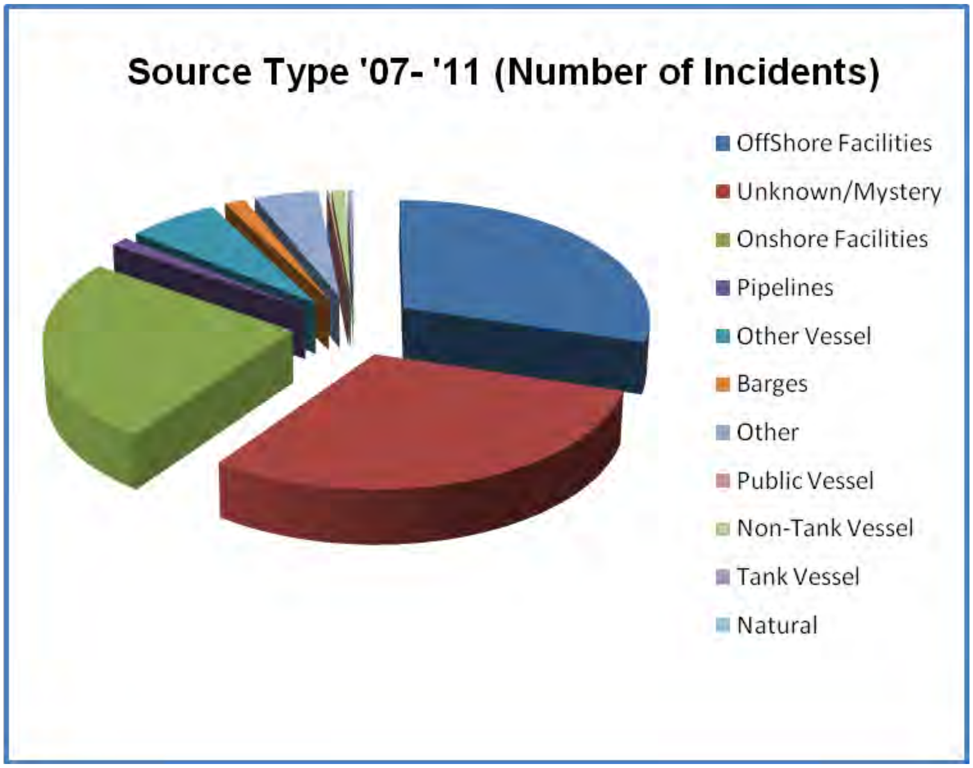
Based on an analysis of this data, the most frequent product reported spilled in the navigable waters was Oil, Petroleum Based. The primary source was determined to be Off-Shore Facilities, accounting for almost 40% of reported incidents, and the average quantity discharged was determined to be approximately 50 gallons. Taken together, these products comprise most of the reported spills in the area.

Off-Shore Facilities were determined to be the primary source of spills during this evaluation period. However, spills from reporting sources tended to be small (minor) spills, which were punctuated by an occasional large (medium or WCD) spill. The primary source producing the largest volume discharged over the last five calendar years is On-shore Waterfront Facilities. The most frequent volumes spilled were between 0.1 Gallons to 100 Gallons.

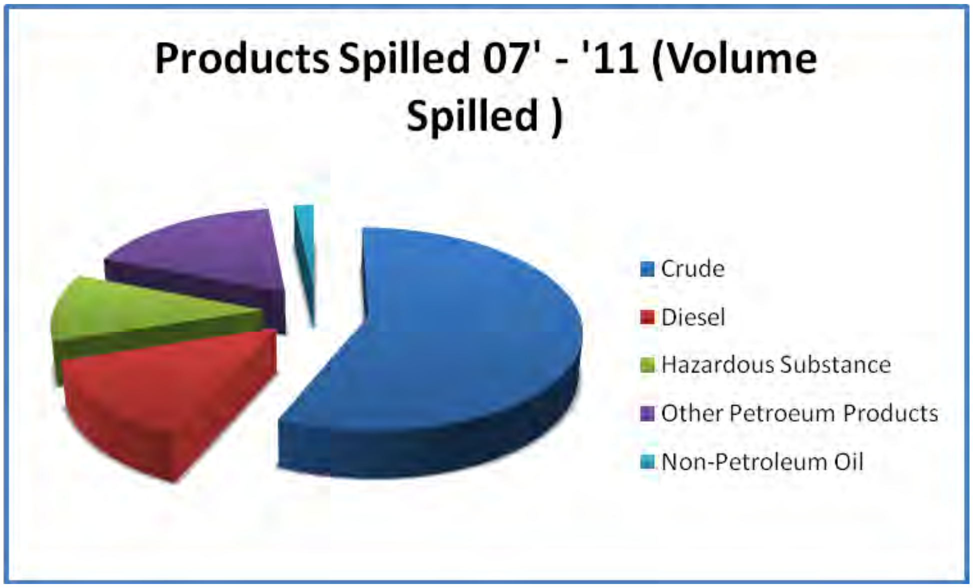
Historical Data

The following data was complied for the calendar years 2007 through 2011. The table below, and corresponding pie chart, tabulates the amount of incidents per calendar year by source type. Off-shore Facilities account for almost 40% of all reported incidents in the last five years.

Source Type	CY2011	CY2010	CY2009	CY2008	CY2007	Total
Off-Shore Facilities	303	262	534	274	145	1518
Unknown/Mystery	308	331	195	99	71	1004
Onshore Facilities	252	112	115	82	59	620
Other	47	82	89	61	92	371
Other Vessel	67	80	57	47	23	274
Pipelines	13	15	17	9	26	80
Barges	15	22	8	16	5	66
Non-Tank Vessel	10	16	8	6	4	44
Tank Vessel	3	3	1	2	1	10
Public Vessel	2	4	0	0	0	6
Natural	1	0	0	0	0	1
Total	1,021	927				**3994**

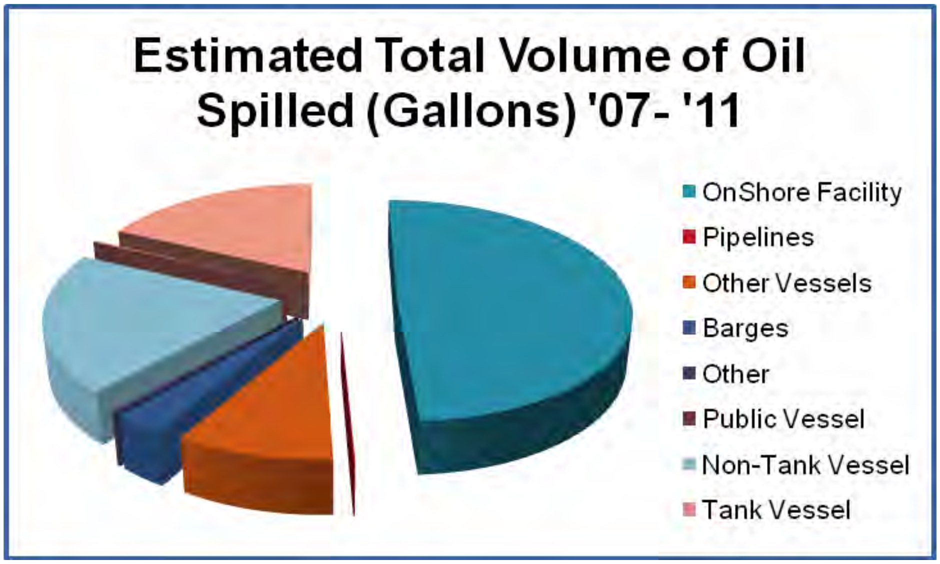


The below chart represents ratio of products spilled for calendar years 2007 through 2011. Due to minor volumes, spilled petroleum products other than Diesel and Crude oil have been grouped into “Other Petroleum Products”, individual hazardous substances have been grouped into “Hazardous Substances”, and non-petroleum based oils have been grouped into “Non-Petroleum Oil”.

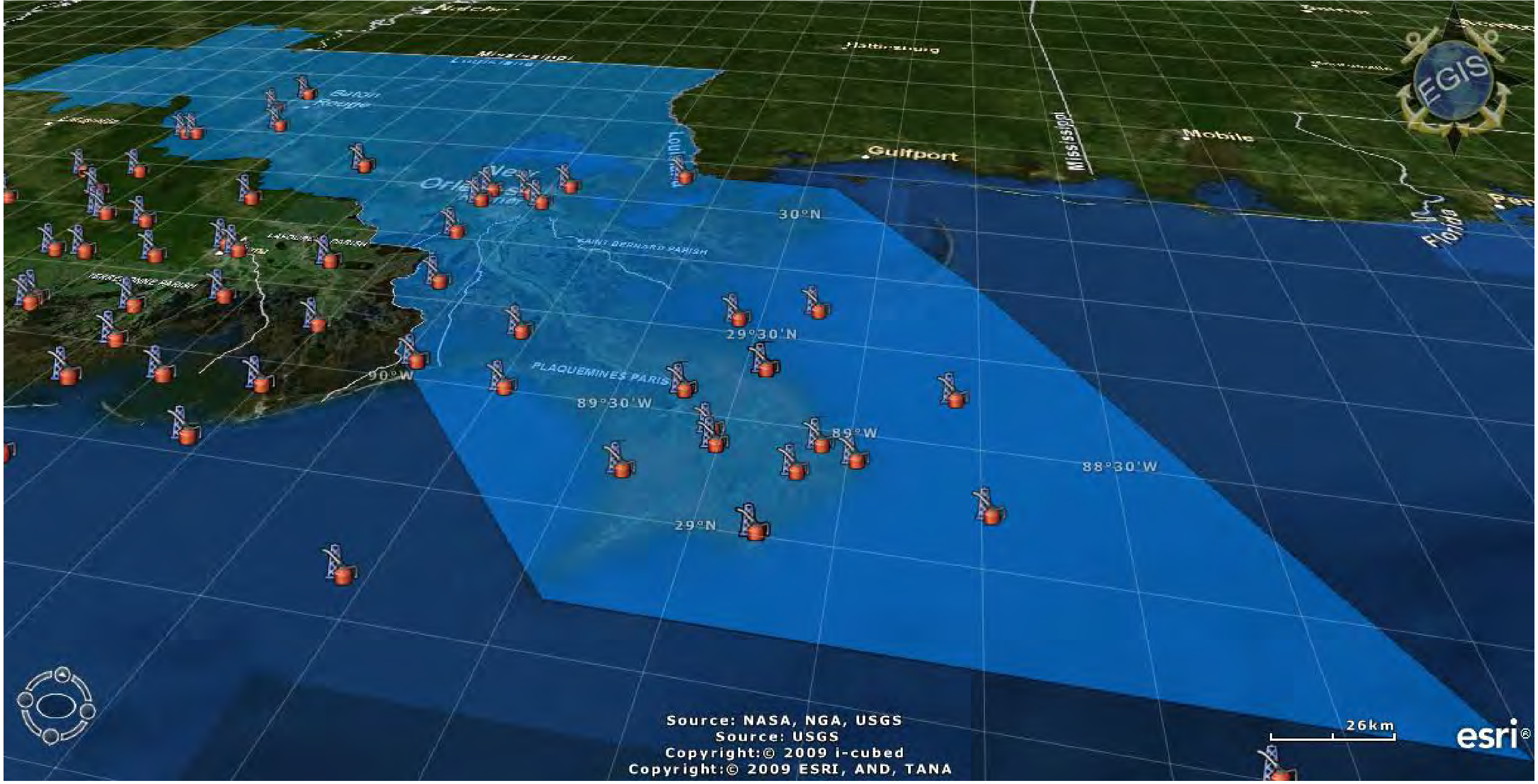


The below table depicts the estimated total volume oil spilled, by source type, for the years 2007 through 2011. WCD volumes, mystery/unknown sources, and unknown volume incidents have been omitted from the data in the table and the corresponding chart.

Source Type	Estimated Total Volume of Oil Spilled In Gallons CY '07 – '11
OnShore Facility	50225
Pipelines	86
Other Vessels	9312
Barges	3087
Other	158
Public Vessel	54
Non-Tank Vessel	20642
Tank Vessel	222
OffShore Facility	18231

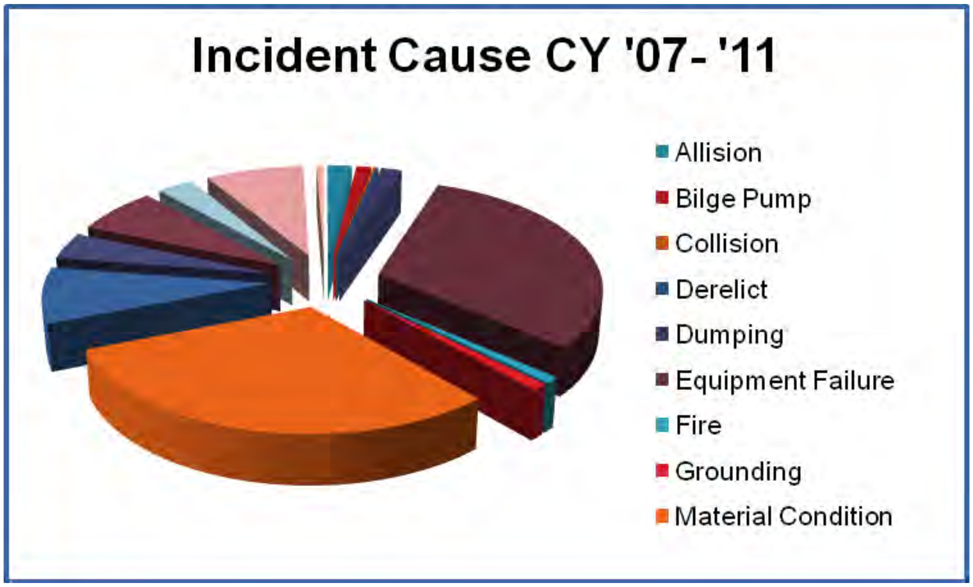

Estimated Total Volume of Oil Spilled (Gallons) '07- '11
OnShore Facility
Pipelines
Other Vessels
Barges
Other
Public Vessel
Non-Tank Vessel
Tank Vessel

The below map shows the plotted location based upon reported latitude and longitude of reported incidents resulting in a discharge of oil greater than 50 gallons in Southeast Louisiana from 2007 to 2011.



Source: NASA, NGA, USGS
Source: USGS
Copyright:© 2009 i-cubed
Copyright:© 2009 ESRI, AND, TANA

The below chart represents ratio of generic incident causes for calendar years 2007 through 2011. Mystery sheen data has been omitted.



Vulnerability Analysis

The New Orleans FOSC Zone includes many areas that are considered vulnerable to the effects of an oil spill. The potential effects of the spill could affect human health, property, and the environment. Information taken from real world events and spill trajectories has shown that a WCD from any source could have a devastating effect on fish, wildlife, and sensitive environments in the area. The analysis shows that the following items could be vulnerable from the effects of a major oil spill in the area:

- Water intakes (drinking, cooling, or other)
- Businesses
- Residential areas
- Wetlands and other sensitive environments
- Fish and Wildlife
- Endangered flora and fauna

- Recreational areas
- Marine transportation system
- Utilities
- Other areas of economic importance (beaches, marinas)
- Unique habitats or historical sites

A WCD from a tank vessel or an offshore/onshore facility would most likely impact these vulnerable and sensitive environments, which are identified and described in Appendix S, Geographic Response Plans of the ACP. The strategies and tactics used to protect, recover, and mitigate the effects of a WCD are also addressed in the Geographic Response Plans.

Planning Assumptions

Vessel transits, navigational hazards, and the operational activities associated with transfer, handling, and storage of oil, along with the activities associated with offshore oil and gas exploration within the area provide high consequence situations for a WCD. Natural disasters such as tropical storms and other severe weather events increase the likelihood of a major spill occurring in the area. The following assumptions are made for the WCD planning scenarios:

- The ability to respond to a WCD will be beyond the ability of the New Orleans Area Committee, the Local Community, and local spill response resources.
- A Unified Command will be established as soon as possible.
- Responders will be adequately trained in oil/hazardous substance response and will operate within the level of their training, expertise, and capabilities as described in 29 CFR Part 1910.120.
- The applicable Facility/Vessel/Pipeline/Off-Shore response plan will be implemented.
- A WCD scenario will draw major media and governmental interest.

Meteorological Conditions

The Gulf of Mexico is influenced by a maritime subtropical climate controlled primarily by the clockwise circulation around the semi permanent area of high barometric pressure commonly known as the Bermuda High. The Gulf of Mexico is located to the southwest of this center of circulation. This proximity to the high pressure system results in predominantly east to southeasterly flow in the region. Two important classes of cyclonic storms are occasionally superimposed on this circulation pattern. During the winter months, December through March, cold fronts associated with cold continental air masses influence mainly the northern coastal areas of the Gulf of Mexico. Behind the fronts, strong north winds bring drier air into the region. Tropical cyclones may develop or migrate into the Gulf of Mexico during the warmer months. These storms may affect any area of the Gulf of Mexico and substantially alter the local wind circulation around them. In coastal areas, the sea breeze effect may become the primary circulation feature during the summer months of May and October. In general, however, the subtropical maritime climate is the dominant feature in driving all aspects of weather in this region; as a result the climate shows very little diurnal or seasonal variation.

Tropical cyclones (hurricanes and tropical storms) are severe but infrequent, with the season extending from June 1 through November 30. Extra-tropical cyclones (low-pressure systems) occur frequently during winter and spring and are likely to produce occasional rough conditions in the area during this time. Extreme weather conditions during an actual spill may inhibit aerial surveillance of a slick and oil recovery operations.

Planning Scenarios

Given the applicable conditions described above, the WCD, MMPD, and AMPD volumes from all potential sources is calculated and listed in the table below. The MMPD and the AMPD scenario volume is calculated based on a fixed number established for an offshore facility, an onshore facility/pipeline/marine terminal, or a percentage of the WCD rate from each potential source. For tank and non-tank vessels, the MMPD and the AMPD scenario volume is calculated based on a fixed number, a percentage of the cargo capacity, or the cargo transfer rate.

Therefore, the MMPD and the AMPD spill volumes from an offshore facility or onshore facility/pipeline/marine terminal is calculated as:

- 1,200 barrels or 10% of the WCD volume when calculating the MMPD.
- 50 barrels of 1% of the WCD volume when calculating the AMPD.

The MMPD and the AMPD spill volume from a tank/non-tank vessel is calculated as:

- 2500 barrels with a cargo capacity greater than or equal to 25,000 barrels, or 10% of the cargo capacity when calculating the MMPD.
- The lesser of 50 barrels or 1% of cargo from the vessel during cargo transfer operations when calculating the AMPD.

Offshore Facility WCD Scenario

Offshore Facility WCD Scenario

Although there are numerous offshore facilities operating within the New Orleans FOSC Zone, the Shell drilling operations at Mississippi Canyon Block 807 was selected as the Offshore WCD even though the facility operates in the Morgan City FOSC Zone. MC807 is located about 75 miles south of Venice, Louisiana in the Gulf of Mexico. The following information regarding a WCD from MC 807 has been taken from the Shell Gulf of Mexico Regional Oil Spill Response Plan

MC 807 Drilling Operations	Calculations (BBLS)
First 24 Hours =	~ 465,000 bbls
30 Day Average (per day) = (estimated blowout rate from the exploratory well calculated with Prosper computer model)	~365,000 bbls

*There is often a very significant change is rate as time proceeds which is illustrated by the differences between 24-hour, 30-day average and volume calculated until a well is killed in a potential blow out. Especially at the very high rates that can be calculated in the Deepwater Gulf of Mexico, several reservoir phenomena combine to create this behavior. At very short times, e.g. during the first 24 hours, the pressure profile in the reservoir changes from the moment when a well firsts starts flowing to a less abrupt pressure profile with time. As a result, the rate declines. At somewhat longer time scales, effects such as reservoir voidage and the impact of geological boundaries can cause the rate to drop continuously. These phenomena are often not as apparent at these same time scales in production wells since those rates are much lower and other mechanical factors, such as choke setting, can serve to reduce or even eliminate these effects. Simulation and material balance models can include these effects and form the basis of the BOEMRE Notice to Lessees No.2010-N06 estimated for 24 hour and 30 day rates as well as maximum duration volumes.

Applied Science Associates (ASA) conducted a deepwater blowout simulation for The Response Group to better determine subsurface and surface evaporation and dispersion rates. Below is a table outlining the applicable evaporation and dispersion quantities:

	Mississippi Canyon Block 807	**Calculations (BBLS)**
i.	30 Day Average WCD =	~365,000 bbls
ii.	Subsurface dispersion- 25% (Water Depth + ~3,000)	- 91,000 bbls
iii.	**REMAINING WCD AFTER SUBSURFACE DISPERSION**	274,000 bbls
iv.	Surface dispersion and evaporation – 25%	- 68,000 bbls
	TOTAL REMAINING	~ 206,000 bbls

The WCD volume of an estimated 365,000 bbls a day of crude oil poses a significant risk to New Orleans FOSC Zone and the entire Gulf Region. Plaquemines Parish has been identified as the most probable/greatest threat of impact within the Gulf of Mexico in the event of a WCD from MC 807. Plaquemines Parish has a total area of 2,429 square miles, of which 845 square miles is land and 1,584 square miles is water. Plaquemines Parish includes two National Wildlife Refuges: Breton National Wildlife Refuge and Delta National Wildlife Refuge. This area is also a nesting ground for the brown pelican, an endangered species.

Following this Worst Case Discharge Response are maps and status boards that outline equipment, personnel, materials, and support vessels as well as temporary storage equipment to be considered in order to cope with an initial spill of approximately 365,000 bbl a day. The list estimates individual times needed for procurement, load out, travel time to the site, and deployment.

The status boards outline the equipment that would be mobilized for a response with de-rated recovery capacity and response times. These resources would be used wherever adequate slick concentration is located, and weather permitting. Under adverse weather conditions, the primary MSRC and CGA equipment (major response vessels and skimmers) is still effective and safe in sea states of 6-8 ft. If sea conditions prohibit safe mechanical recovery efforts, then natural dispersion and airborne chemical dispersant application (visibility and wind conditions permitting) may be the only viable response option.

Shell has contracted with Marine Spill Response Corporation (MSRC), Clean Gulf Associates (CGA), and American Pollution Control Corporation (AMPOL) as primary OSROs.

Upon notification of the spill, Shell would request a partial or full mobilization of resources, including, but not limited to, dispersant aircraft and skimming vessels. The Qualified Individual, Person in Charge, Incident Commander, or designee may contact other service companies if the Unified Command deems such services necessary to the response effort.

Tables below outline equipment as well as temporary storage equipment to be considered in order to cope with an initial spill of approximately 365,000 bbls/day. The list estimates individual times needed for procurement, load out, and travel time to the site and deployment.

Upon notification of a release and mobilization of the response, either a fixed-wing aircraft or helicopter would be dispatched as promptly as possible (considering available daylight hours, weather conditions and other safety factors) to conduct visual surveillance at the spill source. If necessary and safe the surveillance could be supplemented through use of vessels as well. The effectiveness of many response technologies (such as in-situ burning, dispersant application, and mechanical recovery) should be enhanced through collaboration with air-based spotters, who can guide these systems to the oil concentrations and coordinate simultaneous operations (SIMOPS). Air-based spotters should be equipped with air to marine/ground communication equipment to facilitate communications with marine- and land-based response assets. Vessel locations should also be monitored in real-time using vessel-tracking technologies (such as

Automated Identification System (AIS), GPS-based tracking, cell phone data, etc.), which can facilitate vessels being deployed for optimal recovery.

Offshore Response

In the event of a WCD from Shell's MC 807 facility, offshore response strategies will include attempting to skim free floating oil utilizing available OSRO Oil Spill Response Vessels (OSRVs), Oil Spill Response Barges (OSRBs), Vessels of Opportunity (VOO), and Quick Strike OSRVs, which have a combined de-rated recovery rate of approximately 478,000 bbls/day. Temporary storage associated with the identified skimming and temporary storage equipment equals approximately 480,000 bbls. As with any spill, additional cascading response equipment would be mobilized to the site from various OSRO bases. An offshore response would consist of simultaneous operations of approved dispersant application, containment booming, mechanical recovery, and in-situ burning. In the event that an offshore response is necessary, the following strategies will be implemented:

- Mobilize capability to regain control of, and plug the well (e.g., http://www.marinewellcontainment.com/)

- Commence drilling relief well as a contingency

- Mobilize mechanical recovery resources, including vessels (both OSRVs and VOOs), barges, ocean booming, skimming equipment, and spotter/surveillance aircraft. Begin deploying mechanical recovery resources as close to the source as possible to contain and collect concentrated oil in a timely and effective manner. Radio communication will be established between spotter aircraft and other surveillance systems (including AIS) with skimming vessels and barges to direct vessels to locations of concentrated oil to ensure maximum effectiveness and efficiency of mechanical recovery equipment.

- Mobilize dispersant resources to approved locations for both aerial and boat application, in areas where oil cannot be mechanically recovered. Subsea dispersant application equipment may be mobilized at the discretion of the RRT, and requires approval from the RRT. Because large quantities of dispersants will likely be applied on the surface as well, RRT approval should be sought early in the response for ongoing use of dispersants.

- Mobilize in-situ burn resources outside the vicinity of the source to collect and burn oil in heavily concentrated locations. Fire boom will be deployed in a U-configuration.

- Mobilize offshore vessels equipped with remote sensing technologies (radar, infrared camera) to aid in night time operations and slick tracking. Remote sensing technologies assist skimming vessels in identifying thick areas of oil to enhance encounter rate.

- Maintain an effective and well coordinated response effort to control the source of the discharge, which may involve drilling a relief well, up to the point when the Federal On-Scene Coordinator determines the response effort complete.

Mechanical Cleanup Methods

Mechanical oil spill response uses physical barriers (boom) and mechanical devices (skimmers) to redirect and remove oil from the surface of the water. Offshore response strategies will include attempting to skim utilizing the LOUISIANA RESPONDER, MISSISSIPPI RESPONDER, CGA 200 HOSS Barge, and GULF COAST RESPONDER OSRVs, two AMPOL Response Vessels, and multiple skimming packages with a total de-rated skimming capacity of approximately 478,000 bbls. Temporary storage associated with the identified skimming and temporary storage equipment equals approximately 480,000 bbls. ***SAFETY IS FIRST PRIORITY. AIR MONITORING WILL BE APUT IN PLACE AND OPERATIONS DECLARED SAFE PRIOR TO ANY CONTAINMENT/ SKIMMING ATTEMPTS.***

- Skimming systems will deploy boom in a variety of different configurations. Generally, boom will be deployed in a J-configuration in a single skimming unit, which requires only one assist vessel to attend the boom. These single skimming units will locate heavily concentrated oil, with assistance from spotters and remote sensing technologies, to enhance encounter rate and effective recover the oil. Boom will be deployed in a U-configuration when skimming vessels or barges have access to two assist vessels. This configuration maximizes the swath width and containment capacity. Boom may be deployed in a U-configuration with an open apex to funnel oil to awaiting skimming vessels.

- VOOs equipped with skimming systems will be deployed to locations with recoverable oil. For locations with light oil that cannot be recovered mechanically, VOOs will be equipped with sorbent materials to recover light oil

- In order to increase encounter rate, slick containment systems will be directed to locations of heavily concentrated oil by spotter aircraft and vessels with remote sensing technology. Once the oil has been contained within the booms, the oil should be directed into the path of a skimming vessel. Boom also may be configured into a U-configuration with an open apex to funnel oil to awaiting skimming vessels.

- Oil that escapes the above assets and moves shoreward will be collected by VOOs that deploy sorbent boom, collection nets, or other types of equipment that absorbs surface oil. These assets will be deployed as task forces that can rapidly respond to light oil.

Operational Limitations of Response Equipment

MSRC OSRV	8 foot seas
VOSS System	4 foot seas
Expandi Boom	6 foot seas, 20 knot winds
Dispersants	Winds more than 25 knots Visibility less than 3 NM, or Ceiling less than 1,000 ft.

Dispersant Application

Depending on proximity to shore and water depth, dispersants may be a viable response option. ***Use of dispersant in non-preapproved areas will require approval by RRT VI prior to application.*** Because surface application of large quantities of dispersants is likely, RRT VI approval for ongoing dispersant application should be sought in pre-approved areas as well. However, RRT VI consultation should not delay initial surface dispersant use in pre-approved areas if appropriate. If appropriate, and approved, 4 to 5 sorties from three DC-3s will be made within the first 12 hour operating day of the response. Assuming a 1:20 application rate, 90% effectiveness, and 4 to 5 sorties per day, these aerial systems could disperse approximately 7,700 to 9,600 barrels of oil per day based on the NOAA Dispersant Planner. Additionally, there could be 3 to 4 sorties (318 gallons per sortie) from a BE90 King Air and 3 to 4 sorties (3,250 gallons per sortie) from a Hercules C-130A within the first 12 hour operating day of the response. Using a 1:20 application rate, 90% effectiveness, and assuming 3-4 sorties per day, the systems could disperse approximately 4,600 to 6,100 barrels of oil per day based on the NOAA Dispersant Planner. For continuing dispersant operations the CCA's Aerial Dispersant Delivery System (ADDS) would be mobilized. The ADDS has a dispersant spray capability of 5,000 gallons per sortie.

Vessel dispersant application may be another available response option. If appropriate, vessel spray systems can be installed on offshore vessels of opportunity using inductor nozzles (installed on fire-water monitors), skid mounted systems, or purpose-built boom arm spray systems. Vessels can apply dispersant within the first 12-24 hours of the response and continually as directed. This is particularly effective in reducing VOCs in and around well containment operations on the surface.

Shell has contracted with Marine Well Containment Company for a subsea dispersant package. Subsea dispersant application has been found to be highly effective at reducing the amount of oil reaching the surface;
However, approval is required from the appropriate Regional Response Team (RRT) prior to use. Additional data collection, laboratory tests and field tests will help in facilitating the optimal application rate and effectiveness numbers. For planning purposes, Shell assumes a 1:100 application rate, at 90% effectiveness (based on accepted industry dispersant effectiveness standards), and a system flow rate of 8-11 gallons per minute (approximately 11,500 to 16,000 gallons of dispersant per day). Using these assumptions, the system has the potential to disperse approximately 24,500 to 34,000 barrels of oil per day.

In-Situ Burning

Open-water in-situ burning (ISB) also may be used as a response strategy, depending on the circumstances of the release. ISB services may be provided by the primary OSRO contractors. ISB operations will not be conducted without the appropriate RRT approval. If appropriate conditions exist and approvals are granted, one or multiple ISB task forces could be deployed offshore. Task forces typically consist of two to four fire teams, each with two vessels capable of towing fire boom, guide boom or tow line with either a handheld or aerially-deployed oil ignition system. At least one support/safety boat would be present during active burning operations to provide logistics, safety and monitoring support. Depending upon a number of factors, up to 4 burns per 12-hour day could be completed per ISB fire team. Most fire boom systems can be used for approximately 8-12 burns before being replaced. Fire intensity and weather will be the main determining factors for actual burns per system. Although the actual amount of oil that will be removed per burn is dependent on many factors, recent data suggests that a typical burn might eliminate approximately 750 barrels. For planning purposes and based on the above assumptions, a single task force of four fire teams with the appropriate weather and safety conditions could complete four burns per day and remove up to ~12,000 bbls/day. In-situ burning nearshore and along shorelines may be a possible option based on several conditions and with appropriate approvals, as outlined in Section 19 of the Shell Gulf of Mexico Regional Oil Spill Response Plan, In-situ Burn Plan. In-situ burning along certain types of shorelines may be used to minimize physical damage where access is limited or if it is determined that mechanical/manual removal may cause a substantial negative impact on the environment. All safety considerations will be evaluated. Additional information on ISB is presented in Section 19 of the Shell Gulf of Mexico Regional Oil Spill Response Plan, In-situ Burn Plan. In addition, Shell will assess the situation and can make notification within 48 hours of the initial spill, to begin ramping up fire boom production through contracted OSRO(s) as discussed in Section 19 of the Shell Gulf of Mexico Regional Oil Spill Response Plan, In-situ Burn Plan. There are potential limitations that need to be assessed prior to ISB operations. Some limitations include atmospheric and sea conditions; oil weathering; air quality impacts; safety of response workers; and risk of secondary fires.

Source Control/Subsea Containment

The first source control response in a subsurface well blowout would be to activate the blowout preventers and close the well. Wild Well Control and Marine Well Containment Company (MWCC) would be notified in the event of a blowout. The first step is to determine if the blowout well can be capped and killed by bull-heading or circulating down existing tubulars. A pre-emptive relief well planning team would immediately be formed. The relief well team would locate and secure the appropriate rig(s) to conduct relief well operations, if needed. If the well cannot be capped, the relief well(s) operations would start as soon as possible. If the well can be capped but not killed, then using a snubbing or coil tubing unit for a circulating kill, drilling a relief well, or starting both operations simultaneously may be the next response options. Subsea containment resources would be mobilized in the event of an uncontrolled well blowout. Subsea containment incorporates simultaneous operations to cap or contain the flow of oil within the well, contain the oil outside of the well and collect at surface facilities or vessels and chemically disperse the oil at the well head. Refer to the Control and Containment status board for resources and response times.

Nearshore and Shoreline Protection

If the spill went unabated, shoreline impact would depend upon existing environmental conditions. Nearshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom on vegetated areas. Strategies would be based upon surveillance and real time trajectories provided by Shell contractors that depict areas of potential impact given actual sea and weather conditions. Strategies from the New Orleans Area Contingency Plans, The Response Group and Unified Command would be consulted to ensure that environmental and special resources would be correctly identified and prioritized to ensure optimal protection. The Response Group shoreline response guides depict the protection response modes applicable for oil spill clean-up operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Supervisory personnel have the option to modify the deployment and operation of equipment allowing a more effective response to site-specific circumstances.

Mechanical Cleanup Methods

Near shore mechanical recovery resources will be deployed to contain and collect oil prior to reaching the shoreline, minimizing the amount of oil that may impact the shoreline. In areas of shallow water, it may be possible to collect or corral the oil with ocean boom and take it to deeper water or low-current areas that have better skimmer access and higher recovery rates. Sorbent boom and snare boom may be utilized to recovery light sheens and more viscous oils. Sorbent boom is designed primarily to absorb oil, although it can act as a protective measure against thin oil sheens under very quiet water conditions. Snare boom (pom-poms tied onto a line) is effective as a sorbent of more viscous oils under higher wave and current conditions. In any current, sorbent boom can contain only the thinnest sheens. When used with conventional booms, sorbents can be placed outside of the boom to pick up small amounts of escaping oil, or inside the boom to absorb small amounts of contained oil.

Shoreline Protection

The Response Group shoreline response guides depict the protection response modes applicable for oil spill clean-up operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Supervisory personnel have the option to modify the deployment and operation of equipment allowing a more effective response to site-specific circumstances. Booming strategies will be implemented to exclude oil from impacting priority resources, and may be diverted to collection areas for recovery. The following are various types of boom that may be deployed to protect the shoreline:

- ***Near Shore Boom:*** When oil threatens impact shoreline or marshes, this medium size boom (~18”) can be deployed to deflect or contain oil, or prevent impact to sensitive areas.

- ***Bottom-seal Boom:*** This boom is designed for deployment in very shallow water where traditional boom may foul on the bottom during low water levels. This boom’s special features allow it to conform to the substrate, so that it can continue to act as a barrier to oil during changing tides or lower water levels. Bottom seal boom uses ballast tubes that are filled with water and actually lay on the bottom to provide a seal against oil passage. Shallow water boom is effective in higher-current areas because the shallow skirt minimizes the drag in the current

- ***Inland Boom:*** Inland boom is the smallest conventional boom and is designed for deployment in very shallow water; as the draft is only 6-12 inches. It is normally deployed in more protected waters where there is little to no wave action.

Wildlife Support

If wildlife is threatened due to a spill, MSRC and CGA have resources available for Shell, which can be utilized to protect and/or rehabilitate wildlife. Wildlife support resources are identified in the Shoreline Protection & Wildlife Support status board.
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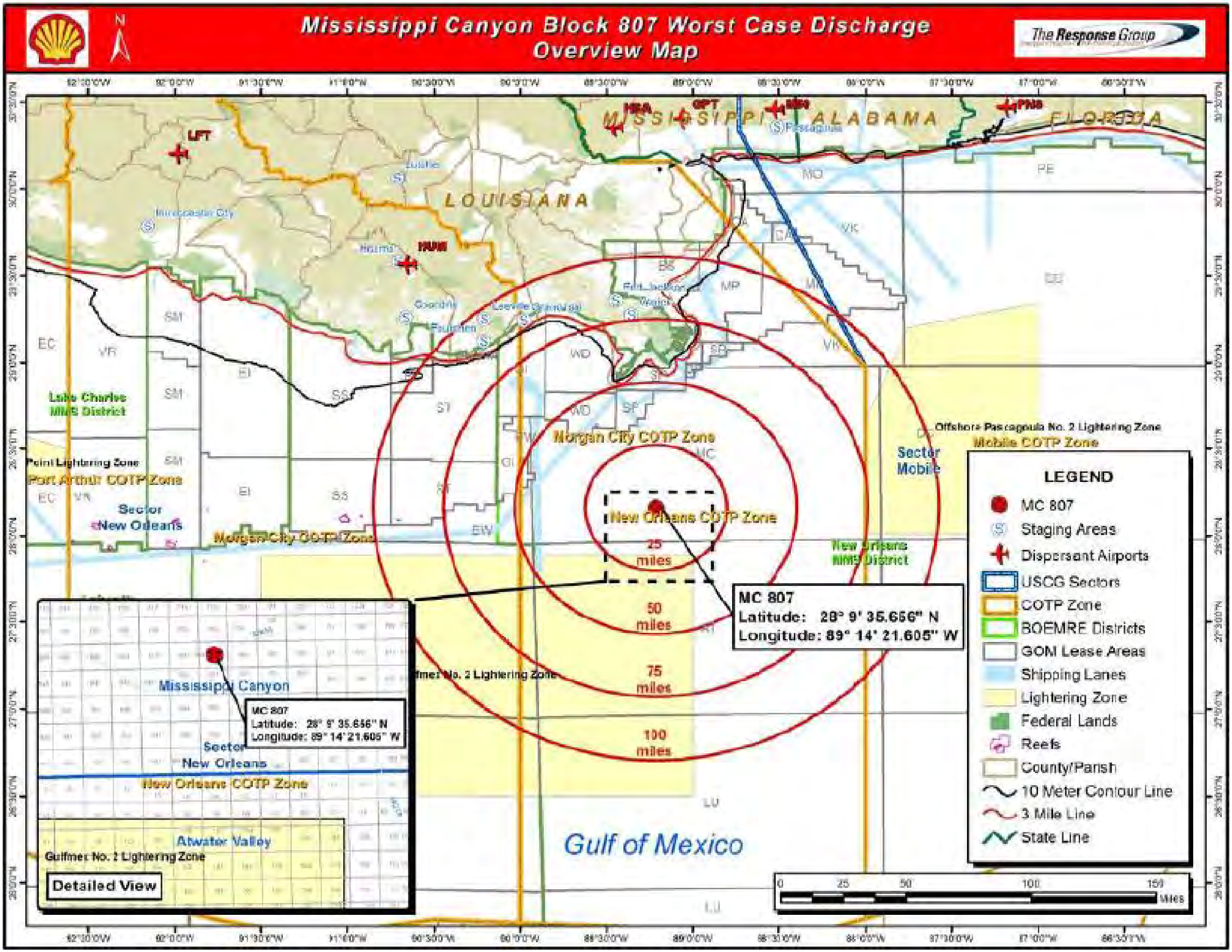
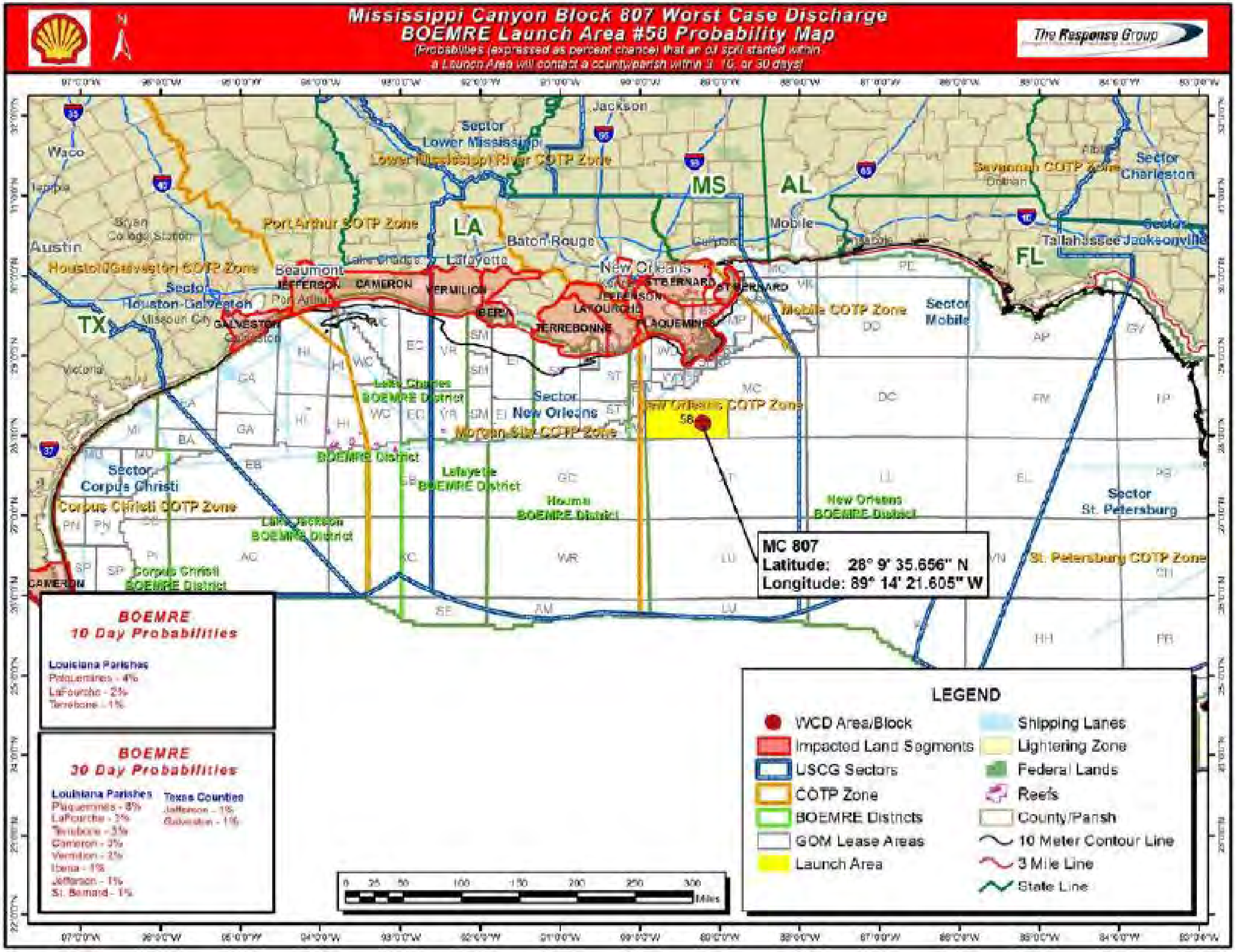


Mississippi Canyon Block 807 Worst Case Discharge Overview Map



Mississippi Canyon Block 807 Worst Case Discharge BOEMRE Launch Area #58 Probability Map

(Probabilities (expressed as percent chance) that an oil spill started within a Launch Area will contact a county/parish within 3, 10, or 30 days)

MC 807
Latitude: 28° 9' 35.656" N
Longitude: 89° 14' 21.605" W

BOEMRE
10 Day Probabilities

Louisiana Parishes
Plaquemines - 4%
LaFourche - 2%
Terrebone - 1%

BOEMRE
30 Day Probabilities

Louisiana Parishes	Texas Counties
Plaquemines - 8%	Jefferson - 1%
LaFourche - 3%	Galveston - 1%
Terrebone - 3%	
Cameron - 3%	
Vermilion - 2%	
Iberia - 1%	
Jefferson - 1%	
St. Bernard - 1%	

Additional Support for a blowout lasting 120 days:

- Ocean Barge to transport recovered oil from offshore skimming systems and temporary storage barges to onshore disposal sites (identified in Area Contingency Plans and approved by the State)

- Additional OSRO personnel to relieve equipment operators

- Vessels for supporting offshore operations

- Field safety personnel

- Continued surveillance and monitoring of oil movement

- Helicopter, video cameras

- Infra red (night time spill tracking) capabilities

- Logistics needed to support equipment:
  - Parts trailers and mechanics to maintain skimmers and boom
  - Staging areas
  - Fueling facilities
  - Decontamination stations
  - Dispersant stockpile transported from Houston to Houma
  - Communications equipment and technicians

- Logistics needed to support responder personnel:
  - Food
  - Berthing
  - Additional clothing/safety supplies
  - Decontamination stations
  - Medical aid stations
  - Safety personnel

Offshore Facility MMPD

Under development.

Offshore Facility AMPD Scenario

Under development.

Onshore Facility/Pipeline/Marine Terminal WCD Scenario

Of the onshore facilities handling oil and or hazardous substances in bulk in the New Orleans FOSC Zone, Marathon Petroleum Garyville Refinery has the largest potential WCD, equaling 500,000 bbls.

Onshore Facility/Pipeline/Marine Terminal MMPD Scenario

Under development

Onshore Facility/Pipeline/Marine Terminal AMPD Scenario

Under development

Tank/Non-Tank Vessel WCD Scenario

Under development

Tank/Non-Tank Vessel MMPD Scenario

Under development

Tank/Non-Tank Vessel AMPD Scenario

Under development

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New Orleans Area Contingency Plan

Chapter 9000
Appendix C
In-Situ Burn Policy

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix C In-Situ Burn Policy

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Chapter 9000 Appendices, Appendix C In-Situ Burn Policy

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In-Situ Burn Policy

In-Situ Burning Introduction

This is the New Orleans Area Committee (NOAC) in-situ burn policy for coastal and applicable inland waters. It describes the established water zones for pre-authorized and conditional in-situ burning (ISB), protocols for conducting ISB operations, applicable to all burns throughout the NOAC boundaries.

The NOAC believes ISB us a viable option for addressing spilled oil and can be utilized when specific circumstances have been met allowing for its use, and that institution of this policy will help to ensure a more rapid and effective response to oil spills within the NOAC area of responsibility. Questions, concerns, and recommendations relating to this policy may be addressed to the Chair or Co-Chair of the Response, Science, and Technology Subcommittee.

Purpose

This policy implements Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and provides pre-authorization for the use of ISB on oil spills by the pre-designated FOSC on oil discharges impacting federal waters within the NOAC boundaries.

The NOAC recognizes that in some instances the physical collection and removal of oil is infeasible or inadequate, and the effective use of ISB as an oil spill response technique must be considered. Pre-authorization within the set guidelines of this policy allows the Unified Command (UC) to employ in-situ burning to: (1) prevent or substantially reduce a hazard to human life, (2) minimize the environmental impact of the spilled oil or, (3) reduce or eliminate economic or aesthetic losses which would otherwise presumably occur without the use of this technique.

Scope

The USCG, EPA, DOI, DOC, and the coastal states of RRT VI have adopted ISB as an approved tool to remove spilled or discharged oil from ocean and coastal waters within the jurisdiction of RRT VI. This policy covers protocols under which ISB is pre-authorized for use by the Unified Command within the boundaries of the NOAC. This document also contains decision-making guidance and procedures for the potential use of ISB on inland waters under the jurisdiction of the NOAC.

In-Situ Burning Policy

The purpose of the policy is to define the conditions under which burning may occur on a pre-approved or case-by-case basis and to define conditions under which burning will not be allowed. The complete policy defines the procedure for arriving at the decision to burn or not to burn, describes the regulatory and statutory framework, and provides background information on logistics, environmental impacts, health and safety, and monitoring. The policy applies to all marine waters and inland areas covered by the New Orleans Area Contingency Plan (NOACP).

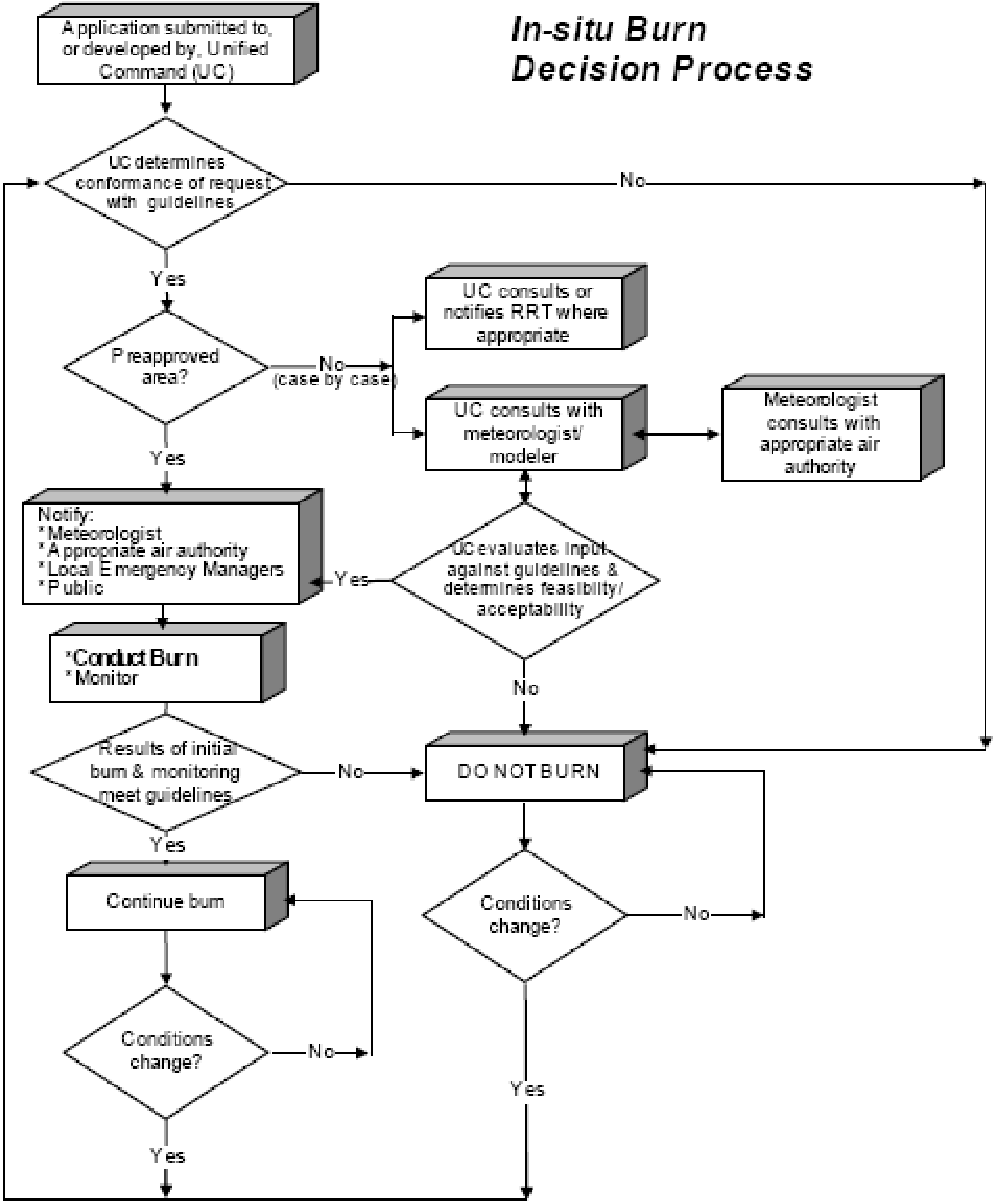
It is the policy of the NOAC to use, and in certain cases encourage, ISB provided that requirements specified herein have been met. A primary consideration in the decision to burn is the protection and safety of human life. The authority to approve a burn rests with the Unified Command (UC), who must determine that an application to burn conforms to these guidelines. The decision to burn or not to burn must be made expeditiously.

Pre-approval areas are defined as those areas which are more than three miles from significant population centers. All other areas will be considered on a case-by-case basis. Monitoring and sampling will be conducted where there is potential for people to be exposed to the smoke. As general guidance, people should not be exposed to the smoke. As general guidance, people should not be exposed to small particles (PM-10) in concentrations that exceed 15 milligrams per cubic meter of air averaged over one hour. The concentrations should never exceed 15 milligrams per cubic meter averaged over 24 hours.

Authorization Procedures

These guidelines provide a common decision-making process to evaluate the appropriateness of using ISB during a response. The process is based on the premise that a rapid decision is essential if ISB is ever to be used since oil emulsifies (becomes mixed with water) and is more difficult to ignite as time goes on.

Under these guidelines, authorization to use ISB rests with the UC. The UC consists of federal, state, tribal, and local government and the responsible party on-scene coordinators, as appropriate. The UC, as part of the Incident Command System, is responsible for overseeing the entire response effort, which includes the decision to use ISB. The decision process is greatly expedited by the use of the UC structure, by establishment of a single application (see attached checklist and worksheet located after the decision process flowchart), and mutually agreed upon operational controls. The following figure summarizes the ISB decision process.



In-Situ Burn Decision Process

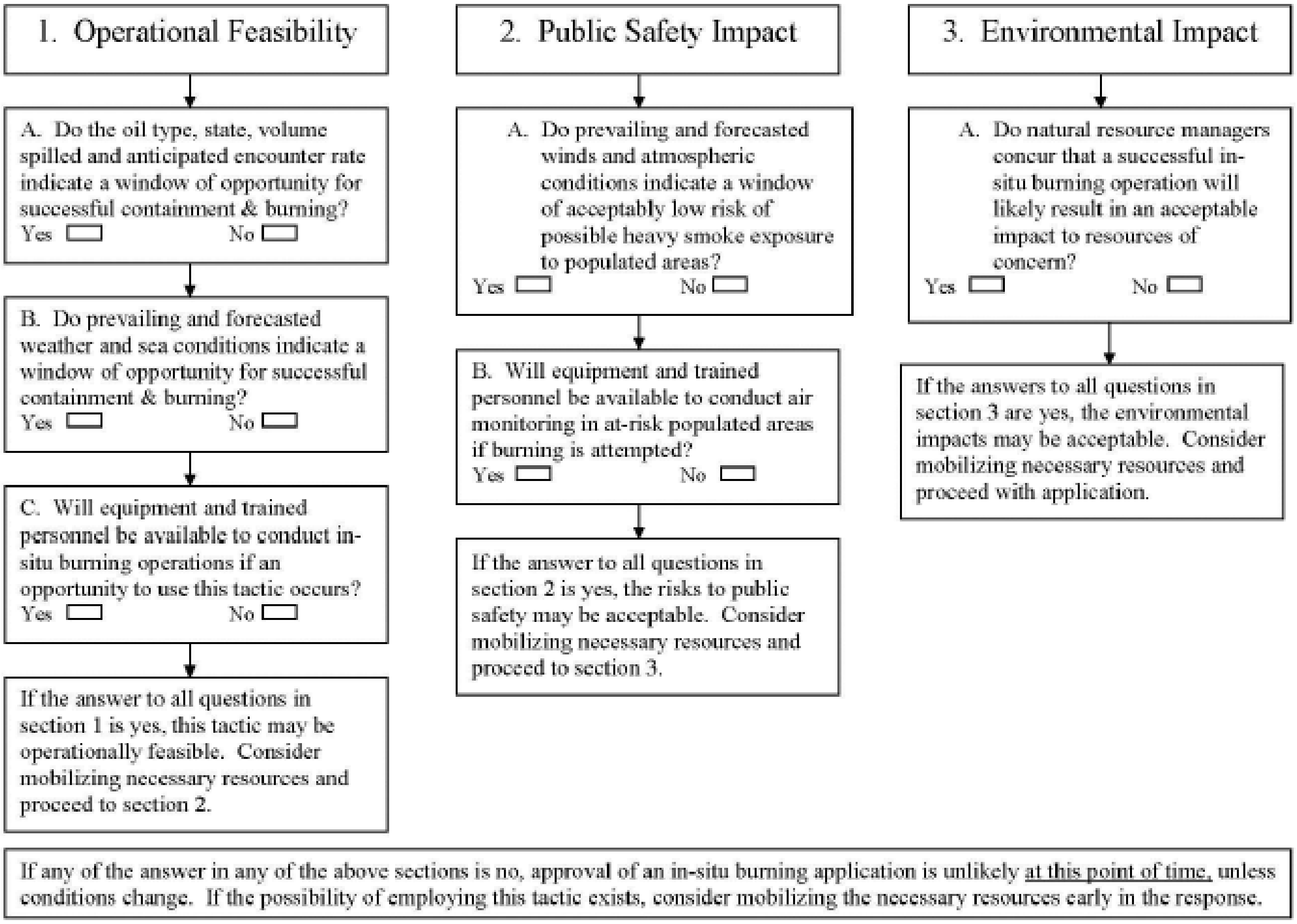
In-Situ Burning Application

The following checklist and worksheet are provided as a summary of important information to be considered by the UC in reviewing any request to conduct ISB in response to an oil spill in marine and in-land waters under the jurisdiction of the NOAC. The flowchart shown in the above figure summarizes the process for making a burn decision. The decision to burn must consider whether this tool will offer a greater level of efficiency in removing oil on the water and/or reducing oil impacts to sensitive resources. Next, the decision must evaluate whether it is practical, feasible, and safe to burn given the spill and conditions involved.

The application process begins with a simple preliminary feasibility analysis. If that analysis concludes that ISB may be feasible, the application checklist and window-of-opportunity worksheet shall be completed. The checklist is divided into several sections of information about the spill, weather, proposed burning plan, and potential impacts. When completed, the checklist and worksheet will identify the window-of-opportunity when ISB would be allowed based on environmental, public health, and operational constraints. Note that the checklist must be updated for each new burn scenario proposed. It is important to note that even if the checklist and worksheet fail to show that ISB is appropriate at one point in time (i.e.,. a “NO” answer), changes in environmental or other factors may make ISB a feasible option at a later time.

Authorization procedures will differ depending upon whether the spill location is in a pre-approval area or is decided on a case-by-case basis. Regardless of location, the UC directs actions that will provide for maximum environmental protection while ensuring human safety.

Preliminary Feasibility Analysis for In-Situ Burn



1. Operational Feasibility

A. Do the oil type, state, volume spilled and anticipated encounter rate indicate a window of opportunity for successful containment & burning?
Yes ☐ No ☐

B. Do prevailing and forecasted weather and sea conditions indicate a window of opportunity for successful containment & burning?
Yes ☐ No ☐

C. Will equipment and trained personnel be available to conduct in-situ burning operations if an opportunity to use this tactic occurs?
Yes ☐ No ☐

If the answer to all questions in section 1 is yes, this tactic may be operationally feasible. Consider mobilizing necessary resources and proceed to section 2.

2. Public Safety Impact

A. Do prevailing and forecasted winds and atmospheric conditions indicate a window of acceptably low risk of possible heavy smoke exposure to populated areas?
Yes ☐ No ☐

B. Will equipment and trained personnel be available to conduct air monitoring in at-risk populated areas if burning is attempted?
Yes ☐ No ☐

If the answer to all questions in section 2 is yes, the risks to public safety may be acceptable. Consider mobilizing necessary resources and proceed to section 3.

3. Environmental Impact

A. Do natural resource managers concur that a successful in-situ burning operation will likely result in an acceptable impact to resources of concern?
Yes ☐ No ☐

If the answers to all questions in section 3 are yes, the environmental impacts may be acceptable. Consider mobilizing necessary resources and proceed with application.

If any of the answer in any of the above sections is no, approval of an in-situ burning application is unlikely at this point of time, unless conditions change. If the possibility of employing this tactic exists, consider mobilizing the necessary resources early in the response.

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In-Situ Burn Application Checklist

Spill Data

Date of incident (month/date/year):________________ Time of incident:__________

Name of incident/responsible party:

Location of incident:________________ Latitude_________N Longitude_________W

Type(s) of oil spilled:

Estimated volume of oil spilled into water: ____________________________________

Estimated Volume of oil at risk of spilling: ____________________________________

Release status: Stopped___ Intermittent___ Continuous___ Outflow Rate____

Forecasted surface area of spill at time of projected burn:
Continuous slick___ Large patches___ Ribbon/streamers___

Will oil concentrations be sufficient to burn? Yes ___ No___

Is oil thickness sufficient to burn? Yes ___ No___

Anticipated oil trajectory (attach NOAA forecasts if available):
____

Forecasted oil distance/direction to nearest land at time of projected burn:
____

Expected areas and times of shoreline oil impact:
____
____

Estimated percentage of natural dispersion and evaporating during:
First 24 hours_____________ Second 24 hours_________________

Oil emulsification at this time: Unknown____None____Light (0-20%)____
Moderate (21-50%)___Heavy (over 50%)____

Distance (in statute miles) and direction to nearest shoreline:__________________

Name of nearest population center:______________________________________

Weather/Environmental Conditions at time of projected Burn

Temperature: Air:____________ F Water: _______________ F

Wind Conditions: Speed ____________ Direction (from) _________________

Are prevailing and forecasted winds less than 25 knots? Yes _____ No ______

Tide state: Flood ______ Ebb ______ Slack Water _______

Sea State: Calm ______ Choppy _________ Swell (in feet) _________

Waves: Less than 1ft____ 1-3ft______ >3ft_____ Direction (from)_______

Other weather/sea condition information:___________________________________
____

Proposed Burning Plan Worksheet

Location of the proposed burn relative to the spill site:

____

____

Location of the proposed burn relative to nearest ignitable slick(s):

____

____

Location and direction of the proposed burn relative to nearest land:

____

____

Can accidental fires be avoided? Yes________ No__________
If yes, what actions are planned?________________________________

____

Can ignition/burn occur at a safe distance from other response operations and public, recreational, and commercial activities? Yes _______ No ________

Method(s) used to notify residents living within the potential smoke plume trajectory:

____

____

____

Method(s) used to notify mariners and aircraft pilots:

____

____

Method(s) used to avoid impacts to marine life in vicinity of burn:

____

____

Type of ignition system proposed for use:_________________________

____

When will ignition system, fire-resistant boom, and deployment equipment/vessel be on-scene and available for use: ______________________________

How will ignition be carried out?_______________________________

If a heli-torch ignition system is to be used, is the helicopter qualified for offshore flight and does it meet FAA certification requirements? Yes______No ______

Method used to collect/concentrate oil, if any:________________________________
____

Amount of fire boom available for use at time of proposed burn:____________ Ft
Number of boom-towing vessels and support vessels available:____________

Proposed location of oil containment relative to spill source:____________________
____

Proposed burning strategy:

___Immediate ignition at or near source

___Ignition away from source after containment and movement to safe location

___Controlled burning in boom or natural collection site at or near shore

___Possible need for multiple ignition attempts

Are floating debris and other safety hazards acceptable: Yes______No _______

Are sufficient numbers of trained personnel available on-scene to conduct safe and effective burn: Yes_____ No _____

Estimated amount of oil to be burned:______________________________

Estimated duration of burn: _______________________________________

Method of collecting burned oil residue:_____________________________

Estimated amount of burned oil residue to be collected:______________________

Proposed interim storage and disposal of burned oil residue:___________________
____

Back-up plan for collection contained oil if burn fails:__________________________
____
____

Burn Impacts

Is adequate air modeling support available: Yes__________ No ____________
Do prevailing conditions and air modeling results indicate that PM-10 standards can be met: Yes ________ No ________

Will visibility remain safe at sensitive locations (e.g., airports, freeways):
Yes _________ No ________

Are adequate air support and burn monitoring equipment on-scene and available:
Yes _________ No ________

How will operational impacts to wildlife in vicinity be monitored:
____
____
____

Name of Application Preparer:____

Date/Time Submitted to Planning Section Chief:______________________________

Approval by Planning Section Chief:_______________________________________

Unified Command Decision:

___________ Approval to implement burn plan

___________ Approval to conduct small pilot burn

___________ Burn Plan disapproved at this time

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Window of Opportunity Worksheet

Spill Name:____________________________ **Spill Time and Date:**___________

This worksheet should be filled out in conjunction with the in-Situ Burning Application Checklist. Fill in top based on time of Incident (e.g., if Incident is at 0300, fill that in for hour 1; 0400 for hour 2, etc.) For each worksheet item, mark in each time segment where the items applies. The likely window-of-opportunity equates to those time segments where all items are marked.

Window of Opportunity				
Feasibility Factors	**Hr. 1 Time**	**Hr. 2 Time**	**Hr. 3 Time**	**Hr. 4 Time**
Operational Outlook				
1. Oil thickness >/= 2-3 mm				
2. Oil emulsion </= 25-50%				
3. Wind Speed </= 25 knots				
4. Wave height </= 3-5 feet				
5. Visibility >/= 500 ft vertically & >/= 0.5 mile horizontally				
6. Trained personnel on-scene & ready				
7. Equipment on-scene & ready				
Planning Concerns				
8. Operation poses acceptably low risk to populated areas				
9. Burn poses acceptable risks to resource likely impacted				
Public Safety Concerns				
10. Public notification and controls addresses				
11. Air monitoring equipment & support are set up & ready				

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Pre-Approval

Once the UC determines that the application to burn conforms to the PM-10 standard, the UC should then determines if the spill location is in a “pre-approval area”. Pre-approval areas include any area that is more than three miles from shoreline. Human population is defined as 100 people per square mile. If a potential burn site is in a pre-approval area, then the meteorologist, appropriate air pollution control authority, local emergency manager, and the public are notified. Preparations will be made for monitoring the burn immediately following notification. (Note: Pre-approval refers to certain locations where burning is allowed with minimal steps to be taken to conduct the burn. Several prior procedures must still be undertaken, including application submittal and approval, notifications, and submission of an ISB Operations Plan).

Case-by-Case Approval

If the UC determines that the application conforms to the guidelines but is not in a pre-approval area, then approval to burn is considered on a case-by-case basis. The UC notifies the RRT. In cases where the RRT’s expertise is needed, the RRT will be consulted. At this stage, the UC consults with the meteorologist to obtain weather data and information on the potential concentrations of pollutants that may reach a populated area from both burned and unburned oil. The meteorologist consults with the appropriate air pollution control authority for more information. Data will also be obtained from a predictive smoke plume model whenever possible. Modeling information will not be relied upon exclusively but considered as a part of the information package. The UC then evaluates all available information and determines the feasibility and acceptability of in-situ burning based on these guidelines. If the decision is yes, then the same procedures apply as those for pre-approval areas. If the decision is no, then the burn will not be conducted. If conditions change, the application will be re-evaluated.

Not Allowed

If the application to burn is not in conformance with these guidelines, ISB operations will not be allowed. Conditions will be monitored in case there is a change which would make ISB appropriate and feasible. While no geographic areas have been excluded from the consideration to use ISB, it is very unlikely that it would be approved in a heavily populated area because of the increased potential for exposing people to high levels of particulates. However, even in highly populated areas, burning may still be approved in unique circumstances, especially when volatiles from the unburned oil pose a serious threat to human health.

In-Situ Burning Oil Spill Response Checklist

1. Spill Data (to be completed by the Responsible Party and submitted to the FOSC)
   a. Name of incident: ____

   b. Date and time of incident: Month/Day/Year _____ Time_____

   c. Incident: Grounding____ Transfer Operations ____Collision _____
   Blowout ____ Pipeline Rupture ____ Explosion ____ Other ____

   d. Did spill source ignite? Yes _____ No _____
   Is the source still burning? Yes _____ No _____

   e. Spill Location: Latitude _____________ Longitude ______________

   f. Distance (in miles) and direction to nearest population __________

   g. Product(s) released: ____

   h. Product(s) easily emulsified? Yes _____ No _____ Uncertain_____

   i. Product(s) already emulsified upon discharge? Yes _____ No____ Light emulsion (0-20%) _____ Moderate emulsion (21-50%) _____ Heavy emulsion (> 51%) _____ Unknown _____

   j. Estimated volume(s) of product discharged __________ gals/bbls
   __________ gals/bbls
   __________ gals/bbls

   k. Estimated volume(s) of product that could still be discharged:
   _________________________ gals __________ bbls __________
   _________________________ gals __________ bbls __________

   l. Discharge status: Continuous ___ Estimated rate __________
   Intermittent ___ Estimated rate __________
   One time only; discharge secured ___

   m. Estimated area of spill:
   Date/Time _____ Surface area____ Sq. Miles (Stat ___ Natu ___)

Date/Time _____ Surface area____ Sq. Miles (Stat ___ Natu ___)
Date/Time _____ Surface area____ Sq. Miles (Stat ___ Natu ___)

2. Weather and Water conditions at time & location of spill
(To be completed by responding party and submitted to FOSC)

a. Temperature: Air _____ (deg. F) Water _____ (deg. F)

b. Weather: Clear _____ Partly Cloudy _____ Heavy Overcast ____
Rain ______ (Heavy ___ Moderate ___ Light ___)
Fog ___ (type & amount at spill source ____________________)
(type & amount at burn site ____________________)

c. Tidal conditions: Slack tide ___ Flood ___ Ebb___

d. Dominant Surface Current (net drift):
Speed _____ (knots)
Direction (t) _____ (true compass heading)

e. Wind speed: Knots _____ Wind direction (from) _____

f. Expected transition time between on-shore & off-shore breeze
____

g. Sea state: Flat clam _____ Light wind-chop ______
Wind-waves: <1 ft _____ 1-3 ft _____ >3ft _____
Swell (est. height in ft) _____

h. Water depth (in feet): ________________________________

i. Other considerations:
General visibility _______________________________________ Rip
Tides/eddies _______________________________________ Floating
Debris _______________________________________ Submerged
Hazards ___________________________________

Note: The NOAA Scientific Support Coordinator (SSC) shall be consulted for the weather and water conditions and predicted oil behavior.

The Responsible Party has the option of also submitting information on predicted oil behavior.

3. Proposed burning plan (to be completed by the Responsible Party)

   a. Location of proposed burn with respect to spill source:
   ____

   b. Location of proposed burn with respect to nearest ignitable oil slick(s):
   ____

   c. Location of proposed burn with respect to nearest land:
   ____

   d. Location of proposed burn with respect to commercial fishing activity, vessel traffic lanes, drilling rigs, and/or other marine activities/facilities:
   ____
   ____
   ____

   e. Risk of accidental (secondary fires):
   ____

   f. Risk of reducing visibility at nearby airstrip(s) or airports(s):
   ____

   g. Distance to, location and type of nearest population center(s) (e.g., recreational site, town, city, etc.):
   ____

   h. Methods that will be used (prior to ignition) to notify residents in areas where smoke could conceivably drift into or over such areas:
   ____

   i. Type of igniter proposed for use:
   ____

   j. Helicopter(s) needed to deploy igniters? No ___ Yes ___
   Name of company and type of helicopter to be used:
   ____

   k. FAA approval already granted to company for use of igniter:
   Yes ___ No ___
   Awaiting FAA Approval or verification of prior approval ___

l. Burning promoters or wicking agents proposed for use?
Yes ___ No___
If yes, give type and amount: ___________________________

m. Describe proposed method of deployment for igniter(s):
____
____

n. Burning promoter(s):
____

o. Wicking agent(s):
____

p. Describe method for oil containment, if any:
____

q. Proposed location of oil containment relative to spill source:
____

r. Proposed burning strategy:
_____ Immediate ignition at or near source
_____ Ignition away from source after containment and movement to safe location
_____ Ignition of uncontained slick(s) at a safe distance
_____ Controlled burning in boo, or natural collection site at/near shore
_____ Possible need for multiple ignition attempts

s. Estimated amount of oil to be burned:____

t. Estimated duration of each burn: _____
Total possible burn period: _____

u. Estimated smoke plume trajectory:
____

v. Method for collection burned oil residue:
____

w. Proposed storage & disposal of burned oil residue:
____
____

4. Weather and water condition forecast from time of spill (to be completed by NOAA SSC)
    a. Wind speed (knots)
        24- hour projection: __________
        48- hour projection __________

    b. Wind direction (from)
        24- hour projection: __________
        48- hour projection __________

    c. Sea Conditions: ____

        24-hour projection:
        Flat calm ___ Light wind-chop ___ Wind-waves <1 ft ___
        1-3 ft ___ >3 ft ___ Swell (est. height in ft) _____

        48-hour projection:
        Flat calm ___ Light wind-chop ___ Wind-waves <1 ft ___
        1-3 ft ___ >3 ft ___ Swell (est. height in ft) _____

    d. Tidal information:
        Date _________ High (time/height) _____/_____
        Low

        Date _________ High (time/height) _____/_____
        Low

        Date _________ High (time/height) _____/_____
        Low

        Date _________ High (time/height) _____/_____
        Low

    e. Predicted dominant current (net drift):
        Speed (knots) _____ Direction (to): _____

5. Predicted oil behavior (to be completed by NOAA SSC)

    a. Unburned oil forecast: Estimated trajectory (attach sketch if necessary):

    ____

b. Expected area(s) and time(s) of land fall:
Location ___________ Date/time ___________
Location ___________ Date/time ___________
Location ___________ Date/time ___________
Location ___________ Date/time ___________

c. Estimated percent naturally dispersed and evaporated:
Within first 12 hours: ___________
Within first 24 hours: ___________
Within first 48 hours: ___________

6. Resources at risk (to be completed by Environmental Unit or resource agencies)

a. Biological Resources:
Are marine mammals, turtles, or concentrations of birds noted in the burn area? Yes ____ No ____
If yes:
_____Endangers/threatened species
_____Non-endangered/threatened species

Comments____
____

b. Historic and archaeological resources: _________________________
____

c. Commercial harvest areas:___________________________________
____

7. FOSC evaluation of response options (to be completed by FOSC)

a. Is in-situ burning likely to result in the limitation of significant volumes of spilled oil? Yes _____ No _____

b. Will the use of in-situ burning interfere with (or in any way reduce the effectiveness of) mechanical recovery and/or dispersant application?
Yes _____ No _____

If yes, do the potential benefits of burning outweigh the potential reductions in effectiveness of mechanical/dispersant use?
Yes _____ No _____

   c. Can in-situ burning be used safely, and with an anticipated overall reduction in environmental impact (compared with the decision not to burn)?

8. FOSC's Decision regarding in-situ burning (to be completed by FOSC)

   a. _____ Do not conducted in-situ burn

   b. _____ In-situ burn may be conducted in limited or selected areas

   c. _____ In-situ burn may be conducted as requested

Note: If the FOSC approves in-situ burning, local media and residents in areas within the potential smoke plume trajectory must be notified prior to initiating the burn.

Signature of FOSC: ________________________________

Printed name of FOSC: _____________________________

Time and date of decision: ___________________________

Operational Requirements

The RP shall submit an ISB operations plan to coordinate operations, along with a safety plan for ISB operations to be conducted. This plan will allow for the safe controlled operations to be conducted during a response. This plan will also allow for safe controlled operations limiting the chances of exposure to toxic gases/or smoke for response personnel and the public. It also will address the protective measures used to limit response personnel to heat, flame, and/or flammable environments that may be encountered by personnel on-scene.

Response Organization

Burn Group Supervisor

The Burn Group Supervisor (ISB-BGS) provides the coordination link between all burn operations, the Operations Section, the Incident Commander/Unified Command. The ISB-BGS will ensure that Deflection, Burn and Reserve Asset task forces are coordinated during the operation. A Deputy may be established and will have all responsibilities and credentials of the ISB-BGS.

Task Force Leaders

Task Force Leaders will manage personnel associated with a task force and report to the ISB-BGS. Examples of Burn Group Task Forces are Burn Task Force, Deflection Boom Task Force, and Reserve/Supply Task Force.

Technical Specialists

Technical Advisers provide spotting, aerial surveillance, and field operations coordination.

Air Operations

Other than designated surveillance/spotter aircraft, no aircraft will be allowed in the immediate airspace with burning operations are active. Pilots of helicopters or fixed-wing aircraft used for aerial surveillance during the burn will brief the ISB-BGS on intended operations, and receive permission from the ISB-BGS before entering the airspace.

SMART as Part of the ICS Organization

SMART activities are directed by the Operations Section Chief in the Incident Command System. It is recommended that a "group" be formed in the Operations Section that directs the monitoring effort. The head of this group is the Monitoring Group Supervisor (ISB-MGS). Under each group there are monitoring teams. At a minimum, each monitoring team consists of two trained members: a monitor and assistant monitor. An additional team member could be used to assist with sampling and recording. The monitor serves as the team leader. The teams report to the ISB-MGS who directs and coordinates team operations, under the control of the Operations Section Chief.

Vessel Requirements

Burn Task Force

Vessels used in the Burn Task Force will meet the following criteria:

- Ability to tow at low speeds without loss of safe navigational ability.

- Accommodations that will support the vessel's crew and oversight crew for at least 48 hours without the need to return to port for fuel or supplies. This time requirement can be extended based upon incident needs.

Deflection Booming Task Force

Vessels used in the Deflection Booming Task Force will meet the following:

- Ability to tow at low speeds without loss of safe navigational ability.

- Accommodations that will support the vessel's crew and task force personnel for at least 48 hours without the need to return to port for fuel or supplies. This time requirement can be extended based upon incident needs.

- Deck space that will allow for storage of multiple pieces of equipment without the loss of safe work space on deck.

Reserve/Supply Task Force

Vessels used in the Reserve/Supply Task Force will meet the following:

- Have the ability to tow at low speeds without losing the ability to maneuver.

- Provide adequate accommodations that will support in-situ burn operations for a minimum of 48 hours of continuous sea operations at sea without returning port for fuel or supplies. This time requirement can be extended based upon incident needs.

- Provide adequate deck space for the storage of multiple pieces of equipment without the loss of safe work space on deck.

- Able to get underway immediately upon direction from the Burn Group Supervisor or applicable Task Force Leader

Primary Control Ship

The ISB Primary control ship, capable of providing a fire fighting and command platform shall meet the following criteria:

- Have the ability to maintain station and provide fire fighting support should a fire fighting situation arise.

- Have an enhanced bridge with electronics capable of supporting vessels and extended ISB command and control.

- Provide adequate accommodations that will support ISB operations for a minimum of 48 hours of continuous sea operations at sea without returning to port for fuel or supplies. This time requirement can be extended based upon incident needs.

- Provide adequate deck space for the storage of multiple pieces of equipment without the loss of safe work space on deck.

- Able to get underway immediately upon direction from the ISB-BGS or applicable Task Force Leader.

Responsibilities of Vessels

Primary Control Ship

In charge of coordinating all on water assets and maintaining overall safety of the ISB operations.

Deflection Task Force

In charge of maintaining positions and condition of the deflection boom.

Burn Task Force

In charge of maintaining positions and condition of the fire boom. The Burn Task Force will also be the source of ignition of the ISB operations.

Reserve/Supply Task Force

Will maintain continuous readiness during burn operations and deliver supplies as needed.

In-Situ Burn Operations Plan

The RP shall submit an ISB Operations Plan. This plan will outline the concept of operations for conducting ISB sorties to minimize the potential for shoreline impacts from an incident in accordance with the Region VI ISB Plan and other guidelines (e.g., SMART).

Burn Control

In order to maintain organization throughout the response effort, the RP's ISB Operations plan will address the following:

Burn Feasibility

This will first be assessed by the aerial observation. The aerial observer will ensure that the amount of collected oil can be ignited without causing radiant heat that may harm the personnel on the stern of the Burn Task Force vessels.

Once the above criteria are met, the aerial observer will then advise the Primary Control Ship as to the best burn area location. The Primary Control Ship will relay the location to the burn team and coordinate the secondary burn team to take the place of the departing team. The Primary Control Ship will stay at a safe location from the burn, but still monitor the burn operations with firefighting equipment on stand-by.

This process will be rotated throughout the operational period as long as favorable conditions remain. Burn operations will start at sunrise and continue until night fall. If a fire is burning prior to sunset, burning operations may continue until complete.

Igniters

A trained person shall deploy the igniter and follow safety recommendations of the manufacturer.

Pre-Ignition Checks

Once final approval for ISB operations to commence is given, all vessels in the Burn task force will ensure the following:

- All personnel on the Fire Boat Team will ensure they are in the proper PPE.
- Surrounding area is clear of vessel traffic not related to the ISB operations.
- Ensure emergency procedures are clearly established for all involved personnel.
- All firefighting appliances are in place and in good working order.

Decontamination Procedures

All booms retrieved at the end of the ISB operations will receive adequate decontamination to minimize contamination of vessel decks before being stowed for transit. Due to the nature of the operations, full decontamination of all booms will likely not take place until termination of ISB operations.

Once ISB operations have been terminated decontamination will take place using established procedures for general decontamination of equipment following manufacturer’s recommendations in accordance with the incident’s Incident Action Plan (IAP).

Vessels involved with ISB operations will undergo adequate decontamination while on their return voyage to ensure that they do not bring contamination back to areas not previously affected by the incident.

Small boats will receive gross decontamination once stowed on board and will be fully decontaminated using procedures established by the IAP once operations are terminated.

Emergency Procedures

In case of a vessel casualty, the vessel will notify the Primary Control Ship of the nature of the casualty and the vessel will follow their established casualty procedures.

If a casualty should occur during towing operations, the affected vessel shall contact their partner vessel in the task force and cooperate to determine the safest actions needed to terminate the towing operations.

If a casualty affecting the steering or propulsion should occur during burning operations the task force will take the following actions:

- Vessel experiencing the casualty will maintain, as possible, course, and speed.
- Alert both Primary Control Ship and partner vessel as to the nature of the casualty.
- The affected vessel will continue to run the water cooling pump.
- The partner vessel will then release tow line and water cooling line.
- Once free from lines the partner vessel will then render aid by pulling along side of the disabled vessel and taking it in tow (depending on sea state) while maintaining a slow (1 to 2 knot) speed forward. Pumping of cooling water to the fire boom is maintained from the disabled vessel until the previously contained oil is released and extinguished.

Termination of Burn

The ISB-BGS should plan to allow a burn to complete once it has ignited. However, premature termination of a burn may be necessary if responder health is threatened due to a wind or weather shift, or a secondary ignition of another slick is a possibility. The fire may be extinguished prematurely by both towing vessels accelerating ahead at several knots (2-3 knots), forcing the oil beneath the boom, and removing it from the combustion zone. A secondary option is to release the towline from one of the towing vessels while the other moves ahead at 2-3 knots; this allows the oil to spread out quickly to a thinness that cannot support combustion. The RP’s ISB Operations Plan should include more detail on terminating a burn.

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In-Situ Burning Operational Checklist

This list is provided as a condensed checklist of critical conditions, concepts, or pieces of equipment that will be considered by the Responsible Party, prior to the initiation of an in-situ burn in the NOAC Boundaries, as defined in Chapter 1000 of the New Orleans Area Contingency Plan.

Approval and Notification Considerations

_____ Approval “checklist” completed and submitted to FOSC/SOSC/RRT.

_____ Any other burn plan or permit/approval requests completed and submitted to appropriate agencies.

_____ All approvals received from federal, state, and local organizations.

_____ U.S. Coast Guard notified regarding Notice to Mariners for proposed burn time and location in which no unauthorized vessels would be allowed.

_____ FAA notified regarding Notice to Aviators for proposed burn time and locations in which no unauthorized aircraft would be allowed.

_____ Local public radio and television announcements of intent to burn, along with information on estimated times, duration of burn(s), potential affected areas, possible health effects, and unauthorized zones for public use. (Coordinated through JIC).

_____ State or local emergency service groups on standby for any possible assistance in notifying or evacuating certain populations.

Oil and Environmental Conditions:

_____ Oil type & conditions- sufficiently combustible under existing weather conditions.

_____ Visibility- suitable for vessels and aircraft in carrying out burn Consideration given to number of daylight hours left to initiate burn.

_____ Sufficient time available to mobilize response personnel transport and deploy equipment to ignite and complete burn(s).

_____ Timing and conditions appropriate for consideration of night-time burn(s). Possibility of night-time oil collection with burns initiated at daybreak.

_____ Burning operations safe and practical in light of spill status (ignited versus non-ignited, proximity to shore mobile or fixed structures, etc.).

_____ Burning safe and practical in light of vessel traffic lanes.

_____ Burning safe and practical in light of spill source stabilization efforts.

_____ Burning safe and practical in light of any personnel evacuation efforts.

_____ Burning compatible with mechanical cleanup operations.

_____ Burning compatible with dispersant application techniques.

_____ Burning compatible with shoreline protection and cleanup activities.

Personnel Requirements:

_____ All personnel trained and qualified for burning operations.

_____ All personnel briefed and familiar with bum plan.

_____ Full response team(s) and supervisor(s) for vessels on location or en route.

_____ Qualified Pilot and support personnel for aerial support functions on location or en route (e.g. reconnaissance, Heli-torch operations, etc.).

_____ Backup Fire Control Team on location or en route.

_____ Everyone has protective clothing, respirators, flotation devices, etc.

Vessel Requirements:

_____ Two fire boom towing vessels available for each U-configuration.

_____ One fire control vessel available for each burn region. More than one vessel possibly needed should individual bums be widely separated.

_____ Backup support vessel(s) as needed for personnel transport; refueling, operations, recovery and storage of burn residue; transport, deployment and recovery of fire boom, boom towing vessels; etc.

Aircraft Requirements:

_____ Helicopter(s) as appropriate for number of burns anticipated, modes of ignition to be employed, and distances to be covered from staging area(s) to assigned region(s) of coverage.

_____ Fixed- wing aircraft as appropriate to supplement helicopter operations involving oil reconnaissance mission, direction of vessels to collection sites, monitoring of smoke plume trajectories, etc.

Fire Boom and Igniter Requirements:

_____ Inspected and ready-to-deploy fire containment boom (typically 500 ft to 1,000 ft per U configuration), along with long tow lines (typically 500 ft to 800 ft per tow vessel), towing bridles, and anchoring systems as appropriate.

_____ Backup fire containment boom (500 ft to 1,000 ft per U configuration) along with additional lengths of boom for any modes of deployment (e.g., containment at spill source, deflection booming into designated near shore burns sites, exclusion booming, etc.)

_____ Inspected and ready-to-deploy Heli-torch(es) as needed for any aerial ignition activities (backup drums available for rapid turn-around).

_____ Batch mixers for gelling large quantities of fuel mix for Heli-torch(es) if necessary (backup fuel supplies such as Jet-A, gasoline, or crude oil, and gelling mix)

_____ Supply of hand-held igniters at least 10 per vessel and helicopter) for potential use (backup supply of at least 200 igniters or a means of acquiring/constructing additional units on short notice).

Communications Requirements:

_____ Dedicated radio links and equipment with specific frequencies for air-to-air and air-to-surface communications.

_____ Dedicated radio links and equipment with specific frequencies for vessel-to-vessel and vessel-to-command communications.

_____ Repeater stations as appropriate for distant or blocked communication paths.

Fire Safety Considerations:

_____ Possible use of dedicated personnel/vessels with vapor emission monitoring equipment (explosimeter).

_____ Backup fire fighting vessels (if necessary) for unique situations involving a burning spill source and/or unusual potential exposures of personnel/vessel to burning oil.

_____ Small fire fighting packages (extinguishers, monitors, foam, etc.) aboard the boom towing boats for backup use in the event of an emergency on or near one of the response vessels.

Hazard Evaluation

Exposure Limits for Emissions

Since burning will almost always provide for the greatest degree of environmental protection, a key issue is for the UC to ensure that pollutants from ISB emissions do not have a significant adverse impact to human health. Airborne particulates are considered, by most experts, to be the main airborne health hazard associated with ISB emissions, particulates are small pieces of should carbon or liquid hydrocarbon suspended in the air. Particulate matter is a by-product of incomplete combustion.

The primary pollutant concern is particulates less than 10 microns in diameter (PM-10). This is the small particulate matter contained in the smoke plume. PM-10 can reach the deep portion of the lungs. The median size of particulates in the smoke from oil fires is 0.5 microns posing a definite hazard to respiration.

It is generally accepted that other pollutants dissipate reaching background levels well before PM-10. An ISB smoke plume usually stays above ground level, hundreds of thousands of feet, but can reach the ground under certain atmospheric conditions. Studies show that the ground level concentrations of PM-10 nearby an ISB usually remain below safety levels (except for areas directly in the smoke plume). For most individuals, exposure to inert particulates becomes a problem only at high concentrations. However, some individuals may develop problems at levels much lower than that.

An exposure standard for PM-10 has been established for these guidelines. ISB operations will not be approved if there is a significant risk that the standard would be exceeded where people are located. Background levels will be taken into consideration when determining risk.

The standard incorporated a cap for PM-10 exposure not to exceed 15 milligrams per cubic meter (mg/m3) averaged over an 8-hour period. The UC should ensure that an approved burn is within this standard. The UC must also weigh the risk to people of the volatiles that evaporate from unburned oil. In some cases, it may be less harmful to people to burn the oil rather than let part of it evaporate.

Permissible Exposure Limits (PEL) for PM-10: For response personnel, the following exposure limits apply: OSHA permissible exposure limit (PEL): 15 milligrams per cubic meter (mg/m3) total particulate 8 hour mean, 5 mg/m3 respirable particulates (PM-10) 8 hour mean.

A meteorologist, responsible for evaluating weather data and information in the area proposed for an in-situ burn, will incorporate this standard in assessing health risks.

Symptoms of Overexposure: Excessive PM-10 will burden the respiratory tract and cause breathing difficulties.

Type of Gas	Hazard Description	Exposure Limits	Symptoms of Overexposure
Particulate Matter < 10 microns (PM-10): Particulates less than 10 microns (millionths of a meter) in diameter can reach the deep portion of lungs (the critical gas exchange area) and become a burden on the respiratory system. Thus the air quality standards are expressed as a fraction of particulates smaller than 10 micron in diameter.	The median size of particulates in the smoke from oil fires is 0.5 microns, posing a definite hazard to respiration. Studies show that the ground level concentrations of PM-10 nearby in-situ burn events usually remain below safety levels (except for the area directly in the smoke plume). For most individuals, exposure to inert particulates becomes a problem only at high concentrations. However, some individuals may develop problems at levels much lower than that	OSHA PEL: 15 milligrams per cubic meter (mg/m3) total particulate 8 hour mean. 5 mg/m3 respirable particulates (PM-10) 8 hour mean	Excessive PM-10 will burden the respiratory tract and cause breathing difficulties
Polycyclic Aromatic Hydrocarbons (PAH): A group of hydrocarbons found in both unburned oil and the smoke plume. PAH's have very low vapor pressure, and most are not very flammable. In ISB PAH's adsorb to particulates. Studies show that concentrations in the smoke remain below exposure limits.	Some PAHs are suspected carcinogens over a long-term exposure: the target organs being the skin and lungs. The hazard is minimal in ISB events. Because of the high temperatures most PAHs are burned in the combustion process and the concentration is usually higher in the oil than in the smoke.	OSHA PEL: 0.2 ppm for 8 hours (for volatile PAH)	None. (Suspected carcinogen)
Carbon Dioxide (CO_2): Colorless, odorless gas produced by burning fossil fuels.	High levels CO_2 may be detected at ground level.	OSHA PEL: 5000 ppm for 8 hours.	Headache, dizziness, restlessness, parasthesia, dysphea, sweating, malaise,

			increased heart rate, elevated blood pressure, coma, asphyxia, convulsions.
Sulfur Dioxide (SO_2): Colorless nonflammable poisonous gas with a pungent odor. The concentration emitted in a burn is directly related to the sulfur content of the oil.	Toxic gas and a corrosive irritant to eyes, skin, and mucous membranes by forming sulfuric acid on these moist surfaces. The gas may reach the deep portion of the lungs. Studies indicate SO_2 emissions remain below exposure limits during ISB events.	OSHA PEL: 2 ppm for 8 hours NAAQS: 0.14 ppm for 24 hours	Irritation of eyes, skin, mucous membranes, and respiratory system.
Nitrogen Dioxide (NO_2): Toxic gaseous byproduct of oil combustion. It is normally a red-brown gas with an irritating order.	Extremely toxic to humans by inhalation. It is less soluble than sulfur dioxide. It can reach the deeper portions of the lungs. Small concentrations can cause pulmonary edema, which can be delayed. NO_2 is also a strong irritant to eyes and respiratory and respiratory tract. Studies of ISB events have shown that concentrations of NO_2 in smoke emissions remain below 0.02 ppm.	OSHA PEL: 1 ppm for 8 hours. NAAQS: 0.053 ppm for 24 hours	Irritation of eyes, skin, and mucous membranes
Carbon Monoxide (CO): Product of incomplete combustion of oils. It is a colorless, odorless gas that is toxic to humans.	The toxicity of CO is acute, it has a high affinity to hemoglobin in the blood, displacing oxygen and ultimately causing oxygen deprivation in the body's cells. The hazard of carbon monoxide from burn emissions is minimal. Data so far suggest that concentrations in oil fire smoke remain below exposure limits.	OSHA PEL: 35 PPM for 8 hours NAAQS: 9 ppm	Headache, nausea, dizziness, confusion, at high concentrations asphyxia and death.

Precautions

Using respirators and eye protection (i.e. full-face respirator P100 cartridge) suitable for protection from particulate matter will reduce exposure. The best precaution, however, is to avoid overexposure altogether. Vessels and personnel should be kept out of the smoke plume.

Environmental Monitoring for Chemical Hazards

To ensure the health and safety of responders, the incident Site Safety Plan and/or the ISB Safety and Health plan must restrict all responders and response vessels from entering the smoke plume or from approaching the fire perimeter. Data analyzed from the Newfoundland Offshore Burn Experiment (NOBE) demonstrated that PM-10 levels were low upwind and outside of the smoke plume. Until further experience is gained, however, it is strongly recommended that the PM-10 levels be monitored for responder's health and safety. Even though data on other ISB gaseous emissions suggest that concentrations do not seem to pose a risk if responders and vessels remain at safe distances and upwind from the burn, concentrations of monoxide are high at ground levels close to the burn. If for some reason, a responder must move close-in to the burn, proper personnel protective equipment and monitoring must be administered. Monitoring equipment will be calibrated and maintained in accordance with the manufacturer's instructions (electronic equipment will be calibrated before each day's use).

Zones of potential hazardous substances may be encountered based upon wind and weather patterns. Projected extent and direction of plume of oil vapors prior to burn and smoke plume during the burn (along with other applicable hazards found during the site survey) will be noted (i.e., noted on incident maps)

Burn Hazards

Serious burn hazards exist in any ISB application. All potential hazards shall be identified and mitigated prior to ignition.

Although safe practices should eliminate the possibility of a responder getting burned during an ISB, contingencies for such a scenario must be identified. Depending on the severity of the burn, damage inflicted will vary from superficial reddening of the skin to extensive surface blistering and death of underlying tissue. However serious, the correct first aid treatment is to cover the burned surface with loosely applied, dry, sterile dressings. To reduce the dangers of infection, handling the burned area must be reduced to a minimum and any temptation to clean the burn resisted. All burns of more than a trivial nature shall be referred to the hospital.

Other Hazards

Heat Proximity

Exposure of personnel to uncomfortable or dangerous levels of heat can be minimized of eliminated with proper considerations for vessel placement during a burn. Vessels should come no closer than five fire diameters for any extended length of time.

Heat Stress

In an ISB event, the combination of hot weather and flam radiation can pose potentially dangerous situations for response personnel. Certain safety problems are common to hot environments. Heat tends to promote accidents due to slippery palms, dizziness, lower mental alertness, or fogging of safety glasses. If the victim is conscious and able to drink fluids, provide caffeine-free, cold liquids, preferably water.

Heat Stroke

Heat stroke is a serious condition which 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 or higher, and the victim may be mentally confused, delirious, or unconscious. Unless the victim receiver quick and appropriate treatment, brain damage, and/or death can occur. Any person with signs or symptoms of heat stroke requires immediate hospitalization; however, first aid should be administered immediately with the intent to lower the body temperature. Move the victim to a cool area, thoroughly soak the clothing with cold water, and vigorously fan the victim.

Heat Exhaustion

Heat exhaustion is caused by the loss of large amounts of body fluid and salt through sweating. A victim suffering heat exhaustion usually still sweats, but experiences weakness or fatigue, giddiness, nausea, or headaches. Sever cases may exhibit vomiting or unconsciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal. Treatment requires rest in a cool place and intake of liquids (caffeine-free).

Burn Operations

Boom Deployment

Boom deployment will be consistent with the boom's instruction manual. Deployment of the boom in an ISB response situation will be made easier and safer with planning and training of personnel in advance of any response effort. Preparations for the following considerations should be completed in advance:

- Ensure that the boom is properly stored in the tray or storage container as specified so deployment is feasible without snagging or twisting. A single twist of the boom can render it nearly useless for oil containment at or near the twist. Attempting to untwist the boom by hand after deployment presents a hazard to personnel.

- During deployment, anticipate drag forces induced by vessel movement and natural and currents. Avoid standing on or holding down boom during adjustments. Use proper tie-downs and anchor points to eliminate tension in the portion of the boom on which work is being done.

- Ensure that all tie-downs, towlines, tow posts, etc., are strong enough to withstand the average and peak drag forces that may be experienced by the fire resistant boom in tow.

- Provide adequate communications between the boom-towing vessels and the personnel tending the boom out of its container or tray. Dedicated radio links and hand signals should be pre-designated in case of an emergency.

Boom Towing

Boom towing will be consistent with the boom instruction manual. The following are safety considerations during towing operations:

- To avoid overexposure to the intense heat of the flames, all vessels must remain at least 3-5 times the fire diameter from the flame perimeter. Downwind of the burn, the minimum approach distance will be necessarily greater to avoid emission exposure to personnel. For operations using 660 feet or less of boom, use tow lines approximately equal to the length of the boom. For boom lengths greater than 660 feet tow lines may be less than the length of the boom. This allows for adequate distance between the towing vessels and the burning oil contained in the bottom third of the boom in a “U” configuration. Also, ensure that strength of tow lines can withstand the maximum anticipated tension forces induced by the drag force of the boom.

- Ensure that qualified aerial support is prepared with established communications line to inform all responders of the location of the boom-towing vessels relative to the target oil slick; other oil slicks in the same general area; other vessels in the area; and the anticipated region of influence from combustion products.

- Prior to ignition, ensure that all personnel on-site are positioned upwind or crosswind from the target slick.

- If response operations commence at or near the spill source, personnel and equipment will be positioned at a safe distance from any potential explosion or premature ignition of oil at or within the source.

- **Contained oil should be ignited only after all pre-burn checks and requirements, as outlined in the FOSC approval applications and operational checklists are met and confirmed via radio link with all vessel commanders and key participants.**

Boom and Boat Handling

Refer to the instruction manual for boom and boat handling instructions. Proper attention to the status of the burn, the speed and position of the towing vessels, and the proximity of the burn, the speed and position of the towing vessel, and the proximity of the burn to other vessels, slicks, etc., must be maintained for quick response to dangerous situations. The boom-towing vessels will have a pre-determined plan of communication and action for defined situations, such as: modification of the rate of burn (by modifying the size); requests of and offers for assistance to the sister towing vessel; and termination of the burn.

Monitoring

Monitoring should always be incorporated as part of standard ISB operations; however, in some cases, especially in remote areas, it may be difficult or not possible to monitor. Information from monitoring, sampling, and computer modeling will be continuously evaluated to ensure the burn is conducted safely and to gather historical data to enhance our knowledge of in-situ burning. Weather and sea conditions will also be continuously monitored, and, if conditions become unfavorable, the burn may be extinguished.

Monitoring Program

To ensure health and safety Special Monitoring of Applied Response Technologies (SMART) protocols will be used. Refer to Chapter 9000 Appendix I, Special Monitoring of Applied Response Technologies (SMART) for more information.

The NOAC has also adopted the current U.S. Coast Guard (USCG) National Strike Force monitoring program for ISB operations to allow for timely utilization of this response tool and to insure the availability of the monitoring results to the UC and the Federal and State Trustees involved in the response. This program is designed for assets and logistical capabilities that are provided in this area by the USCG Gulf Strike Team (GST) and the Scientific Support Coordinator’s (SSC) scientific support team.

The GST has been chosen for this task because of their proven ability to quickly respond to the UC’s technical needs during an oil spill incident with properly trained and equipped personnel and logistical support. Having a government agency accomplish this task is partially dictated by the operational need for such monitoring data sets to remain in the public domain in order to ensure timely availability and objective presentation of the data to the UC.

The GST will perform the actual on-site monitoring to collect the raw data with the guidance of the SSC’s scientific support team. The SSC’s scientific support team will assist in monitoring, analysis of the data, and forwarding of the results to the UC in a timely manner.

The monitoring program is designed to enhance the decision making process undertaken by the UC during the use of ISB in fulfillment of his/her responsibility to ensure appropriate and timely response to mitigate the effects of oil spills, as established by the Clean Water Act and defined by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This monitoring program is established to attempt to provide the FOSC with logical "Continue/Discontinue" input during actual operations involving ISB.

Since the monitoring protocols are constantly undergoing revision and change due to improvements and enhancements made to the available technology and monitoring practices, the actual monitoring procedures and processes are held under separate cover. The current monitoring protocol is available within incident specific planning documents available to the UC and the NOAC.

Monitoring Procedures

General considerations

In general, SMART is conducted when there is a concern that the general public may be exposed to smoke from the ISB operations. It follows that monitoring should be conducted when the predicted trajectory of the smoke plume indicates that the smoke may reach population centers, and the concentrations of smoke particulates at ground level may exceed safe levels. Monitoring is not required, however, when impacts are not anticipated.

Execution of ISB has a narrow window of opportunity. It is imperative that the monitoring teams are alerted of possible ISB operations and a SMART operation as soon as burning is being considered, even is implementation is not certain. This increases the likelihood of timely and orderly SMART operations.

Sampling and Reporting

Monitoring operations require deployment of one or more monitoring teams. SMART recommends at least three monitoring teams for large-scale burning operations. Each team uses a real-time particulate monitor capable of detecting the small particulates emitted by the burn (PM-10), a global positioning system, and other equipment required for collecting and documenting the data. Each monitoring instrument provides an instantaneous particulate concentration as well as the time-weighted average over the duration of the data collection. The readings are displayed on the instrument's screen and stored in its data logger. In addition, particulate concentrations are logged manually every few minutes by the monitoring team in the recorder data log. The monitoring teams are deployed at designated areas of concern to determine ambient concentrations of particulates before the burn starts. During the burn, sampling continues and readings are recorded both in the data logger of the instrument and manually in the recorder data log. After the burn has ended and the smoke plume has dissipated, the teams remain in place for some time (15-30 minutes) and again sample for a record ambient particulate concentrations.

During the course of the sampling, it is expected that the instantaneous readings will vary widely. However, the calculated time-weighted average readings are less variable, since they represent the average of the readings collected over the sampling duration, and hence are a better indicator of particulate concentration trend. When the time-weighted average readings approach or exceed the Level of Concern (LOC), the team leader conveys this information to the ISB Monitoring Group Supervisor (ISM-MGS) who passes it on to the Technical Specialist in the Planning Section (SSC, where applicable),which reviews and interprets the data and passes them, with appropriate recommendations, to the UC.

Monitoring Locations

Monitoring locations are dictated by the potential for smoke exposure to human and environmentally sensitive areas. Taking into account the prevailing winds and atmospheric conditions, the location and magnitude of the burn, modeling output (if available), the location of population centers, and input from state and local health officials, the monitoring teams are deployed where the potential exposure to the smoke may be most substantial (sensitive locations). Precise monitoring locations should be flexible and determined on a case-by-case basis. In general, one team is deployed at the upwind edge of a sensitive location. A second team is deployed at the downwind end of this location. Both teams remain at their designated locations, moving only to improve sampling capabilities. A third team is more mobile and is deployed at the discretion of the ISB-MGS. It should be emphasized that, while visual monitoring is conducted continuously as long as the burn takes place, air sampling using SMART is not needed if there is no potential for human exposure to the smoke.

Level of Concern

The Level of Concern (LOC) for SMART operations follows the National Response Team (NRT) guidelines. As of March 1999, the NRT recommends a conservative upper limit of 150 micrograms of PM-10 per cubic meter of air, averaged over one hour. Furthermore, the NRT emphasizes that this LOC does not constitute a fine line between safe and unsafe conditions, but should instead be used as an action level. If it is exceeded substantially, human exposure to particulates may be elevated to a degree that justifies precautionary actions. However, if particulate levels remain generally below the recommended limit with few or no transitory excursions above it, there is no reason to believe that the population is being exposed to particulate concentrations above the EPA's National Ambient Air Quality Standard (NAAQS). It is important to keep in mind that real-time particulate monitoring is one factor among several, including smoke modeling and trajectory analysis, visual observations, and behavior of the smoke plume. **The UC must determine early on in the response what conditions, in addition to the LOC, justify termination of a burn or other action to protect public health**. The UC should work closely with local Public Health organizations in determining burn termination thresholds.

When addressing particulate monitoring for ISB, the NRT emphasizes that concentration trend, rather than individual readings, should be used to decide whether to continue or terminate the burn. For SMART operations, the time-weighted average generated by the particulate monitors should be used to ascertain the trend. The NRT recommends that burning not take place if the air quality in the region already exceeds the NAAQS and if burning the oil will add to the particulate exposure concentration. SMART can be used to take background readings to indicate whether the region is within the NAAQS, before the burn operation takes place. The monitoring teams should report ambient readings to the UC, especially if these readings approach or exceed the NAAQS.

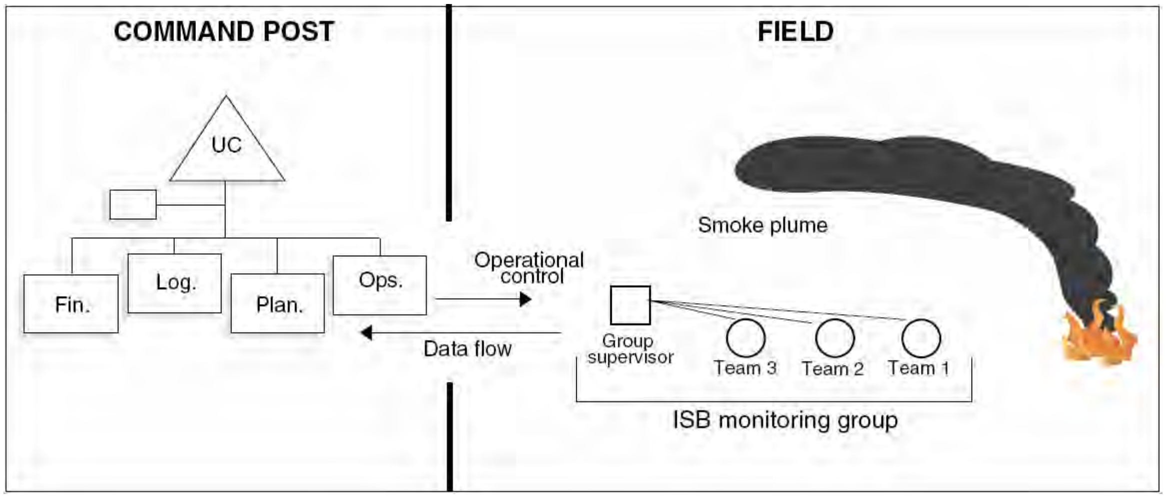
Information Flow and Data Handling

Communication of monitoring results should flow from the field ISB-MGS to those persons in the UC who can interpret the results and use the data. Typically, this falls under the responsibility of a Technical Specialist on ISB operations in the Planning Section of the command structure. The observation and monitoring data will flow from the Monitoring Teams to the ISB-MGS. The ISB-MGS forwards the data to the Technical Specialist. The Technical Specialist or his/her representative reviews the data and, most importantly, formulates recommendations based on the data. The Planning Section Chief communicates these recommendations to the UC.

Quality assurance and control should be applied to the data at all levels. The Technical Specialist is the custodian of the data during the operation, but ultimately the data belongs to the UC. The UC should ensure that the data are properly archived, presentable, and accessible for the benefit of future monitoring operations.

Chapter 9000 Appendices, Appendix C In-Situ Burn Policy

The below figure depicts command, control, and data flow during ISB monitoring operations.



For more information regarding SMART including training, equipment lists, etc., please refer to Chapter 9000 Appendix I Special Monitoring of Applied Response Technologies (SMART).

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New Orleans Area Contingency Plan

Chapter 9000
Appendix D
Dispersant Use Policy

Chapter 9000 Appendices, Appendix D Dispersant Use Policy

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NOAC Dispersant Use Policy

Introduction

Following an oil spill, response actions should be designed to minimize environmental impact. While physical control and recovery techniques are the traditional response measures, other countermeasures also need to be considered. Dispersants are chemicals that operate at the water-oil interface and, by reducing the surface tension, cause all or part of the slick to be dispersed into the water column. Scientific studies indicate that using dispersants can, under certain conditions, significantly reduce the negative short-term and long-term environmental impacts of oil spills.

The NOAC believes the use of a dispersant is a viable option for addressing spilled oil and can be utilized when specific circumstances have been met allowing for its use, and the institution of this policy will help to ensure a more rapid and effective response to oil spills within the NOAC area of responsibility. Questions, concerns, and recommendations relating to this policy may be addressed to the Chair or Co-Chair of the Response, Science, and Technology Workgroup.

Purpose

This policy implements Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and provides pre-authorization for the limited use of dispersants by the predestinated USCG Federal On-Scene Coordinator on oil discharges impacting federal waters within the New Orleans Area Committee boundaries. The NOAC members agree that, in certain circumstances, the complete physical containment, collection, and removal of oil discharges may not be possible. The use of dispersants may therefore be considered to prevent a substantial threat to public health or welfare, or to minimize serious environmental damage. This policy establishes criteria under which dispersants may be applied to the waters under federal jurisdiction within the NOAC boundaries or as established.

Scope

The USCG, EPA, DOI, DOC, and the coastal states of the RRT VI have adopted the use of dispersants as an approved tool to respond to discharged oil on coastal waters within the jurisdiction of RRT VI. This policy includes protocols under which dispersant use must be conducted by the Unified Command within the boundaries of the NOAC.

Offshore dispersant application to remediate oil spills occurring in the New Orleans Area Committee boundaries will be conducted in accordance with this policy. The pre-approval to authorize the use of dispersants provided by this policy is in effect for the Pre-designated Federal On-Scene Coordinator only.

Dispersant Use Policy

Areas within the New Orleans Area Committee area of responsibility fall into three different zones with respect to dispersant use: a pre-approval zone, case-by-case approval zones, or no dispersant use zones. The FOSC will determine whether to authorize the use of dispersants in pre—approval zones or request RRT approval of dispersant use in case-by-case approval zones through the information gathering and decision-making process outlined in this policy. It is expected that any FOSC Checklists and supplemental documentation will be completed by the Technical Specialist within the Environmental Unit, with input from appropriate members of the Operations Section and other Natural Resource Trustee agencies, as needed.

The decision to use dispersants is best made within the 24-36 hours after a discharge has occurred.

During the Deepwater Horizon Oil Spill in 2010, dispersants were used in unprecedented volumes and applications for any spill occurring within the waters of the United States. Due to the perceived uncertainties that surrounded using dispersant in such a manner, media visibility and scrutiny on the subject was greater than ever, and certain misinformation was ultimately circulated regarding the impacts. As a result of the scrutiny and ongoing litigation, it is unlikely that the FOSC, without the assistance of the RP, will be able to acquire the necessary permission to access and use a dispersant stockpile, absent relief from a dispersant manufacturer, on a federalized response. Therefore, the FOSC should plan for complications that are likely to preclude the usage of dispersants on spill where there is no viable RP.

Should the FOSC be approached by any Oil Spill Response Organization (OSRO) requesting certain language in any response documentation in order to bolster a derivative immunity defense, the FOSC should immediately seek assistance from the Coast Guard District Eight legal office and notify the Office of Maritime and International Law (CG-0941), Prevention Law Division duty attorney, through the National Command Center at (202) 372-2100. Access to the District Eight legal is available via the District Eight command center at (504) 589-6225. Additionally, the FOSC is requested to contact their servicing legal staffs and CG-0941, Prevention Law Division duty attorney as soon as it is contemplated that dispersants will be used on ANY oil spill.

Dispersant Pre-Approval Policy

The objective of the RRT VI FOSC Dispersant Pre-approval Guidelines and Checklist is to provide for environmentally safe and effective dispersant operation. The programmed checklist approaches allows the FOSC to quickly arrive at a logical GO/NO-GO decision. This gives the dispersant operation the opportunity to begin in a timely manner that is consistent with attempting to maximize the effectiveness of dispersant use as a countermeasure to reduce the impact of oil spills. The general criteria for evaluating the approval for use of dispersants in marine waters “from the ten-meter isobaths or three nautical miles”, whichever is farthest from the shoreline, to 200 nautical miles from the coastline of an island shoreline EXCEPT for waters designated as a part of a National Marine Sanctuary and any Tribal Usual and Accustomed marine area or waters within three miles of any Tribal Usual and Accustomed marine areas or waters.

The Region VI RRT has developed a near shore environmental dispersant expedited approval process and checklist.

The RRT VI OSC Pre-Approved Dispersant Use Manual can be found in this Section following the NOAC Policy. The FOSC has been directed to use the decision –making process as defined in the OSC Pre-approved Dispersant Use Manual to determine the applicability of dispersants as a response option for a specific spill response. The RRT ***SHALL*** be notified by the FOSC of an approval to initiate dispersant operations within ***three hours*** after the approval has been given to the Responsible Party. It is required that the RRT be convened within three hours of the completion of the first dispersant spray drop, and that a debrief/after-action report will be given to the RRT by the FOSC and the SSC immediately following the completion of the pre-approved dispersant operations. Pre-approval is for aerial application only. If other application techniques (e.g., vessel) are desired in the pre-approval area after aerial application has begun, consultation with and approval of the RRT is required before those techniques can be applied.

Pre-approval is only for those dispersants that are listed on the most current NCP Product Schedule and that have been specified in the NCP Product Schedule Listing to be suitable for aerial application. Pre-approval allows for maximum dispersant spray coverage of suitable slick areas. Multiple sorties and passes are authorized to continue unless a decision is made by the RRT, when convened, to cease operations.

The RP or the FOSC must have established the appropriate contractual relationships required for aerial application of dispersants as part of the pre-planning process. If contracts must be established during the spill response, activation of the dispersant pre-approval is inappropriate. There should be sufficient time to consult with the RRT in accordance with the Region VI Regional Contingency Plan (RCP), Subpart H (Authorization for The Use of Dispersants in Non-Life Threatening Situations).

Dispersant Case-by-Case Approval Policy

According to the National Contingency Plan, 40 CFR Part300,910(b), in all areas outside of the pre-approved zone, FOSC authorization to use dispersants requires the concurrence of the EPA and State representatives to the RRT with jurisdiction over the waters threatened by the release or discharge, and consultation with the DOI and DOC representatives to the RRT. It is the policy the New Orleans Area Committee to also consult with appropriate Tribal governments with off reservation treaty rights in the navigable waters threatened by a release or discharge, when practicable. Upon activation of the Region VI RRT, the FOSC should forward the completed "FOSC Dispersant Authorization Checklist" and supplemental documentation, and any/all supporting information to the RRT for consideration in their concurrence and consultation process. Oil trajectory, potential impact area, and the respective sensitivities of the resources at risk in those areas should be considered. A decision from the RRT on dispersant use is expected within 3 hours of activation.

While safe dispersant operations have typically used a 500 foot exclusion zone around manned platforms and vessels, past experience has identified incident-specific concerns from personnel on board assets that may be in close proximity to spray operations. Dispersant spray providers may have company specific policies that extend exclusion zones beyond the minimum recommended 500 foot exclusion zone.

The Dispersant Case-by-Case Approval Zones are as follows:

- All marine waters that are seaward of the shoreline but shoreward of the 10 meter isobaths, whichever is further.

- Waters designated as part of a National Marine Sanctuary and waters that are a part of a Tribal Usual and Accustomed marine area.

- Marine waters within 3 miles of the borders of a Tribal Usual and Accustomed marine areal In consideration of the use of dispersants within 3 miles of a Tribal Usual and Accustomed marine area, the NOAC will consult with the applicable Tribal Government.

This is not a pre-authorization. RRT VI authorization for dispersant use is required for use in the near-shore environments listed in this section.

The FOSC may authorize the use of any dispersant without obtaining concurrence through the case-by-case approval policy process when, in the judgment of the FOSC, their use is necessary to prevent or substantially reduce a hazard to human life.

No Dispersant Use Policy

There are some areas in the New Orleans Area Committee area of responsibility where the NOAC has determined it is not appropriate to use dispersants. In these areas, dispersants may be used only if, in the judgment of the FOSC, they are required to prevent or substantially reduce a hazard to human life.

The No Dispersant Use Zones are as follows:

- Inland bays

- Estuaries

FOSC Case-by Case Dispersant Authorization Checklist

Y	N	N/A	
			Dispersability: Available technical information or expertise suggests that the spilled product is dispersible and will still be dispersible in the time frame of anticipated application of dispersants.
			NCP Listed Dispersant: The dispersant to be used is listed on the current NCP Product Schedule and is considered appropriate for the oil type and conditions.
			Inadequacy of other options: Mechanical response equipment alone is not deemed adequate (due to the magnitude of the spill, availability, or timelines) to protect potential resource at risk. Environmental trade-offs of dispersant use have been considered.
			Weather Conditions: Weather and sea conditions are conducive to dispersant application by the chosen system or platform (Generally, for aerial application: wind less than or equal to 25 Kts, visibility greater than or equal to 3 statute miles, and ceiling greater than or equal to 1000 feet. Generally for boat application, a sea state that will allow the vessel to be used to conduct an effective and safe spray operation.)

Y	N	N/A	
			General Adequacy of Dispersant Spray System and Personnel Competency: In addition to any other requirements of the Region VI RRT and the NOAC, the general criteria for evaluating the suitability for use of any dispersant system should be the ability of the party or parties requesting approval to demonstrate to the satisfaction of the FOSC, the following: • That the application system has been: o Specifically designed for its intended purpose, or o If not specifically designed for dispersant use, had been tested and deemed to be effective and appropriate, or o By some other specific means of documentation or experience, reasonably deemed to be effective and o Appropriate under the circumstances. • That the design and operation of the application system can reasonably be expected to apply the chemical dispersant in a manner consistent with the dispersant manufacturer's recommendations, especially with regard to dosage rates and concentrations. • That the operation will be supervised or coordinated by personnel who have experience, knowledge, specific training, and/or recognized competence with chemical dispersants and the type of system to be used
			Aerial Application Operational and Technical Issues: In the case of Aerial Application of dispersants: • The FOSC must ensure that the Responsible Party's dispersant operation provides for a dispersant controller over the spray zone able to effectively direct the dispersant aircraft in carrying out the dispersant operation, including avoiding the spraying of birds and marine mammals that may be in the area. • Aircraft spray systems must be capable of producing dispersant droplet sizes that provide for optimal dispersant effectiveness as described in ASTM guidelines or as supported by peer-reviewed research.

Y	N	N/A	
			Boat Application Operational Technical Issues: If the system involves spray arms or booms that extend out over the edge of a boat and have fan type nozzles that spray a fixed pattern of dispersant, the dispersant operator has confirmed that application will comply with the following ASTM standards as appropriate: a) ASTM F 1413-92 Standard Guide for Oil Spill Dispersant Application Equipment: Boom and Nozzle Systems b) ASTM F 1460-93 Standard Practice for Calibrating Oil Spill Dispersant Application Equipment Boom and Nozzle System C) ASTM F 1737-96 Standard Guide for Use of Oil Spill Dispersant Application Equipment during Spill Response: Boom and Nozzle Systems.
			Fire Monitor Operational and Technical Issues: If the system involves the use of a fire monitor and or fire nozzle to apply the dispersants from a boat, the dispersant operator has confirmed that application will comply with ASTM Standard F 2465-05 for fire monitors and has provided the information in paragraph 7 of the Standard titles “Information to be provided by the user” to ensure that the fire monitor meets the standard and is acceptable for use. The specific fire monitor system(s) intended for use must have been specifically designed for dispersant application and/or must have been specifically calibrated via field trial for dispersant use.
			SMART Deployment: The FOSC has activated Special monitoring of Applied Response Technologies (SMART), including a SMART observer, at a minimum, to fly over the response zone to visually assess effectiveness of the dispersant applications (Tier I). See Chapter 9000, Appendix I Special Monitoring of Applied Response Technologies.
			Wildlife Observation: A specialist in aerial surveillance of wildlife or oil, preferably from a Trustee agency, is available to observe wildlife that should be avoided in the potential dispersant application area. If possible, wildlife observations should be conducted immediately prior to dispersant application.

Y	N	N/A	
			Endangered Species Act (ESA) and Essential Fish Habitat 9EFH) Consultations: Endangered Species Act (ESA) consultation has been initiated in accordance with implementation of the 2001 “Interagency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities under the Federal Water Pollution Control National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act.”

*If the answer to any item on the checklist is “N”, explanation and justification for authorization of dispersant use must be included in the After-Action Report.

In addition to the FOSC Dispersant Authorization Checklist and the Supplemental Document, the appropriate Technical Specialists within the Environmental Unit will prepare a map outlining the area proposed for dispersant application, including any pertinent information.

For case-by-case dispersant decisions, once the RRT has made a decision on the use of dispersants, Technical Specialists within the Environmental Unit will also prepare a Decision Memo to capture the specific details, conditions, constraints and any other pertinent information from the RRT linked to the used dispersants. This memo, addressed to the FOSC from the key RRT members (EPA Co-Chair, affected State representative, and the representatives from the DOC and DOI), will then be signed by each key member of the RRT involved in the decision and sent to the FOSC.

Subsurface Dispersants

Subsurface Dispersant Application Policy

The RP shall implement an approved Dispersant Plume Characterization Plan for Subsurface Dispersant Application. Part 1 of the plan is a “Proof of Concept” to determine if subsurface dispersant operations are chemically dispersing the oil plume. Once the “Proof of Concept” test is complete, the results will be reviewed by the FOSC/RRT VI for a decision to proceed or not to proceed with Part 2 of the plan. Part 2 of the plan involves robust sampling to detect and delineate the dispersed plume. Part 3, entitled “Subsurface Injection of Dispersant”, outlines the operational procedures. Additional guidance will be provided by the RRT VI.

At least 24 hours prior to the testing, use and/or application of any subsurface dispersants, the RP shall provide a Dispersant Application Plan that identifies the dispersants to be used, describes the methods and equipment used to inject the dispersant, plume model to assure representative sampling, proposed method of visual observation, process for determining the effectiveness of subsurface injection, the specific injection rate (i.e., gallons/minute), the total amount to be used for the duration of the test, the total length of time that dispersant is injected, and the plan for sampling and monitoring, as approved by the Environmental Unit. Dispersants must be on the approved NCP product schedule and suitable for this use.

All data shall be provided to the FOSC and RRT VI within 24 hours of the information being received. This data includes real time monitoring, laboratory analysis, documented observations, photographs, video, and any other information related to subsurface dispersant application.

The RP shall conduct Part 1 monitoring and collect the data outline below to determine dispersed plume concentration and transport. The RP shall conduct Part 2 monitoring and collect the data outlined below, which will be sustained and more comprehensive, to address plume fate and effects from the dispersed plume and chemical dispersants based on the results of Part 1 and iterative hydrodynamic modeling output.

The RP shall commence Part 1 monitoring when subsurface application of dispersants is initiated.

Part 1

The RP shall design and implement a part 1 monitoring plan to determine the factors needed to calculate dispersion effectiveness, namely, percent oil, water, and dispersant. This phase of sampling should determine the factors to predict buoyancy; namely droplet sizes, density (or specific gravity) along the thermal gradient of the water column, and kinematic viscosity.

Part 2

If Part 1 is successful and continuous subsea injection proceeds, the RP shall design and implement a Part 2 monitoring plan to collect and report, on a daily basis, the data and information described below. The RP shall submit this plan to the FOSC/RRT VI for approval and shall begin implementation upon notice from the FOSC. The RP shall continue implementation of this plan until further notification from the FOSC.

The RP's monitoring plan shall include a more thorough oil analysis, to enable the EPA to determine whether the dispersed plume is toxic to aquatic life. This plan shall be designed and implemented to determine whether the dispersed oil will hang in the water column and eventually come in contact with the benthos as it approaches land. The RP has the option of conducting this particular monitoring and analysis as part of Part 1 if so desired.

Example

PART 1- Proof of Concept- Data Collection Requirement

- Towed Fluorometer at 1 meter
- Laser In-Situ Scattering and Transmissometry (LISST) Particle Analysis at various intervals from surface to 550 meters
- Dissolved Oxygen at various intervals from surface to 550 meters
- CTD- Conductivity, Temperature, and Depth at various intervals from surface to 550 meters
- Water sampling from surface to 550 meters for polycyclic aromatic hydrocarbon (PAH) analysis

- Aerial Visual Observation (Weather permitting)

PART 2- Characterization Plan Data Collection Requirement

- Cast Fluorometer- surface to sea floor
- LISST Particle Analysis at various intervals from surface to sea floor
- Dissolved Oxygen at various intervals from surface to sea floor
- CTD- Conductivity, Temperature, and Depth at various intervals from surface to sea floor
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation (Weather permitting)
- Rototox toxicity testing
- UV-Flourescence testing to meet objectives

PART 3- Subsurface Injection of Dispersant- Parameter Requirements

- Type of dispersant to be used
- Rate of dispersant injection
- Process for monitoring pumping rate
- Procedures for FOSC to start and stop injection

Evaluation Criteria to Determine Operational Shut-Down of Subsurface Dispersant Application

The FOSC will immediately convene the RRT VI when either of the following conditions is reported:

1. If there is a significant reduction in dissolved oxygen from background to below 2 mg/L; or
2. If the EPA’s interpretation of the toxicity test reveals excessive exertion of a toxic response. To determine a measurable toxic response, the RP must first perform a rangefinder test since the collection of the sample will be directly from the toxic

plume, and any sample from the plume will likely kill 100% of the test population. Therefore, the rangefinder must first be conducted to determine an order of magnitude dilution that gives a measureable response. Then, a more refined dilution procedure must be done to get the final LC50* answer. This result will be compared to a NOAA plume model that would predict when or where exertion of that toxic response would take place. The EPA and NOAA will interpret the results of the toxicity test to inform determination of a shutdown decision.

**LC stands for "lethal Concentration". LC values usually refer to the concentration of a chemical. LC50 is the concentration that will be lethal to 50% of the test animals in a given time (usually 4 hours).*

The RRT will evaluate the conditions above, in addition to all relevant factors including shoreline, surface water, and other human health and ecological impacts, to determine whether subsurface dispersant application should be shut down.

Limitations to Address

The RP shall include in its monitoring plan provisions to address and minimize the impact of the following challenges:

1. Timely transport of samples to labs where necessary, may be subject to weather and/or operational delays.

2. Sampling in the deep sea environment may pose challenges due to equipment limitations and malfunctions.

Environmental Tradeoff Assessment for Subsurface Dispersant Use

RRT VI trustee agencies have, in the past, discussed the pending impacts of the oil emulsion and surface-dispersed oil on fisheries, marshes and wetlands, and near shore marine life on the coastal shelf.

Particular focus was spent on threats to sperm whales, concluding that the whales are at risk at the surface (from inhalation of volatiles and direct contact with slicks) as well as from diving through dispersed oil in deep water or consuming squid that may be exposed to deep water dispersed oil plumes. A risk of damage from oil exposure will be shifted to organisms in this environment. Diving studies from recent sperm whale studies in the GOM identified the 400-600 m (1312-1969 ft) depth range as the most consistent for feeding sperm whales. If oil/dispersant from the deepwater dispersion stays below this level, direct impacts to whales should be reduced.

Subsurface Dispersants Monitoring

The immediate goal of subsurface dispersant monitoring is an integrated sub-surface sampling strategy in order to produce actionable information and products to effectively inform operational decisions such as boom deployment or dispersant application during the response phase of the incident. The resulting data and information (e.g., maps; model outputs; informational releases) will have extended value as a foundation for the subsequent assessment and monitoring phases of an incident response. An additional outcome will be extended science and operational knowledge in the chemical, physical, and biological realms.

The primary objectives of subsurface dispersant monitoring are:

- Characterize and determine the distribution of subsurface oil beyond the immediate area of the oil release;
- Identify changes in oil characteristics and transport associated with response measures at the release point;
- Support verification of oil fate and transport models; and
- Provide context for longer-term integrated ecosystem assessment of oil spill impacts.

To achieve these objectives three immediate actions are required in the short-term:

- Evaluation and validation of optimal oil detection methodologies in this incident zone;
- The capture of continued ocean state conditions for forecast models; and
- Model parameterization, output, and feedback to inform response decisions.

Quality Assurance and Sampling Plan Requirements

The RP's plan shall include sample collection methodology, handling, chain of custody, and decontamination procedures to ensure the highest quality data will be collected. Discrete samples shall be tested at an approved lab(s). Duplicate samples shall be tested. All samples (or as practicably possible) shall be archived from potential future analysis. Where technically possible all samples shall be at least 100 ml.

The RP shall include the following components and criteria in its Sampling Plan:

1. An Introduction, to include project objective and project staff
2. A brief site description and background
3. A description of the Sampling Approach and Procedures to encompass:

   a. A brief overview of sampling activities, data quality objectives, and health and safety implementation strategies (frequently, this references another specific document, but must be included).

   b. The actual sampling and/or monitoring approach, to ensure repeatability and consistent procedures. Describe sampling, monitoring, sampling, and field quality control procedures, spoil or waste disposal procedures resulting from this effort, as well as specimen/data handling issues.

   c. Sample management- how the sample will be procures, handled, and delivered.

   d. Sample instructions- preservation, containers, and hold times

4. The analytical approach- Lab tests to be run, any special instructions, how the data will be verified, and how data will be reported.

5. Quality Assurance-custody procedures, field records including logs, chain of custody, qualitative data handling including photographs.

Additional Requirements for Subsurface Sampling

- In addition to sampling of dispersant/oil and oil only waters, the RP shall also collect baseline data of waters without direct application of dispersant or oil.

- The RP shall allow the EPA/NOAA scientists flexibility within the sampling plan to direct the collection of additional data based on field observations (at times and locations of their choice).

- The RP shall use Turner Designs C3 fluorometer (e.g. SMART protocol) to distinguish between oil impacted surface waters and those not impacted by oil.

- The RP shall use a CTD rosette package equipped with CDOM fluormeter and a 2-way communications wire to ensure the EPA/NOAA scientists can view profile data as the rosette package is deployed. In addition, the CDT rosette package must be capable of collecting discrete samples in the water column using the live feed data stream.

- The RP shall deploy LISST from the vessel for continuous sampling of /surface waters during transits, in order to provide particle size counts information which potentially distinguishes between dispersed and non-dispersed oil.

- Discrete water samples shall be taken by the RP at predetermined depths as specified or directed by EPA/NOAA scientists for UV fluorescence.

- The RP shall provide 48 hour advance notice for departure and trip duration timelines to the FOSC and the RRT.

- Data reporting shall be conducted by the RP on a daily basis. This reporting shall include a sample tracking table. Data reporting shall be provided by the RP to the FOSC and the RRT.

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Subsurface Dispersant Monitoring Checklist

- ☐ Complete RRT VI dispersant checklist and send to the Federal on Scene Coordinator (FOSC). The FOSC will coordinate the request with the Regional Response Team (RRT) for approval.

- ☐ Draft a subsea dispersant plan and submit with the checklist to the FOSC.

  The plan should address the following:

  - ☐ Timing of the monitoring (when & where)
  - ☐ Monitoring Objectives
    - Confirm location and extent of the subsurface plume.
    - Determine how much oil (total PAH) remains in the dispersed plume.
    - Collect physical oceanographic data to validate the sub-surface dispersed plume model.
  - ☐ Monitoring Techniques:
    - Laser In-Situ Scattering and Transmissometry (LISST-ST)
    - Ultra Violet (UV) Fluorescence
    - Toxicity testing (may be optional)
  - ☐ Water Colum Sampling
    - Total PAH analysis
    - Dissolved oxygen
  - ☐ Physical oceanographic data collection
    - Initial Conductivity Temperature and Depth (CTD)
    - Acoustic Current Doppler Profilers (ACDP) for currents

  - Shutdown Criteria – Proposed criteria for shutting down subsea dispersant use
  - Monitoring Vessel Schedule/Cruise Plan
  - Reporting – provide for written reports daily of scientific observations w/associated data and sampling data as it is received to regulatory agencies as required.
- Coordinate a research vessel (e.g., R/V BROOKS McCALL, R/V PELICAN) w/embarked scientists to execute the above plan
- Plan for a regulatory agency representative (BSEE, USCG or EPA) to be embarked on the research vessel.
- Equipment for Subsea monitoring for research vessel:
  - CTD rosette package equipped with CDOM fluorometer w/2-way communication wire
  - Laser In-Situ Scattering and Transmissometry (LISST-ST)
  - Acoustic Current Doppler Profilers (ACDP)
  - ea-Bird Electronics, Inc., SBE 25 SEALOGGER CTD (Conductivity, Temperature and Depth) to measure temperature, salinity, and dissolved oxygen (DO2), with water samples taken at 1-m, 275 m, and 550 m depth.
  - A Sea-Bird 911 *plus* CTD with a Wet Labs ECO Colored Dissolved Organic Matter (CDOM)
  - FLCDRTD-1800 fluorometer and a Sea- Bird SBE 43 DO2 sensor to measure continuous profiles of temperature, salinity, DO2, and fluorescence

Resources at Risk

Ecological implications of dispersing oil in deep water are known. Key points are:

- The Gulf is two “seas”, one above the other and each with its own currents and ecosystems. Unlike the warm, well-lit, active, surface layer (0 to 200 m; 0-656 ft), the deep water is cold (4C, 39 F at 1524 m; 5000 ft) and dark with turbulence (mixing) where currents intensify over the slope. A density interface exists between 800-1000 m (2625-3281 ft). This interface is expected to prevent movement of a dispersed oil plume above this depth.

- There is no photosynthetic activity in the deep sea and the animal and microbial life is entirely different including:

    - Many pelagic species of squid, fishes, crabs, jellyfish and small crustaceans unfamiliar to most of the general public and fishers

    - Mesopelagic and benthic communities dependent on flux of organic matter fallout from the upper waters

    - Many forms of cold-water coral and methane and sulfide processing seep communities on the sea floor.

- Toothed whales, notably sperm whales, are among the animals that dive into the deep to feed on cold water squids. Tuna, including blue fin, may also “go deep” to feed and/or spawn and spawning can reach a depth of 300 m (984 ft). The majority of sperm whale feeding is at 400-600 m (1312-1969 ft). It is expected that the dispersed plume at depth would not rise past the major density layer at around 800 m (2624 ft) depth, and thus not impact this activity. Similarly, sea turtles, of particular concern, the leatherback sea turtle, also dive relatively deep and feed on pelagic prey. However, this feeding activity would be far above 800 m (2625 ft).

- A specific concern is the large plankton-feeding whale shark that dives and feeds to depths up to 1000 m (3280 ft). This diving depth could overlap the water column containing dispersed oil, but only at the extreme range of the diving depth.

- Unique Benthic Communities: Maps for some species and bottom communities are available from BSEE and NOAA for determining where special habitats and protected areas occur in the region.

- The deepwater environment is not oil-free in the GOM: naturally occurring oil seeps are estimated to discharge up to 40 million gallons (980,000 bbl) per year between depths of 300-3000 m (984-9840 ft) in the entire Gulf of Mexico (NRC, 2003). The oil concentrations, types of hydrocarbons, and exposure durations to which the deep biota is naturally exposed are unknown.

- Unlike the surface layer, food webs of the deep are almost entirely dependent on flux of organic material sinking from the surface. They may be adapted to organic carbon that includes small amounts of petroleum hydrocarbons. In addition, there are numerous chemosynthetic communities on the sea floor living on methane and oil seeps and presumably naturally experiencing low levels of petroleum. These processes may allow them deal with a small additional flux of petroleum.

Supplemental Documentation for Dispersants

The Technical Specialist within the Environmental Unit preparing the FOSC Dispersant Authorization Checklist will produce an itemized list of the rationale behind the "Y" or "N" decision for each of the Checklist items:

Item #	Supplemental Checklist	Rational Behind Y or N Decision
1.	Dispersability	
2.	NCP Listed Dispersant	
3.	Inadequacy of other options	
4.	Weather Conditions	
5.	General Adequacy of Dispersant Spray System and Personal Competency	
5a.	Application system designed for intended purpose	
5b.	Dosage rates and concentrations	
5c.	Experienced supervision, coordination	
6.	Aerial Application Operational and Technical Issues	
6a.	Dispersant controller over the spray zone	
6b.	Aircraft spray system dispersant droplet sizes	
7.	Boat Application Operational Technical Issues	
8.	Fire Monitor Operational and Technical Issues	
9.	SMART Deployment	
10.	Wildlife Observation	
11.	Endangered Species Act (ESA) and Essential Fish Habitat (EFH) Consultations	

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Suggested Incident After-Action Report Outline

Incident Overview

- Description of initial report (date, time, source, etc.)
- Spill source
- Spill location
- Estimated quantity and potential quantity of release
- Environmental conditions

Oil Slick Trajectory and Behavior

- Oil chemistry
- Expected movement of oil slick
- Expected weathering and behavior of product
- Observations of the same
- Observations of oil fate and movement

Completed FOSC Dispersant Authorization Checklist and Justification for Dispersant Use

- Potential impact areas and their respective sensitivities to impact
- Within pre-approval zone for RRT VI (If applicable)
- Potential for use of other recovery methods (e.g., mechanical recovery, in-situ burning)
- Weather and sea state
- Authorization checklist with explanation and justification when all items are not checked “Y” (Case-by-case)

Overview of Dispersant Operations

- Type and product used
- Methods and rates of application
- Area of application
- Chronology of dispersant applications
- Estimates and observations of efficacy
- Sightings of marine birds and marine mammals
- Extenuating circumstances affecting deployment and any element (spotters, dispersant, SMART, etc.)
- Results from all SMART monitoring
- Post-application fate of the dispersed plume and surface slick

Chronology of Dispersant-Related Events

- FOSC Notification of the spill
- Reconnaissance aircraft requested
- Reconnaissance aircraft launch
- USCG Strike Team altered for SMART
- SMART en-route
- Reconnaissance aircraft on-scene and reports
- RP requested use of dispersants
- Source and field sample requested by FOSC
- Dispersant use approved under pre-approval guidelines (if applicable)
- Decision Memo from RRT (If not pre-approved)
- Dispersant contractor notified

- Dispersant stock requested
- Dispersant stock en-route
- Dispersant stocks arrive at airport/dock
- Spotter aircraft/vessel launch
- Dispersant aircraft/vessel launch
- SMART vessel launch
- Spotter on-scene
- Dispersant aircraft/vessel on-scene
- SMART Vessel on-scene
- Source and “in-water” samples collected
- SMART sample begins
- First application
- Spotter aircraft/vessel option of efficacy
- SMART sampling results (go/no go)
- Additional applications, Spotter aircraft/vessel options, and SMART sampling (as required)
- Termination of dispersant operation

Overview of Dispersant Operations

- Amounts and times of dispersants applied
- Any extenuating circumstances affecting the deployment of any element (spotters, dispersant, SMART, etc.)
- Estimated and observations of efficacy

- Any discrepancies between observations
- Any sightings of pelagic/migratory birds, sea turtles, or marine mammals.

Completed Checklists and Supporting Documentation as Appropriate

Special Monitoring of Applied Response Technologies (SMART) Protocols for Dispersants

Special Monitoring of Applied Response Technologies is a cooperatively designed monitoring program for in-situ 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 in-situ burning operations. Data are channeled to the Unified Command to address critical questions about effectiveness and effects. Monitoring data can assist the Unified Command with decision-making for dispersant and in-situ burning operations.

It is the policy of the NOAC that the SMART protocols will be used, to the extent possible, for monitoring after the application of dispersants. Additional detail on the SMART protocols can be found in Chapter 9000, Appendix I. ***SMART does not monitor the fate, effects, or impacts of dispersed oil.*** To monitor the efficacy of dispersant application, SMART recommends three options, or tiers.

Tier I

A trained observer flying over the oil slick assesses dispersant efficacy and reports back to the Unified Command. Tier I monitoring, at a minimum, must be conducted during and dispersant application.

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, with recommendations, to the Unified Command. Water samples will be taken for later chemical analysis at a laboratory.

Tier III

By expanding the monitoring efforts in several ways, Tier II provides information on the dispersed oil movement and fate. (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.

NCP Product Schedule

A list of products currently listed in the NCP Product Schedule can be found at: http://www.epa.gov/oem/content/ncp/product_schedule.htm

Public Outreach

Dispersant Risk Communications

The guidance below should provide interim guidance with respect to dispersant use outreach to federal, state and local public officials, local citizens, and communities. Area Committee members should provide training or information seminars or sessions to the public before a spill occurs. After a spill occurs, the Information officer and liaison officer should produce a dispersant communications plan with the following elements:

- Dispersant decisions and their use are under the direction of the FOSC in consultation with Federal and State environmental trustees.
- Dispersant - fate and transport of oil in marine waters.
- Dispersibility of oil in marine waters.
- Links between fate and transport and exposure and effects processes.
- Acute and chronic effects of exposure in the upper water column (and other areas as needed) with and without the use of dispersants.
- Biodegradation, evaporation, photo-oxidation, and sedimentation of oil in marine waters.
- Logistics of dispersant use.
- Actual areas where dispersant is being used, the actual times of deployments, concentrations, and accountability of how much dispersant was used.
- Tradeoff discussions.
- Comparisons to common household products used by the general public.
- Additional NRT or RRT provided documentation concerning dispersant use.

The general public should have access to local town meetings where the access to scientists and other experts will be made available to answer specific questions one-on-one.

New Orleans Area Contingency Plan

Chapter 9000
Appendix E
Decanting Policy

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix E Decanting Policy

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NOAC Decanting Policy

Introduction

When oil is spilled on the water, mechanical recovery of the oil is the principle approved method of responding. However, the mechanical recovery process and associated systems necessarily involve placing vessels and machinery in a floating oil environment. Incidental returns of oil into the response area, such as oil that falls back into the recovery area from vessels and machinery that are immersed and working in the oil, are an inevitable part of the mechanical recovery process. Similarly, separation or “decanting” of water from recovered oil and return of excess water into the response area can be vital to the efficient mechanical recovery of spilled oil because it allows maximum use of limited storage capacity, thereby increasing recovery operations.

This practice is currently recognized as a necessary and routine part of response operations. In addition, some activities such as those associated with oil recovery vessels, small boats, and equipment cleaning operations may result in incidental discharges. These activities may be necessary to facilitate response operations on a continuing basis and all of these activities are considered to be “incidental discharges.”

Decanting Policy

This policy addresses “incidental discharges” associated with spill response activities. “Incidental discharge” is defined as the release of oil and/or oily water within or proximate to the response area or the area in which oil recovery activities are taking place during and attendant to the oil spill response activities. Incidental discharge include, but are not limited to, the decanting of oily water, oil and oily water returns associated with runoff from vessels and equipment operating in an oiled environment and the wash down of vessels, facilities, and equipment used in the response. “Incidental discharges” as addressed by this policy, do not require additional permits and do not constitute a prohibited discharge. See 33 CFR 153.301 and 40 CFR 300.

Criteria

During spill response operations, mechanical recovery of oil is often restricted by a number of factors, including the recovery system’s oil/water recovery rate, the type of recovery system employed and the amount of tank space available on the recovery unit to hold recovered oil/water mixtures. In addition, the longer oil remains on or in the water, the more it mixes to form an emulsified mousse or highly mixed oil/water liquid, which sometimes contains as much as 70% water and 30% oil, thus consuming significantly more storage space. Decanting is the process of draining off recovered water from portable tanks, internal tanks, collection wells or other storage containers to increase the available storage capacity of recovered oil. When decanting is conducted properly most of the petroleum can be removed from the water.

The overriding goal of mechanical recovery is the expeditious recovery of oil from water. In many cases, the separation of oil and water and discharge of excess water is necessary for skimming operations to be effective in maximizing the amount of oil recovered and in minimizing overall environmental damages. Expeditious review and approval, as appropriate, of such requests is necessary to ensure a rapid and efficient recovery operation. In addition, such incidental discharges associated with mechanical recovery operations should not be considered decanting. In appropriate circumstances, the FOSC can pre-authorize incidental discharges because the discharges will be much less harmful to the environment than allowing the oil to remain in the water and be subject to spreading and weathering.

Therefore, the NOAC adopts the following policy in order to provide for an expeditious decanting approval process and provide clear guidance to the Unified Command, response contractors, and other members of the spill response community.

Oils Pre-Approved for Decanting and Associated Conditions

Pre-approval for on water decanting is authorized when pumping recovered oil and water ashore is not practical during the first 24-hours after initial spill discovery. Decanting authorization is granted for the oil products listed below.

All crude oils;

- Vacuum gas oil;
- Atmospheric gas oils;
- Recycle oils not containing distillates;
- Bunker fuels;

- No. 6 fuel oils;
- Crude oils;
- Cutter stocks; and
- Coker gas oils.

Decanting of the listed oils is preapproved if the following conditions are met:

- Pre-approval is for the first 24-hours after spill discovery. Decanting requests for all the remaining operational periods will need to be completed and submitted to the Unified Command. The RP must fill out the NOACP decanting request and seek Unified Command approval prior to any additional decanting approvals from the second operational period on;
- The Unified Command must be notified within one hour of decanting being initiated; and
- The RP assures the Unified Command that they are quickly obtaining adequate oil storage and skimming capacity within the first 24 hours and the responding Primary Response Contractor (PRCs) are expeditiously getting sufficient storage and skimming capacity, if available (worst case discharges may exceed these resources throughout the region) to alleviate the need for prolonged decanting.

The following criteria found in the current Decanting Authorization Form must be complied with:

- All decanting shall be done in a designated “response area” within a collection area, vessel collection well, recovery belt, weir area, or directly in front of a recovery system;
- Vessels employing sweep booms with recovery pumps in the apex of the boom shall decant forward of the recovery system;
- Vessels not equipped with an oil/water separator should allow retention of oil help in internal or portable tanks before decanting commences;
- Containment boom needs to be deployed around the collection area, where feasible, to prevent loss of decanted oil or entrainment;

- Visual monitoring of the decanting shall be maintained at all times so discharges of oil in the decanted water are detected promptly;

- Where feasible, decant ahead of an operating skimmer recovery system so decanting occurs inside an enclosed boomed area; and

- Unified Command can revoke the pre-approval at any time if the above conditions are not met.

Shore-side container decanting (i.e. vacuum truck, portable tanks, etc.) is not authorized for pre-approval under this policy. Decanting in areas where vacuum trucks, portable tanks, or other collection systems are used for shore cleanup will be subject to filling out the decanting form contained in this policy prior to authorization and must comply with the same rules as vessels.

Oils Requiring Approval by Unified Command Prior to Decanting

During a response, when decanting has not been pre-approved for lighter oils, which are not listed above, it will be necessary for response contractors or the responsible party to request from the Unified Command written authority to decant while recovering oil so that the response operations do not cease or become impaired. The Unified Command will consider each request for decanting of lighter oils on a case-by-case basis. Prior to approving decanting, the Unified Command should evaluate the potential effects of weather including the wind and wave conditions, the quantity of oil spilled and the type of oil as well as available storage. The Unified Command should also take into account that recovery operations as enhanced by decanting will actually reduce the overall quantity of pollutants in a more timely and effective manner to facilitate cleanup operations.

The following criteria should be considered by the Unified Command in determining whether to approve decanting unless circumstances dictate otherwise:

- All decanting should be done in a designated “Response Area” within a collection area, vessel collection well, recovery belt, weir area, or directly in front of a recovery system;

- Vessels employing sweep booms with recovery pumps in the apex of the boom should decant forward of the recovery pump;

- All vessels, motor vessels, and other equipment not equipped with an oil/water separator should allow retention time for oil held in internal or portable tanks before decanting commences;

- When deemed necessary by the UC or the response contractor, a containment boom will be deployed around the collection area to minimize loss of decanted oil or entrainment.

- Visual monitoring of the decanting area shall be maintained so that discharge of oil in the decanted water is detected promptly; and

- Decanting in areas where vacuum trucks, portable tanks, or other collection systems are used for shore cleanup will be subject to the same rules as vessels.

The response contractor or responsible party will seek approval from the UC prior to decanting by presenting the UC with a brief description of the area for which decanting approval is sought, the decanting process proposed, the prevailing conditions (wind, weather, etc.) and protective measures proposed to be implemented. The UC will review such requests promptly and render a decision as quickly as possible. FOSC authorization is required in all cases and in addition SOSC authorization is required for decanting activities in state waters.

Other activities related to possible oil discharges associated with an oil spill event such as actions to save a vessel or protect human life which may include such actions as pumping bilges on a sinking vessel are not covered by this policy.

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Oil Spill Decanting Authorization Form

The federal and state OSCs, hereby approve the use of decanting as a means of expediting the recovery of oil during the following spill cleanup operations
Date(s) Approval Effective:
Name of Spill Incident:
Federally Defined Response Area:
Name of Requester:
Location and description of proposed decanting operation: (continue on additional pages if necessary):

The decanting operation must meet the following conditions:

1. All decanting should be done in a designated “Response Area” within a collection area, vessel collection well, recovery belt, weir area, or directly in front of a recovery system.
2. Vessels employing sweep booms with recovery pumps in the apex of the boom shall decant forward of the recovery pumps.
3. Vessels not equipped with an oil/water separator should allow retention time for oil held in internal or portable tanks before decanting commences.
4. Containment boom must / need not (circle one) be deployed around the collection area to prevent loss of decanted oil or entrainment.
5. Visual monitoring of the decanting shall be maintained at all times so that discharge of oil in the decanted water is detected promptly.
6. Decanting in areas where vacuum trucks, portable tanks, or other collection systems are used for shore cleanup will be subject to the same rules as a vessel.
7. Additional Comments:

SIGNATURE:
Date:
Federal OSC

SIGNATURE:
Date:
State OSC

Note: When verbal authorization is given, a copy of this form must be immediately expedited to the requester (must be a person of authority in the response organization) to ensure that the conditions and limitations are clearly understood by all parties.

Decision Memo

Decanting Approval Plan

Name of Spill Incident:
Federally defined response area:
Effective date(s) of approval:
Current storage capacity on site:

Name of Requestor:
Product Spilled:

The Federal and State OSC's hereby approve the use of decanting as a means of expediting the recovery of oil during the above mentioned spill response operation. The following approval provides authority to conduct decanting of oil so that response operations do not cease or become impaired. FOSC authorization is required in all cases, and SOSC authorization is required for decanting within state waters. The OSC should acknowledge that recovery operations enhanced by decanting will actually reduce the overall quantity of pollutants in a more timely and effective manner to facilitate clean-up operations.

The following criteria should be followed in order for decanting to proceed in an efficient manner:

1) All decanting should be done in a designated "response area" within a collection area, vessel collection well, recovery belt, weir area, or directly in front of a recovery system.
2) Vessels employing sweep booms with recovery pumps in the apex of the boom should decant forward of the recovery pump.
3) All vessels, motor vehicles, and other equipment not equipped with an oil/water separator would allow retention time for oil held in internal or portable tanks before decanting commences.
4) A containment boom must / need not (circle one) be deployed around the collection area to minimize loss of the decanted oil or entrainment.
5) Visual monitoring of the decanting area shall be maintained so that discharges of oil in the decanted water are detected promptly.
6) Tanks used for decanting will be tested prior to use to ensure there are no contaminates from previous activities and that the water is safe to discharge back into the environment.
7) Settling times for oil water separation on board skimmers is estimated to be:
8) Additional conditions:

Approval: (Check one) Yes ________ No _________

Environmental Unit Leader (Planning) ____________________________________

FOSC ____

SOSC ____

Reason for disapproval:

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New Orleans Area Contingency Plan

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Appendix F
Oil Spill Best Management Practices

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Oil Spill Best Management Practices

Open Water Habitats

Booming

Booms are flexible floating barriers that are placed on the surface of the water to control the spread of spilled oil and to protect ecologically sensitive areas. Oil spill containment booms generally have five operating components- flotation chamber, freeboard, skirt, tension member, and ballast. The overall height of the boom is divided between the freeboard, the portion above the surface of the water, and the skirt, the portion below the water surface. Boom heights range from approximately 6 inches to over 90 inches, to address different types of water bodies and environmental conditions. Flotation attached to the freeboard and ballast (e.g., chain, weights) attached to the skirt enable the boom to float upright in the water. In other words, the plane created by the boom is perpendicular to that of the surface of the water. Boom is typically made up of 50-foot sections. The sections, and the connectors between sections, provide flexibility both in boom length and shape. Depending on the specific booming strategy employed, boom is towed through the water, anchored in place (typically in water less than 100 ft deep), or attached to the shoreline or to a vessel.

There are four basic booming strategies contained in the NOACP: (1) Containment, where boom is used to contain and concentrate the oil until it can be removed; (2) Deflection, where boom is used re-direct floating oil away from sensitive areas; (3) Diversion, where boom is used to re-direct floating oil toward recovery sites that have slower flow, better access for equipment and personnel, and a way to remove the oil; and (4) Exclusion, where boom is used to keep oil out of a sensitive area. In addition, booming strategies can be used in combination with each other. Boom may also be used to enhance recovery of oil by skimmers (described in greater detail below). During a response, boom is typically in place for less than a week, depending on the spill. During that time, boom may be moved and repositioned to maximize its effectiveness at containing, excluding, diverting, or deflecting oil.

Boom can potentially be used in all open water habitats, depending on environmental conditions, but boom placement may be constrained by water depth and boat accessibility (except in the case of very small bodies of water, where boom may be deployed by hand). Boom may come in contact with the substrate in shallow water or along shore-lines. However, this is undesirable in most cases as typical floating boom that comes into contact with the substrate is likely to lay flat and loose its ability to contain oil. Boom designed for this specific purpose (i.e., to maintain containment after coming into contact with the substrate), known as intertidal or tidal seal boom, may be used for oil containment along shorelines. Like other boom, intertidal boom floats up and down over tidal cycles. However the skirt is replaced by one or two continuous tubes filled with water, which forms a seal with the substrate. As a result, a vertical plane is maintained by the boom attached to the shoreline which typically comes in contact with substrate along shorelines for only a short distance, usually less than 10 feet, depending on the slope of the shoreline. In addition to shallow water depths, the effectiveness of booming strategies can be significantly reduced by wind, currents, waves, and the presence of large quantities of floating debris. For maximum boom effectiveness, the depth of the water should be at least 5 times the draft of the boom. Once deployed, boom is routinely checked and repositioned by response personnel using small boats to maximize its effectiveness in changing environmental conditions.

Removal of Floating Oil- Sorbents

The objective of this response is to remove floating oil by allowing it to adhere to pads or rolls made of oleophilic material. The dimensions of sorbent pads are typically 2 feet by 2 feet. Sorbent rolls are approximately the same width as pads and may be 100 ft long. The use of sorbents to remove floating oil is different from the use of skimmers in two ways: (1) the use of sorbents is a passive oil collection technique that requires no mechanized equipment, whereas skimmers may be attached to active vessels for oil collection and (2) sorbents are left temporarily in the affected environment to absorb oil in a specific locale, whereas skimmers may transit in order to collect oil in a broader area.

Sorbents are most likely to be used to remove floating oil in near shore environments that contain shallow water. They are often used as a secondary method of oil removal following gross oil removal, such as skimming. Sorbents may be used for all types of oil, lighter oils absorb into the material and heavier oils absorb onto the surface of sorbent material, requiring sorbents with greater surface area. Retrieval of sorbent material is mandatory, as well as at least daily monitoring to check that sorbents are not adversely affecting wildlife or breaking apart after lengthy deployments. However, sorbent materials generally do not remain in the environment for longer than one day.

Removal of Floating Oil- Skimmers

The object of this response action is to recover floating oil from the water surface using mechanized equipment know as skimmers. There are numerous types or categories of skimming devices, including weir, centrifugal, submersion plane, and oleophilic. (1) Weir Skimmers use gravity to drain oil from the water surface into a submerged holding tank. Once in the holding tank, oil may be pumped away to larger storage facilities. (2) Centrifugal (also known as vortex) skimmers create a water/oil whirlpool in which the heavier water forces oil to the center of the vortex. Once in the center, oil may be pumped away from the chamber within the skimmer. (3) Submersion plane skimmers use a belt or inclined plane to push the oil beneath the water surface and toward a collection well in the hull of a vessel. Oil is scraped from the surface or removed by gravity and then flows upward into a collection well where it is subsequently removed with a pump. (4) Oleophilic (i.e., having an affinity for oil) skimmers may take on several forms (e.g., disc, drum, belt, rope, brush), but the general principle of oil collection remains the same; oil on the surface of the water adheres to a rotating oleophilic surface. Once oil had adhered to the surface it may be scraped off into containers or pumped directly into larger storage tanks.

Skimmers are placed at the oil/water interface to recover, or skim, oil from the water surface. Skimmers may be operated independently from shore, be mounted on vessels, or be completely self-propelled. To minimize the amount of water collected incidental to skimming oil, booming may be used in conjunction with skimming to concentrate the floating oil in a wedge at the back of the boom, which provides a thick layer of oil at the skimmer head.

In shallow water, hoses attached to vacuum pumps may be used instead of other skimming devices described earlier in this section. Oil may be removed from the water surface using circular hose heads (4 to 6 inches in diameter); however, this is likely to result in the intake of a large water-to-oil ratio and inefficient oil removal. Inefficient oil removal of this kind may also result in adverse effects to organisms in the surrounding water. Instead, flat head nozzles, sometimes known as “duckbills” are often attached to the suction end of the hose in order to maximize the contact between the oil and vacuum, minimizing the amount of water that is removed from the environment. Duckbills (very much like an attachment to a vacuum cleaner) are typically 18 inches or less in width and less than 2 inches in height. In other words, duckbills are relatively small and designed for maximizing the amount of oil removed from the water surface relative to the volume of water removed. Vacuum hoses may also be attached to small, portable skimmer heads to recover oil they have collected. Adequate storage for recovered oil/water mixtures, as well as suitable transfer capability, must be available. Recovery systems that use skimmers are often placed where oil naturally accumulates: in pockets, pools, or eddies.

Skimming can be used in all water environments (weather and visibility permitting) for most oils. The presence of large waves, strong currents, debris, seaweed, kelp, as well as viscous oils, will reduce skimmer efficiency.

Decanting

Efforts are made to minimize the amount of water collected during skimming (as discussed above). However, the collection of water, in addition to oil, may be a reality under some circumstances. Limited storage capacity for oil and water collected through skimming may constrain a response and the removal of floating oil. Decanting is a procedure that can help maximize the use of temporary storage capacity. When decanting is not used, storage limitations may necessitate that the removal of floating oil, either by skimming or vacuuming, is ceased until more storage is available. Decanting is the process of draining off recovered water from portable tanks, internal tanks, collection wells, or other storage containers to increase the available storage capacity for recovered oil. The liquid in the tanks is allowed to sit for a sufficient period of time to permit oil to float to the top of the tanks. Water is then drained from the bottom of the tank (stopping in time to retain most of the oil). The water removed from the bottom of the tank is discharged back into the environment, usually in front of the skimmer or back into a boomed area. When decanting is conducted properly, minimal oil is discharged back into the environment. The decanting process is monitored visually to ensure prompt detection of oil discharges in decanted water and that water quality standards set for the in the Clean Water Act are not violated.

Decanting may be allowed because of storage limitations; however, it may not be permitted in all cases. In these cases, the NOAC Decanting Policy addresses “incidental discharges” associated with oil spill response activities. Incidental discharges include, but are not limited to, the decanting of oily water, oil and oily water returns associated with runoff from vessels and equipment operating in a oiled environment and the wash down of vessels, facilities, and equipment used in the response. Incidental discharges, as addressed by this policy, do not require additional permits and do not constitute a prohibited discharge. See 33 CFR Part 153.301 and 40 CFR Part 300. However, the NOACP advises the FOSC to consider and authorize the use of decanting on a case-by-case basis, after an evaluation of the environmental tradeoffs of allowing oil to remain in the environment (because of storage limitations) or discharging decanted water. The response contractor or the responsible party will seek approval from the FOSC/ Unified Command prior to decanting by presenting the Unified Command with a brief description of the area in which decanting approval is sought, the decanting process proposed, the prevailing conditions (wind, weather, etc.) and protective measures proposed to be implemented. The FOSC will review such requests promptly and render a decision as quickly as possible. FOSC authorization is required in all cases and, in addition, the SOSC authorization is required for decanting activities in state waters.

The NOAC Decanting Policy can be found in Chapter 9000, Appendix E.

In-Situ Burning

The objective of in-situ burning is to remove oil from the water surface or habitat by burning it in place, or in situ. Oil floating on the water surface is collected into slicks a minimum of 2-3 mm thick and ignited. The oil is typically collected in fire-resistant boom that is towed through the spill zone by watercraft, or collected by natural barriers such as the shore. Although in-situ burning may be used in any open water environment, the environment dictates the specific procedure employed in a given burn. For example, in offshore and near shore marine environments, bays and estuaries, large lakes and large rivers a boom may be towed at 1 knot or less during the burning process in order to maintain the proper oil concentration or thickness. In rivers and small streams, oil carried by currents may be collected and concentrated in stationary boom attached to shoreline or other permanent structures (e.g., pilings). Wind or mechanically generated currents (known as herding) may be used to collect and concentrate oil along the shoreline or in a stationary boom attached to the shoreline.

Once an oil slick is sufficiently thick, an external igniter is used to heat the oil, generating enough vapors above the surface of the oil to sustain a burn. It is these vapors, rather than the liquid oil on the water surface, that actually burn. When enough oil burns, to the point that the remaining oil layer is less that 1-2 mm thick, the fire goes out. The fire is extinguished at this oil thickness because the oil slick is no longer sufficiently thick to provide insulation from the cool water. This insulation is necessary to sustain the heat that produced the vapors, which are subsequently burned. The small quantity of burn residue remaining in the boom is then manually recovered for disposal.

In-situ burning generated a thick black smoke that contains primarily particulates, soot, and various gases (carbon dioxide, carbon monoxides, water vapor, nitrous oxides, and PAHs). The components of the smoke are similar to those of car exhaust. Of these smoke constituents, small particles less than 10 microns in diameter, known as PM-10, (which can be inhaled deeply into the lungs) are considered to pose the greatest risk to humans and nearby wildlife. For this reason, the In-Situ Burn Policy does not allow for pre-approval of in-situ burning within 3 miles of a population, defined as >100 people per square mile. All other areas are considered on a case-by-case basis. Decisions to burn or not to burn oil in areas considered case-by-case are made on the basis of the potential for humans to be exposed to the smoke plume, and pollutants associated with it. PM-10 exposure is generally limited to 150 micrograms per cubic meter averaged over a 24-hour period. Smoke plume modeling is done to predict which areas might be adversely affected. In addition, in-situ burning responses require downwind air monitoring for PM-10. Aerial surveys are also conducted prior to initiating a burn to minimize the chance that concentrations of marine mammals, turtles, and birds are not in the operational area and affected by the response. SMART (Special Monitoring for Advanced Response Technologies) protocols are used. They recommend that sampling is conducted for particulates at sensitive downwind sites prior to the burn (to gather background data) and after the burn has been initiated. Data on particulate levels are recorded and the Scientific Support Team forwards the data and recommendations to the Unified Command.

It is possible for as much as 95% of the oil contained in a boom to be burned, depending on the thickness of the initial layer of oil and whether it is possible to ignite the oil. Burning drastically reduced the requirement for waste storage and disposal. Weathered and emulsified oils that contain more than 50% water are extremely difficult to ignite. Therefore, it is important to make the decision to burn within 24-48 hours of the spill. The NOAC requires that tradeoffs between the effected of the emissions produced from in-situ burning, such as PAHs, and the contamination that may result from floating oil or oil that washes ashore, are carefully weighed in making the decision to conduct and in-situ burn.

The NOAC In-Situ Burn Policy can be found in Chapter 9000, Appendix C.

Chemical Dispersion of Floating Oil

The objective of chemical dispersion is to reduce the impact to sensitive shoreline habitats and animals that use the water surface by chemically dispersing oil into the water column. Dispersants are chemicals that reduce the oil- water interfacial tension, thereby decreasing the energy needed for the slick to break into small droplets and mix into the water column. Specially formulated products containing surface-active agents (surfactants) are sprayed (generally at concentrations of 2-5% by volume of the oil) from aircraft or boats onto the slick. Agitation from wind and waves is required to achieve dispersion. Depending on the level of energy, very small droplets of oil (10-100 microns in diameter) are mixed in the upper meter of the water column creating a sub-surface plume. This plume of dispersed oil droplets rapidly (within hours) mixes and expands in three dimensions (horizontal spreading and vertical mixing) down to as much as 10 meters below the surface. As a result of this mixing, oil concentrations decrease rapidly from the initial peak concentrations, for example from 10 or 100 ppm down to 1 ppm or less within hours to a day. Dispersion of oil and actual measurements of dispersed oil concentrations have been conducted and studied in several field studies. (Cormack and Nichols 1977, McAuliffe *et al.* 1980, McAuliffe *et al.* 1981, Lichtenthaler and Daling 1985, *Brandvick et al.* 1995, Walker and Lunel 1995, Coelho *et al.* 1995). *Dispersed* oil concentrations were generally between 1 ppm and 4 ppm within 1 hour after application of the dispersant in all of these studies.

Dispersing oil changes the trajectory of the oil plume from onshore to along-shore, as dispersed oil is no longer transported by the wind. Therefore, oil dispersion may help protect sensitive shoreline environments, as wind usually is the dominant environmental factor that carried floating oil ashore to strand. Dispersants and dispersant applications are rarely 100% effective, however, so some oil will likely remain floating on the water surface.

Due to the relatively short window of opportunity in which oil may be dispersed effectively, the decision to use and deployment of this response technique are time-critical. In order to be used on a spill, a dispersant must be listed on the National Contingency Plan Product Schedule maintained by the U.S. Environmental Protection Agency.

The NOAC Dispersant Use Policy can be found in Chapter 9000, Appendix D.

Barriers, Berms, and Underflow Dams

The objective of barriers, berms, and underflow dams is to prevent entry of oil into a sensitive area or to divert oil to a collection area. A physical barrier is placed across an area to prevent moving oil from passing. Oil may be removed using sorbent material (placed in the water where oil is trapped by the barrier), skimmers or vacuums. Barriers can consist of earthen berms, filtered fences, boards or other solid barriers. Constructing berms may take considerable time and resources. The length of time needed to construct berms and potential for negative impact to ecosystems caused by berms should be taken into account before deciding to construct them. This response is more likely to be implemented in shallow and small water bodies than deep ones. Earthen berms are fortified with sandbags or geotextile fabric (fabric or synthetic material that enhances water movement and retards soil movement), to minimize the amount of siltation that may be caused as a result of the structure. Silt fences and settling ponds (or a series of them) are used to contain any suspended sediments that may be mobilized in the water while the berm is being constructed in place or being removed. Stream barriers may be removed using manual or mechanical means, or both, depending on the accessibility of the site, the size of the structure and stream and sensitivity of the area to the use of heavy machinery.

If it is necessary for water to pass the barrier because of water flow volume or down-stream water needs, underflow dams (for low flow rates) can be used. Underflow dams contain oil with a solid barrier (e.g., boards, earthen berms) at the water level, while a submerged pipe (e.g., PVC or opening along the bottom of the barrier) allows some water to flow beneath and past the barrier. This response is used in small rivers, streams, and drainage ditches or at the entrance to shallow sloughs when the flow of oil threatens sensitive habitats. The importance of maintaining water quality and sufficient flow downstream of barriers is recognized (this response is often used to protect sensitive habitats that are located downstream of the barrier), so these features of affected habitats are monitored.

Vegetation Cutting

The objective of vegetation cutting is the removal of oil trapped in the canopy of kelp beds, to prevent the oiling of wildlife or remobilization of trapped oil. Thick layers of oil may adhere to kelp fronds or collect under vegetation canopies. The upper 1 to 2 feet of the vegetation canopy is cut away by hand or with a mechanical harvester. The oiled vegetation cuttings are removed for disposal. Trapped tar balls in the vegetation are freed and can be manually collected or flushed to a collection site. Vegetation cutting is used when a large quantity of oil is trapped in the vegetation canopy and the oil poses a risk to sensitive wildlife using the kelp habitat or when the remobilization of oil to other adjacent sensitive environments is likely to occur. Resource experts should be routinely consulted prior to vegetation cutting activities.

Shoreline Habitats

The action being analyzed in the biological assessment is comprised of a variety of methods, each of which may be further subdivided into two or more variations. While the effects of each response, and each variation thereof, may be discussed separately, they have been consolidated in a similar process, to that followed in the consolidation of shoreline types. For the purpose of this analysis, it makes sense, both in terms on continuity and succinctness, to consolidate response methods that are similar in terms of (1) the habitats in which they are used (e.g., sand beaches, rocky shorelines), (2) the types of effects that may potentially result from them (e.g., increases in water temperature, siltation), and (3) the overall activities associated with each (e.g., boat activity, use of machinery). Each response is described below. Variations of each response are included. While variations of a given response are not typically expected to result in different effects from those described for the response, the inclusion of their descriptions is expected to increase the clarity of this document. Expectations, in which a variation of a response is expected to result in different or magnified effects to listed species, are noted and discusses in the *Effects Analysis* section.

Removal of Surface Oil

The objective of this response method is to remove stranded oil on the shoreline while removing minimum amount of sediment. Collected oil is placed in bags or containers and removed from the shoreline. No mechanized machinery is used, with the possible exception of All Terrain Vehicles (ATVs) that may be used to transport containers of collected oil to a staging area for retrieval. ATVs are generally used on sand beaches and are restricted to transiting outside of the oiled areas along the upper part of the beach. The techniques used in the removal of surface oil can be used on most shoreline types, but they are most effective on sand or gavel beaches. Generally, removal of surface oil is not recommended on soft mud substrates where mixing oil deeper into the sediment might occur, unless this activity can take place from a boat when the substrate is under-water. It is most appropriate for light to moderate oiling by medium to heavy oils. Light oils such as gasoline and diesel rapidly evaporate and spread out to very thin layers and are not easily picked up. Removal of surface oil is not recommended for mud flats, because of the potential for mixing the oil down into the soft sediments. For similar reasons, removal of surface oil is typically only used along the edges of sheltered vegetated low riverbanks and marshes, and must be closely monitored.

Best Management Practices for Removal of Surface Oil

- Removal of surface oil may be used on all shoreline types with the exception of tidal flats; not recommended for these shorelines because of the likelihood of mixing oil deeper into the sediments.

- Clean-up should commence after the majority of oil has come ashore, unless significant burial (on sand beaches) or remobilization is expected; minimize burial and/or remobilization by conducting cleanup between tidal cycles.

- Minimize the amount of sediment removed with the oil.

- Minimize foot traffic through oiled areas on non-solid substrates (sand, gravel, dirt, etc) to reduce the likelihood that oil will be worked into the sediment.

- Restrict foot traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.

- Shoreline access to specific areas* may be restricted for periods of time to minimize the impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting, marine mammal pupping, breeding, fish spawning, etc.)

- Separate and segregate any contaminated wastes generated to optimize waste disposal stream and minimize what has to be sent to hazardous waste site.

- Establish temporary upland collection sites for oiled waste materials for large spill events; collection sites should be lined with asphalt pad and surrounded by berms to prevent secondary contamination from run-off.

- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

*Operations Section will be advised by Planning Section (Environmental Unit)

Here variations of this response exist: (1) manual removal of oil, (2) passive collection of oil (sorbents) and (3) vacuum removal of oil. A brief description of each variation follows.

Manual Removal of Oil

The objective of this variation of the removal of surface oil is to remove oil by using tools such as hands, rakes, shovels, and other manual means. Collected oil is placed in bags or containers and removed from the shoreline. This variation of the response can be used on most shoreline types except for tidal flats where the threat of mixing oil deeper into sediments as a result of foot traffic is typically greater than the benefits gained through use of this variation. Manual removal of oil is recommended for the use on (1) sheltered rocky shorelines and man-made structures, and (2) sheltered rubble slopes. It is conditionally recommended on (1) exposed rocky shorelines, (2) sand beaches, (3) gravel beaches, (4) sheltered vegetated low banks, and (5) marshes.

Passive Collection of Oil

This variation of the removal of surface oil allows for oil absorption onto oleophilic material placed in the intertidal zone or along a riverbank. Sorbent material is placed on the surface of the shoreline substrate, allowing it to absorb oil as it is released by tidal wave action. The sorbents most typically used for medium to heavy oils are snares (like cheerleader pompoms) made of oleophilic material; snares are attached at 18 inch intervals along a rope that can be tied, anchored, or staked along the intertidal shoreline. As the snares are moved about by tidal or wave action, they also help remobilize oil by rubbing across rock surfaces. Snare lines are monitored on a regular basis for their effectiveness at picking up oil, and to collect and replace oiled sorbents with new material. This method is often used in conjunction with other techniques (e.g., flushing, booming) to collect floating oil for recovery. Passive collection of oil using sorbents is recommended for (1) sand beaches, (2) gravel beaches, (3) sheltered rocky shores and man-made structures, (4) sheltered rubble slopes, (5) sheltered vegetated low banks, and (6) marshes. It is conditionally recommended on (1) exposed rocky shores and (2) tidal flats.

Best Management Practices for Passive Collection of Oil

Passive collection of oil using sorbent material may be used on all shoreline types, but is not useful with light to moderate oiling.

Continually monitor and collect passive sorbent material deployed in the intertidal zone to prevent it from entering the environment as non-degradable, oily debris.

Monitor passive absorbents placed in the mid- or lower intertidal zone for potential entrapment of small crustaceans; coordinate with the Environmental Unit for corrective actions if entrapment is observed.

Vacuum Removal of Oil

The objective of this variation of the removal of surface oil is to remove free oil that has polled on the substrate. It entails the use of a vacuum unit with a suction head to recover free oil. Equipment can range in size from small portable units that fill individual 55-gallon drums to large “supersuckers” that are truck mounted and have the capacity to lift rocks. Supersuckers are primarily used when circumstances (e.g., the length or number of hoses used) necessitate that suction capacity is great. In other words, suction is reduced with increasing hose length and with a number of the hoses used. In these situations, additional suction capacity may be necessary to make up for these losses. This system can also be used with water spray system to flush the oil towards the suction head. This response variation is used when free, liquid oil is stranded on the shoreline (usually along the high-tide line) or is trapped in vegetation that is readily accessible. Vacuum removal of oil is not recommended on any shoreline habitat. It is conditionally recommended on (1) exposed rocky shores, (2) sand beaches, (3) gravel beaches, (4) sheltered rocky shores and man-made structures; (5) sheltered rubble slopes, (6) sheltered vegetated low banks, and (7) marshes.

Best Management Practices for Vacuum Removal of Oil

- Vacuum removal of oil may be used on any shoreline type where liquid oil has polled with the exception of tidal flats; not recommended for these shorelines because of poor access and potential for mixing oil deeper into the sediments.

- Closely monitor vacuum operations in wetlands; site specific restrictions* may be required to minimize impact to marsh plant root systems which could lead to erosion.

*Operations Section will be advised by Planning Section (Environmental Unit).

Oiled Debris Removal

The objective of this response is the removal of oiled debris (organic and man-made) from the shoreline. Debris (e.g. Seaweed, trash, logs) is removed when it becomes heavily contaminated and when it is either a potential source of chronic oil release, an aesthetic problem or a source of contamination for organisms on the shoreline. If time and resources permit, un-oiled, man-made debris (e.g., trash, mooring lines, etc.) may be removed or placed above the high tide line prior to oil reaching a shoreline (based on oil spill trajectory) in order to minimize the amount of oiled debris generated by the spill. Oiled debris removal is recommended for (1) sand beaches, (2) gravel beaches, (3) sheltered rocky shores and man-made structures and (4) sheltered rubble slopes. It is conditionally recommended (1) exposed rocky shores, (2) tidal flats, (3) sheltered vegetated low banks, and (4) marshes.

Best Management Practice for Oiled Debris Removal

- Removal of oily debris may be used on all shoreline types; removal of oily debris from shorelines with soft mud substrates (mudflats, marshes) is usually restricted to debris stranded at the high tide line where debris can be recovered without grinding oil into the substrate.

- Minimize foot traffic through oiled areas on non-solid substrates (sand, gravel, dirt, etc.) to reduce the likelihood that oil will be worked into the sediment.

- Minimize quantity of oiled vegetative debris removed by concentrating on debris that is moderately to heavily oiled; leave lightly oiled and clean stranded seaweed and wood debris in place to provide habitat for small invertebrates and to help stabilize shoreline.

- Restrict foot traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.

- Shoreline access to specific areas* may be restricted for periods of time to minimize impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting, marine mammal pupping, breeding, fish spawning, etc.).

- Separate and segregate any contaminated wastes generated to optimize waste disposal stream and minimize what has to be sent to hazardous waste site.

- Establish temporary upland collection sites for oiled waste materials for large spill events; collection sites should be lined with asphalt pad and surrounded by berms to prevent secondary contamination from run-off.

- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

* Operations Section will be advised by Planning Section (Environmental Unit).

Trenching/Recovery Wells

The objective of trenching or the use of recovery wells is to remove subsurface oil from permeable substrates. Trenches or wells are dug down to the depth of the oil (or water table) to intercept oil migrating through the substrate. The oil collected in the trench or well is then recovered by vacuum pump or skimmer, and disposed of offsite. The oil must be liquid enough to flow at ambient temperatures. Water flooding or flushing the substrate can be used to speed up oil migration into the trench or well. If the trench or the well is not deep enough to reach the water table, the bottom must be lined with plastic to prevent oil penetrating deeper into the sediment. Trenches are not dug in the lower portions of the beach where attached plants and organisms may be abundant.

Trenching and recovery wells are conditionally recommended for (1) sand beaches, (2) gravel beaches (pebble- to-cobble-size substrate) and (3) sheltered vegetated low banks.

Best Management Practices for Trenching and the Use of Recovery Wells

- Trenching and recovery wells may be used on sand and gravel shorelines with grain size ranging from fine sand to pebble-size gravel.

- Line the bottom of trenches that do not reach the water table (dry) with plastic to prevent the collected oil from penetrating deeper into the substrate.
- Restrict trenches from the lower intertidal zone where attached algae and organisms are abundant.
- Collapse of fill in trenches/well when response action is completed; ensure sides and bottom of trenches are clean before collapsing.
- Minimize foot traffic through oiled areas on non-solid substrates (sand, gravel, dirt, etc.) to reduce the likelihood that oil will be worked into the sediment.
- Restrict foot traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.
- Shoreline access to specific areas* may be restricted for periods of time to minimize impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting, marine mammal pupping, breeding, fish spawning, etc.).
- Separate and segregate any contaminated wastes generated to optimize waste disposal stream and minimize what has to be sent to hazardous waste sites.
- Establish temporary upland collection sites for oiled waste materials for large spill events; collections sites should be lined with asphalt pad and surrounded by berms to prevent secondary contamination from run-off.
- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

*Operations Section will be advised by Planning Section (Environmental Unit)

Removal of Oiled Sediment

The objective of this response is to remove oiled surface sediments. Oiled sediment is removed by either use of hand tools or by use of various kinds of motorized equipment. Oiled sediment removal is restricted to the supratidal and upper intertidal areas to minimize disturbance of biological communities in the lower intertidal and sub-tidal. After removal, oiled sediments are transported and disposed of offsite. New sediments are not typically transported to replace those that were removed; however, a variation of this response that includes sediment replacement (described below) is used for beaches with low natural replenishment rates or high rates of erosion. This method of cleanup is most effective when there is limited amount of oiled sediment that must be removed. Close monitoring is required so that the quantity of sediment removed, siltation, and the likelihood of erosion may be minimized in all cases. Such operations are generally restricted in fish spawning areas. Sensitive areas that are adjacent, and may be potentially affected by released oil sheens, must also be protected.

It should be noted that oiled sediment removal (and removal of adjacent sediment) may be used along riverbanks or other upland areas to prevent oil from leaching into the adjacent aquatic environment. For example, this may be necessary when a tank truck or rail car overturns and spills oil in an upland area adjacent to a stream. As a primary response, the source of oil in the environment, including the sediment and/or adjacent soil varies with the scale of the spill and the accessibility of the site; however, both manual and mechanized removal tools are used regularly. In areas that are prone to erosion, contaminated sediment and/or soil that is removed is typically replaced with clean sediment.

Typically, oiled sediment removal is conditionally recommended for (1) sand beaches, (2) gravel beaches, (3) sheltered rubble slopes, and (4) sheltered vegetated low banks.

Best Management Practices for Removal of Oiled Sediment

- Oiled sediment removal (without replacement) is used primarily on sand beaches not subject to high rates of erosion; small quantities of oiled sediment removal may be permitted on gravel beaches (pebble-to-cobble size gravel or riprap) and sheltered vegetated stream banks.

- Clean-up should commence after the majority of oil has come ashore, unless significant burial (sand beaches) or remobilization is expected; minimize burial and/or remobilization by conducting cleanup between tidal cycles.

- Restrict sediment removal to supra and upper intertidal zones (or above waterline on stream banks) to minimize disturbance of biological communities in lower intertidal and subtidal zones.

- Take appropriate actions to protect nearby sensitive environments* (shellfish beds, nursery areas) from the effects of increased oil runoff/sheening or siltation by the proper deployment of booms, silt curtains, sorbents, etc.; monitor for effectiveness of protection measures.

- Minimize the amount of oiled sediment removed by closely monitoring mechanical equipment operations.
- Coordinate the locations of any temporary oiled sediment staging or storage sites near the shoreline*.
- Minimize vehicle traffic through oiled areas to reduce the likelihood that oil will be worked into the sediment and contamination carried off site by clean equipment.
- Restrict foot or vehicular traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.
- Shoreline access to specific areas* may be restricted for periods of time to minimize impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting, marine mammal pupping, breeding, fish spawning, etc.).
- Separate and segregate contaminated wastes generated to optimize waste disposal stream and minimize what has to be sent to hazardous waste site.
- Establish temporary upland collection sites for oiled waste materials for large spill events; collection sites should be lines with asphalt pads and surrounded by berms to prevent secondary contamination from runoff.
- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

*Operations Section will be advised by Planning Section (Environmental Unit).

Oiled Sediment Reworking

The objective of this variation of oiled sediment is to re-work oiled sediments to break up oil deposits, increase surface area and mix oxygen into deep subsurface oil layers; this activity exposes the oil to natural removal processes and enhances the rate of oil degradation. Oiled sediment is not removed from the beach. Instead, beach sediments are roto-tilled or otherwise mechanically mixed with the use of heavy equipment. The oiled sediments in the upper beach area may also be relocated to the mid-tidal portion of the beach. Relocation enhances natural clean-up during reworking by wave activity. This procedure is also known as surf washing, or berm relocation. Generally, sediment reworking is used on sand or gravel beaches where high erosion rates or low natural sediment replenishment rates are issues. Sediment reworking may also be used where remoteness or other logistical limitations make sediment removal unfeasible. Sediment reworking is not used on beaches near shellfish harvest or fish spawning areas because of the potential for release of oil or oiled sediments into these sensitive habitats. Sediment reworking is conditionally recommended for (1) sand beach and (2) gravel beach habitats.

Best Management Practices for Oiled Sediment Reworking

- Oiled sediment reworking (roto-tilling) breaks up oil crusts or aerates light surface oiling is used primarily on sand or mixed sand and gravel beaches, especially those prone to erosion.

- Berm relocation or surf washing may be used on sand, mixed sand and gravel, or gravel (pebble to cobble size) beaches exposed to at least moderate wave energy.

- Restrict roto-tilling to mid and upper intertidal zones to minimize disturbance of biological communities in lower intertidal and subtidal zones.

- Restrict berm relocation/surf washing in vicinity of sensitive environments* (shellfish beds, nursery areas, etc.) to prevent adverse effects from increased oil runoff/sheening or siltation.

*Operations Section will be advised by Planning Section (Environmental Unit).

Oiled Sediment Removal with Replacement

The objective of this response variation is to remove oiled sediment and replace it with cleaned or new material. Oiled sediments are excavated using heavy equipment on the beach at low tide. After removal of the oiled sediment, new clean sediment of similar composition is brought in for replacement. The oiled sediment may also be cleaned and then replaced on the beach. The sediments are loaded into a container for washing. Cleansing methods include a hot water wash or physical agitation with a cleaning solution. After the cleansing process, the rinsed materials are returned to the original area. Cleaning equipment must be placed close to beaches in order to reduce transportation problems. This variation is conditionally recommended on (1) sand beaches, (2) gravel beaches, and (3) sheltered rubble slopes, although the beaches must be exposed to wave activity so the replaced sediments can be re-worked into a natural distribution.

Best Management Practices for Oiled Sediment Removal and Replacement

- Oiled sediment removal (with replacement) is used primarily on sand, mixed sand and gravel, and gravel, and vegetated stream bank shorelines subject to high rates of erosion.

- Restrict sediment removal and replacement to supra and upper intertidal zones (or above waterline on stream banks) to minimize disturbance of biological communities in lower intertidal and subtidal zones.

- Take appropriate actions to protect nearby sensitive environments* (shellfish beds, nursery areas, etc.) from the effects of increased oil runoff/sheening or siltation by the proper deployment of boom, siltation curtains, sorbents, etc.; monitor for effectiveness of protection measures.

- Coordinate the locations of any temporary oiled sediment staffing or storage sites near the shoreline with the Environmental Unit.

*Operations Section will be advised by Planning Section (Environmental Unit).

Flushing with Ambient (temperature, salinity) Water

The objective of ambient water flushing is to remobilize oil stranded on surface substrate, as well as oil from crevices and rock interstices, to water’s edge for collection. Water is pumped from hoses onto an oiled beach, beginning above the highest level where the oil is stranded and slowly working down to the water level. The flow of water remobilizes oil stranded on the surface sediments and flushes it down to water’s edge. The remobilized oil is contained by boom and recovered for disposal. Increased water pressure may be needed to assist in the remobilization as the oil weathers and begins to harden on the substrate. Because of the potential for higher pressures to cause siltation and physical disruption of the softer substrates, flushing with higher pressure is restricted to rock or hard man-made substrates. Intake and outflow may range from 2-4 inches in diameter and, depending on the pump used, pump between 200 and 400 gallons of water per minute. Intake hoses are fitted with screens to minimize the extraction of debris, flora and fauna. Screen holes generally range from 0.25

inch to 1 inch in diameter, depending on the environment from which the water is being pumped. Intake hoses are propped off bottom using rebar in about 3 feet of water to further minimize the amount of sediment and debris and the number of organisms taken into the hose and pump.

Best Management Practices for Ambient Water Flushing

- Clean-up should commence after the majority of oil has come ashore, unless significant burial (sand beaches) or remobilization is expected; minimize burial and/or remobilization by conduction cleanup between tidal cycles.

- Protect sensitive environments* (shellfish bed, submerged aquatic vegetation, nursery areas, etc.) from the effects of increased oil run off by the proper deployment of booms, sorbents, etc.; monitor for effectiveness of protection measures.

- Restrict foot or vehicular traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.

- Shoreline access to specific areas* may be restricted for periods of time to minimize impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting, marine mammal pupping, breeding, fish spawning, etc.)

- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

*Operations Section will be advised by Planning Section (Environmental Unit).

Flooding (Deluge)

The objective of this variation of ambient water flushing is to mobilize stranded oil from rock crevices and interstices. Ambient water is pumped through a header pipe at low pressure above and inshore from the fouled area of shoreline. The pipe is meant to create a sheet of water that simulates tidal washing over the affected area. Removing stranded oil may be particularly important when a more sensitive habitat is nearby and in danger of becoming fouled with oil after the intertidal zone is washed over the next tidal cycle, remobilizing the oil. The effects of flooding may also be desired when a spring tide has deposited oil above the normal high water mark or when the wave energy of the adjacent water is not great enough to sufficiently wash the affected area over the following tidal cycle. After oil has been loosened from the substrate it is collected and removed using a variety of mechanical, manual, and passive methods. Ambient water flooding is recommended for use on gravel beaches. Ambient water flooding is conditionally recommended for the following habitats: (1) sand beaches, (2) sheltered rocky shorelines and man-made structures, (3) sheltered rubble slopes, (4) sheltered vegetated low banks, and (5) marshes.

Best Management Practices for Ambient Water Flooding

- Ambient water flooding (deluge) could be used on all shoreline types with the exception of fine to course grained sand beaches. Use in this habitat could mobilize contaminated sediment into the environmentally sensitive sub-tidal zone or cause excessive siltation.

- Closely monitor flooding of shorelines with fine sediments (mixed sand and gravel, sheltered rubble, sheltered vegetative banks, marshes) to minimize excessive siltation or mobilization of contaminated sediments into the sub tidal zone.

- Ambient water flooding is not generally useful on exposed rocky shorelines or submerged tidal flats because these areas are naturally well flooded.

Ambient Water, Low-Pressure Flushing

The objective of this variation of ambient water flushing is to mobilize liquid oil that has adhered to the substrate or man-made structures, pooled on the surface, or become trapped in vegetation to the water’s edge for collection. Low-pressure washing (<50 psi) with ambient seawater sprayed through hoses is used to flush oil to the water’s edge for collection. Oil is trapped by booms and picked up with skimmers and sorbents. This variation may also be used in concert with ambient water flooding, which helps move the oil without the potential effects associated with higher water pressures. Low-pressure flushing is conditionally recommended for (1) exposed rocky shores, (2) sand beaches with coarser sediments (mixed sand and gravel), (3) gravel beaches, (4) sheltered rocky shorelines and man-made structures, (5) sheltered rubble slopes, (6) sheltered vegetated low banks, and (7) marshes.

Best Management Practices for Ambient Water, Low-Pressure Flushing

- Ambient water, low-pressure flushing could be used on all shoreline types with the exception of sand beaches (fine to coarse grained) and mud flats (exposed or sheltered).

- Flushing on exposed rocky shorelines may be hazardous to response personnel; ensure presence of adequate safeguards and monitoring to ensure personnel safety.

- Prevent pushing or mixing oil deeper into the sediment by not directing the stream of water directly into the oil; direct hoses to place stream of water above or behind the surface oil to create a sheet of water to remobilize and carry oil down the beach to a containment area for recovery.

- Closely monitor flushing of shorelines with fine sediment (mixed sand and gravel, sheltered rubble, sheltered vegetative banks, marshes) to minimize excessive siltation or contaminated sediments mobilization into the subtidal zone.

- Restrict flushing in marshes from boats or on shore above the high tide line during high tide to minimize mixing oil into the sediments or mechanically damaging the marsh plants.

Ambient Water, High-Pressure Flushing

The objective of this variation of ambient water flushing is to mobilize oil that has adhered to hard substrates or man-made structures to the water’s edge for collection. It is similar to low-pressure washing except the water pressure may reach 100+ psi, and it can be used to flush floating oil or loose oil out of tide pools and between crevices on riprap. Compared to the lower pressure spray, high-pressure spray will more effectively remove oil that has adhered to rocks. Because water volumes are typically low, this response method may require the placement of sorbents directly below the treatment area or the use of a deluge to carry oil to the water’s edge for collection. High-pressure flushing is conditionally recommended for (1) exposed rocky shores, (2) gravel beaches, particularly those consisting of cobble and boulder sized rocks, and rips rap, (3) sheltered rocky shorelines and man-made structures, and (4) sheltered rubble slopes.

Best Management Practices for Ambient Water, High-Pressure Flushing

- Ambient water, high-pressure flushing may be used on rocky (exposed and sheltered) and riprap shorelines.

- Flushing on exposed rocky shorelines may be hazardous to response personnel; ensure presence of adequate safeguards and monitoring to ensure personnel safety.

- Prevent pushing or mixing of oil deeper into the riprap by not directing the stream of water directly into the oil; direct hoses to place stream of water above or behind the surface oil to create a sheet of water to remobilize and carry oil down to a containment area for recovery.

- If small volumes of high-pressure water are used to remobilize weathered oil from rocky surfaces, include larger volume of low-pressure water to help carry remobilized oil into containment area for recovery.

Warm Water, Moderate-Pressure Washing

The objective of warm water, moderate-pressure washing is to mobilize thick and weathered oil that has adhered to rock surfaces, prior to flushing it to the waters' edge for collection. Seawater is heated (typically between the ambient temperature and 90 F) and applied to moderate pressure to mobilize weathered oil that has adhered to rocks. If the warm water is not sufficient to flush the oil down the beach, flooding or additional low or high pressure washing may be used to float the oil to the water's edge for collection. Oil is then trapped by boom and may be picked up with skimmers or sorbents.

Warm water, moderate-pressure washing is conditionally recommended for (1) exposed rocky shores, (2) gravel beaches (including riprap), and (3) sheltered rocky shorelines and man-made structures. One variation of the response exists: hot water, moderate-pressure washing (described below).

Best Management Practices for Warm Water, Moderate-pressure Washing

- Warm water, moderate-pressure flushing may be used on heavily oiled gravel beaches, riprap and hard, vertical manmade structures such as seawalls, bulk-heads, and docks.

- Restricted use to certain tidal environments so that the oil/water effluent does not drain across sensitive low-tide habitats (damage can result from exposure to oil, oiled sediments and hot water).

- Flushing on exposed rocky shorelines may be hazardous to response personnel; ensure presence of adequate safeguards and monitoring to ensure personnel safety.

- If small volumes of warm water are used to remobilize weathered oil from rocky surface, include larger volume of ambient water at low-pressure to help catty remobilized oil into containment area for recovery.

- Clean-up should commence after the majority of oil has come ashore.

- Protect nearby sensitive environments* (shellfish beds, submerged aquatic vegetation, bursary areas, etc.) from the effect of increased oil runoff by the proper deployment of booms, sorbents, etc.; monitor for effectiveness of protection measures.

- Restrict foot traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.

- Shoreline access to specific areas* may be restricted to periods of time to minimize impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting, marine mammal pupping, breeding, fish spawning, etc.)

- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

*Operations Section will be advised by Planning Section (Environmental Unit).

Hot Water Moderate-Pressure Washing

The objective of this variation of warm water, moderate-pressure washing is to dislodge and mobilize trapped and weathered oil from inaccessible locations and surfaces not amenable to mechanical removal, prior to flushing oil to water's edge for collection. Water heaters are mounted on offshore barges or on small land-based units. The water is heated to temperatures from 90 to 170 F, which is usually sprayed in small volumes by hand using moderate-pressure wands. Used without water flooding, this procedure requires immediate use of vacuums (vacuum trucks or super-suckers) to remove the oil/water runoff. With a deluge system, the oil is flushed to the water's edge for collection with skimmers or sorbents. This response is generally used when the oil has weathered to the point that even warm water at high pressure is ineffective for the removal of adhered oil, which must be removed due to the threat of continued release of oil or for aesthetic reasons. Hot water washing is conditionally recommended for (1) exposed rocky shores, (2) gravel beaches (specifically riprap), and (3) sheltered rocky shorelines and man-made structures.

Best Management Practices for Hot Water, Moderate- Pressure Washing

Hot water, moderate-pressure flushing is used only on heavily oiled hard, man-made structures such as seawalls, bulkheads, docks, and riprap; primarily for aesthetic purposes.

Restrict use to certain tidal elevations so that the oil/water effluent does not drain across sensitive low-tide habitats (damage can result from exposure to oil, oiled sediments, and hot water).

If small volumes of hot water are used to remobilize weathered oil from rocky surface, remobilize oil must be recovered using sorbent material at the base of the structure; or a second stream with ambient water can be used to flush the remobilized oil to the water’s edge for recovery.

Vegetation Cutting

The objective of vegetation cutting is the removal of oiled vegetation which attaches to shorelines to prevent the oiling of wildlife or remobilization of trapped oil. Thick layers of oil may adhere to plant leaves or pool on the substrate under a layer of overlapping plant leaves. The upper parts of the oiled plant are cut away using hand tools or “weed eater” type power tools. The oiled plant cuttings are raked up and removed for disposal. Any remaining oil pooled around the roots/stems can then be flushed out for recovery. These attached plants provide protective habitat to fish and invertebrate species, so cutting of this type will result in loss of habitat. Cut vegetation may or may not recover depending on the reproductive cycle of the plant and whether the plant roots are oiled or damaged in the cutting operation. Resource experts should always be consulted prior to initiating vegetation cutting. When conducted in marshes, boards are generally laid down for workers to walk; this distributes the worker’s weight to prevent damage to plant root systems and to avoid working oil deeper into the soft sediments. This response is conditionally recommended for (1) sheltered rocky shorelines, (2) gravel beaches, (3) sheltered rocky shorelines and man-made structures, (4) Sheltered rubble slopes, (5) sheltered vegetated low banks, and (6) marshes.

Best Management Practices for Vegetation Cutting

- Vegetation cutting may be used on marsh, rock, gravel (boulder/riprap) and vegetated riverbanks.
- Clean-up should commence after the majority of oil has come ashore.
- Minimize mechanical impacts on vegetation being cut by taking appropriate actions* to ensure continued health and survival of vegetative ecosystem.
- Minimize foot traffic through oiled areas on non-solid substrates (sand, gravel, dirt, etc.) to reduce the likelihood that oil will be worked into the sediment.
- Restrict foot traffic over sensitive areas* (shellfish beds, algal mats, bird nesting areas, dunes, etc.) to reduce the potential for mechanical damage.
- Shoreline access to specific areas* may be restricted for periods of time to minimize impact of human presence/excessive noise on nearby sensitive biological populations* (bird nesting areas, marine mammal pupping, breeding, fish spawning, etc.)
- Separate and segregate any contaminated wastes generated to optimize waste disposal stream and minimize what has to be sent to hazardous waste site.
- Establish temporary upland collection sites for oiled waste materials for large spill events; collection sites should be lined with asphalt pad and surrounded by berms to prevent secondary contamination from runoff.
- Ensure safety of responders by maintaining proper span of control under experienced crew bosses.

*Operations Section will be advised by Planning Section (Environmental Unit).

Nutrient Enhancement

The objective of nutrient enhancement is to increase the rates of natural degradation of oil by adding nutrients (specifically nitrogen and phosphorus). Micro biodegradation is the conversion by microorganisms of hydrocarbons into oxidized products via various enzymatic reactions. Some hydrocarbons converted into carbon dioxide and cell material, while others are partially oxidized or left unaltered as a residue. Nutrients are applied to the shoreline using one of several methods: (1) soluble inorganic formulations are dissolved in water and applied as a spray at low tide, requiring frequent applications; (2) slow release formulations are applied as a solid to the intertidal zone and designed to slowly dissolve; and (3) oleophilic formulations that adhere to the oil itself and are sprayed directly on the oiled areas. This response method is limited to shorelines and adjacent water bodies, which are well flushed, minimizing the potential for nutrient runoff that may cause significant eutrophication. Nutrient enhancement is conditionally recommended on (1) sand beaches, (2) gravel beaches, (3) sheltered rubble slopes, and (4) marshes.

Nutrient enhancement requires RRT approval on a case-by-case basis, as well as the development of a detailed operations and monitoring plan.

Motorized Transportation/Support of Response Actions

Several of the open water and shoreline response activities described above may require the use of machinery in support of the response effort or for transport of personnel. The response activities that may use equipment are noted in their descriptions, however; the use of boats and other watercraft, planes, helicopters, and ATVs warrant further discussion. The use of these machines is described in this section, while the potential effects of their used are discussed separately in *Effects Analysis*.

Boats and Other Watercraft

Boats and other watercraft (e.g. hovercraft, wave runners, and barges) may be used in open water and shoreline response activities. The use of these resources varies depending on the specific response. However, they may be used as a component of the response itself (e.g., skimmers, platforms for applying dispersants, deploying or collecting booms), or as a mode of transportation to and from remote locations for response personnel (e.g., removal of surface oil). As a result, boats and other watercraft may be used in shallow or deep water, near shore or offshore, fresh water or marine environments, etc. The Geographic Response Plans (GRPs) may outline boat and watercraft use restrictions within 200 yards of sensitive areas. As a standard practice, the response organization must request a waiver from the National Marine Fisheries Service, US Fish and Wildlife Service and/or Louisiana Department of Wildlife and Fisheries regarding approaching or hazing marine mammals inadvertently during open water response operations.

Airplanes

Planes may be used in open water and with shoreline response activities. The use of planes depends on the specific response. However, they may be used as a component of the response itself (e.g., platforms for applying dispersants, directing on-water recovery operations), or as a part of the pre- or post-response monitoring (e.g., wildlife surveys). As result, planes may be used over any aquatic or terrestrial environment. However, flight restriction zones may be designated by the GRPs as a precaution against disturbing wildlife species (e.g., marine mammal pupping, bird breeding colony). Year-round restriction may be imposed in some locations; however, restrictions are more likely to be imposed only during times of year in which species have been identified as most sensitive.

Typically, the area within a 1,500 ft radius and below 1,000 ft in altitude is restricted to flying in areas that have been identified as sensitive. However, some areas may have more restrictive zones. In addition to restrictions associated with wildlife, Tribal authorities may also request notifications when over flights are likely to affect culturally sensitive areas.

Helicopters

Helicopters may be used in open water and with shoreline response activities. The use of helicopters depends on the specific response. However, they may be used as a component of the response itself (e.g., platforms for igniting floating oil, directing skimming operations, transporting workers), or as a part of pre- or post-response monitoring (e.g., wildlife surveys). As a result, helicopters may be used over any aquatic or terrestrial environment. However, flight restriction zones may be designated by the GRPs as a precaution against disturbing wildlife species (e.g., marine mammal pupping, bird breeding colony). Year-round restriction may be imposed in some locations; however, restrictions are more likely to be imposed only during times of year in which species have been identified as most sensitive.

Typically, the area within a 1,500 ft radius and below 1,000 ft in altitude is restricted to flying in areas that have been identified as sensitive. However, some areas may have more restrictive zones. In addition to restrictions associated with wildlife, Tribal authorities may also request notifications when over flights are likely to affect culturally sensitive areas.

All Terrain Vehicles (ATV’s)

ATVs may be used in support of open water and shoreline response activities. The use of ATVs is often dependent upon the accessibility of the site (e.g., proximity of roads) to this kind of equipment and the type of shoreline in which they are to be used. It is possible to use ATVs on any accessible shoreline type in which an ATV can safely be driven; however, some shoreline types (e.g., marshes, vegetated low banks) are more sensitive to the use of motorized equipment (as well as human foot traffic) than other shoreline types, both in the presence and absence of oil. For example, it is recognized that the use of the ATVs may adversely affect particular un-oiled shoreline habitats that are susceptible to erosion. Some oiled shoreline types, such as marshes, are particularly vulnerable to the introduction and mixing of oil into subsurface sediments. As a result of these concerns relating to shoreline damage, care is taken to weigh the tradeoffs of ATV use on a particular shoreline type, whether oiled or un-oiled. Therefore, in a practical sense, ATV use may be limited to those situations in which the benefits of using ATVs outweigh any potential adverse effects of their use.

Generally, ATVs are used on sand beaches, and restricted to transiting outside of the oiled areas along the upper part of the beach. The decision process for use of ATVs near sensitive aggregations of wildlife is similar to that described for shoreline habitats discussed above. ATVs may be used for a variety of purposes, including the transportation of response personnel and for the collection and disposal of oil, oiled sediments, or oiled debris in support of response activities in near shore open water and on shorelines.

Vessel of Opportunity Program

As part of an oil spill response, a Vessel of Opportunity (VOO) program may be designed and implemented to provide local vessel operators an opportunity to assist with response activities, including transporting supplies, assisting wildlife rescue, and deploying containment and sorbent boom

To qualify for a VOO program, vessel operators and crew must meet several key requirements, including completing an appropriate level of HAZWOPER training, passing a U.S. Coast Guard dockside examination and meeting crew requirements based on vessel size. A vessel must also be certified as safe, which may include inspection prior to activation.

Once qualified and selected for use, vessel operators and crew will be compensated for their assistance. Qualification alone, however, does not guarantee participation.

NOAA
Shoreline Assessment Manual

4th Edition

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Emergency Response Division

August 2013

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Front Cover: Point Reyes Beach, Point Reyes National Seashore, California on 18 August 2008.

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Secretary

National Oceanic and Atmospheric Administration
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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.

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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.

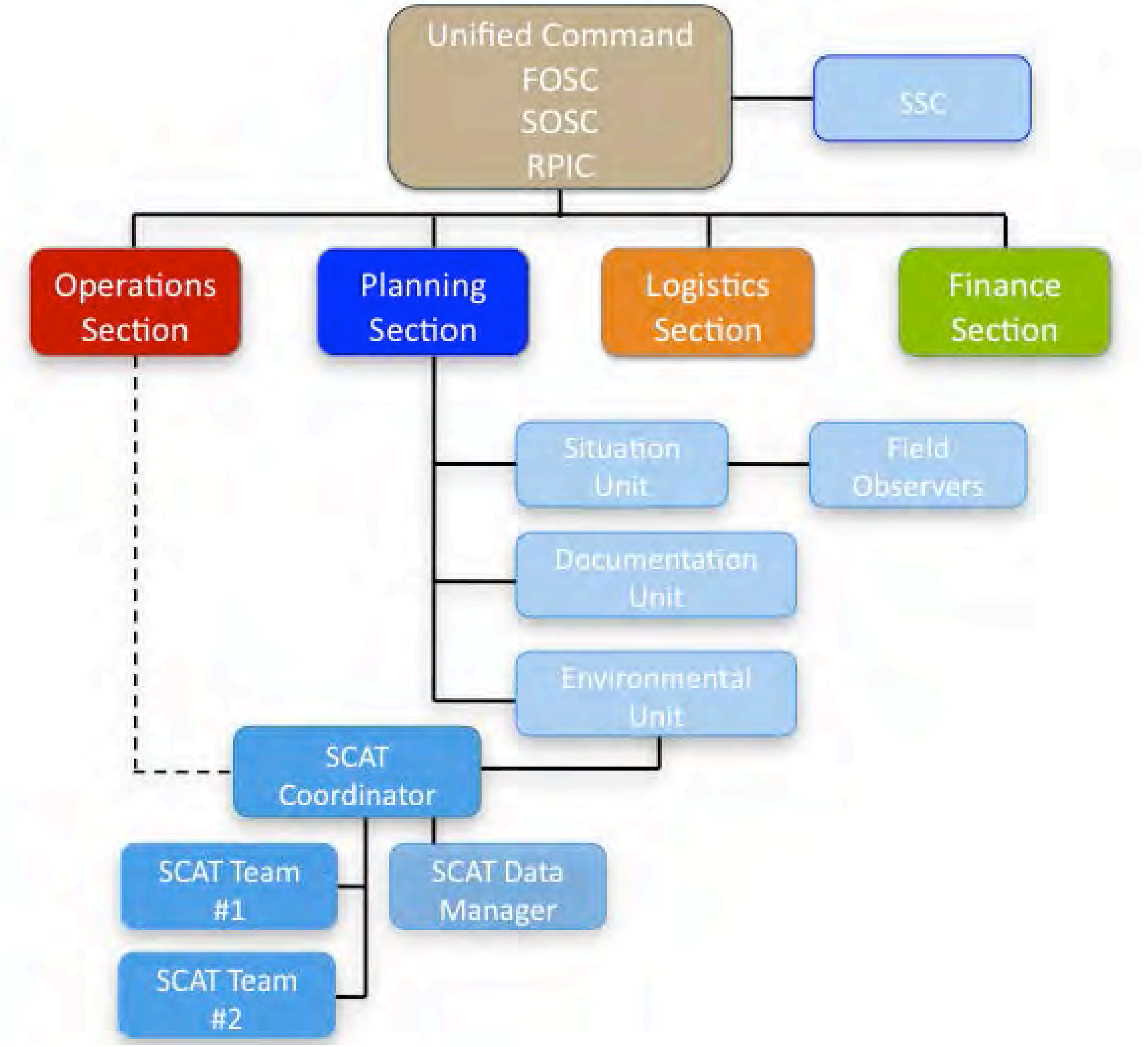


Figure 1. The Unified Command Structure of ICS. SCAT Teams work as part of the Environmental Unit to collect information on shoreline oiling conditions to support cleanup decision-making.

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.

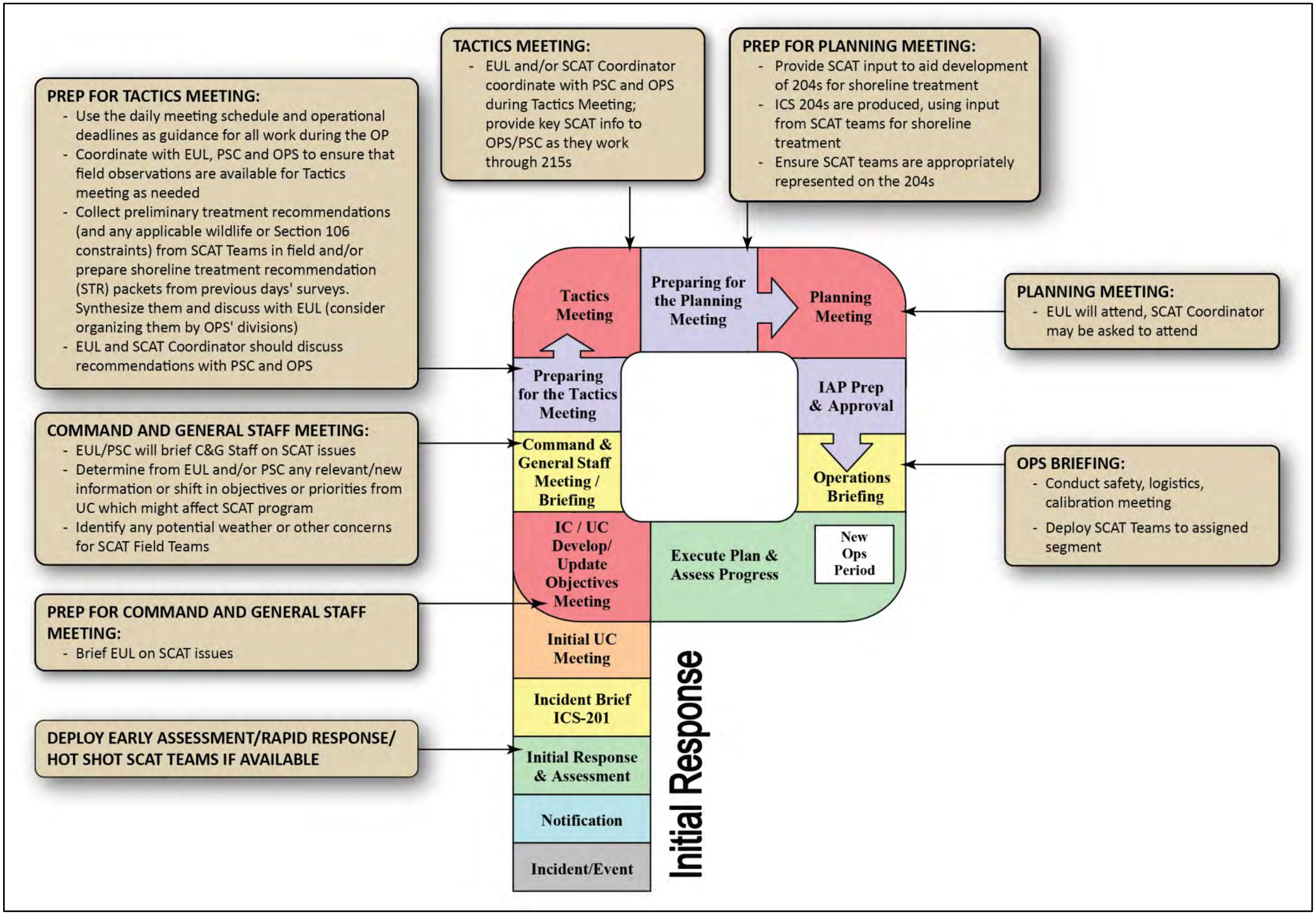
Information from these assessments must meet the requirements of the cleanup operation, being both timely and of uniform quality and content. Finally, the teams must coordinate their field activities with the Operations Division supervisors working in the areas being assessed. This ensures that all operations 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



TACTICS MEETING:
- EUL and/or SCAT Coordinator coordinate with PSC and OPS during Tactics Meeting; provide key SCAT info to OPS/PSC as they work through 215s

PREP FOR PLANNING MEETING:
- Provide SCAT input to aid development of 204s for shoreline treatment
- ICS 204s are produced, using input from SCAT teams for shoreline treatment
- Ensure SCAT teams are appropriately represented on the 204s

PREP FOR TACTICS MEETING:
- Use the daily meeting schedule and operational deadlines as guidance for all work during the OP
- Coordinate with EUL, PSC and OPS to ensure that field observations are available for Tactics meeting as needed
- Collect preliminary treatment recommendations (and any applicable wildlife or Section 106 constraints) from SCAT Teams in field and/or prepare shoreline treatment recommendation (STR) packets from previous days' surveys. Synthesize them and discuss with EUL (consider organizing them by OPS' divisions)
- EUL and SCAT Coordinator should discuss recommendations with PSC and OPS

PLANNING MEETING:
- EUL will attend, SCAT Coordinator may be asked to attend

COMMAND AND GENERAL STAFF MEETING:
- EUL/PSC will brief C&G Staff on SCAT issues
- Determine from EUL and/or PSC any relevant/new information or shift in objectives or priorities from UC which might affect SCAT program
- Identify any potential weather or other concerns for SCAT Field Teams

OPS BRIEFING:
- Conduct safety, logistics, calibration meeting
- Deploy SCAT Teams to assigned segment

PREP FOR COMMAND AND GENERAL STAFF MEETING:
- Brief EUL on SCAT issues

DEPLOY EARLY ASSESSMENT/RAPID RESPONSE/ HOT SHOT SCAT TEAMS IF AVAILABLE

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.

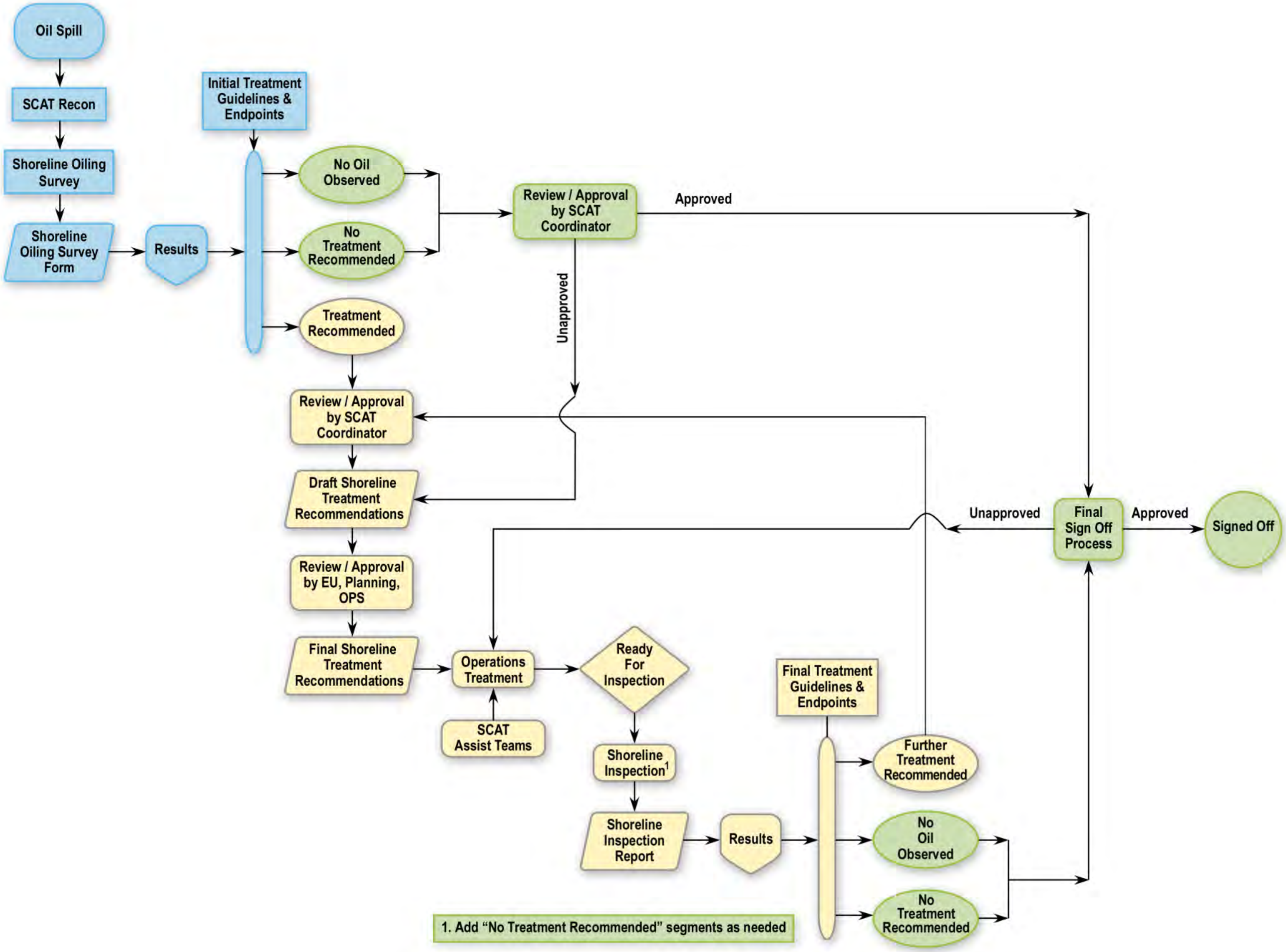


Figure 3. SCAT process flow chart.

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.

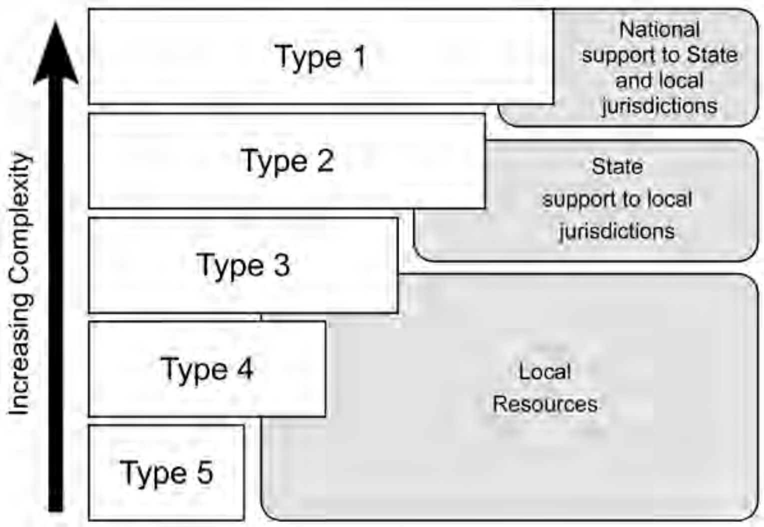


Figure 4. U.S. Coast Guard Response Types.

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)

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[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

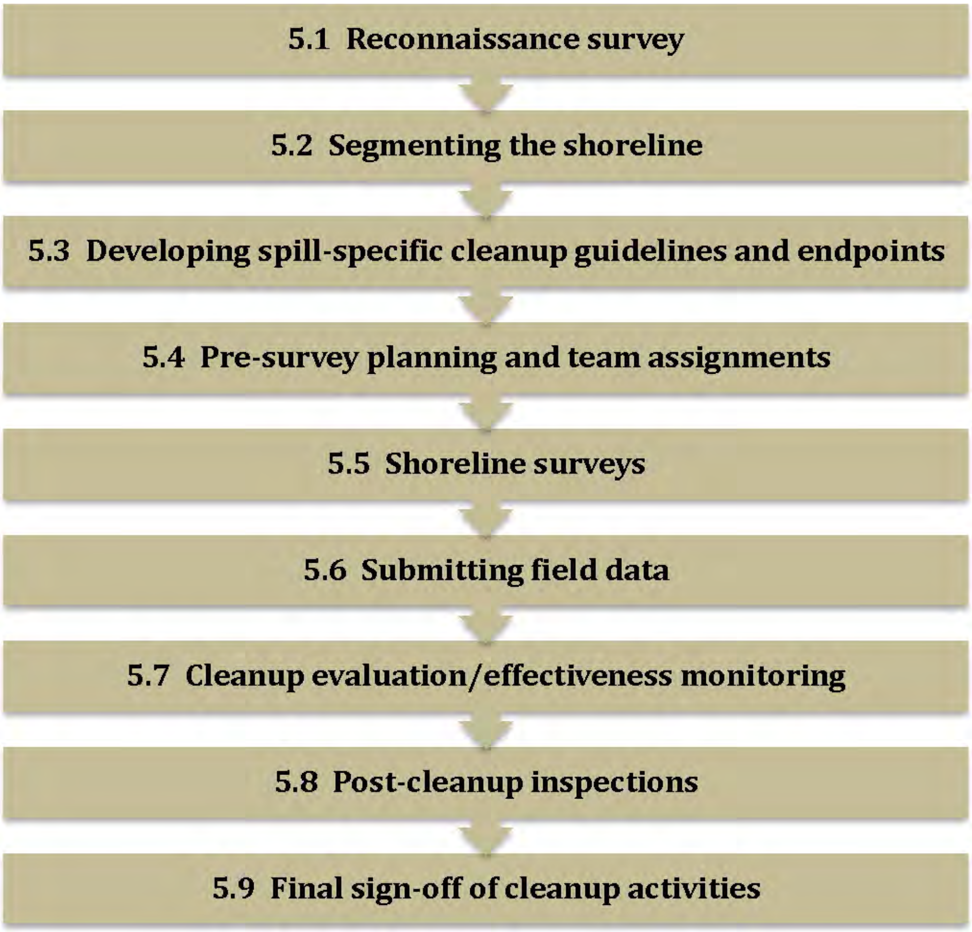
For responses that require complex logistics to get SCAT teams into the field, making all the logistical arrangements is a full-time job. A Logistics Coordinator will be essential to making sure that the teams have the resources needed to get to their assigned segments, including field and safety gear, 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.

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[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.

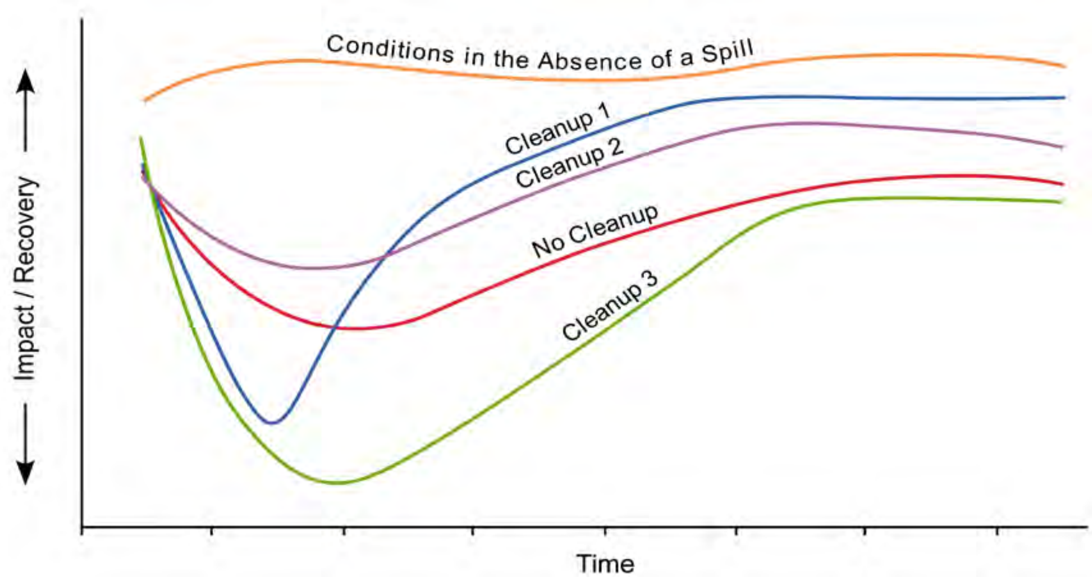


Figure 6. Impact and recovery of various cleanup methods, including natural recovery. Note that Cleanup method 3 removed the most oil but had the longest habitat recovery. Cleanup method 1 was the best option because it removed more oil and had the fastest habitat recovery.

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)

Cleanup Trade-off Issues

- 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

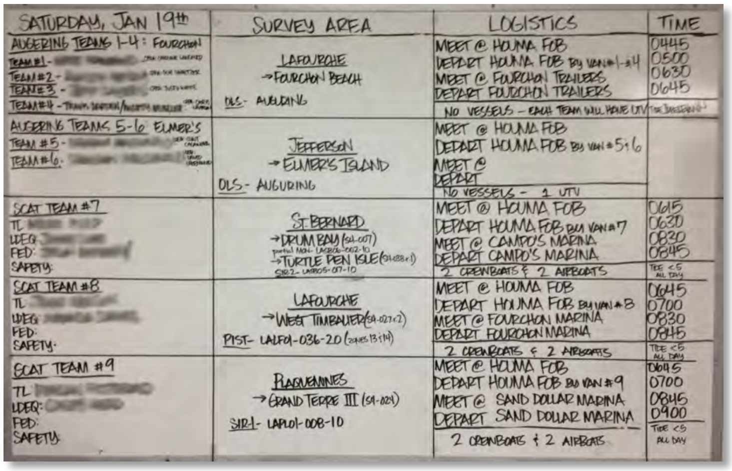
Cleanup Trade-off Issues

- 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



SATURDAY, JAN 19th	SURVEY AREA	LOGISTICS	TIME
AUGERING TEAMS 1-4: FOURCHON TEAM #1 - [redacted] TEAM #2 - [redacted] TEAM #3 - [redacted] TEAM #4 - [redacted]	LAFOURCHE → FOURCHON BEACH OLS - AUGURING	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #1-#4 MEET @ FOURCHON TRAILERS DEPART FOURCHON TRAILERS	0445 0500 0630 0645
		NO VESSELS – EACH TEAM WILL HAVE UTV	
AUGERING TEAMS 5-6 ELMER'S TEAM #5 - [redacted] TEAM #6 - [redacted]	JEFFERSON → ELMER'S ISLAND OLS - AUGURING	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #5 & 6 MEET @ DEPART	
		NO VESSELS - 1 UTV	
SCAT TEAM #7 TL [redacted] LDEQ [redacted] FED: [redacted] SAFETY:	ST. BERNARD → DRUM BAY (SA-007) partial MON- LASB06-002-10 → TURTLE PEN ISLE (SA-088.1) SIR 2 - LASB05-017-10	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #7 MEET @ CAMPO'S MARINA DEPART CAMPO'S MARINA	0615 0630 0830 0845
		2 CREWBOATS & 2 AIRBOATS	TIDE <5 ALL DAY
SCAT TEAM #8 TL [redacted] LDEQ [redacted] FED: SAFETY:	LAFOURCHE → WEST TIMBALIER (SA-027.2) PIST - LALF01-036-20 (zones 13 & 14)	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #8 MEET @ FOURCHON MARINA DEPART FOURCHON MARINA	0645 0700 0830 0845
		2 CREWBOATS & 2 AIRBOATS	TIDE <5 ALL DAY
SCAT TEAM #9 TL [redacted] LDEQ: [redacted] FED: SAFETY:	PLAQUEMINES → GRAND TERRE III (SA-024) SIR 1 - LAPL01-008-10	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #9 MEET @ SAND DOLLAR MARINA DEPART SAND DOLLAR MARINA	0645 0700 0845 0900
		2 CREWBOATS & 2 AIRBOATS	TIDE <5 ALL DAY

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)

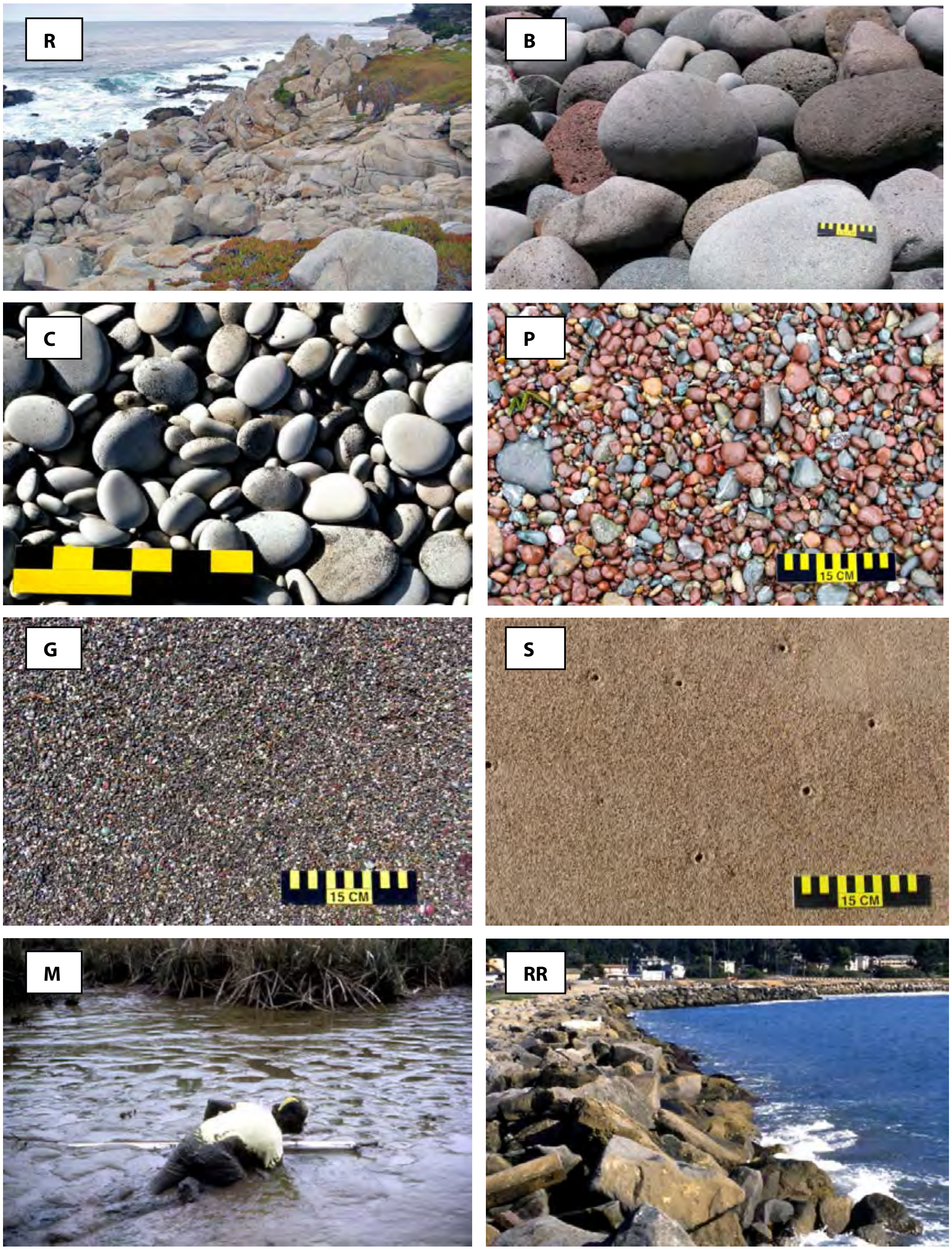


Figure 7. Sediment Types.

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)

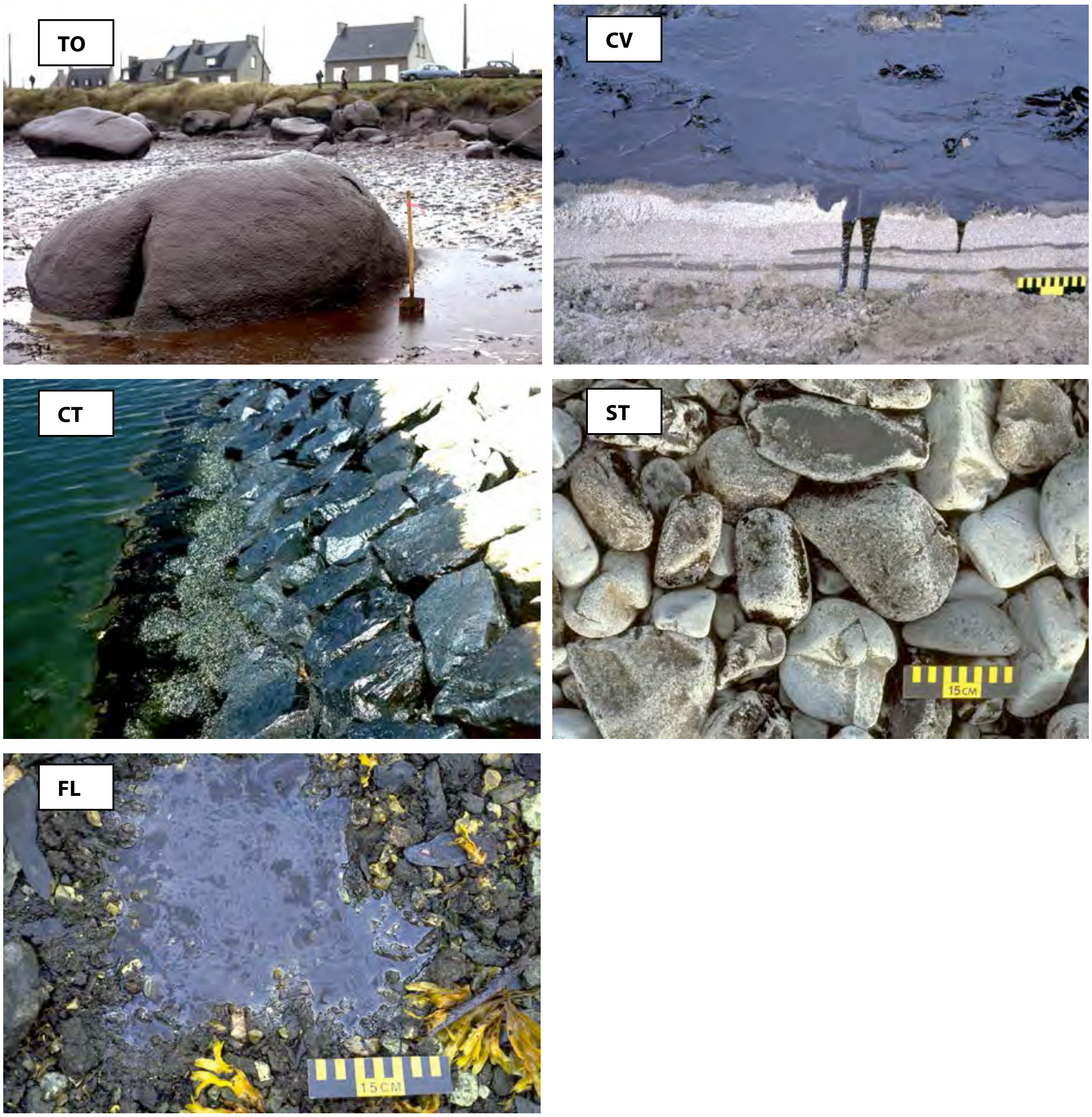


Figure 9. Surface and Subsurface Oiling Descriptors – Thickness.

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)

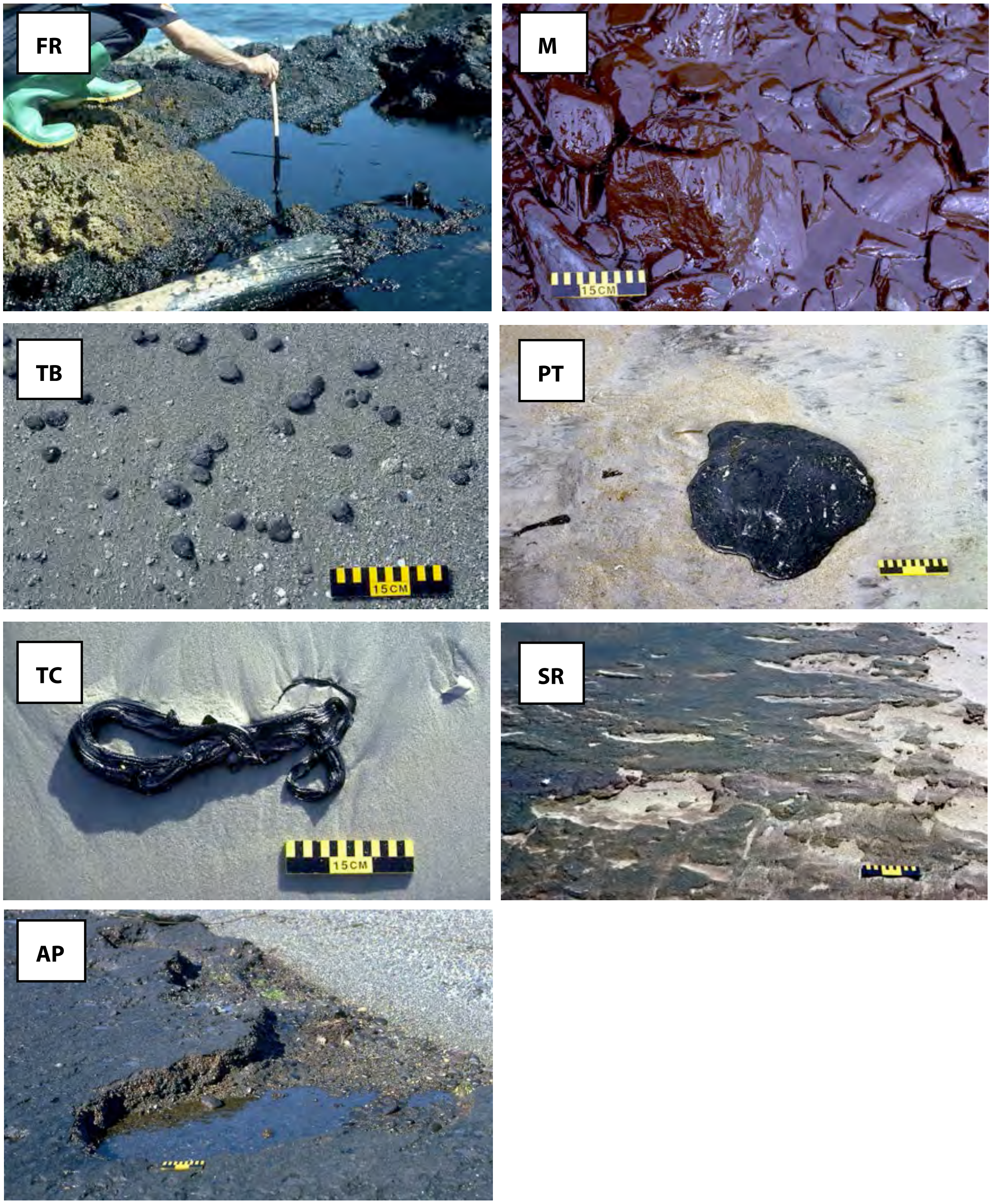


Figure 10. Surface Oiling Descriptors – Type.

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)

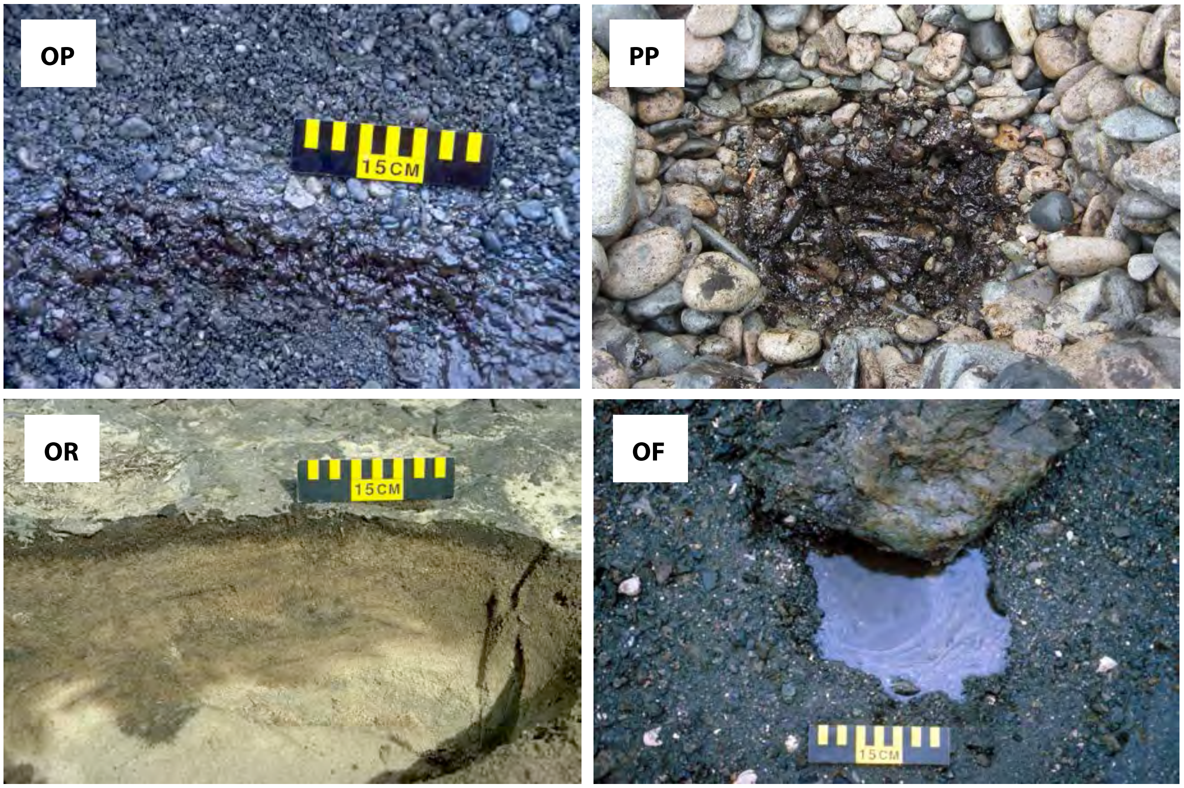


Figure 11. Subsurface Oiling Descriptors.

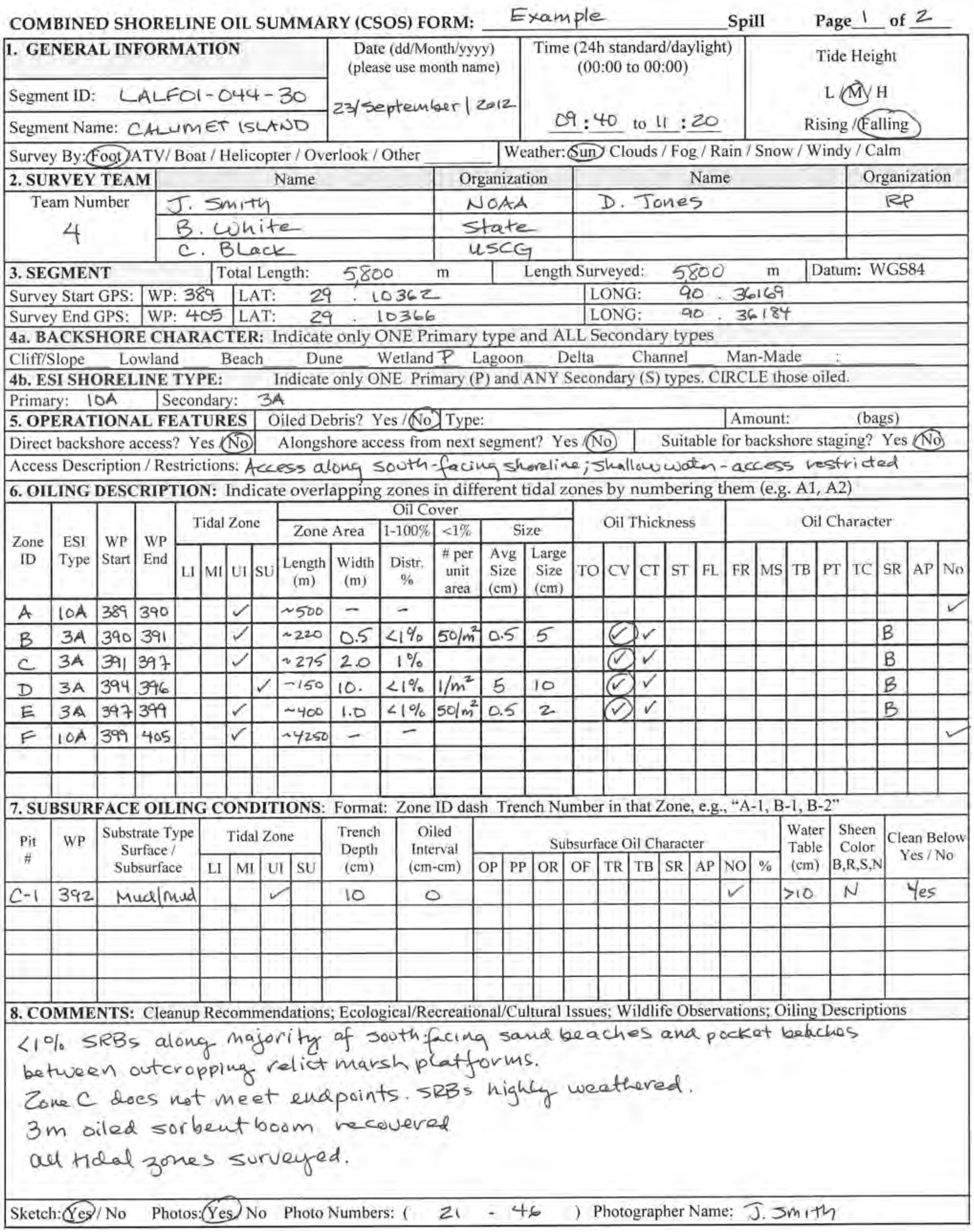
Table 3. SCAT terms to be used for spills of light, refined products.

<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

Segment ID: LALF01-044-30

Segment Name: CALUMET ISLAND

Date (dd/Month/yyyy) (please use month name): 23/September/2012

Time (24h standard/daylight) (00:00 to 00:00): 09:40 to 11:20

Tide Height: L / [✓ M] / H

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	J. Smith	NOAA	D. Jones	RP
4	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%	$50/m^2$	0.5	5		✓	✓								B		
C	3A	391	397			✓		~275	2.0	1%					✓	✓								B		
D	3A	394	396				✓	~150	10.	<1%	$1/m^2$	5	10		✓	✓								B		
E	3A	397	399			✓		~400	1.0	<1%	$50/m^2$	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.

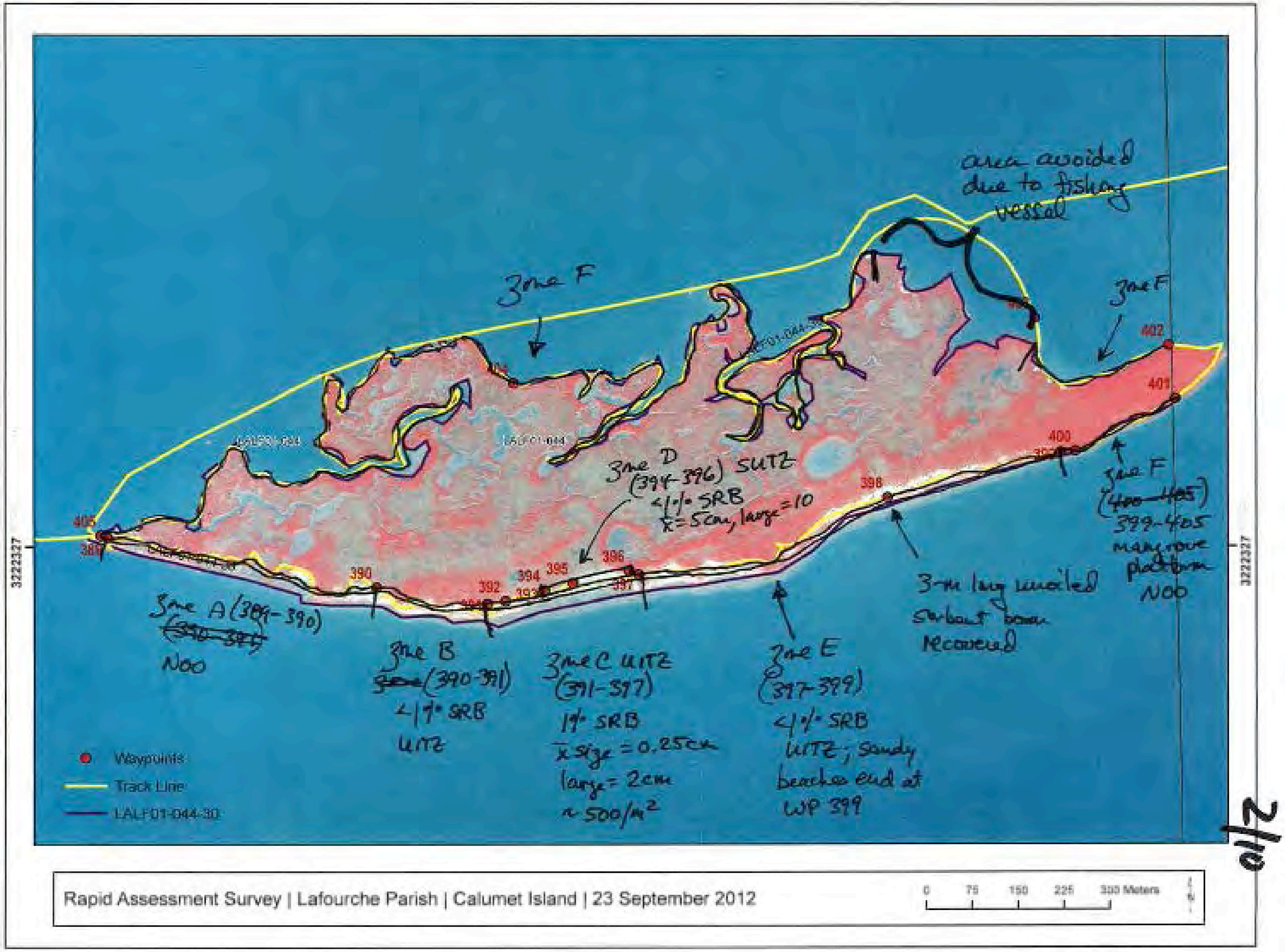
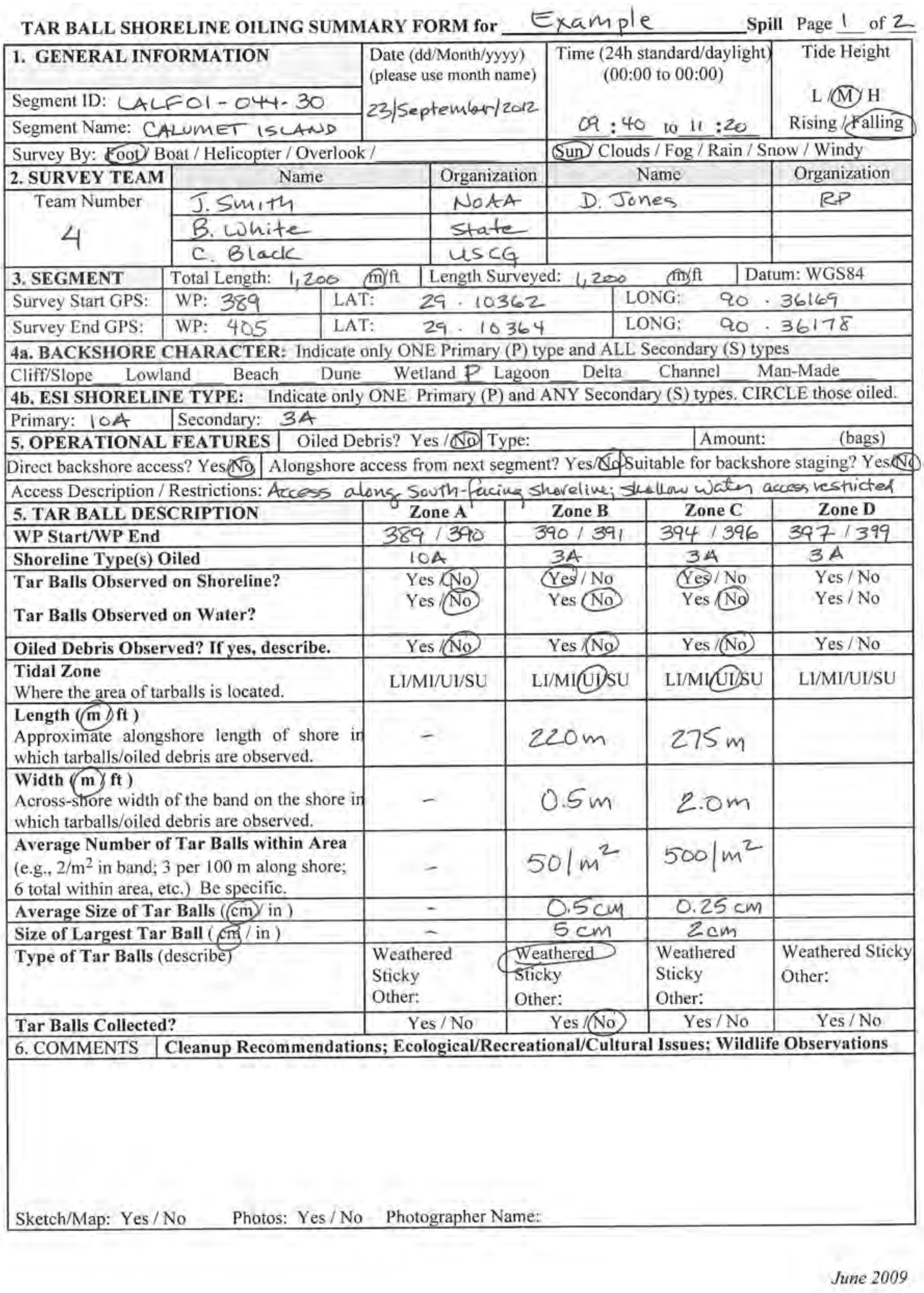


Figure 13. SCAT map for the example survey from the SOS form in Figure 12. Note that way points are used to define the boundaries between SCAT zones A, B, C, etc. and short notes are made about the oiling conditions, matching the data on the SOS form in Figure 12.



TAR BALL SHORELINE OILING SUMMARY FORM for Example **Spill** Page 1 of 2

1. GENERAL INFORMATION

Segment ID: LALF01-044-30

Segment Name: CALUMET ISLAND

Date (dd/Month/yyyy) (please use month name): 23/September/2012

Time (24h standard/daylight) (00:00 to 00:00): 09:40 to 11:20

Tide Height: L / [✓ M] / H; Rising / [✓ Falling]

Survey By: [✓ Foot] / Boat / Helicopter / Overlook /

[✓ Sun] / Clouds / Fog / Rain / Snow / Windy

2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number	J. Smith	NOAA	D. Jones	RP
4	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

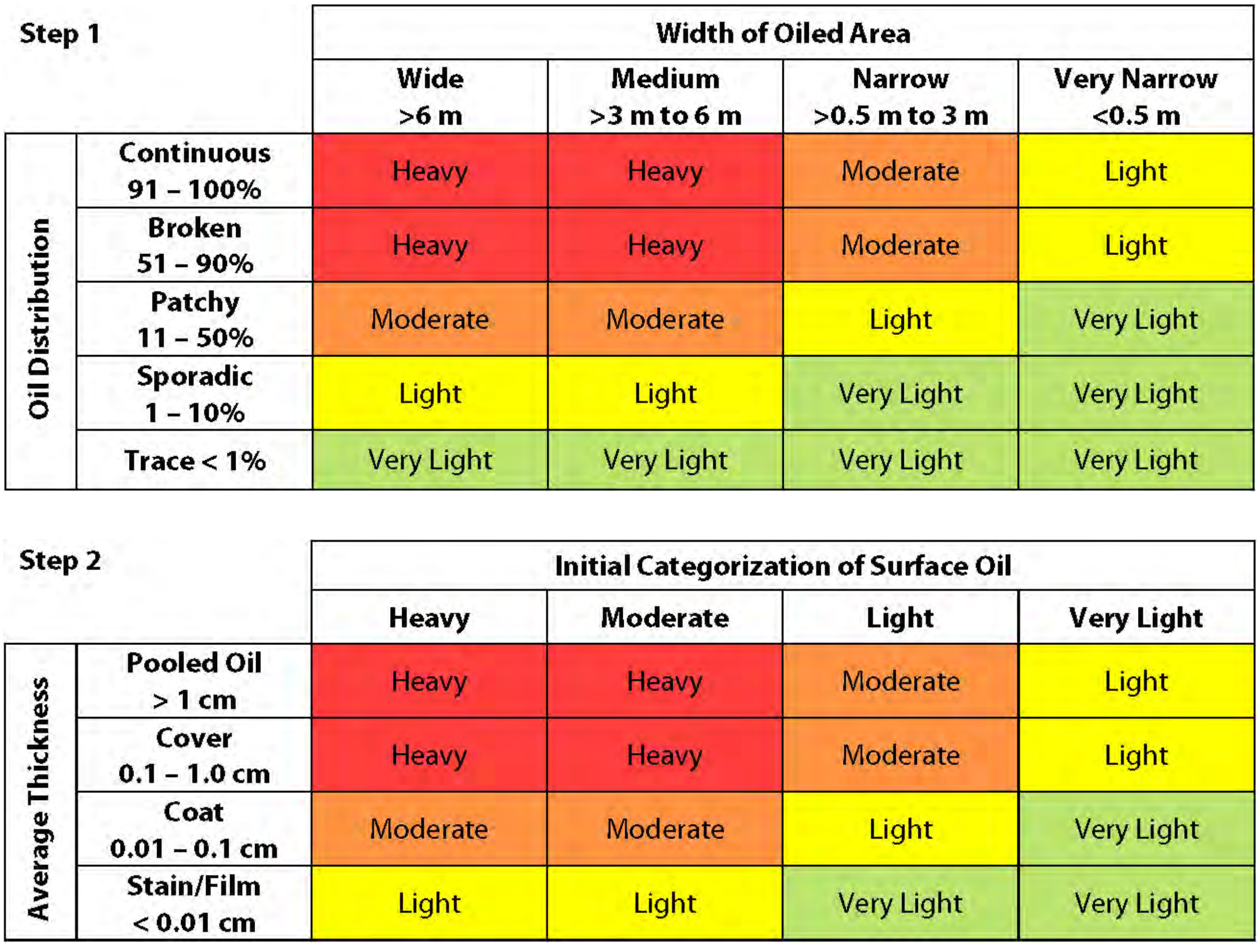
Figure 14 Tar Ball SOS Form completed for zones A-D in the example survey in Figure 13. Waypoints denote the start and end of the SCAT zones as well as the segment.

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.

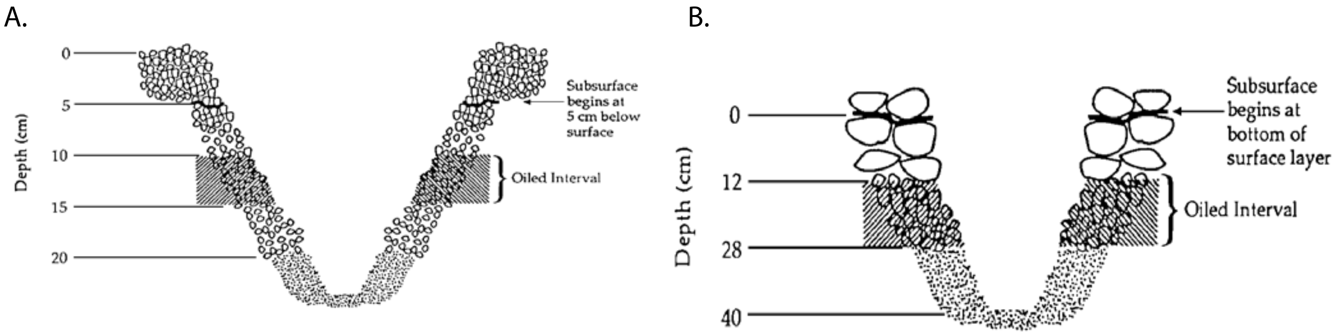


Figure 16. Definition of subsurface oil in fine-grained (A) and coarse-grained (B) sediments. From Owens and Sergy (2000).

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.

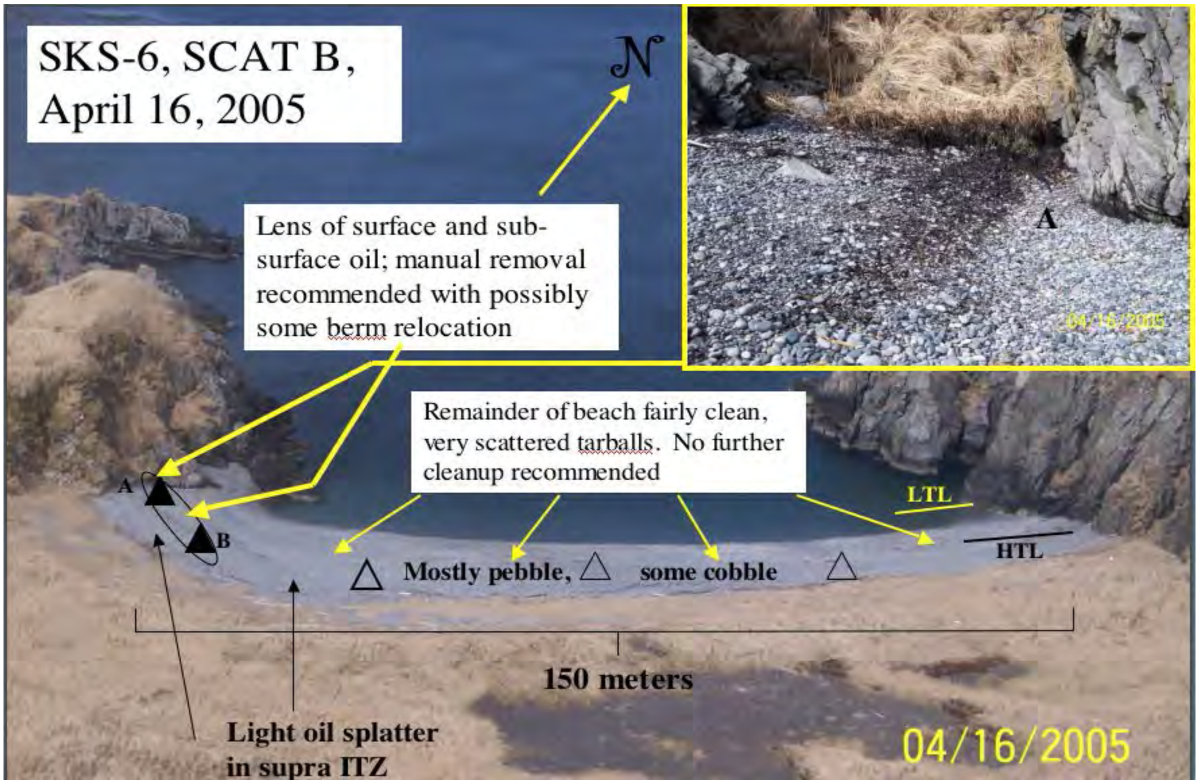
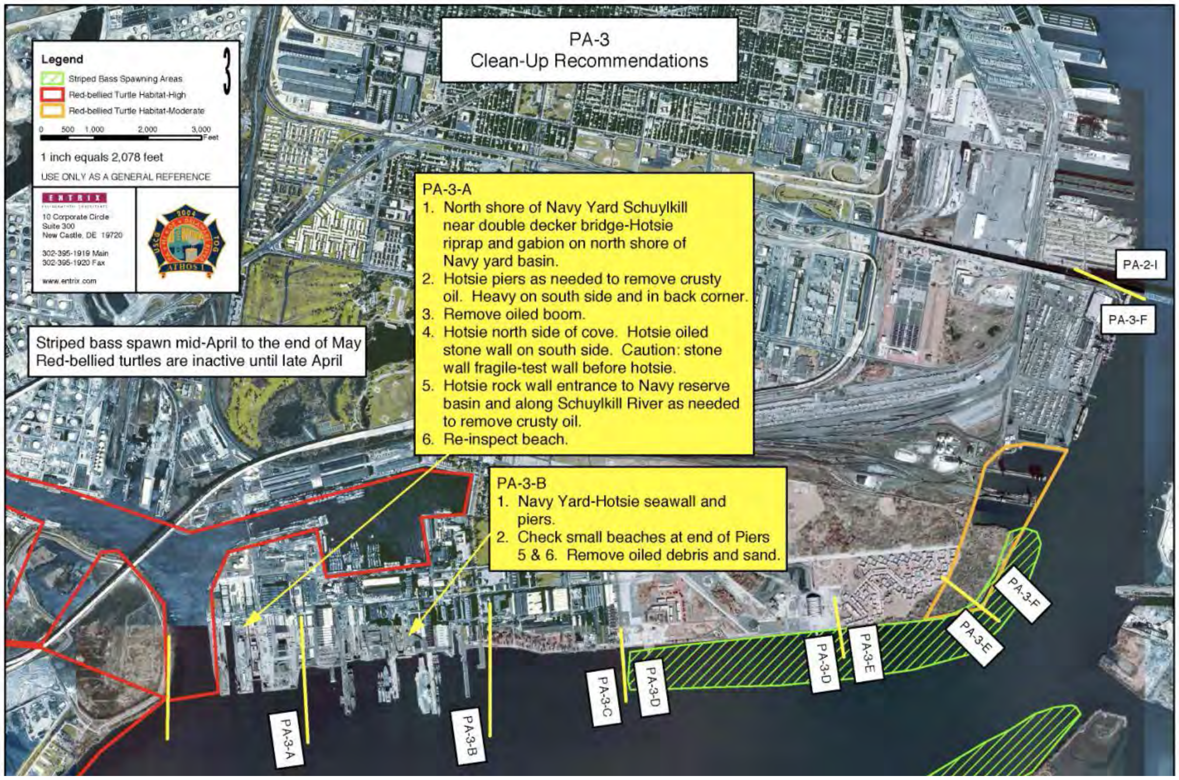


Figure 17. Example of using oblique aerial photographs as the basemap for presenting the results of the SCAT survey at the *M/V Selendang Ayu* spill in Alaska, USA.

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.



PA-3
Clean-Up Recommendations

Striped bass spawn mid-April to the end of May
Red-bellied turtles are inactive until late April

PA-3-A
1. North shore of Navy Yard Schuylkill near double decker bridge-Hotsie riprap and gabion on north shore of Navy yard basin.
2. Hotsie piers as needed to remove crusty oil. Heavy on south side and in back corner.
3. Remove oiled boom.
4. Hotsie north side of cove. Hotsie oiled stone wall on south side. Caution: stone wall fragile-test wall before hotsie.
5. Hotsie rock wall entrance to Navy reserve basin and along Schuylkill River as needed to remove crusty oil.
6. Re-inspect beach.

PA-3-B
1. Navy Yard-Hotsie seawall and piers.
2. Check small beaches at end of Piers 5 & 6. Remove oiled debris and sand.

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**

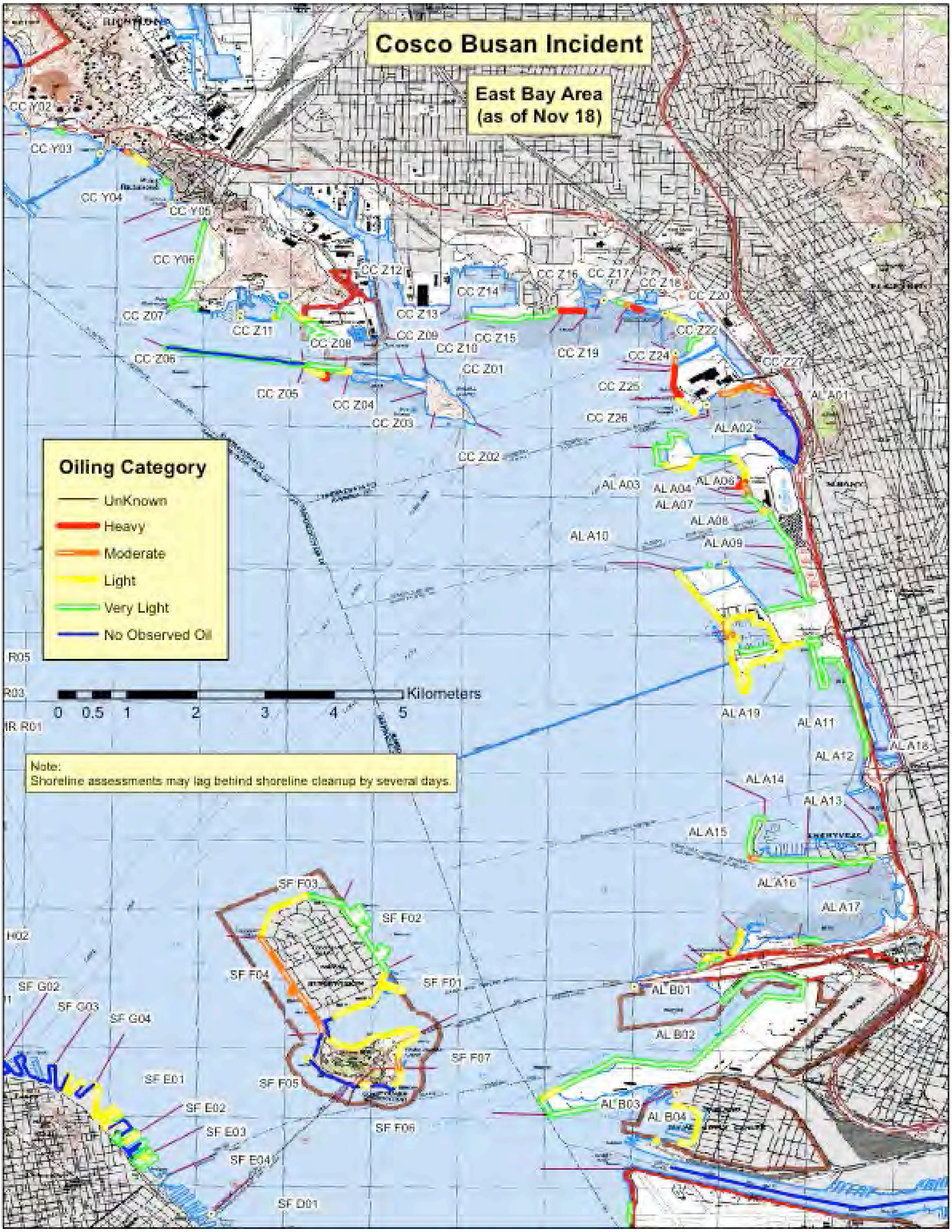


Figure 19. Example of shoreline oiling summary map from the 2006 M/V *Cosco Busan* spill in San Francisco Bay, CA.

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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).

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Appendices

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

02 17 2013

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


12/14/2010 10:31

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

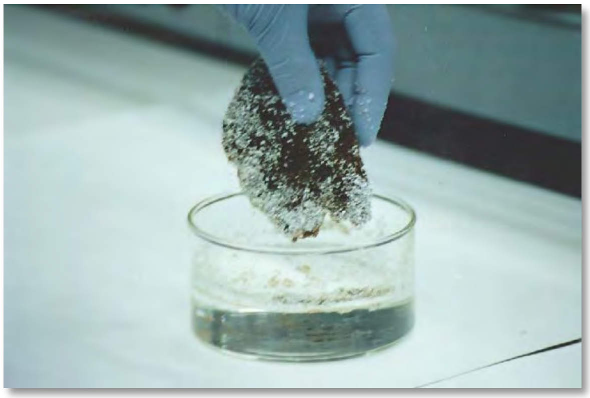
Not suitable for use in very shallow water or fish-spawning areas.

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)	or Number per unit 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.

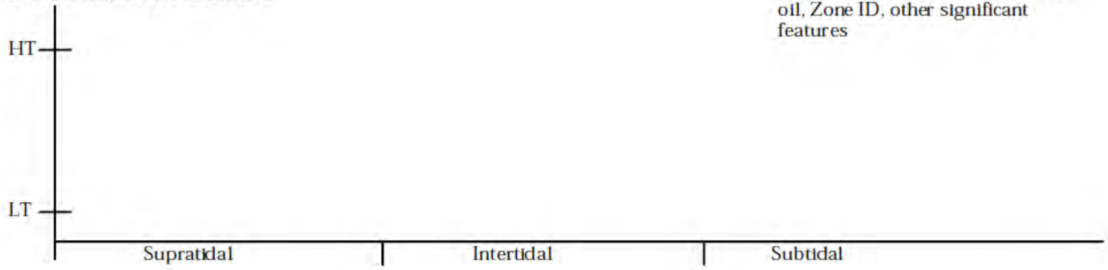
8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

**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_____
MAN-MADE: Solid______ Permeable______
Description:______________________________
ESI Code (primary) ________ (secondary) ________

UNCONSOLIDATED: Clay____ Mud____ Sand____ Mixed Fine____ Shell____
Mixed Coarse ____ Pebble-Cobble____ Boulder ___ Rubble____
Marsh/Swamp____ Peat/Organics _____ Wooded ____ Vegetated ____
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: > (5^0) (15^0) (30^0) | 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:______________________________
ESI Shoreline Type (primary) _____ (secondary) _____

UNCONSOLIDATED: Clay____ Mud____ Sand____ Mixed Fine____
Mixed Coarse ____ Pebble-Cobble____ Boulder ___ Rubble____
Marsh/Swamp____ Peat _____ Vegetated ____ Shell Hash _____
Other: ______________________________________

4b. OVERBANK 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____ Description/Other:______________________________ Forested / Vegetated

4c. STREAM - VALLEY CHARACTER : *Circle or select as appropriate.*

Channel Width: < 1 m 1-10 m >10 m ________m | Shoal(s) Present: Y / N Point Bar Present: Y / N
Water Depth: < 1 m 1-3 m >3 m ________ m | 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

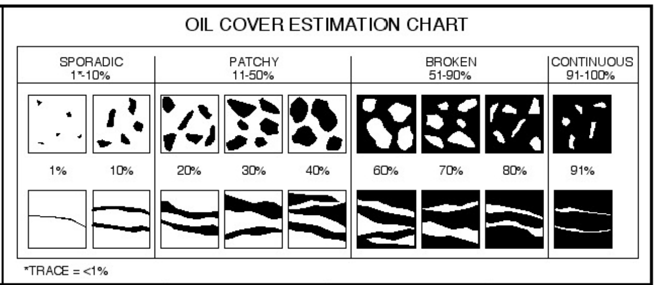
1.	Shoreline Area Name:	Division	Zone	Date: (dd/month/year)	Time:
Segment ID or location description:			Tidal Conditions (e.g.: high, falling)		
GPS Coordinates (if available)			Surveyed by: ____Foot ____Boat ____Vehicle ____Aircraft		
Team I.D.	Name: for:		Name: for:		

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	 			
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:

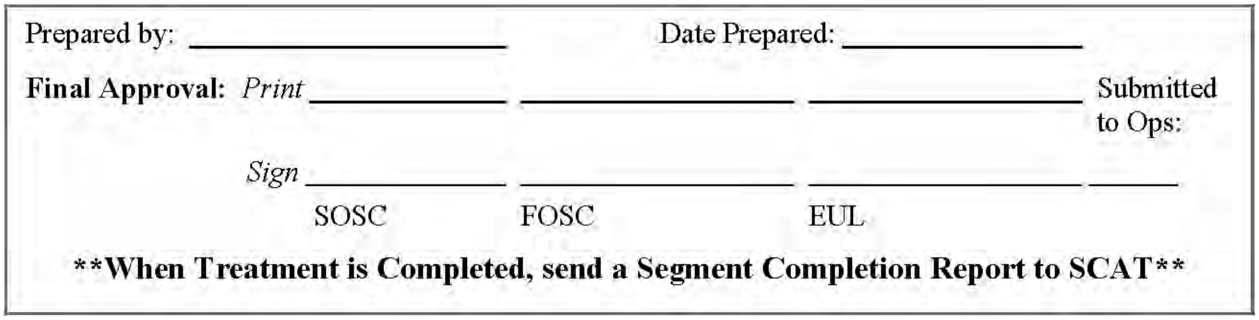
Staging and Logistics Constraints/Waste Issues:

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

<u>Result/Recommendation:</u>

☐ 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.)

<u>SCAT Team Members</u>:

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△

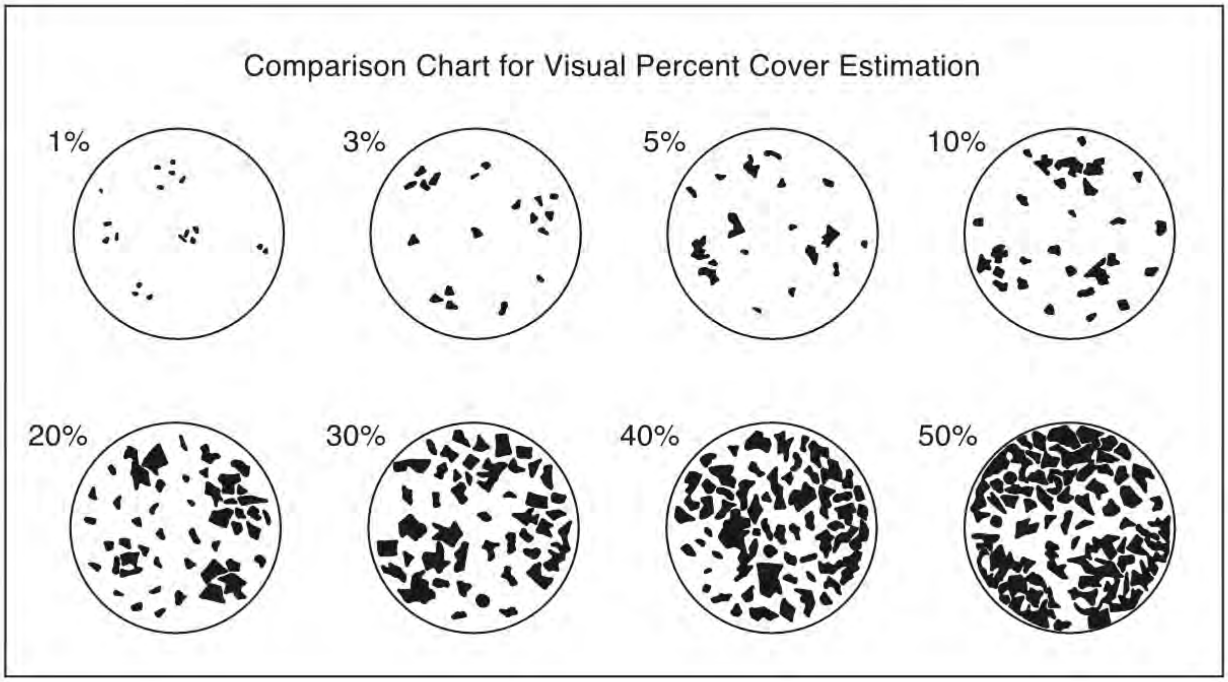
Trench Number.
No Subsurface Oil

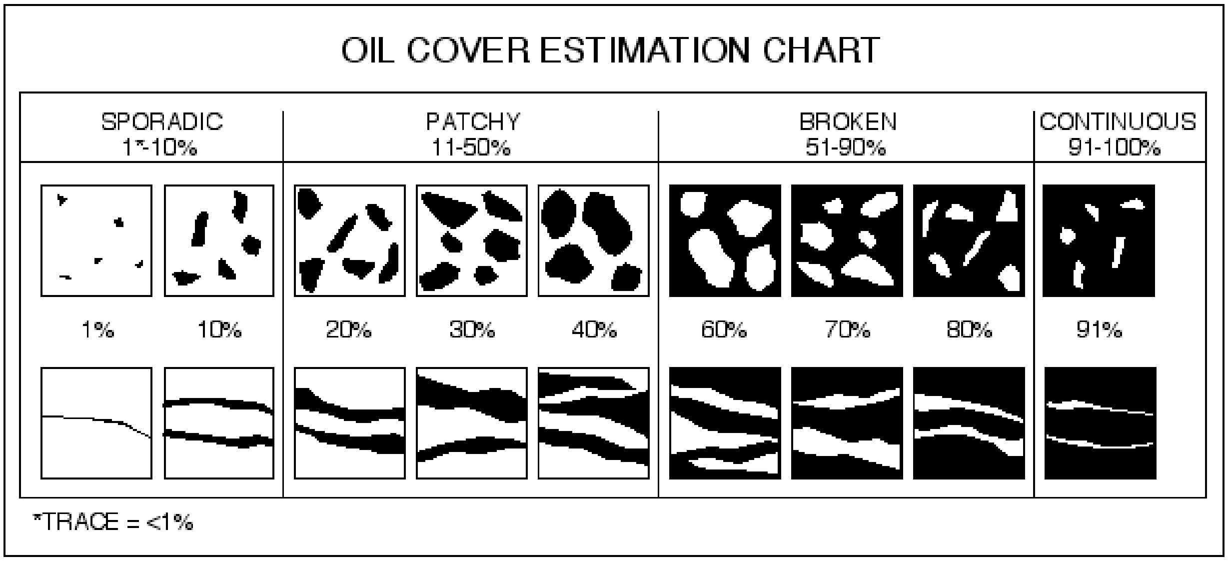
2▲

Trench Number.
Subsurface Oil

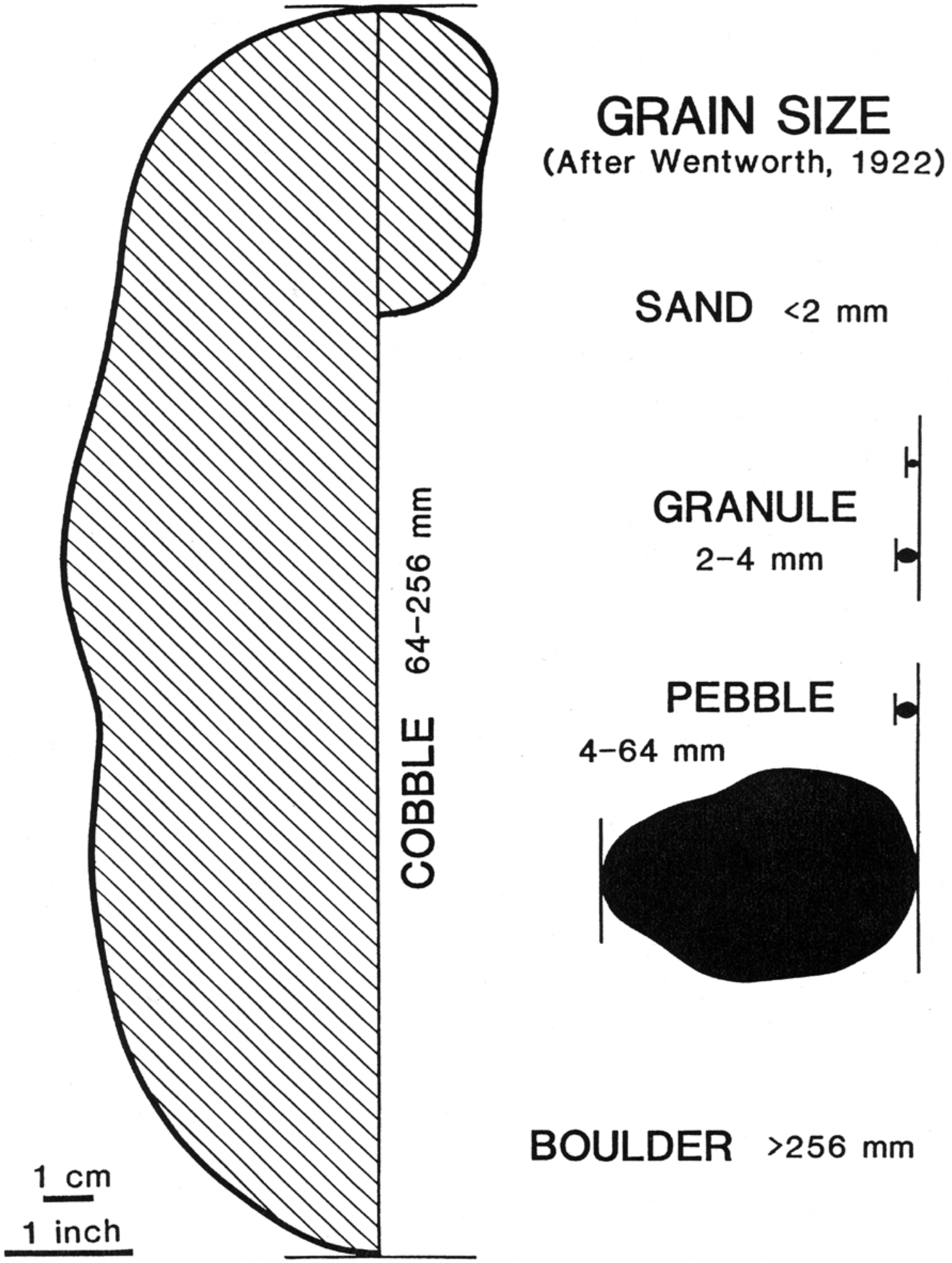
#●→

Photo Location
Direction and
Frame No.


Comparison Chart for Visual Percent Cover Estimation

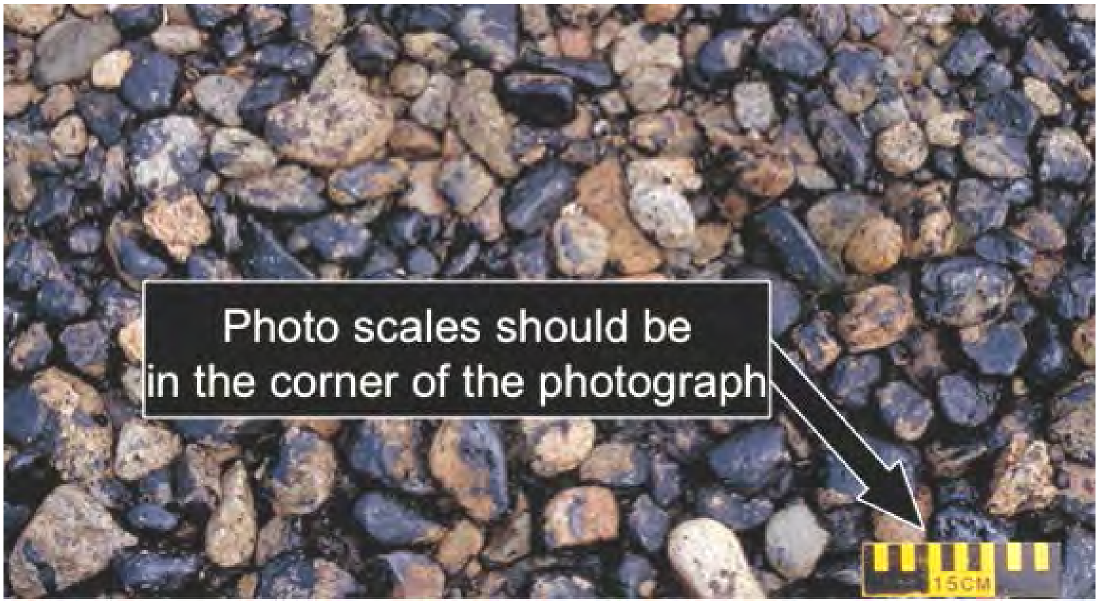

OIL COVER ESTIMATION CHART

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.

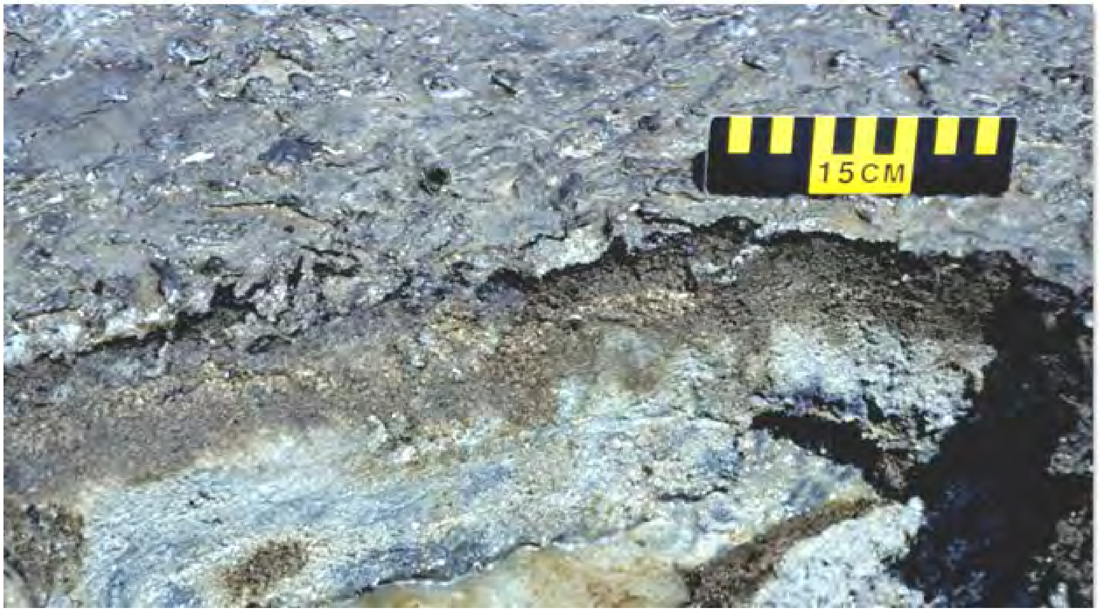


Grain-size estimator chart for the different types of gravel. Diagram shown is smaller than actual size.

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

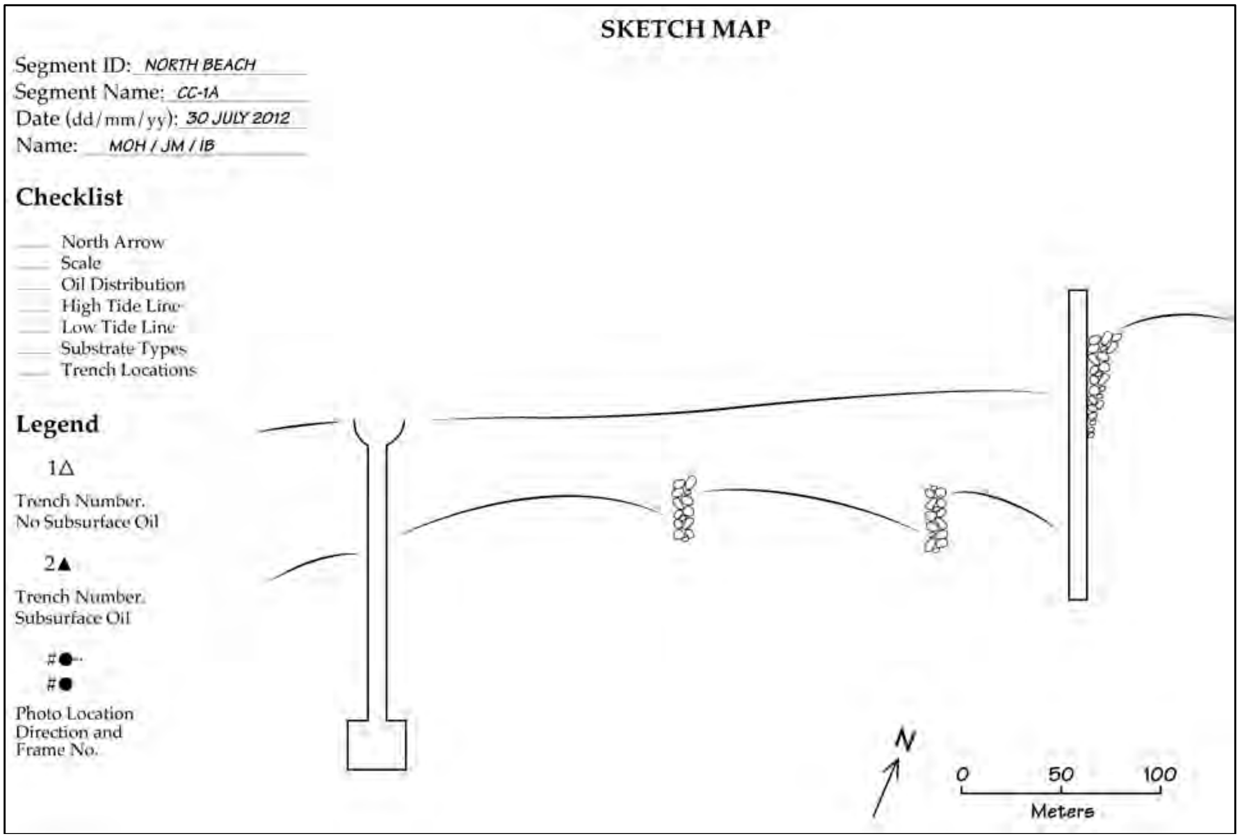
The field sketch is an important component of the shoreline assessment process for two principal reasons: (1) it provides a focused picture of the oil distribution within the entire segment, or sub-segment, on a single piece of paper (or image); and (2) it adds discipline to the field observation process, 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).



SKETCH MAP

Segment ID: NORTH BEACH
Segment Name: CC-1A
Date (dd/mm/yy): 30 JULY 2012
Name: MOH / JM / IB

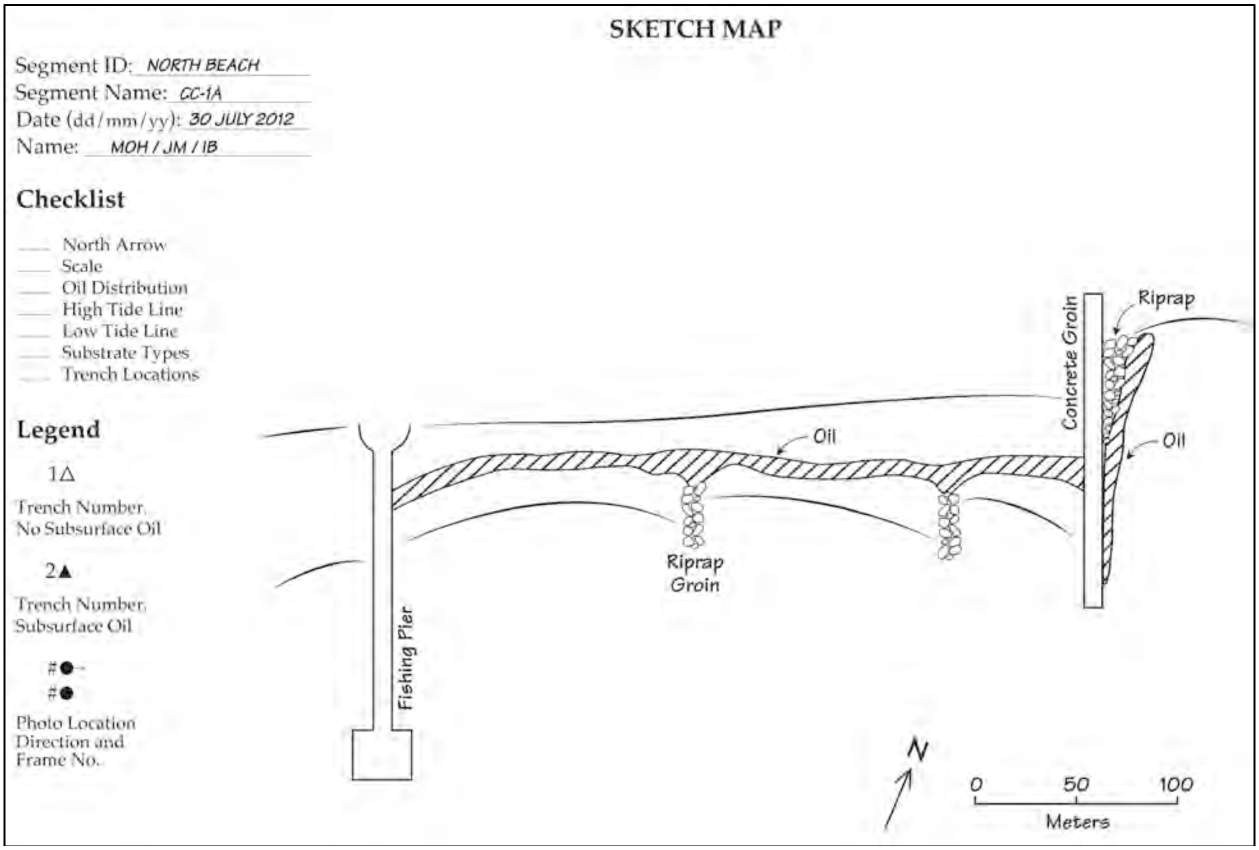
Checklist

____ North Arrow
____ Scale
____ Oil Distribution
____ High Tide Line
____ Low Tide Line
____ Substrate Types
____ Trench Locations

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.



SKETCH MAP

Segment ID: NORTH BEACH
Segment Name: CC-1A
Date (dd/mm/yy): 30 JULY 2012
Name: MOH / JM / IB

Checklist

___ North Arrow
___ Scale
___ Oil Distribution
___ High Tide Line
___ Low Tide Line
___ Substrate Types
___ Trench Locations

Legend

1△
Trench Number,
No Subsurface Oil

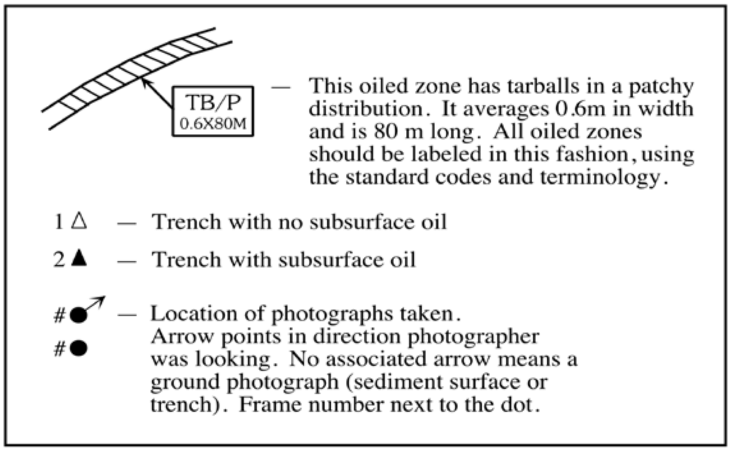
2▲
Trench Number,
Subsurface Oil

#●→
#●
Photo Location
Direction and
Frame No.

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:



— This oiled zone has tarballs in a patchy distribution. It averages 0.6m in width and is 80 m long. All oiled zones should be labeled in this fashion, using the standard codes and terminology.

1 △ — Trench with no subsurface oil

2 ▲ — Trench with subsurface oil

#●↗ — Location of photographs taken. Arrow points in direction photographer was looking. No associated arrow means a ground photograph (sediment surface or trench). Frame number next to the dot.
#●

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.

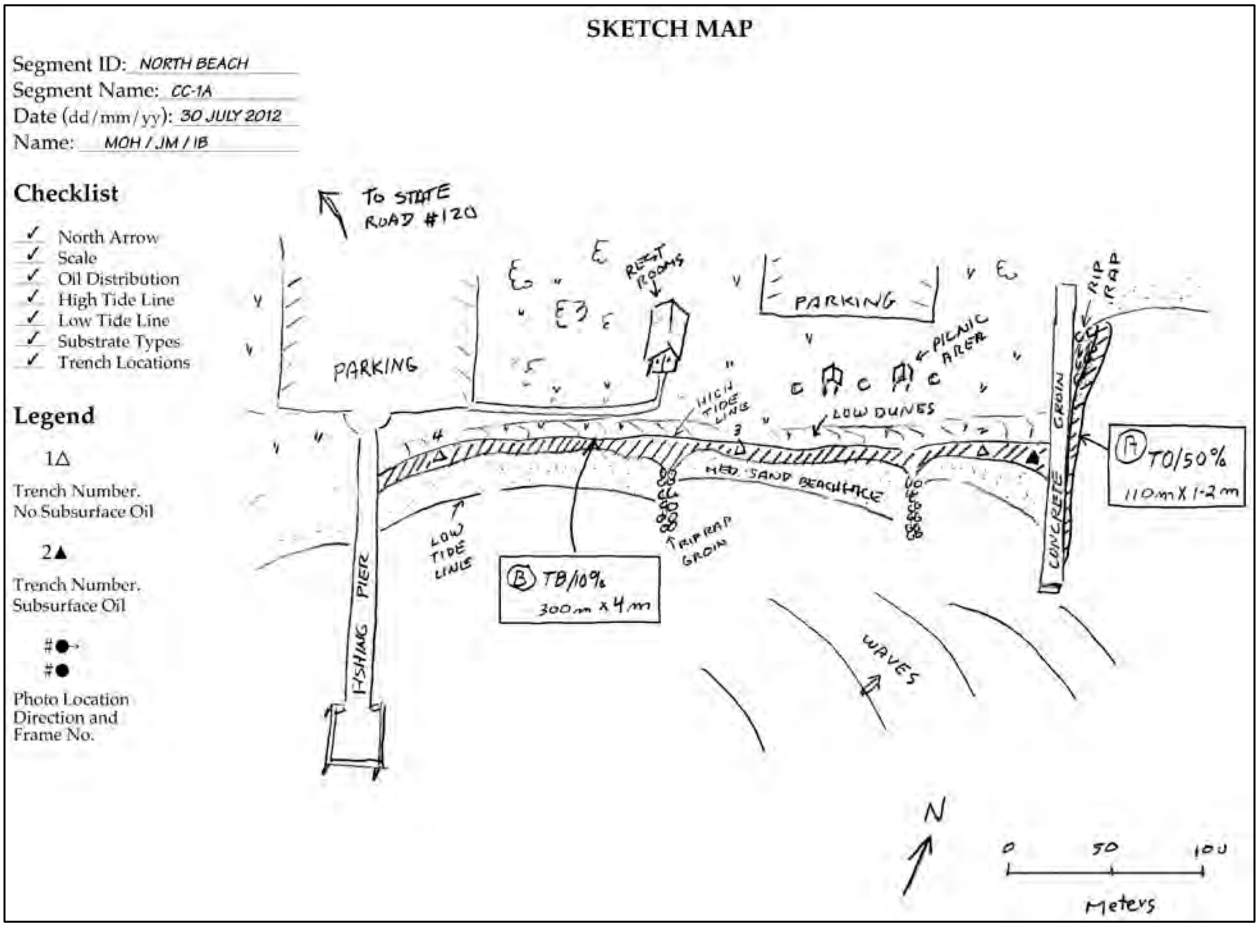
Step 6

(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.



SKETCH MAP

Segment ID: NORTH BEACH
Segment Name: CC-1A
Date (dd/mm/yy): 30 JULY 2012
Name: MOH / JM / IB

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.

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!**

In the Field

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

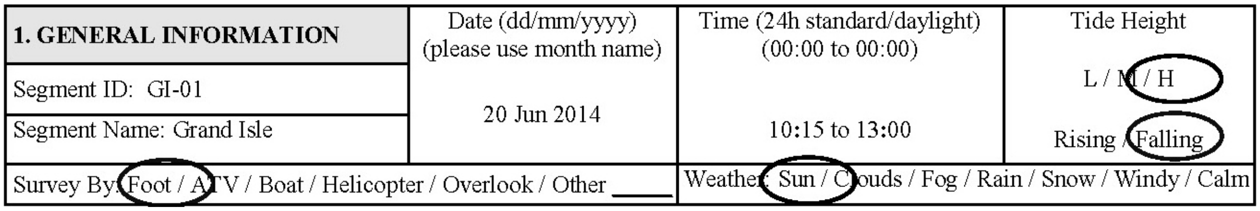
Time Zone	GMT Standard Time	GMT Daylight Savings
Puerto Rico & USVI	-4	-4
Eastern	-5	-4
Central	-6	-5
Mountain	-7	-6
Pacific	-8	-7
Alaska	-9	-8
Hawaii & Guam	-10	-10
Am. Samoa	-11	-11

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

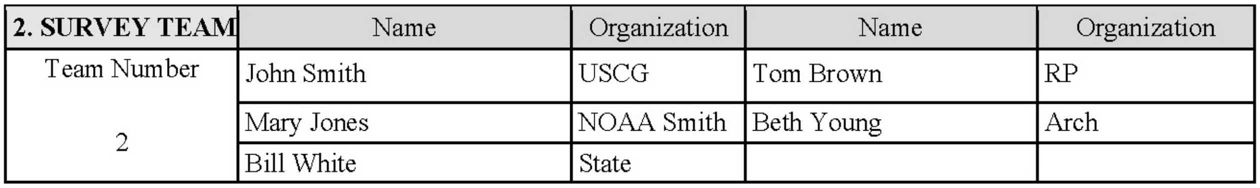
Section 1 includes general information about the segment, date and time of the survey, etc. You will be given the segment ID on a base map, or you will be generating them in the field for the first survey of the segment. The tide height during the survey is very important to record. In the example below, 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

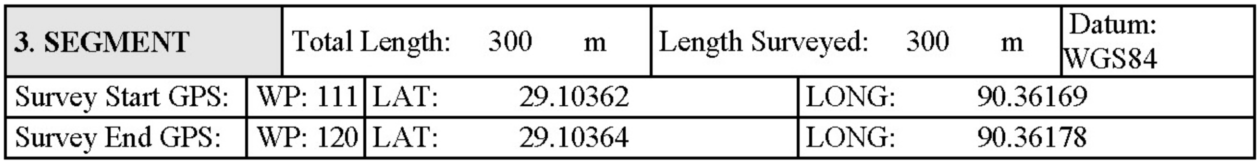
The names and organization of each member of the team must be recorded in Section 2, along with the Team Number.



2. SURVEY TEAM	Name	Organization	Name	Organization
Team Number	John Smith	USCG	Tom Brown	RP
2	Mary Jones	NOAA Smith	Beth Young	Arch
	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.

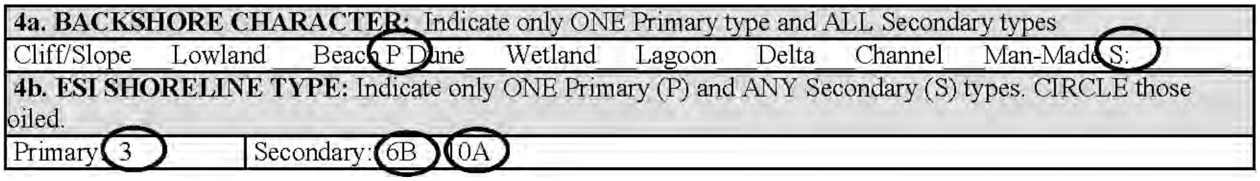


3. SEGMENT	Total Length: 300 m	Length Surveyed: 300 m	Datum: WGS84
Survey Start GPS: WP: 111	LAT: 29.10362	LONG: 90.36169	
Survey End GPS: WP: 120	LAT: 29.10364	LONG: 90.36178	

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.

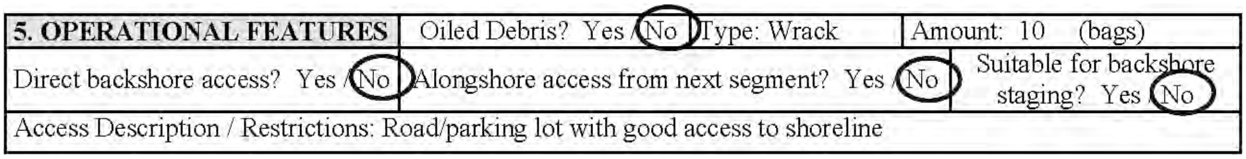
The **ESI Shoreline Type** refers to the intertidal habitat (between low and high tides). Refer to Table 1 in the Shoreline Assessment Manual for the ESI shoreline types and numbers. The Primary shoreline type is the one that is most common within the segment. The Secondary shoreline type(s) are all 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

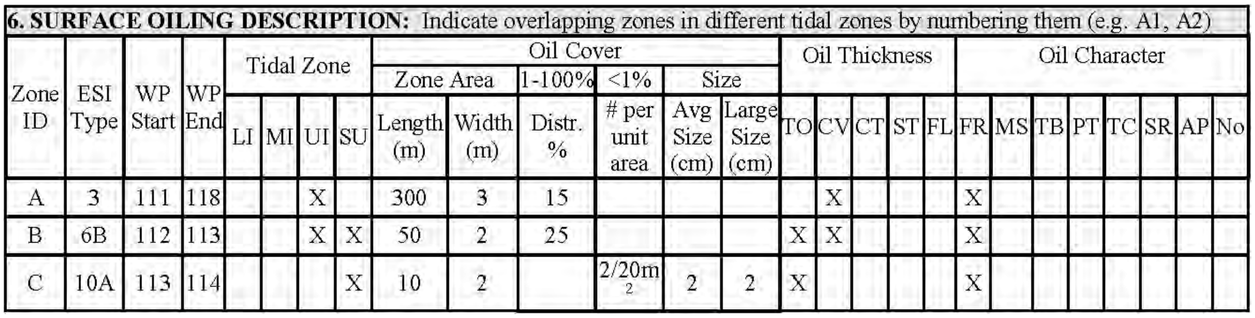
If surface oil is present:

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.

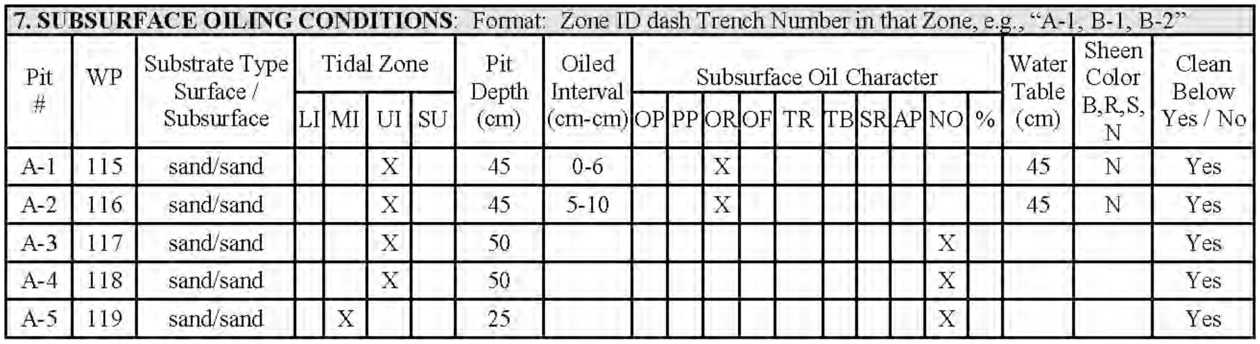


6. SURFACE OILING DESCRIPTION: Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

				Tidal Zone				Oil Cover						Oil Thickness					Oil Character							
								Zone Area		1-100%	<1%	Size														
Zone ID	ESI Type	WP Start	WP End	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.

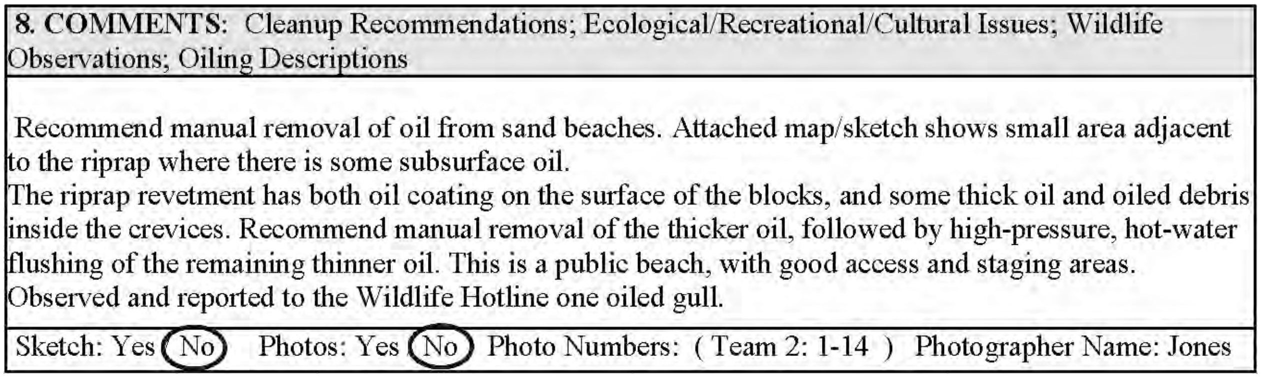


7. SUBSURFACE OILING CONDITIONS: Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"

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

August 2013

U.S. DEPARTMENT OF COMMERCE	**National Oceanic and Atmospheric Administration**	**National Ocean Service**
Penny Pritzker Secretary	Dr. Kathryn Sullivan, Acting Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator	Dr. Holly Bamford, Assistant Administrator for Ocean Services and Coastal Zone Management

TEMPLATE

SHORELINE COUNTERMEASURES MANUAL

TROPICAL COASTAL ENVIRONMENTS

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
HAZARDOUS MATERIALS
RESPONSE & ASSESSMENT
DIVISION

MAY 1993

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MAY 1992

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Contents, cont.

3 Shoreline Mapping and Prioritization

Contents, cont.

Appendices

Introduction

Shoreline countermeasures following an oil spill are a critical element in determining the ultimate environmental impact and cost resulting from a spill. As with most aspects of spill response, careful planning can significantly increase the effectiveness of treatment operations. Local response organizations need to develop mechanisms for identifying shorelines requiring treatment, establishing treatment priorities, monitoring the effectiveness and impacts of treatment, and for identifying and resolving problems as the treatment progresses.

The National Oceanic and Atmospheric Administration (NOAA) developed this manual as a tool for shoreline countermeasure planning and response by Regional Response Teams, Area Planning Committees, and State and local response agencies. This manual has been written specifically for tropical environments, to support oil spill planning and response activities in both the Caribbean Sea and the Pacific Ocean regions. Similar manuals have been prepared for temperate regions, and a freshwater manual is under preparation.

Even though this manual has been adapted for tropical environments, further customization for each geographic area is needed and encouraged. Each section of the manual should be adapted to address specific issues, priorities, and concerns in the planning area. These elements provide the information needed to select cleanup methods for specific combinations of shoreline and oil types. Adapting and completing the various sections creates a better manual that meets the specific needs of the area. More importantly, the pre-spill process of adapting this manual should allow response agencies the opportunity to discuss and resolve shoreline treatment issues prior to a spill emergency.

The shoreline environments have already been revised to reflect those found in tropical areas, based on those included in the Environmental Sensitivity Index (ESI) atlases prepared by NOAA for Florida, Puerto Rico, U.S. Virgin Islands, Hawaii, and Guam. The shoreline descriptions and rankings in these atlases descriptions have been updated to reflect the current research on oil behavior and response activities, and they are discussed in Chapter 2. The section on Special Considerations at the end of Chapter 2 lists those resource issues that are potentially of concern in tropical environments. Guidelines have been written for three types of special concerns common to all tropical regions: coral reefs, seagrasses, and turtle nesting beaches. It is intended that each region or area would identify those resources of greatest concern to them and prepare similar guidance on how to best minimize impacts from oil spills.

Chapter 3 of the manual also outlines a process of documenting and recommending cleanup options for a section of a shoreline after it has been oiled. The scope of the process should be scaled to fit the spill size and conditions. Thus, both comprehensive and simplified forms and methods have been included.

Chapter 4 contains the main thrust of the manual, the matrices for recommended cleanup methods for four main types of oil and the shoreline habitats present in tropical environments. Each region should complete the matrices for themselves.

Chapters 5 and 6 include detailed descriptions of the various shoreline treatment methods to be considered. Local experts in shoreline treatment should be involved in the analysis of the effectiveness and effects of each of these methods for each area.

The appendices include a section on Best Management Practices, which have been compiled from previous spills. These practices address specific resource issues which were raised during an oil spill and resolved by the scientific community. They are included as examples for response teams to follow, in the event similar issues arise. Each region is encouraged to contribute to this appendix additional practices as they are developed during actual spills, so that all may benefit from the lessons learned.

1 Decision Process Organization

A Shoreline Evaluation Process

The shoreline evaluation process requires a commitment of trained personnel to assess, evaluate, and communicate the effects of oil on the shoreline, as well as to recommend countermeasures to mitigate adverse effects. At most spills, a repetitive, detailed, and systematic survey of the extent and degree of shoreline contamination is needed to:

1. Assess the need for shoreline cleanup
2. Select the most appropriate cleanup method
3. Determine priorities for shoreline cleanup
4. Document the spatial oil distribution over time
5. Maintain an internally consistent historical record of shoreline oil distribution for use by other scientific surveys of intertidal and subtidal impacts

The organizational structure described in the following pages details a three-phase model for the On-Scene Coordinator (OSC) to use in establishing the shoreline evaluation process during an incident. During a small spill event, one team of individuals may be able to conduct all three phases of support.

On the other end of the spectrum, during a larger spill event, three or more separate teams would be required to conduct all three phases of support to the OSC. The products of the shoreline evaluation process for a larger spill would include collecting the individual shoreline sketches noting the extent of oiling, developing a database either in text matrix or graphics displaying the oil distribution on the shoreline, recording the decision process from the initial assessment of oiling, and monitoring and final evaluation of the countermeasures used.

1 Shoreline Assessment Group

Objectives

To determine location and extent of shoreline oiling, and effectiveness of implemented countermeasures.

Members

Three or four trained personnel prepared to evaluate a section of shoreline, equipped with proper protective gear and suitable transportation to and from the site. The assessment group should have representatives of the OSC, State, responsible party, and trustees. Trained volunteers may assist members of the group. Team members must have basic site safety training and training sufficient to complete the Shoreline Survey Evaluation Form (page 33). A person well-versed in oil spill control should be the team leader. The group leader should seek consensus, however, all areas of controversy or differences of opinion shall be documented and forwarded to the OSC. Specific recommendations for cleanup may be included under this phase of the assessment. Chapter 3 outlines the shoreline field evaluation process.

Products

During a small spill event, the products may be as simple as a field sketch illustrating the oil distribution on the impacted shoreline and photographic documentation. During more complex events, the completion of the Shoreline Survey Evaluation Form would be required to document the many details of the oil's distribution on complex shoreline features.

2 Shoreline Product Review Group

Objectives

Assure product quality of the Shoreline Assessment Group. Assure quality of the spill database.

During larger or complex spill events, the OSC may elect to establish a special quality assurance / quality control (QA / QC) team. The responsibility of this group is to insure that information from the Shoreline Assessment Group is accurate and consistently gathered. They will assure items of significance that may have been overlooked by the Shoreline Assessment Group are added to the assessment process from other data sources (i.e., in-house reports, maps, databases) such as culturally or archaeologically significant areas.

Significantly, the time-sensitive elements of the response may also be added to recommendations to the OSC by this team. For example, are there natural resources that are particularly sensitive to oiling at the time, or season, the spill is occurring? Is there a window of opportunity to conduct countermeasure operations to protect a turtle nesting season (remove the oil before they arrive) or terminate countermeasure activities to protect bird nesting areas (keep the responders away from nesting areas with live chicks)?

Members

The Shoreline Product Review Group should contain representatives from the OSC, State, land managers, and database managers, as appropriate. The State representative shall collect and forward special concerns submitted by local authorities. The NOAA Scientific Support Coordinator (SSC) team can assist in the design of the database to compile detailed data on oil distribution by shoreline segment.

Products

During more complex spill events, a database will be used to collect and summarize the Shoreline Evaluation Survey forms prepared by the field teams. The use of maps and other graphics to display the oil's distribution on the shoreline is critical in assisting the decision process. This display may be as simple as using colored markers on existing maps or charts. There should not be a requirement for a computer-generated display of the oil's distribution on the shoreline when lower technology displays will provide the same information to the Technical Advisory Group and the OSC. The NOAA SSC team can assist in the design of a visual display for a particular spill event by drawing pictures representing oil distribution on representations of particular shorelines now available from National Ocean Survey (NOS) charts.

For more detailed statistical documentation, the use of a database to collect and summarize distances and extent of shoreline segments that are oiled may also be required. There should not be a requirement for the computer system to be both a combination of a visual and a data collection system when lower technology systems can provide the same information to the Technical Advisory Group and the OSC.

3 Technical Advisory Group

Objectives

Review and evaluate Shoreline Survey Evaluation forms to provide timely advice to the OSC for recommended treatment of oiled shorelines and priorities, including specific countermeasures. In addition, this group will consider the effects of proposed countermeasures. They may also suggest alternative or modified countermeasures and technologies to the OSC for experimental trials during a spill of opportunity.

Members

NOAA SSC, State representative, trustee(s), U.S. Coast Guard, and responsible party. The SSC will present group recommendations, including differing opinions, to the OSC. Participants in this group shall have the authority to commit their agencies to recommended actions. The level of staff participating on this team should have the authority to determine the final recommendations.

Products

One key product of the Technical Advisory Group is feedback to the Shoreline Assessment Group on treatment countermeasures that have been approved. The Shoreline Assessment Group will then be able to assess the effectiveness of this treatment method on the affected shoreline and make recommendations back through the Technical Advisory Group for any adjustments necessary to improve the efficacy of the cleanup. The form of the feedback may be as simple as a copy of the approved countermeasure or a work order. The copying of the graphics/charts, in which the oil distribution is displayed, would be another desirable form of feedback. Recommendations and authorized countermeasures should be copied to each team member.

B Termination of Countermeasure Activities

Objective

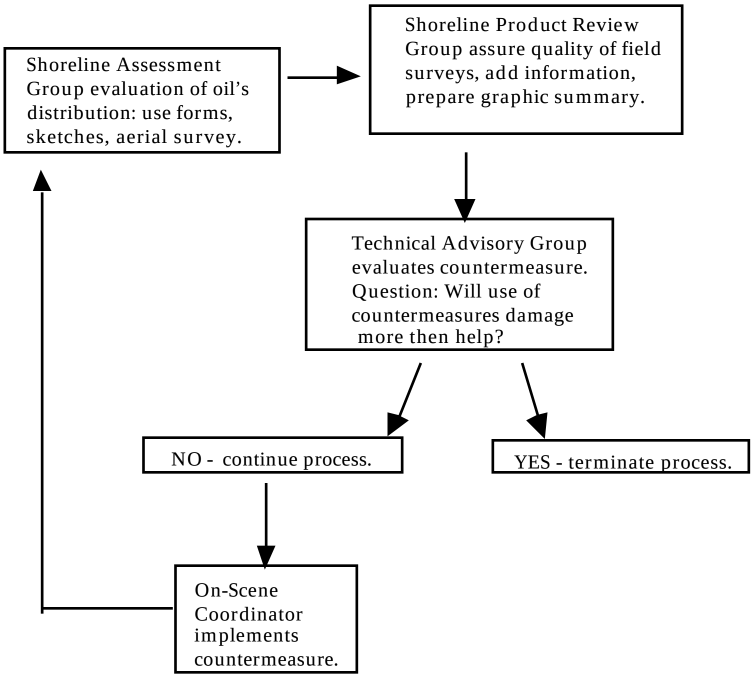
To reach agreement on the completion of each shoreline segment countermeasure activity.

Product

Completion of active shoreline countermeasures under the jurisdiction of the Federal Government is a decision of the OSC. Support of the OSC requires recommendations on shoreline countermeasures, and also recommendations on when to terminate response. The process of evaluating the results of countermeasures and the recommendation to terminate response activities requires a give and take of members with many different responsibilities and roles. A goal of the Technical Advisory Group is to determine if the continued use of a particular countermeasure will result in more damage to the environment than would occur as a result of terminating any active response measures.

Summary of the Decision Process

This section outlines the cyclical decision tree for evaluating activities.



Summary products of the decision process, including the use of maps and other graphics to display the oil's distribution on the shoreline, is critical in assisting this cyclical decision process.

- This display may be as simple as using colored markers on existing maps or charts.
- For more detailed and statistical documentation, the use of a database to collect and summarize distances of shoreline segments that are, for example, heavily or lightly oiled, may also be required.
- The NOAA SSC team can present the visual and database information, including differing opinions of members, to the OSC.
- This report of the recommendations and countermeasures approved for use should be copied to each team member and collected for inclusion in the final OSC report as required.

2 Shoreline Types and Sensitive Resources

The type of shoreline, degree of exposure to waves and currents, and associated biological sensitivity are the main criteria for selecting appropriate treatment techniques. Prediction of the behavior and persistence of oil on intertidal habitats is based on an understanding of the coastal environment, not just the substrate type and grain size. The vulnerability of a particular intertidal habitat is an integration of the:

1. Shoreline type (substrate, grain size, tidal elevation, origin)
2. Exposure to wave and tidal energy
3. Biological productivity and sensitivity
4. Ease of cleanup

All of these factors are used to determine the relative sensitivity of shorelines. Key to the sensitivity ranking is an understanding of the relationships between: physical processes, substrate, shoreline type, product type, sediment transport, and product fate and effect. The intensity of energy expended upon a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline cleanup activities is determined, in part, by the lack or slowness of natural processes in removal of oil stranded on the shoreline.

These concepts were used in the development of the Environmental Sensitivity Index (ESI), which ranks shoreline environments as to their relative sensitivity to oil spills, potential biological injury, and ease of cleanup. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low on the scale, while sheltered areas with associated high biological activity have the highest ranking. The shoreline ranking system provides a useful first step in the design of contingency plans because it identifies the priority areas that require maximum effort for protection and cleanup. The shoreline types used in this manual are the rankings, on a scale of 1 to 10, used on ESI maps prepared for Florida, Puerto Rico, U.S. Virgin Islands, Hawaii, and Guam The descriptions, predicted oil impact, and recommended response activity listed in the following sections were updated from existing ESI maps, based on NOAA (1992). These shoreline types are then used in the matrices in Chapter 4.

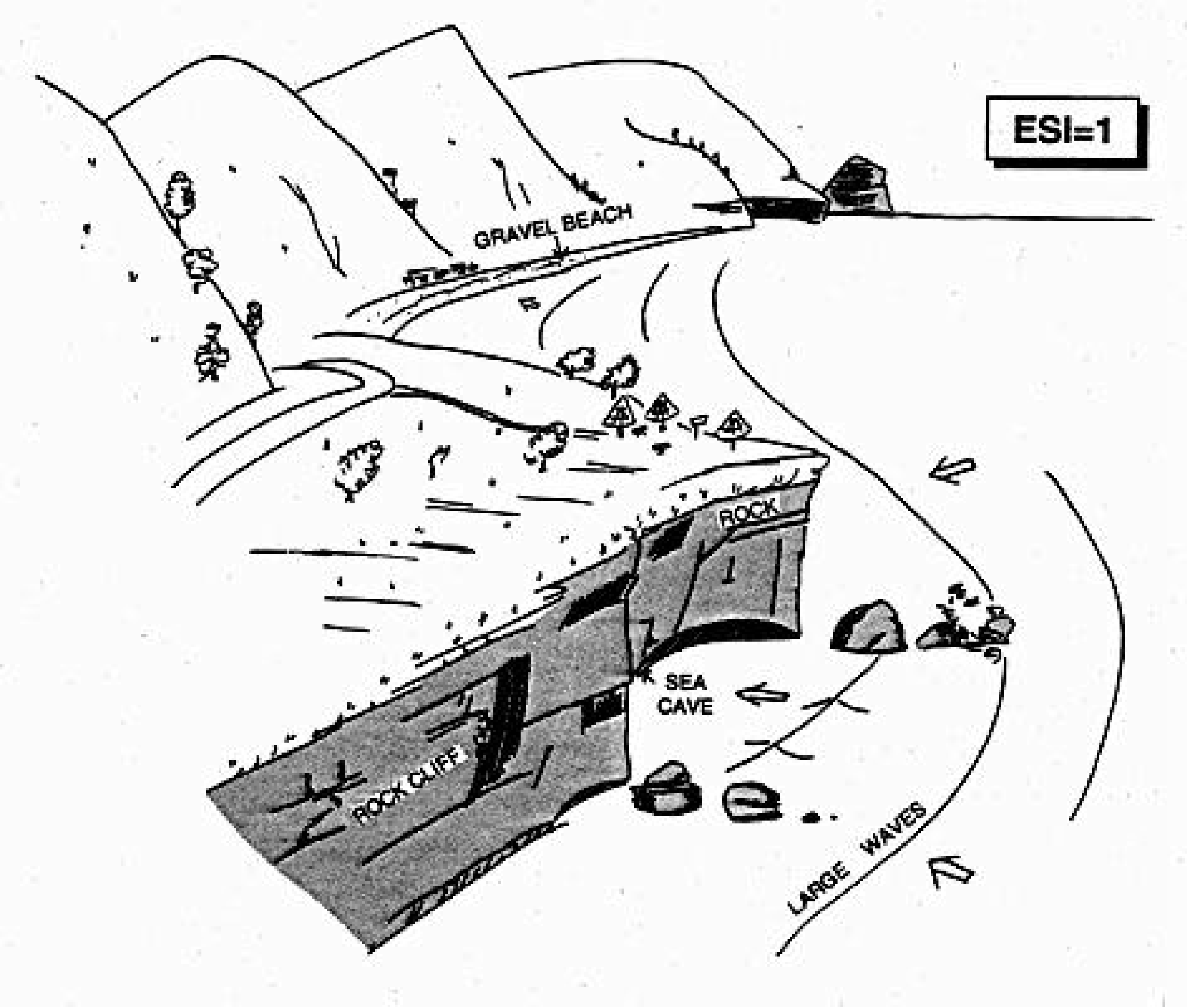
ESI=1 Exposed Rocky Shores and Vertical, Hard Man-Made Structures (e.g., Seawalls)

Description

- Exposed rocky shores are composed of vertical scarps (>45° in slope) in bedrock.
- They are most common on exposed headlands with steep nearshore topography.
- They are exposed to high wave energy or tidal energy on a regular basis.
- In places, the vertical scarps are buttressed at the base by large slump blocks.
- Seawalls and piers occur in developed areas to provide protection to residential and industrial developments.
- Substrate may be colonized by intertidal algae and limpets, although attached organisms are usually sparse to moderate.

Predicted Oil Impact

- Most commonly, oil would be held offshore by waves reflecting off the steep rock faces.
- Deposited light oils would be removed rapidly by wave action; heavier, sticky oils are likely to remain longer as a patchy band at or above the high-tide line.
- Heavy and weathered oils would adhere to rough surfaces and in crevices; there is little potential for penetration.
- Effects on intertidal communities are expected to be of short duration; an exception would be where heavy concentrations of a light refined product (e.g., No. 2 fuel oil) came ashore very quickly.



Recommended Response Activity

- On very exposed shores, no cleanup is necessary (and may be dangerous).
- On less exposed shores:
  - High-pressure spraying may be effective while oil is still liquid.
  - Manual scraping of seawalls may be necessary for removal of tarry deposits, to minimize aesthetic impacts.

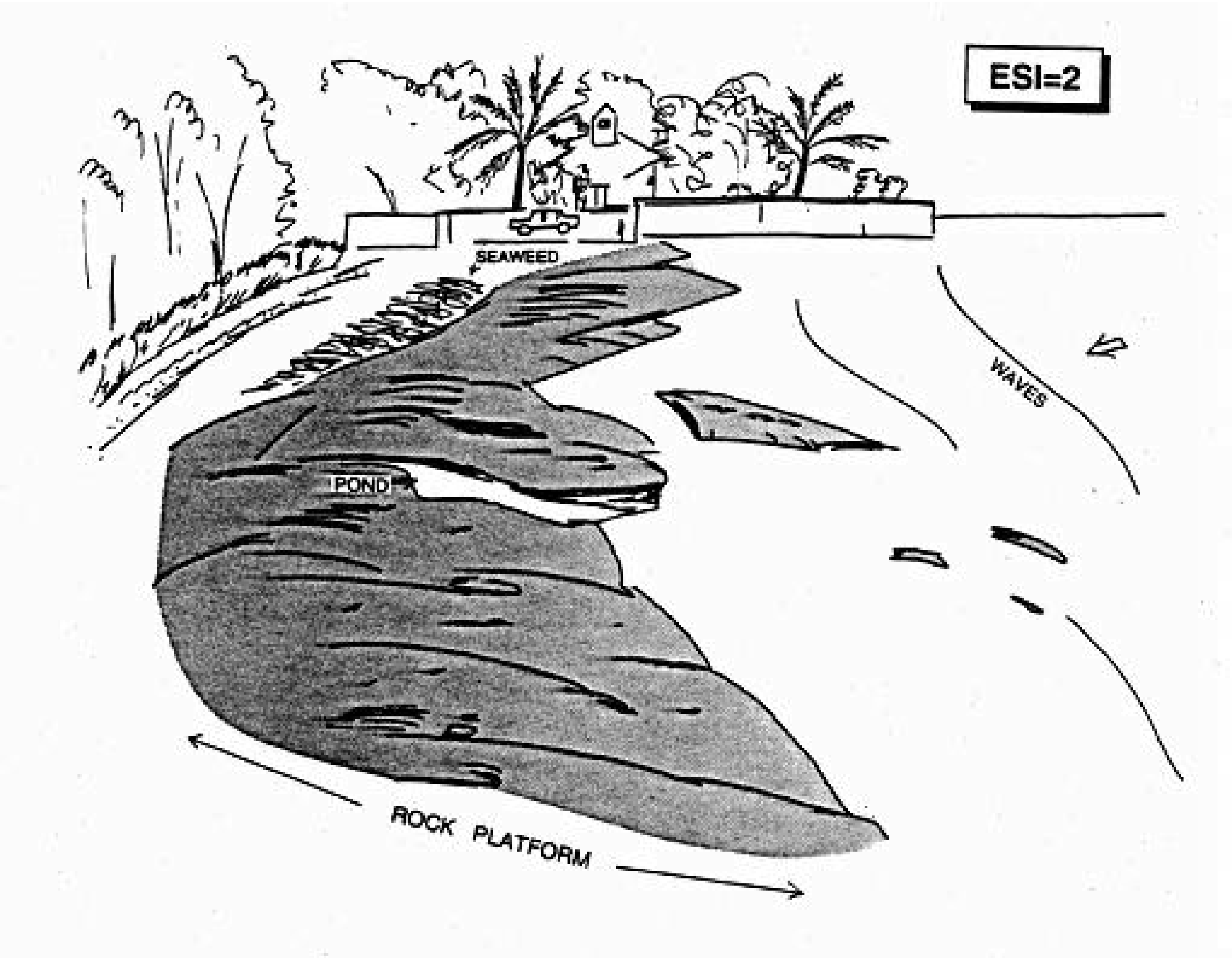
ESI=2 Exposed, Wave-Cut Rock Platforms

Description

- Platforms are wave-cut or low-lying benches in rock, generally exposed to high wave action.
- The platform may be covered by a thin veneer of sand and gravel, frequently colonized by intertidal algae and limpets.
- Rock surfaces are irregular, with numerous tidal pools and associated organisms. The rock surface may be colonized by intertidal algae and limpets.
- In places, low-lying, pitted, and pinnacled limestone merges into offshore reef-flat platforms.
- The reef-flat platform supports large populations of encrusting plants and animals. Often, the heaviest growth on the reef-flat platform is restricted to low-tide moats or where holes and depressions retain water during low tide.

Predicted Oil Impact

- Oil would not adhere to the rock platform, but rather be transported across the platform and accumulate along the high-tide line.
- Light oils may penetrate porous volcanic rocks at the high-tide line.
- Oil can penetrate and persist in the beach sediments on the landward side of the platform, if present.
- Light oils would tend to be removed rapidly by waves and evaporation.
- Heavy oils and tar balls would tend to melt into crevices and depressions, especially on porous, irregular rock surfaces.
- Persistence may be from days to months, depending on the site-specific, wave-energy levels and type of oil.
- Tidal pool organisms and algae may be killed, but recovery can be rapid.



Recommended Response Activity

- Cleanup is not necessary in most areas, except for removal of oiled wrack and accumulated pooled oil.
- High recreational-use areas may be cleaned effectively using high-pressure water spraying of non-vegetated areas if oil is still fresh.
- Avoid removal of organisms.
- Low-pressure flushing may be appropriate on vegetated areas that continue to sheen after several days.

ESI=3 Fine-Grained Sand Beaches

Description

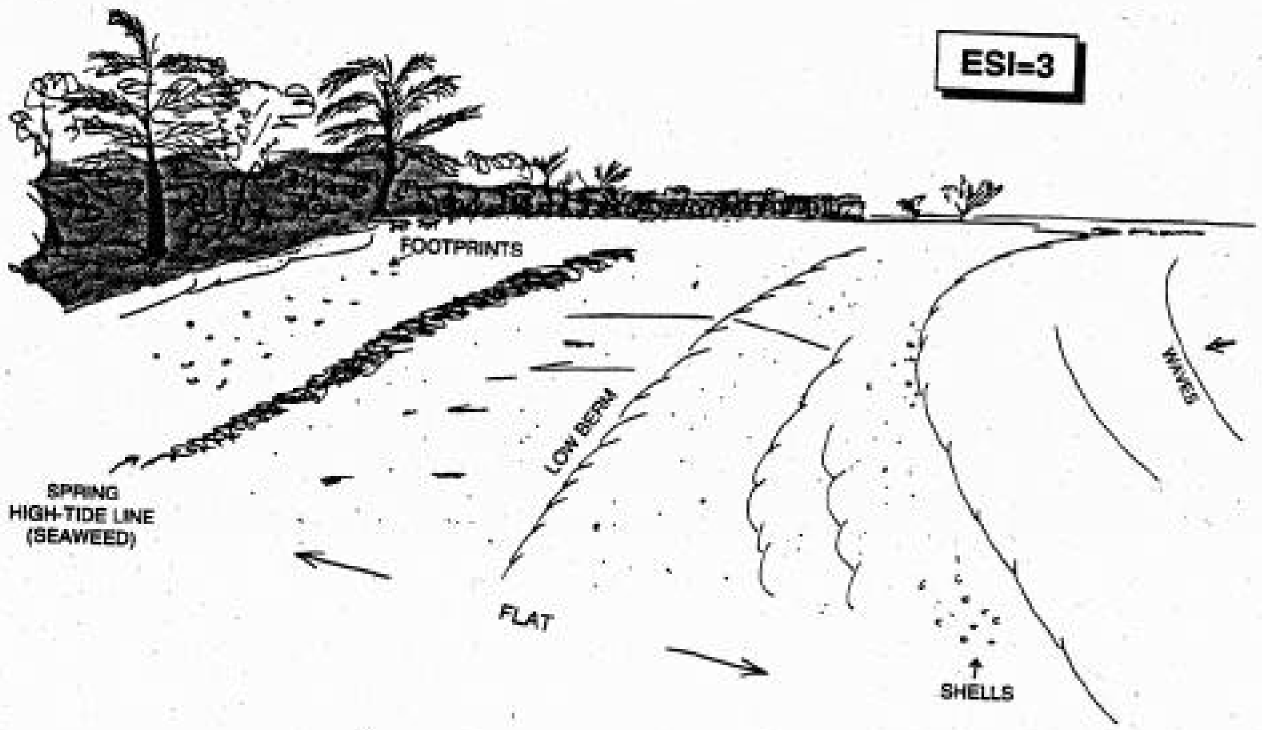
- Not a dominant beach type because of the abundance of coarse shells and coral rubble.
- On islands they are usually found as pocket beaches bordered by rocky headlands.
- They are high-use recreational areas.
- The beaches are generally flat and hard-packed, and infauna are scarce.

Predicted Oil Impact

- Large oil accumulations would cover entire active beach face.
- Light oil accumulations would be deposited as oily swashes along the upper intertidal zone.
- Oil would accumulate in any wrack that may be present.
- Penetration of oil into the beach can be up to 10 cm; burial would be minimal.
- Asphalt pavements can form under heavy accumulations; pavements change the nature and stability of the substrate and thus its biological utilization.
- Shorebirds resting/feeding on these beaches may be oiled.
- Biological effects include temporary declines in beach organisms, which may also affect feeding shorebirds.

Recommended Response Activity

- Fine-grained sand beaches are the easiest beach type to clean.
- Cleanup should concentrate on removal of oil and oiled wrack.
- Sand removal should be minimized to avoid erosional problems; sediment removal activities should commence only after all the oil has come ashore.
- Manual cleanup, rather than use of road graders and front-end loaders, is advised to minimize volume of sand removed and prevent grinding the oil deeper, depending on the size of the oiled area.
- Techniques which wash oiled sand into the lower intertidal and subtidal should be avoided.


ESI=3
FOOTPRINTS
SPRING
HIGH-TIDE LINE
(SEAWEED)
LOW BERM
WAVES
FLAT
SHELLS

ESI=4 Medium- to Coarse-Grained Sand Beaches

Description

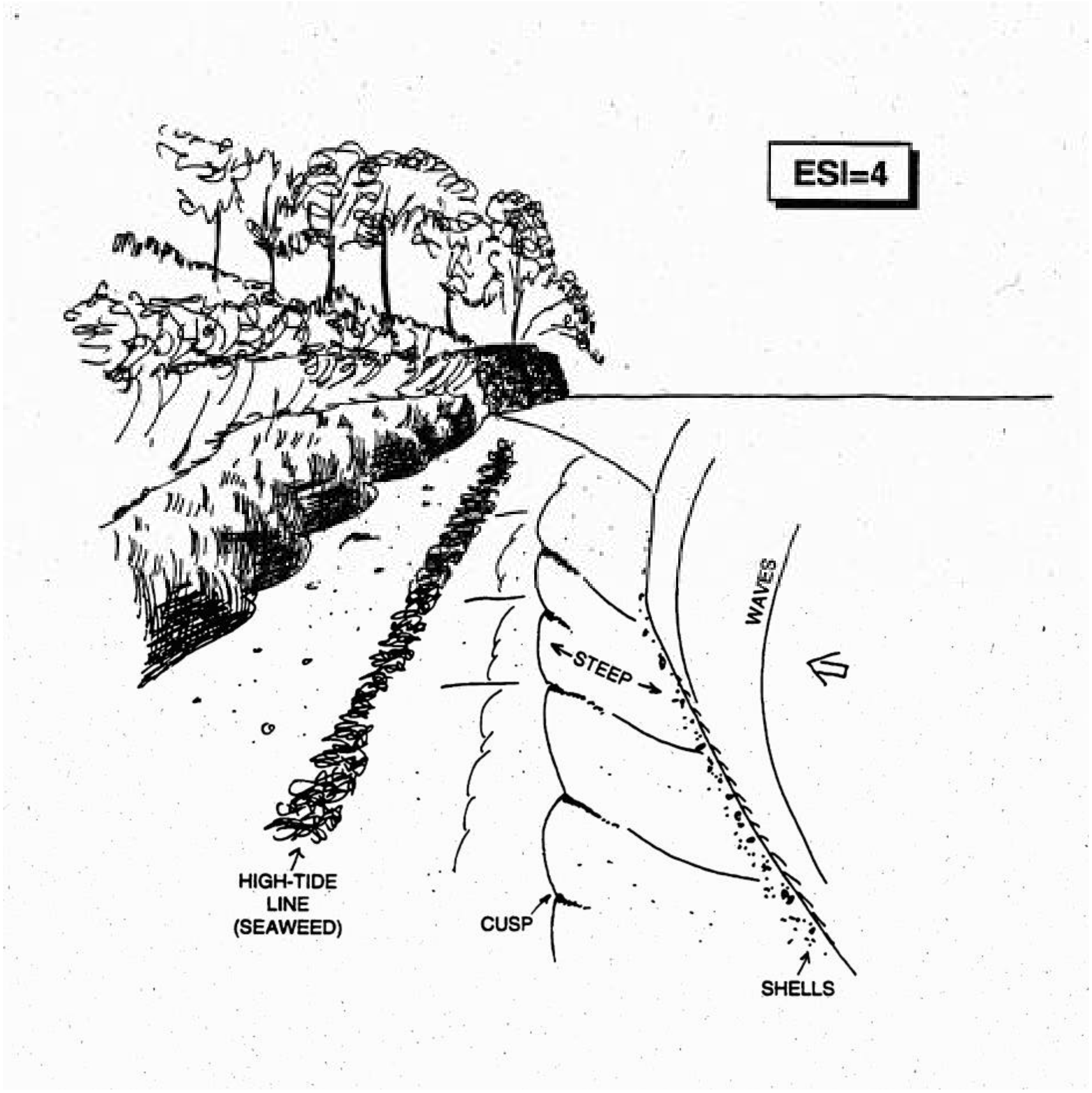
- These beaches are present in areas sheltered by barrier reefs or wide reef-flat platforms, as pocket beaches bordered by rocky headlands, or as long stretches that have been renourished.
- They have moderate beach slopes and are narrow with soft sediments.
- They occur in areas with intermittent high waves and wrack can be common.
- Species density and diversity is usually low.

Predicted Oil Impact

- Under heavy accumulations, oil can cover the entire beach face, although the oil would be lifted off the lower part of the beach with the rising tide.
- Small accumulations would be deposited in swash lines and wrack deposits.
- Large amounts of oil can accumulate behind the high-tide berm, where it is unable to drain off the beach at low tide.
- Oil can penetrate 10-25 cm, with light oils penetrating deeper than heavy oils.
- Oil may become deeply buried (30-60 cm) as clean beach sediments are deposited on top of the oiled layer.
- Asphalt pavements can form under heavy accumulations in more sheltered areas; pavements change the nature and stability of the substrate and thus its biological utilization.
- Temporary declines in infaunal populations may occur.

Recommended Response Activity

- Cleanup may be difficult because of relatively soft sediments (e.g., vehicular access may be impaired).
- Cleanup should focus on oil/oily debris removal from the upper beach face.
- Sand removal should be minimized to avoid erosional problems; sediment removal activities should commence only after all the oil has come ashore.



- Traffic should be limited to prevent mixing oil deeper into the sediments.
- Use of heavy equipment for oiled sand removal may result in the removal of excessive amounts of sand; manual cleanup may be less disruptive, depending on the size of the oiled area.
- Nutrient addition may be an option, particularly when other cleanup methods have reached their practical limit of application. Effectiveness of nutrients would have to be evaluated on a case-by-case basis.

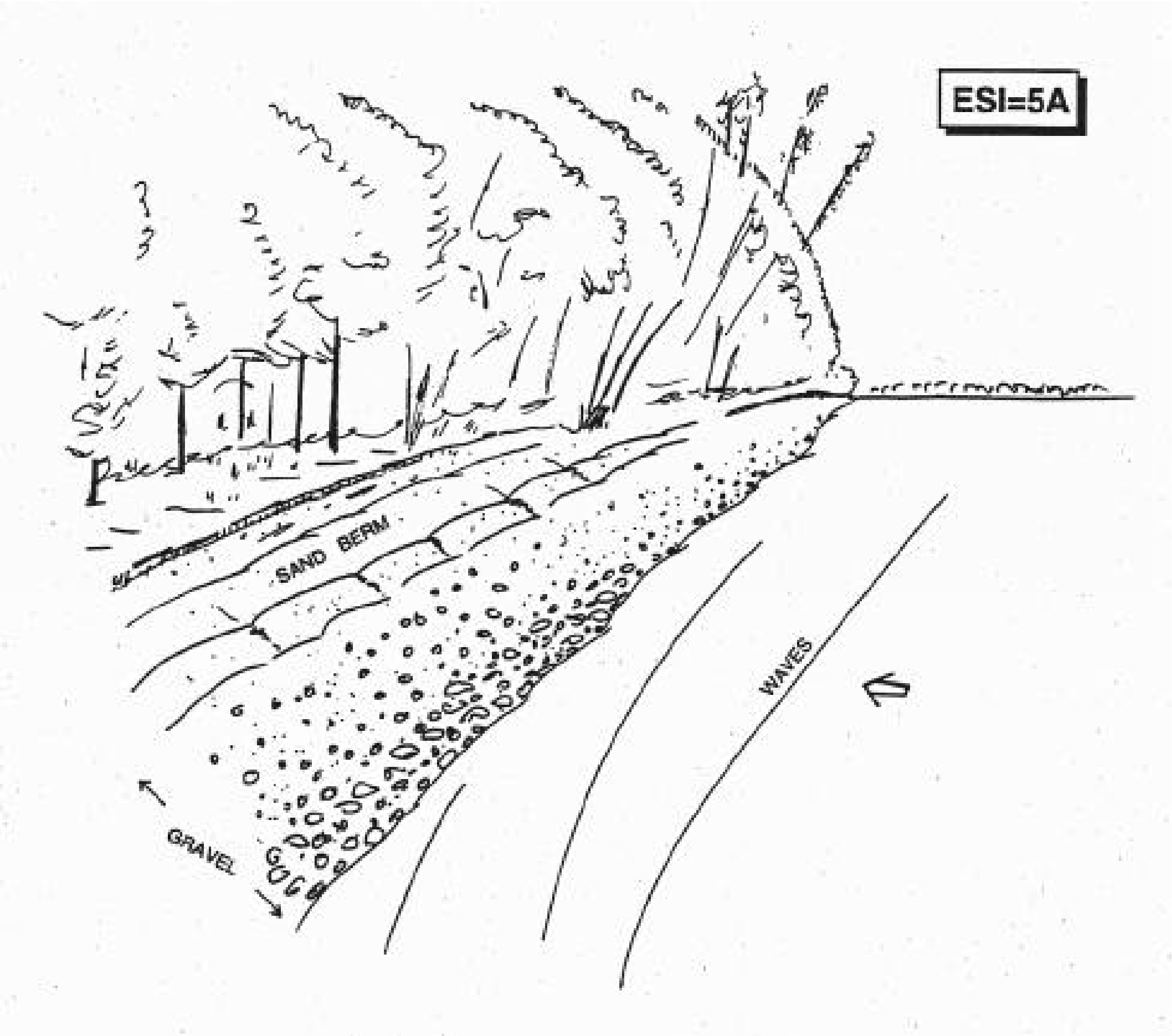
ESI=5A Mixed Sand and Gravel Beaches

Description

- These beaches are composed of a variable mixture of carbonate sand, shells, coral rubble, and rock fragments.
- They occur in a wide variety of settings, but are most common on exposed shorelines in shallow indentions adjacent to eroding headlands and on top of reef-flat platforms.
- Active beaches have low infaunal densities because of sediment mobility; more stable beaches have moderate densities.

Predicted Oil Impact

- Oil penetration may be high (tens of cm), with greatest penetration in coarser, well-sorted sediments.
- Under very heavy accumulations, oil may spread across the entire beach.
- During small spills, oil would be deposited along and above the high-tide swash line.
- Burial of oil by clean sediments may be very deep (more than 1 m) at the high-tide berm.
- Oil can be stranded on low-tide terraces composed of gravel, particularly if the oil is weathered or emulsified.
- Asphalt pavements are likely to form in more sheltered beaches where heavy accumulations of oil fill the voids between the sediments; once formed, these pavements are very stable and can persist for many years.
- Any oil stranded above the high-tide line would be highly persistent.
- Biota present may be killed by the oil, either by smothering or by lethal concentrations of dissolved components in interstitial water.



Recommended Response Activity

- Sediment removal should be minimized to avoid erosional problems; sediment cleanup should commence only after all the oil has come ashore.
- Oiled wrack and debris deposits should be removed manually.
- Low-pressure spraying may be used effectively on coarser-grained beaches.
- Berm relocation is effective for speeding natural removal of subsurface oil.
- Nutrient addition may be an option, particularly when other cleanup methods have reached their practical limit of application. Effectiveness of nutrients would have to be evaluated on a case-by-case basis.

ESI=5B Artificial Fill Containing a Range of Grain Size and Materials

Description

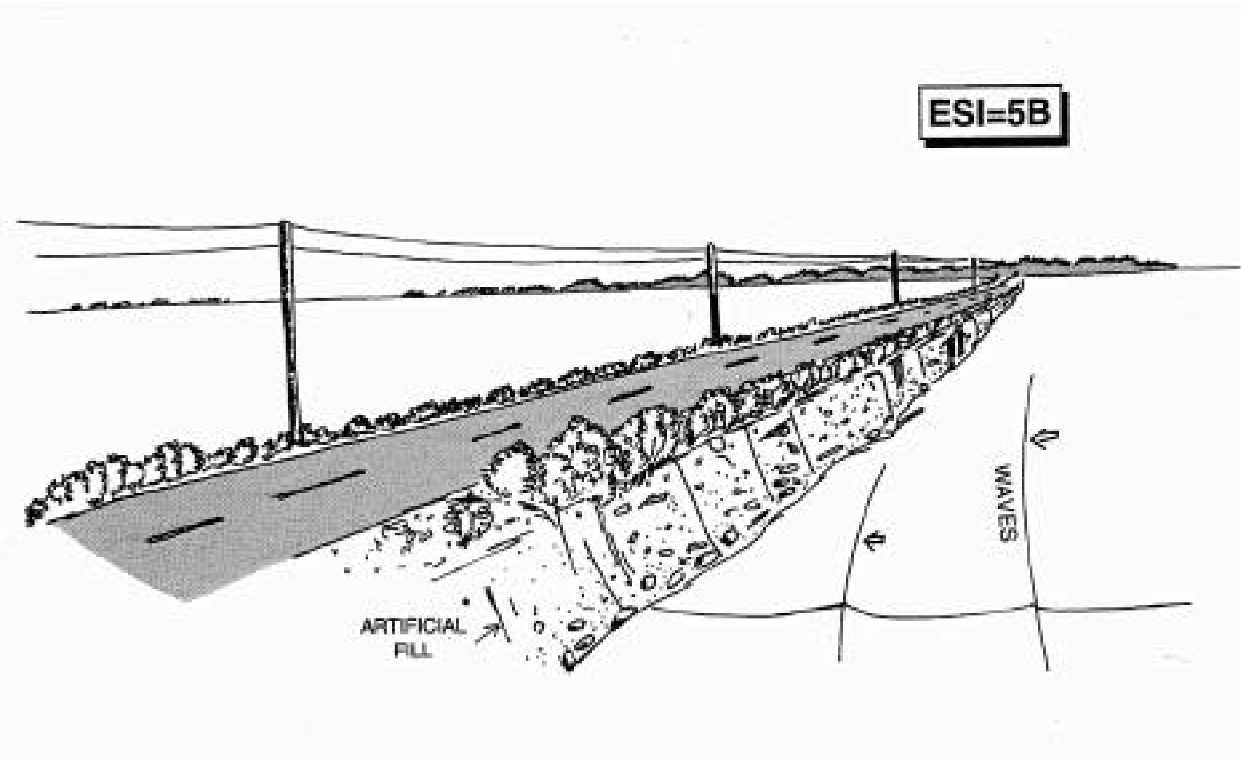
- Most of the developed ports and harbors have areas that have been modified by creating beaches, assorted breakwaters, etc., by artificial placement of a variety of materials.
- Usually has the consistency of mixed sand and gravel beaches, being composed of sand mixed with coral and rock debris.
- These beaches may be exposed only to very intermittent wave energy.

Predicted Oil Impact

- Oil penetration may be high (tens of cm), with greatest penetration in coarser, well-sorted sediments.
- Deeply penetrated oil may leach for a period of time, generating a source of chronic oiling to adjacent habitats.
- Under very heavy accumulations, oil may spread across the entire beach.
- During small spills, oil would be deposited along and above the high-tide swash line.
- Natural removal rates may be very slow, depending on the local wave or boat wake energy.
- Asphalt pavements are likely to form in more sheltered beaches where heavy accumulations of oil fill the voids between the sediments; once formed, these pavements are very stable and can persist for many years.
- Any oil stranded above the high-tide line would be highly persistent.

Recommended Response Activity

- Oiled wrack and debris deposits should be removed manually.
- Low-pressure spraying may be used effectively.
- Removal of sediment may be advisable if more fill is available to replace it, to control chronic leaching or remove pavements.


ESI=5B
ARTIFICIAL FILL
WAVES

ESI=6A Gravel Beaches

Description

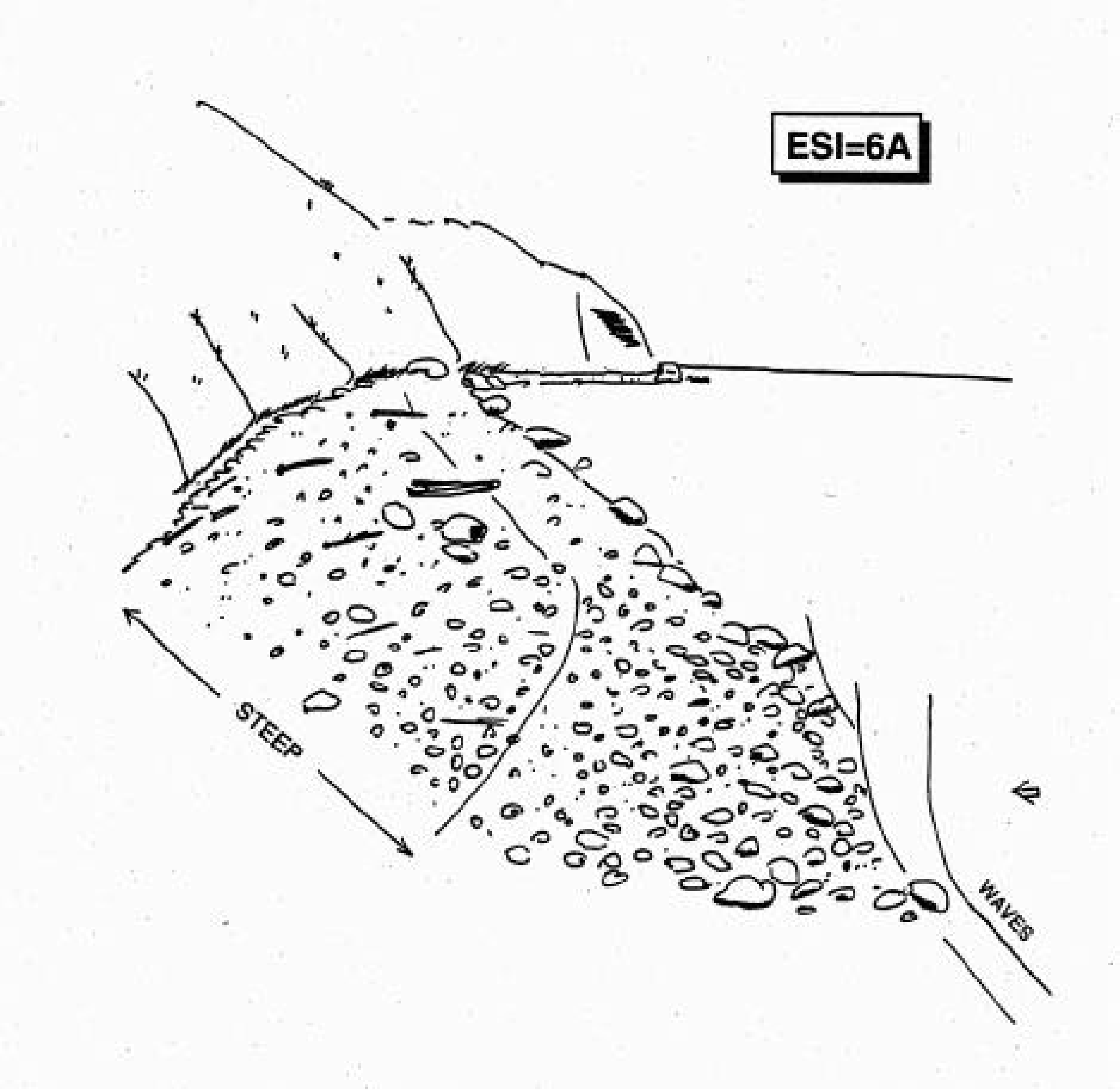
- Gravel beaches are composed purely of gravel-sized sediments, with little-to-no sand.
- The gravel-sized sediments include coral rubble and/or shell and rock fragments.
- Gravel beaches are present adjacent to eroding headlands.
- They can be steep, with multiple wave-built berms forming the upper beach.

Predicted Oil Impact

- Oil on gravel beaches would coat individual pieces of gravel.
- Coral rubble is very porous and most oils will soak into the coral rubble itself.
- High porosity and permeability would allow deep penetration to several tens of centimeters into substrate.
- Penetration would be greatest in areas of largest grain size and best sorting.
- In exposed areas, waves would remove surface contamination.
- In intermittent-energy areas, buried or penetrated oil would tend to seep out slowly, generating sheens that can recontaminate the shoreline.
- There is a high potential for oil burial by accretional features.
- If left to harden, heavy accumulations of oil would likely form an asphalt/gravel pavement in sheltered areas.

Recommended Response Activity

- Heavily oiled wrack and debris should be removed.
- Removal of sediments is not recommended because of the slow rate of natural replacement of gravel.
- High-pressure spraying of oiled gravel may help in cleaning exposed surfaces, but would have little effect on oil that penetrated deeply into gravel.
- Berm relocation is effective for speeding natural removal of subsurface oil.
- Nutrient addition may be an option for treating oiled gravel beaches, particularly when other cleanup methods have reached their practical limit of application. Effectiveness of nutrients would have to be evaluated on a case-by-case basis.


ESI=6A
STEEP
WAVES

ESI=6B Exposed Riprap

Description

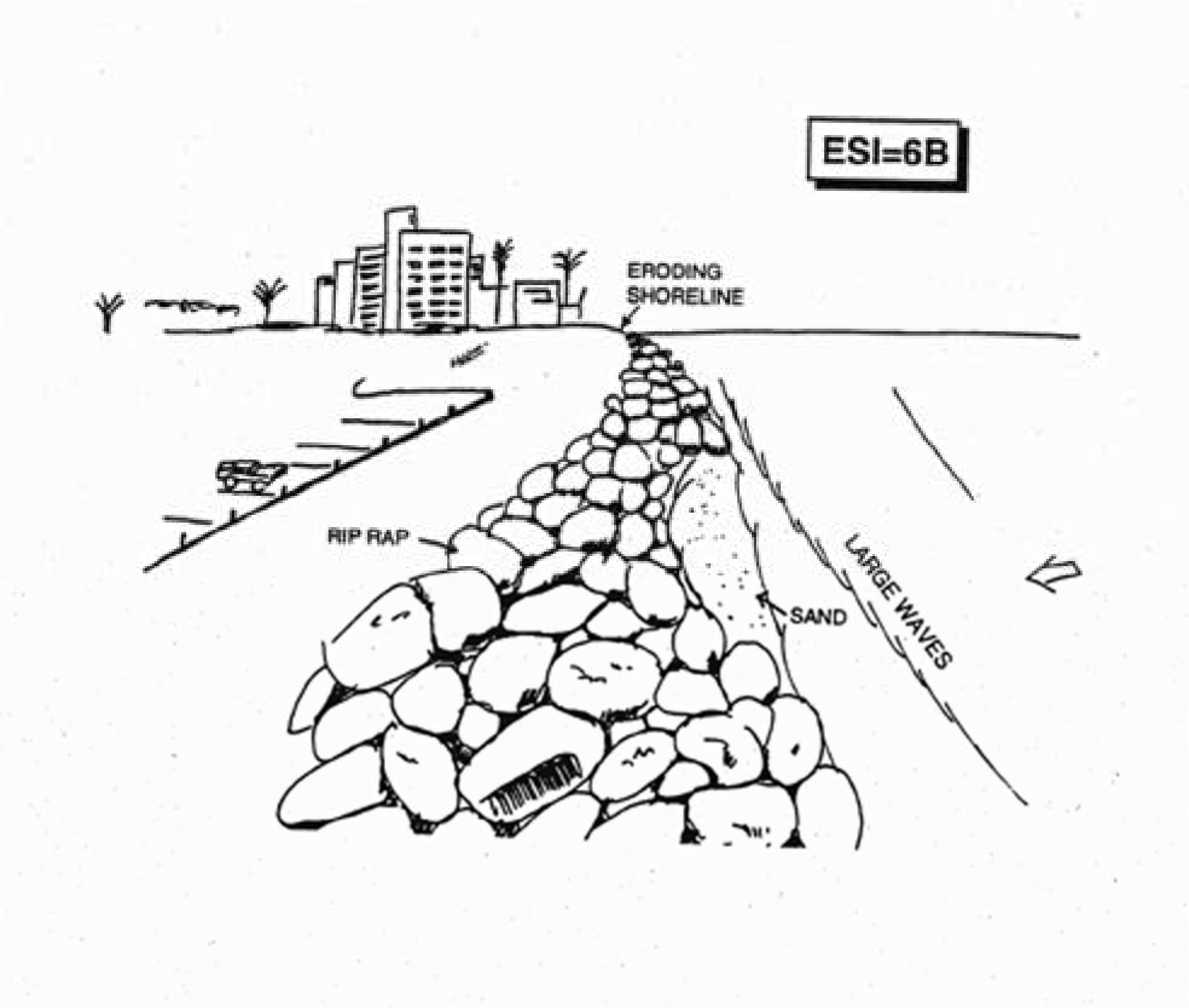
- Riprap consists of large rocks as well as concrete armor units (tetrapods, dolos, etc.).
- Riprap is present in harbor entrances and along developed areas for shore protection.
- Biomass is generally low in high energy areas, but attached organism density and species diversity are higher at more protected sites.

Predicted Oil Impact

- Heavy oil would coat the surface as well as penetrate and completely fill the cavities in riprap structures.
- In exposed areas, waves would remove surface contamination.
- In lower-energy areas, oil would tend to seep out of the oil-filled cavities slowly, generating sheens that can recontaminate adjacent shorelines.
- If oil is left to harden, an asphalt pavement may result.

Recommended Response Activity

- High-pressure spraying of oiled riprap may help in cleaning exposed surfaces but would have little effect on oil that penetrated deeply into the riprap.
- For small areas of contamination, riprap units can be manually wiped or scraped to remove oil.
- It may be necessary to remove heavily oiled riprap and replace it.
- Sometimes, the only option is to use snare booms to pick up oil as it is naturally removed.


ESI=6B
ERODING SHORELINE
RIP RAP
SAND
LARGE WAVES

ESI=7 Exposed Tidal Flats

Description

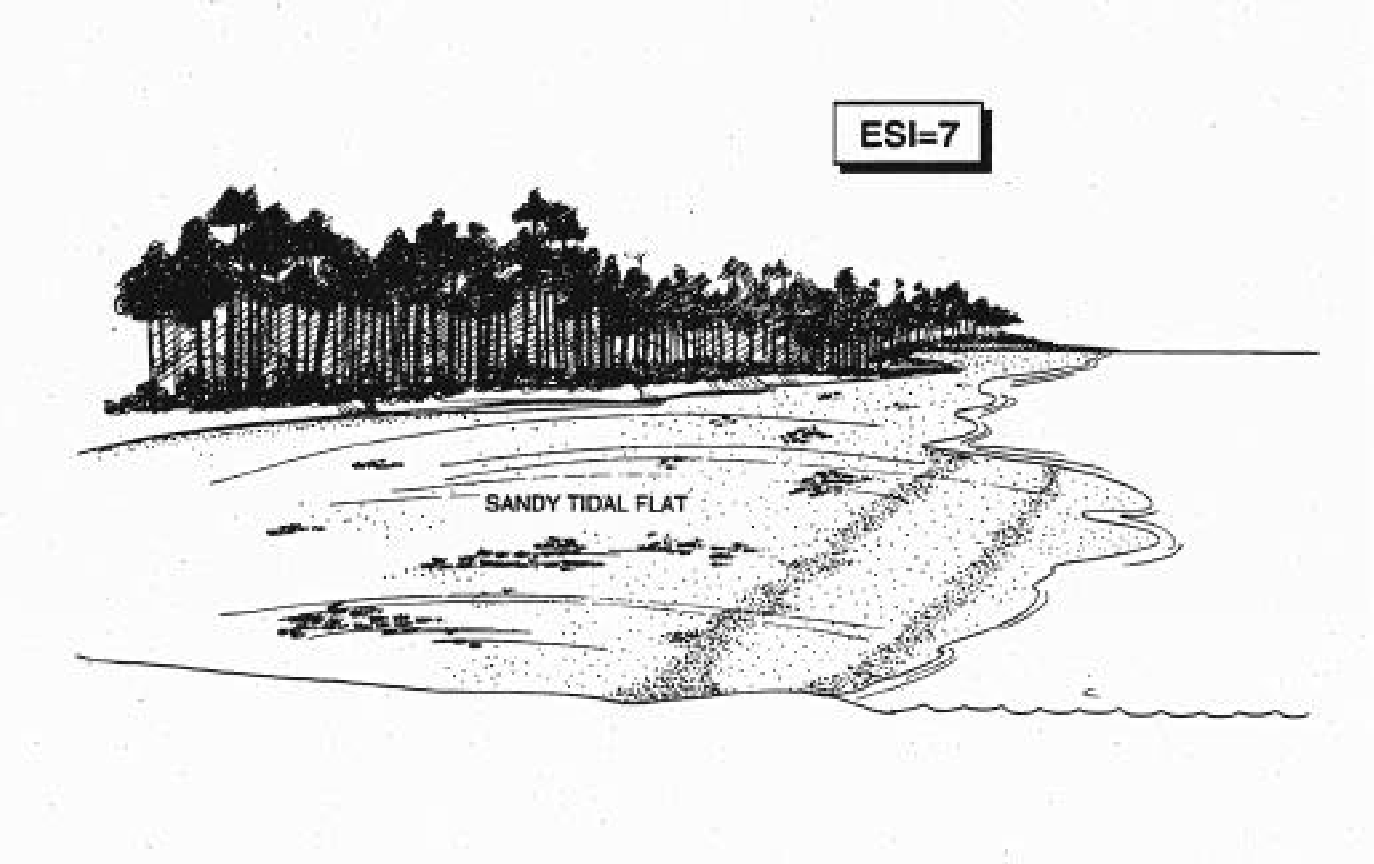
- They are an uncommon shoreline type in tropical U.S. waters because of the small tidal range in the Caribbean Sea and open Pacific Ocean.
- They are present near river mouths in areas sheltered by barrier reefs or wide fringing reefs, in the lee of offshore islands, or near tidal inlets.
- The dominant grain size is sand, perhaps with minor amounts of mud and gravel.
- They are exposed to moderate wave and tidal current energy.
- They are always associated with another shoreline type on the landward side of the flat.
- Biological utilization can be very high, with large numbers of organisms and heavy use by birds for roosting and foraging.
- Intertidal benthic algae may dominate this habitat.

Predicted Oil Impact

- Heaviest concentrations would be along the high-tide line.
- Most oil would be transported across the flat with the rising tide; seldom would oil adhere to the tidal flat or be buried.
- Heavy accumulations would cover the flat during low tide.
- Oil does not penetrate the water-saturated sediments, except into burrows in the upper intertidal zone, but it may coat the attached algae, particularly if it is dead or dries out during exposure at low tide.
- Biological impacts may be severe, primarily to organisms, thereby reducing food sources for birds and other predators.

Recommended Response Activity

- Cleanup is difficult; therefore these areas require priority protection.
- Cleanup is possible only during low tides.
- The use of heavy machinery should be avoided at all times.
- Cleanup efforts should concentrate on removing oil and oily debris along the high-tide line.
- Operations should be conducted from boats to minimize sediment disturbance.


ESI=7
SANDY TIDAL FLAT

ESI=8 Sheltered Rocky Shores and Coastal Structures

Description

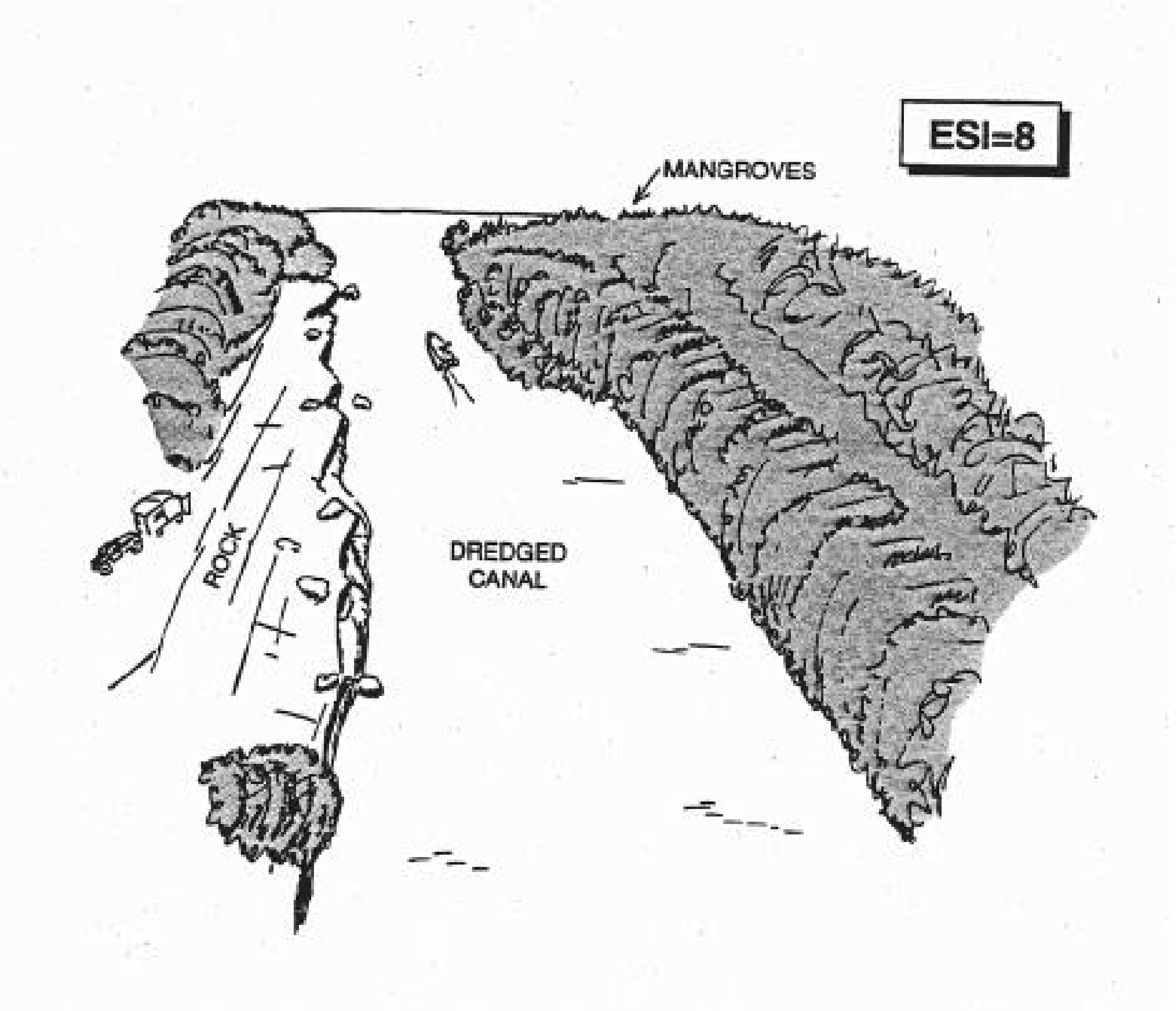
- Sheltered rocky shores occur in small coves and bays, and in developed areas where canals have been dug into bedrock.
- They occur as vertical rock walls and boulder-strewn rocky ledges.
- Seawalls, piers, bulkheads, and other structures can dominate developed shorelines along harbors and bays.

Predicted Oil Impact

- Oil would coat the intertidal surfaces of rocky shores and seawalls.
- Oil would penetrate into the joints and voids of the rocks.
- On vertical surfaces, the oil would form a distinct oil band along the high-tide line; the lower half of the rock face usually stays wet enough to prevent oil from adhering and remaining.
- Heavy oil accumulations can coat the entire intertidal zone.
- Oil may persist for weeks to months; fresh oil and light refined products have high acute toxicities, which can affect attached organisms after even short exposures.
- Biota living on the surface (e.g., urchins, crabs, snails) would be impacted.

Recommended Response Activity

- High- and low-pressure water spraying of the rocky surfaces and seawalls may be required:
  - To remove oil
  - To prepare area for recolonization of epifauna
  - For aesthetic reasons, in populated areas
  - To prevent the chronic leaching of oil from the surface
- High-pressure spraying of coastal structures should be conducted only when the tide is high, to prevent the released oil from adhering to the sediments at the base of the structures. Sorbents can also be used to recover the oil.


ESI=8
MANGROVES
ROCK
DREDGED CANAL

ESI=9 Sheltered Tidal Flats

Description

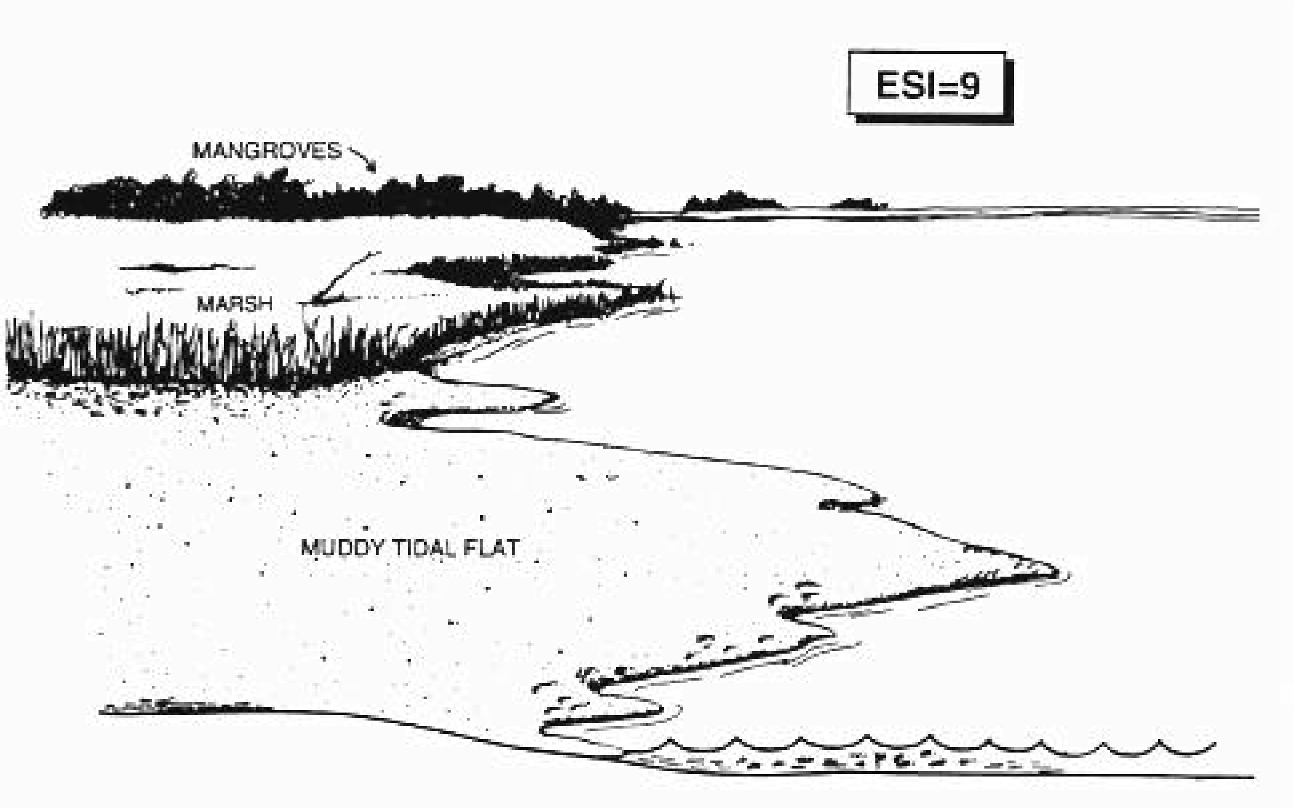
- Sheltered tidal flats are not common, because of the small tidal range.
- They are often associated with mangroves.
- They are composed predominantly of mud, but may contain sand and/or gravel, and are sheltered from wave and tidal energy.

Predicted Oil Impact

- Oil would most likely to be transported across the tidal flat and deposited along the high-tide line in the accumulated wrack deposits.
- Very heavy accumulations can cover much of the flat surface, but penetration would not occur into the water-saturated sediments of the flat, except possibly into burrows at the high-tide line.
- Long-term contamination of muddy tidal-flat sediments is possible in areas of high suspended sediments through the sorption of the oil on these particulates.
- Oil stranded at the high-tide line or mixed into the sediments may persist for many years; natural removal is very slow.
- Organisms living in and on the sediments would be impacted.

Recommended Response Activity

- These environments are high-priority areas necessitating the use of spill protection devices such as booms to prevent or minimize oil impact.
- Foot traffic on oiled tidal flats should be prohibited.
- If cleanup is necessary, it should be restricted to the upper reaches of the high-tide swash line or be conducted from boats.
- Passive cleanup efforts such as deployment of sorbent boom can be used to recover oil as it is removed naturally, but they must be changed frequently to be effective.
- Any cleanup should be supervised closely to minimize the mixing of oil into the sediment during the cleanup effort.


ESI=9
MANGROVES
MARSH
MUDDY TIDAL FLAT

ESI=10A Mangroves

Description

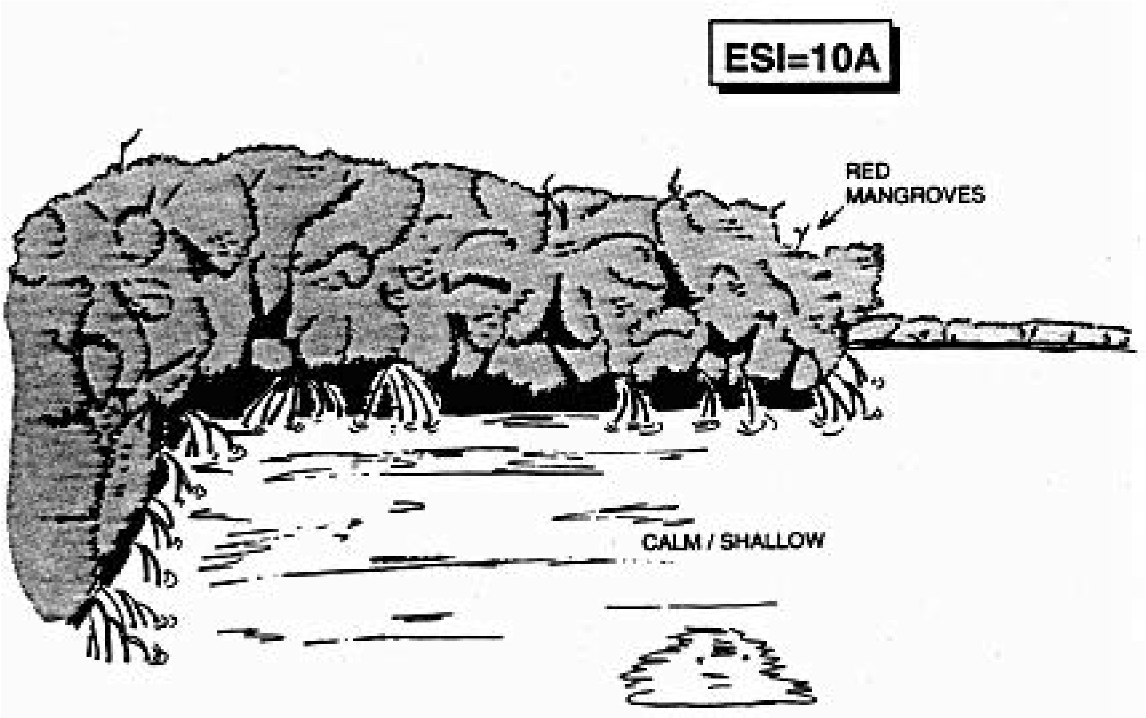
- Mangroves are the most sensitive shoreline habitat to oil-spill effects.
- Mangrove forests can range in width from one to hundreds of meters.
- Red (*Rhizophora*) and black (*Avicennia*) mangroves are the most common mangrove species.
- The sediment ranges from thin to thick layers of sand and mud, to muddy peat on bedrock, to a rubble veneer on bedrock.
- They can vary widely in the degree of exposure to wave and tidal energy, with exposed forests along the outer shoreline and sheltered forests in bays and estuaries well-protected from physical processes.
- There can be many storm swash lines of heavy wrack deposits deep into the forest.
- The mangrove roots support a rich diversity of attached animals and plants.

Predicted Oil Impact

- As oil enters mangrove forests, their roots and associated epiphytic communities would be covered with a band of oil.
- Degree and type of acute mortality is oil-type dependent:
  - Light oils (gasoline, jet fuel, No. 2 fuel oil) would have acute, toxic effects to both trees and intertidal biota
  - Crude oils/heavy refined products are toxic due to coating and sediment contamination
- Oiling of sediments would occur if large quantities of oil were washed ashore; of particular concern are organic-rich sediments that are exposed at low tide.
- No. 2 fuel oil would have the greatest effects due to penetration; it can persist and remain toxic for many years if it penetrates burrows and prop root cavities.
- Persistence would be long-term with heavy oil accumulations.
- A beach berm fronting the mangroves would normally limit oil contamination to the seaward side of the berm, preventing oiling of forest interiors.

Recommended Response Activity

- These highly sensitive areas are very difficult to clean up and thus require the highest protection priority.



- Under most conditions, the best practice is to allow natural recovery, especially where natural cleaning can occur.
- Placement of sorbent boom along the mangrove forest fringe may reduce the quantity of stranded oil significantly.
- Booms should be deployed in an attempt to protect the most sheltered areas where greatest persistence is likely.
- However, deployment of boom is seldom effective with light refined oils because of the low viscosity of these products.
- Heavy accumulations should be skimmed or flushed with low-pressure water flooding, as long as there is NO disturbance or mixing of oil into the substrate. If substrate mixing is likely or unavoidable, it is better to leave the oil to weather naturally.
- Oily debris and wrack can be a source of chronic sheening and should be removed, taking care not to disturb the substrate.
- Vegetation should never be cut or otherwise removed.
- Sorbents can be used to wipe heavy oil coating from prop roots in areas of firm substrate. Close supervision of cleanup is required.
- Nutrient addition may be an option for treatment of residual oil contamination in mangrove sediments. Effectiveness would have to be evaluated case-by-case.

ESI=10B Other Estuarine Wetlands

Description

- Many of the river systems on tropical islands contain estuarine wetlands which, in some areas, extend over 1 km inland.
- Principal plants on Pacific Ocean Islands include the Nipa palm (*Nypa fruticans*), pago (*Hibiscus tiliaceus*), tangan-tangan (*Leucaena* sp.), bamboo, and miscellaneous grasses, among others.
- These wetlands have high density and diversity of plants, and they are important habitats for many animals.

Predicted Oil Impact

- Estuarine conditions allow the possibility for oil to be transported into these wetlands during flood tides.
- Specific effects of oil on many of these species is unknown, but wetlands are usually heavily impacted during oil spills.
- Oil adheres readily to the vegetation.
- The band of coating would vary widely, depending upon the tidal stage at the time that the oil slicks are in the vegetation. There can be multiple bands.
- Large slicks would persist through multiple tidal cycles and coat the entire plant from the high-tide line to the base.
- Fresh crudes and heavy oils would tend to “slide” down the stem over time in warmer weather and pool on the sediments at the base of the plant.
- Weathered oils do not “slide” as much; the oil stays on the vegetation.
- If the vegetation is thick, heavy oil contamination can be restricted to the outer fringing vegetation, with penetration and lighter oiling further inland.
- Lighter oils (light refined, fresh crudes) can penetrate deeply into the wetland, to the high-tide line.
- Medium to heavy oils do not readily adhere to or penetrate the wet, muddy sediments, but they can pool on the surface and in burrows.
- Light oils can penetrate the top few cm of sediment and deeply into burrows and cracks (up to 100 cm).

Recommended Response Activity

- These highly sensitive areas are very difficult to clean up, therefore they require the highest of priority protection.
- Under most conditions, the best practice is to allow natural recovery, especially where natural cleaning is effective, such as along river channels exposed to wave and tidal energy.
- Placement of sorbent boom along the vegetative fringe may reduce the quantity of oil impacting the area.
- Deployment of boom is seldom effective with light refined oils because of the low viscosity of these products.
- For other products, booms should be deployed to attempt to protect the most sheltered areas where greatest persistence is likely.
- Heavy accumulations should be skimmed or flushed with low-pressure water flooding, as long as there is NO disturbance or mixing of oil into the substrate. If substrate mixing is likely or unavoidable, it is better to leave the oil to weather naturally.
- Oily debris should be removed, taking care not to disturb the substrate.
- Live vegetation should not be cut or otherwise removed.
- These activities should be closely supervised.

Special Considerations

Coral Reefs

Description

This section deals with coral reefs, that is, structures which are created and maintained by the establishment and growth of populations of hermatypic coral and coralline algae. Coral reefs are mostly subtidal in nature, although the most shallow portions of some reefs can be exposed during very low tides. The four major categories of reefs are:

- *Fringing reefs* - long, narrow bands of coral reefs parallel to and near the shoreline. When near coastal development, they are susceptible to stress from sedimentation and chronic pollution.
- *Barrier reefs* - similar to fringing reefs except that they are further offshore and much broader.
- *Atoll reefs* - reefs formed by the buildup of coral on the rim of a subsiding volcano. They are circular or portions of a circle, forming a sheltered lagoon.
- *Patch reefs* - small, irregularly shaped coral reefs that occur in isolated patches rather than long bands.

Recent studies have found that many coral species throughout the world spawn simultaneously over a very short time period (days), a behavior which makes the entire year’s recruitment very vulnerable.

Predicted Oil Impact

- Oil would usually pass over subtidal reefs with no direct contamination.
- Exceptions where floating oil would potentially coat living reef communities are:
    - Landward border of fringing reef platforms which are exposed at low tide
    - Certain reef-flats which are floored with bedrock and may have high coral heads growing on them, and
    - The outer, seaward part of reef-flat platforms that are usually slightly elevated and are consequently exposed at low tide and heavily washed by waves
- Except in the event of extremely heavy oil concentrations, oil would be readily removed from these reef areas with the rising tide. This is especially true of the outer reef platform.

- There is little documentation of long-term impacts to coral reefs from oil spills, except in the situations where the pollution is chronic, or in the rare instance where oiled sediments might be transported to the bottom. The best case history is a five-year study of the corals impacted by the Texaco spill in Panama.
- Studies have shown sublethal impacts to coral from oil spills, with short-term recovery.
- Greatest impacts to the reef would result from spills of light refined products directly into the shallow waters overlying reefs and where high concentrations of water-soluble fractions persist. Also, large spills during the period of simultaneous spawning could affect the larvae of all coral species, regardless of water depth.
- Of greater concern at most spills are the organisms that concentrate around the coral reef habitat.

Recommended Response Activity

- Sorbents and booms should be used to prevent oil from being transported over the reefs.
- No cleanup is recommended. Cleanup of the reef itself by natural processes is expected to be rapid.
- Oil should be removed from adjacent intertidal areas to prevent chronic exposure of the corals to oil leaching from these sites.
- Any use of sorbents should be limited to those that can be contained and recovered.

Seagrasses

Description

Seagrasses in tropical environments in the Caribbean and U.S. Pacific territories are dominated by turtlegrass (*Thalassia sp.*), manatee grass (*Syringodium sp.*), and shoalgrass (*Halodule sp.* and *Enhalus sp.*). Their distribution is limited by water temperature, light penetration (thus turbidity and water depth), and salinity. Seagrasses play a very important role in shallow coastal marine environments, including:

- Sediment stabilization.
- Detritus production which provides a major basis of food chains, although the bulk of the biomass is in the sediments (in the rhizomes).

- Substrate for a highly productive epiphytic community, with a total biomass which often approaches or exceeds that of the plants themselves.
- A directly utilized food source for a few organisms, namely turtles, who graze on seagrasses.
- Habitat which is utilized by fish and shellfish as nursery areas.
- Key role in nutrient cycling, including nitrogen, phosphorous, and sulfur.

Predicted Oil Impact

- Greatest impacts occur on seagrasses that are intertidal, where the oil comes in direct contact with exposed blades.
- Oil readily adheres to exposed blades, particularly when the oil is heavy or weathered.
- Unless the sediments are also oiled, any oiled blades are quickly defoliated and the plants have the capacity to grow new leaves (the leaves grow from a relatively protected meristem). Recovery can occur with 6-12 months.
- Plant mortality has been observed at spills when the sediments were contaminated by oil, although such incidents have been rare.
- The most sensitive component of the seagrass ecosystem is the epiphytic community and juvenile organisms using the grass beds as a nursery. These species and life stages can be highly sensitive to both the water-soluble and insoluble fractions of oil.
- The plants can uptake hydrocarbons from the water column and sediments, potentially lowering their tolerances to other stresses.

Recommended Response Activity

- Where possible, oil should be prevented from entering shallow, sheltered areas where seagrass beds occur. Highest priority should be those beds which are known to provide nursery areas for commercially important species.
- Little can be done to protect seagrass beds along exposed sections of shoreline.
- Extreme care should be taken not to disturb the sediments during cleanup operations in the vicinity of seagrasses, which could result in total loss of the seagrass bed.
- Cleanup efforts onshore should not result in the deposition of oiled sediments in the beds, e.g., from water flushing of intertidal substrates.

- Oiled wrack on adjacent beaches should be removed quickly, to prevent re-entry of oiled detritus into the nearshore environment.
- Removal of oiled blades should only be considered when it can be demonstrated that special species (such as endangered turtles) are at significant risk of injury from contact or grazing on the blades.
- Otherwise, the best strategy for oiled blades is to allow natural recovery; the oiled blades are sloughed off within days to weeks.

Turtle Nesting Beaches

Description

This section deals with beaches which are used by turtles for laying and incubation of eggs. The most sensitive life stages are the eggs when they are buried in the sand, the hatchlings as they dig their way out of the nest and enter the water, and young juveniles which are pelagic surface dwellers. Important aspects of the life histories of the five species of sea turtles which spend part of their lives in coastal waters (Kemp’s ridley, loggerhead, green turtle, hawksbill, and leatherback) are:

- Sea turtles may nest every 1-4 years after reaching maturity (which is estimated to take 10-50 years).
- The female may lay anywhere from 1 to 10 clutches of about 100 eggs per season, depending on the species.
- The nests are normally located above the high-tide level.
- Incubation takes about two months.
- The greatest source of natural mortality of sea turtles is probably predation of hatchlings in the ocean.
- There is strong nesting beach fidelity.

Predicted Oil Impact

- The greatest threat of oil spills on land is the toxic effects of direct contamination of eggs in the nest. However, it should be noted that, because the eggs are laid above the high-tide line, direct oiling is unlikely when it occurs during nesting.
- The number of unhatched eggs is much higher when fresh crude oil is on the sand surface during the last half to quarter of the incubation period. This effect is thought

to be due to displacement of oxygen by the lighter oil fractions when the rate of oxygen consumption is at its peak.

- Many weathered crude oils are less toxic to turtle eggs than fresh crude oils.
- Hatchling morphology is affected by the amount of oil and time of oiling. Weights are lower and sizes are smaller when the eggs are exposed to a light dosage of oil mixed in the sand.
- Young turtles exposed to oil in water in tests have demonstrated disturbed diving and respiratory patterns, decreased blood glucose levels, reddening and sloughing off of the skin, and dysfunctioning of the salt glands.
- Turtles feed on floating objects, therefore they are susceptible to ingestion of tarballs and coating of oil on their flippers and in their mouths.

Recommended Response Activity

- Removal of eggs from nests along beaches under immediate threat of oiling is seldom an option because the eggs should not be moved after 24 hours post-laying. The yolks and embryos settle to one side within 48 hours, thus any movement after that period usually results in decreased viability.
- Only experienced or trained personnel should attempt to move threatened eggs.
- Nesting beaches should receive highest priority for cleanup if they are oiled prior to the nesting period.
- Rapid removal of oil from a beach with active nests may be attempted, particularly if the oil has not reached the nest sites.
- If hatchlings emerge while oil is coming onshore and slicks are still in nearshore waters, hatchlings should be captured and released in clean waters.
- Hatchlings usually emerge during night hours, so nests should be monitored to intercept hatchlings before they swim into contaminated waters.
- Cleanup activities on nesting beaches should be monitored by experienced personnel so that the nests are not physically disturbed.

Other special considerations may need to be developed for:

Birds

- Rookeries and nesting sites
- High concentration migration stopovers

Marine Mammals

- Population concentration areas

Terrestrial Mammals and Plants

- Concentration areas
- Threatened and endangered plants adjacent to the shoreline

Fish and Shellfish

- Estuarine areas which are important fish nursery areas
- Shellfish seed beds and nursery areas, high concentration areas

Recreation

- High-use recreational beaches
- High use boating, fishing, and diving areas
- Marinas and boat ramps

Management Areas

- State marine parks/federal marine sanctuaries
- Nature preserves and reserves
- Wildlife management areas and refuges

Resource Extraction

- Commercial fishing areas
- Subsistence harvest areas
- Aquaculture sites
- Water intakes

Cultural Resources

- Archaeological and other historically significant sites

3 Shoreline Mapping and Prioritization

Guidelines for Shoreline Surveys

At most spills, a repetitive, detailed, and systematic survey of the extent and degree of shoreline contamination is needed to:

1. Assess the need for shoreline cleanup
2. Select the most appropriate cleanup method
3. Determine priorities for shoreline cleanup
4. Document the spatial oil distribution over time
5. Maintain internally consistent historical record of stranded oil distribution for use by other scientific surveys of intertidal and subtidal impacts.

Though general approvals for use of shoreline cleanup methods are to be developed during planning stages, site-specific cleanup recommendations must be based on field data on the shoreline types and type and degree of shoreline contamination. Thus, shoreline surveys become a very important component of the decision-making process, and they must be conducted in a systematic manner. Also, repeated surveys are needed to monitor the effectiveness and effects of on-going treatment methods (any migration of beached oil, as well as natural recovery), so that the need for additional treatment or constraints can be evaluated.

Several methods of data collection can be used to obtain information on shoreline character and degree of oil contamination. For example, aerial surveys provide reconnaissance-level information that is necessary for broad scale evaluations, definition of the impacted area, and general characterization of the oiling conditions. During aerial surveys, observers should note presence of resources at risk that need immediate protection, recommendations for boom deployment sites, access points, or restrictions, etc.

Ground surveys provide detailed information necessary for site-specific decisions on shoreline treatment techniques. The methods and forms for ground surveys described here have been modified from those developed by Exxon and their contractors during the 1989 *Exxon Valdez* oil spill in Prince William Sound (Owens and Teal, 1990). These methods have been revised for application to specific regions, such as the Oil Spill SCAT Manual for the coastline of British Columbia (Environment Canada, 1992). Guidance on methods and forms for use in ground surveys are described in the following section.

Ground Surveys

The primary purpose of ground surveys is to collect information on the extent of oiling on various shoreline types and to feed this information into the decision-making process for shoreline cleanup. Thus, it is imperative that survey teams use consistent methods and terminology throughout the spill event. A series of forms have been developed as the basis for data collection and reporting. Field teams should conduct a training program so all members understand the objectives, methods, data forms, terms, etc., and to insure standardized application. The teams need to visit at least one site as a group so that their observations can be calibrated.

At a large spill, the scientific members of the Shoreline Assessment Team usually consist of the following:

Oil Spill Scientist/Coastal Geologist (OG)

Should have at least B.Sc. degree in geology or physical geography and oil-spill experience, plus familiarity with shorelines of impacted area. Responsible for logistical/direction and detailed documentation (i.e., completion of Shoreline Survey Evaluation Form).

Ecologist (ECO)

Should have degree in biology and oil-spill experience, plus familiarity with the local affected habitats and organisms. Responsible for characterization of the intertidal communities and assessing affects of oil or cleanup efforts.

Archaeologist (ARCH)

Usually a M.S.- or Ph.D.-level archaeologist. Main responsibilities are identifying and updating archaeological and historical sites, and determining potential impacts of oiling or cleanup measures.

In addition to the core scientific group, the team also usually has representatives of:
(a) operations group of the party responsible for cleanup; (b) the State government;
(c) the Federal Government; and (d) the land owner or manager. At smaller spills or under emergency conditions, team members may have to assume more than one role.

Selecting and Naming Segments

The general approach is to divide the impacted area into segments, which are sections of the oiled shoreline for which detailed observations are recorded. The size of segments depends on the variabilities in degree of oiling and shoreline type. Boundaries of the segments should be defined where the shoreline geomorphology or degree of oiling changes significantly. However, it should be noted that new forms are completed for each segment, so the interval should not be so small that the number of forms required becomes unmanageable for the size of the spill. Segment lengths up to several kilometers would be acceptable for large spills, where smaller spills may have lengths in the hundreds of meters.

Numbering of the segments in a logical order helps location recognition. Usually an alpha-numeric code is employed, with two-letter abbreviations for the local area (e.g., HB for segments located along the Hanama Bay and CI for those on Coconut Island), and numbers for each segment in the order it was surveyed. Thus, if Coconut Island was divided into four segments, they would be designated as CI-1 through CI-4. The boundaries of the segments would be delineated on detailed maps.

The Shoreline Survey Evaluation Forms

For each segment, the Shoreline Survey Evaluation Form should be completed. Two versions of a Shoreline Survey Evaluation Form have been included in this manual. This section briefly outlines the methods to be used to complete the long form.

The Shoreline Terminology / Codes sheet lists the common terms and abbreviations to be used to describe the oil, sediments, and other features on the forms and sketch maps. The blocks on the Shoreline Survey Evaluation Form, where the codes are used, are indicated on the sheet. One member of the team, usually the OG, should be responsible for completing the forms, although all members collect the field data. The segment is walked and observations on the oiling conditions are recorded. It is very important to make accurate measurements or estimates of the dimensions of each type of oil. Areas containing surface oil are shown on a field sketch of the shoreline segment. The oiled sites, which are designated by letters, are described systematically by filling in Block 6 of the Shoreline Survey Evaluation Form. A blank sketch form is attached, and an example is included for illustration purposes.

Subsurface oil is investigated by digging trenches and recording measurements of the degree and depths of subsurface oil. Each trench is numbered, and the location of each trench should be shown on the sketch. A symbol is used to differentiate between oiled and clean trenches (filled-in versus open triangle). The sketches are a very important component of the field survey data; they are better than photographs at depicting overall conditions. Sketches help reviewers put the tabular data on oiled area and type in perspective, thereby facilitating decision making. They provide documentation in a manner not achieved by photographs, videotapes, or statistics, and they allow ready comparisons over time.

The objective of the surveys should always be kept in mind: to collect the information needed by operations personnel and decision makers to formulate and approve shoreline treatment plans. An operations manager should be able to use the data to develop a detailed cleanup plan, including equipment and manpower needs, from these surveys. Government agencies should be able to use the data, along with natural resource information, to develop cleanup priorities, identify site-specific or temporal constraints, and approve the proposed cleanup plan.

The Comment section and sketch map will be important references for documentation of sensitive resources and impacts. The Comments section should highlight the information the field team considers to be very important to the shoreline treatment decision making. The Comments section is also where the field team makes treatment recommendations that would best remove the oil without causing further environmental damage, or identify specific constraints that should be incorporated into the cleanup plan.

Abbreviated Shoreline Surveys

Comprehensive surveys, as outlined above, are not always appropriate for smaller spills, or those that are relatively simple in oiling conditions. Yet, there is still the need for systematic observations and documentation of shoreline oiling conditions and cleanup progress. An abbreviated shoreline survey at smaller or less complicated spills would consist of:

- Trained team(s) with members from State and Federal response agencies, the cleanup contractor, and responsible party to document shoreline oiling conditions.
- Consistent terminology for description of oiling conditions and of shoreline features.
- Segmentation of the oiled areas into sections by shoreline type, degree of oiling, etc., and for which specific cleanup recommendations can be made.
- Field sketches to identify the area surveyed, record oil observations, identify sensitive areas to avoid, and utilize as the basis for a work plan by cleanup crews.
- Simplified forms for recording observations, making recommendations for cleanup, listing segment-specific restrictions, and generating summary statistics on shoreline

oiling conditions. The forms would also document team composition, samples, photographs, etc., for each segment.

The Shoreline Survey Evaluation Short Form was developed to meet the documentation requirements at smaller spills. The form contains space for recording measurements of the length and degree of shoreline contamination, but allows for textual descriptions of the oiling conditions. It is important that the standard terms be used in these descriptions and that specific features be shown on the field sketch. The Short Form also includes space for recording segment-specific considerations for cleanup operations. This section would include information on the location of areas that should be avoided or that require special care or restricted activities by cleanup crews. For example, the location of sensitive wildlife such as eagle nests would be noted in this section. Sites to be avoided, such as archeological sites or private property, would be delineated. Photographs and samples taken at the site would be recorded in the section for Other Comments.

Surface Oil Cover Summary

As the shoreline surveys are being completed, a rating system must be used to describe and summarize the surface oil conditions on the shoreline. These conditions are:

- Heavy
- Moderate
- Light
- Very Light

These ratings are assigned based upon the Oil Category Width and the Surface Oil Distribution, as defined on the sheet on Shoreline Oil Terminology / Codes. Following is an Initial Surface Oil Cover Matrix for use during spills.

		Width of Oiled Areas			
		Wide >6 m	Medium >3 - 6 m	Narrow >0.5 - 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

Shoreline Oil Terminology/Codes 11/5/92

Shoreline Slope (Enter in Block 3)

Low	Less than 30 degrees
Medium	Between 31 and 60 degrees
High	Between 61 and 90 degrees
Vertical	Vertical or near vertical

Oil Category Width (Enter in Block 4)

(To be determined for each segment, depending on width of the intertidal zone)

W	Wide	> 6 m wide
M	Medium	> 3 m to ≤ 6 m
N	Narrow	> 0.5 m to ≤ 3 m
V	Very Narrow	≤ 0.5 m

Oil Distribution (Enter in Block 5)

C	Continuous	91 - 100%
B	Broken	51 - 90%
P	Patchy	11 - 50%
S	Sporadic	1 - 10%
T	Trace	<1%

Surface Oiling Descriptors - Thickness (Enter in Block 5)

PO	Pooled 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 scrapped off with fingernail)
ST	Stain (visible oil, which cannot be scrapped off with fingernail)
FL	Film (transparent or iridescent sheen or oily film)

Surface Oiling Descriptors - Type (Enter in Block 5)

FR	Fresh Oil (unweathered, liquid oil)
MS	Mousse (emulsified oil occurring over broad areas)
TB	Tarballs (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 Pavements (cohesive, heavily oiled surface sediments)
NO	No Oil
DB	Debris; logs, vegetation, rubbish, garbage, response items such as booms, etc.

Shoreline Oil Terminology/Codes 11/5/92

Subsurface Oiling Descriptors (Enter in Block 6)

SAP	Subsurface asphalt pavement (cohesive)
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, 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)
NO	No Oil (no evidence of any type of oil)

Shoreline Zone (Enter in Blocks 5 and 6)

SU	Supratidal (above normal spring high tide levels)
UI	Upper Intertidal
MI	Middle Intertidal
LI	Lower Intertidal

Sediment Types (Enter in Blocks 5 and 6)

R	Bedrock outcrops
	Gravel
B	Boulder (>256 mm in diameter)
C	Cobble (64-256 mm)
P	Pebble (4-64 mm)
G	Granule (2-4 mm)
S	Sand (0.06-2 mm)
M	Mud (silt and clay, < 0.06 mm)
AR	Riprap (man-made permeable rubble)
AW	Seawalls (impermeable)
AP	Man-made pilings

Sheen Color (Enter in Block 6)

B	Brown
R	Rainbow
S	Silver
N	None

SHORELINE SURVEY EVALUATION FORM

Page __ of __

1	G	Segment Name: ____________	Survey	Survey (use military time)
	E	Segment ID: ____________	Date: ____________	Time: ________ to ________
	N	Surveyed From: Foot / Boat / Helicopter	Weather: Sun / Clouds / Fog / Rain / Snow	

2	T	Team No.	Operations:	
	E	OG :	State:	for:
	A	ECO :	Federal:	for:
	M	ARCH :	Land Manager:	for:

3	S	Overall Classification for UITZ–select one	Sediment Beach:	Sediment Flat:
	H	Bedrock: Cliff ___ Platform ___	Boulder-Cobble __ Sand __	Boulder-Cobble __ Sand _
	O	Manmade: Permeable ___ Impermeable ___	Pebble-Cobble __	Pebble-Cobble __
	R	Marsh/Wetlands	Sand-Gravel __	Sand-Gravel __
	E	Secondary Shore Type:	Backshore Type:	

4	L	Geomorphology	
	A	Slope: Low ___% Med. ___% High ___% Vert. ___%	Wave Exposure: Low / Medium / High
	N	Estimated Segment Length: m	Total Estimated Length Surveyed:
	D	Access Restrictions:	

5	O	Oil Category Width:		Total Pavement: ______ sq.m by ______ cm	
	I	Wide ____ m	Very Narrow ______ m	Patties/Tarballs ______ bags	Oiled Debris? Yes/No
	L	Medium ___ m	No Oil ______ m	Debris/Amount: Logs ______	Vegetation ______
		Narrow ___ m	Unsurveyed ______ m	Trash ______	Other ______

6 S	L	AREA		ZONE				DIST	SURFACE OIL													SHORELINE SEDIMENT TYPE
U	O	LENGTH	WIDTH						THICKNESS					TYPE								
R	C	m	m	SU	UI	MI	LI		PO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	NO	
F																						
A																						
C																						
E																						
O																						
I																						
L																						

Distribution (DIST): C = 100-91%; B = 90-51%; P = 50-11%; S = 10-1%; T = <1%

Photo Roll # _____ Frames _____

7 S U	N	TRENCHES				TRENCH DEPTH cm	OILED ZONE cm-cm	SUBSURFACE OIL CHARACTER						WATER TABLE cm	SHEEN COLOR	SURFACE-SUBSURFACE SEDIMENTS	CLEAN BELOW Y/N
B	O.	SU	UI	MI	LI			OP	PP	OR	OF	TR	NO				
S																	
U																	
R																	
F																	
A																	
C																	
E																	

Sheen Color: B = Brown R = Rainbow S = Silver N = None

8 **COMMENTS**

SHORELINE SURVEY EVALUATION SHORT FORM

Page __ of __

1	G	Segment Name: ________	Survey	Survey (use military time)
	E	Segment ID: ________	Date: ________	Time: ______ to ______
	N	Surveyed From: Foot / Boat / Helicopter	Weather: Sun / Clouds / Fog / Rain / Snow	

2	T	Team No.			
	E	Name:	for:	Name:	for:
	A	Name:	for:	Name:	for:
	M	Name:	for:	Name:	for:

3	L	Shoreline Types:
	A	Sediment Types:
	N	Access Restrictions:
	D	

Length of Shoreline for Each Oil Category

		Oil Distribution	Wide (>6m)	Medium (3-6m)	Narrow (0.5-3m)	Very Narrow (<0.5m)	No Oil	Total Estimated Segment Length
4	O	Continuous (91-100%)	______ m	______ m	______ m	______ m	__ m	______ m
	I	Broken (51-90%)	______ m	______ m	______ m	______ m		
	L	Patchy (11-50%)	______ m	______ m	______ m	______ m		
		Sporadic (1-10%)	______ m	______ m	______ m	______ m		

5 **Description of oiling conditions (use standard terms/refer to sketch)**

SURFACE OIL:

SUBSURFACE OIL:

6 **Segment-specific considerations for cleanup operations (sensitive wildlife areas to avoid, etc.)**

7 **Other Comments**

SKETCH MAP

11/05/92

Segment Name______________________________
Segment No.___________
Date___________________
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

SKETCH MAP

Segment Name OYSTERCATCHER BAY, CAL.
Segment No. CN-12
Date 20 October 1991
Names (OG) Y. B. Hadley

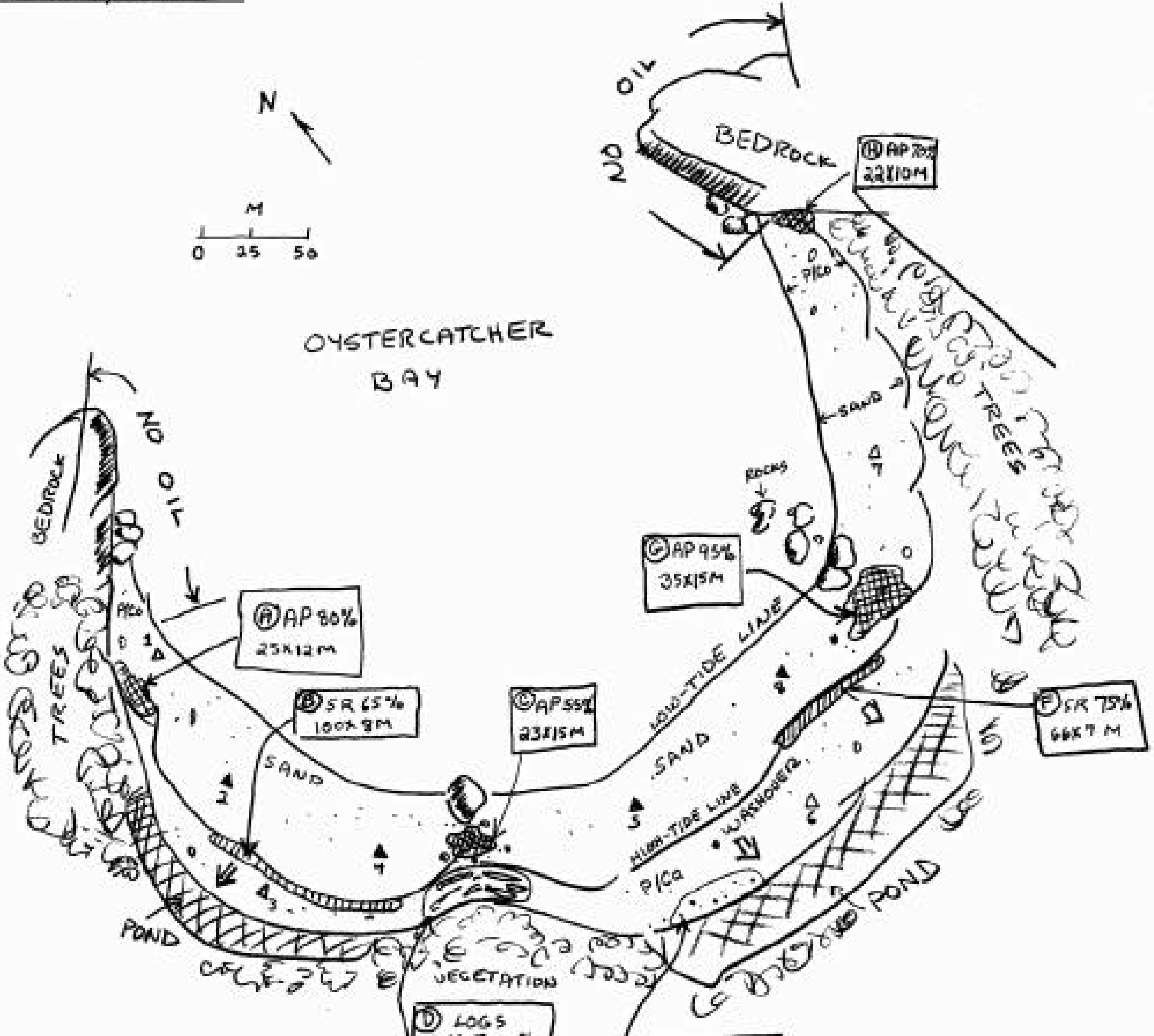
Checklist

- ✓ 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



4 Matrices of Recommended Countermeasure Methods by Oil and Shoreline Type

The matrices included in this chapter show which shoreline countermeasure techniques have been considered for the ten shoreline types described in Chapter 2. Four matrices have been constructed for the major categories of oil (very light, light, medium, and heavy).

Countermeasure methods are described in Chapters 5 and 6. Countermeasures in Chapter 5 are traditional techniques that the OSC can use without any additional concurrence. However, the cutting of vegetation countermeasure should be used only during specific seasonal windows under specific conditions and with landowner approval. Countermeasures in Chapter 6 are described under a separate section called “Treatment Methods Requiring Regional Response Team Approval” and may be useful in certain situations. The matrices are a particularly dynamic component of the manual and should continue to be revised as the existing techniques are used and evaluated, and as both old and new techniques are refined.

Each matrix has a written explanation of how it is to be used as a countermeasure advisability matrix. The matrix is only a general guide for removing oil from shoreline substrates. It must be used in conjunction with the entire “Shoreline Countermeasures Manual” plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the State OSC operating with the FOSC's authorization has the responsibility for and authority to determine which countermeasure(s) are appropriate for the various situations encountered.

Selection of countermeasure techniques to be used in each spill is based upon the degree of oil contamination, shoreline types, and the presence of sensitive resources. Extremely sensitive areas are limited to manual cleanup methods. It is important to note that the primary goal of countermeasure implementation is to speed up or enhance environmental recovery of the shoreline habitats. Aesthetic considerations are secondary but also important. Nevertheless, shoreline countermeasures should cause no further injury or destruction to the environment. The three categories of guidance used in the matrices are defined as follows:

R	Recommended	Method that best achieves the goal of minimizing destruction or injury to the environment
C	Conditional	Viable and possibly useful but may result in limited adverse effects to the environment
Shaded		Not recommended

Shoreline Countermeasure Matrix

Very Light Oils (Jet fuels, Gasoline)

* Highly volatile (should all evaporate within 1 – 2 days)
* High concentrations of toxic (soluble) compounds
* Result: Localized, severe impacts to water column and intertidal resources
* Duration of impact is a function of the resource recovery rate
* No dispersion necessary

SHORELINE TYPE CODES

1 - Seawalls and piers
2 - Exposed wave-cut platforms
3 - Fine-grained sand beaches
4 - Coarse-grained sand beaches
5 - Mixed sand and gravel (or shell) beaches
6 - Gravel beaches and riprap structures
7 - Exposed tidal flats
8 - Sheltered rocky shores
9 - Sheltered tidal flats
10- Fringing and extensive salt marshes

COUNTERMEASURE	**SHORELINE TYPES**									
	1	2	3	4	5	6	7	8	9	10
1) No Action										
2) Manual Removal										
3) Passive Collection (Sorbents)										
4) Debris Removal										
5) Trenching										
6) Sediment Removal										
7) Ambient Water Flooding (Deluge)										
8) Ambient Water Washing										
a) Low Pressure (< 50 psi)										
b) High Pressure (< 100 psi)										
9) Warm Water Washing/Mod.-High Pressure										
10) Hot Water/High Pressure Washing										
11) Slurry Sand Blasting										
12) Vacuum										
13) Sediment Reworking †										
14) Excavation, Cleansing, and Replacement										
15) Cutting Vegetation										
16) Chemical Treatment †										
a) Oil Stabilization with Elastomizers										
b) Protection of Beaches										
c) Cleaning of Beaches										
17) *In situ* Burning of Shorelines †										
18) Nutrient Enhancement †										
19) Microbial Addition †										

† - Requires RRT approval
R - Recommended - may be preferred alternative
C - Conditional
▨ Do Not Use

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Shoreline Countermeasure Matrix

Light Oils (Diesel, No. 2 Fuel Oils, Light Crudes)

* Moderately volatile; will leave residue (up to 1/3 of spilled amount)
* Moderate concentrations of toxic (soluble) compounds
* Will "oil" intertidal resources with long-term contamination potential
* Has potential for subtidal impacts (dissolution, mixing, sorption onto suspended sediments)
* No dispersion necessary
* Cleanup can be very effective

SHORELINE TYPE CODES

1 - Seawalls and piers
2 - Exposed wave-cut platforms
3 - Fine-grained sand beaches
4 - Coarse-grained sand beaches
5 - Mixed sand and gravel (or shell) beaches
6 - Gravel beaches and riprap structures
7 - Exposed tidal flats
8 - Sheltered rocky shores
9 - Sheltered tidal flats
10- Fringing and extensive salt marshes

COUNTERMEASURE	**SHORELINE TYPES**									
	1	2	3	4	5	6	7	8	9	10
1) No Action										
2) Manual Removal										
3) Passive Collection (Sorbents)										
4) Debris Removal										
5) Trenching										
6) Sediment Removal										
7) Ambient Water Flooding (Deluge)										
8) Ambient Water Washing										
a) Low Pressure (< 50 psi)										
b) High Pressure (< 100 psi)										
9) Warm Water Washing/Mod.-High Pressure										
10) Hot Water/High Pressure Washing										
11) Slurry Sand Blasting										
12) Vacuum										
13) Sediment Reworking †										
14) Excavation, Cleansing, and Replacement										
15) Cutting Vegetation *										
16) Chemical Treatment †										
a) Oil Stabilization with Elastomizers										
b) Protection of Beaches										
c) Cleaning of Beaches										
17) *In situ* Burning †										
18) Nutrient Enhancement †										
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Shoreline Countermeasure Matrix

Medium Oils (Most Crude Oils)

* About 1/3 will evaporate within 24 hours
* Maximum water-soluble fraction is 10 – 100 ppm
* Oil contamination of intertidal areas can be severe/long term
* Impact to waterfowl and fur-bearing mammals can be severe
* Chemical dispersion is an option within 1 – 2 days
* Cleanup most effective if conducted quickly

SHORELINE TYPE CODES

1 - Seawalls and piers
2 - Exposed wave-cut platforms
3 - Fine-grained sand beaches
4 - Coarse-grained sand beaches
5 - Mixed sand and gravel (or shell) beaches
6 - Gravel beaches and riprap structures
7 - Exposed tidal flats
8 - Sheltered rocky shores
9 - Sheltered tidal flats
10- Fringing and extensive salt marshes

COUNTERMEASURE	**SHORELINE TYPES**									
	1	2	3	4	5	6	7	8	9	10
1) No Action										
2) Manual Removal										
3) Passive Collection (Sorbents)										
4) Debris Removal										
5) Trenching										
6) Sediment Removal										
7) Ambient Water Flooding (Deluge)										
8) Ambient Water Washing										
a) Low Pressure (< 50 psi)										
b) High Pressure (< 100 psi)										
9) Warm Water Washing/Mod.-High Pressure										
10) Hot Water/High Pressure Washing										
11) Slurry Sand Blasting										
12) Vacuum										
13) Sediment Reworking †										
14) Excavation, Cleansing, and Replacement										
15) Cutting Vegetation *										
16) Chemical Treatment †										
a) Oil Stabilization with Elastomizers										
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17) *In situ* Burning †										
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Shoreline Countermeasure Matrix

Heavy Oils (Heavy Crude Oils, No. 6 fuel, Bunker C)

* Heavy oils with little or no evaporation or dissolution
* Water-soluble fraction likely to be <10 ppm
* Heavy contamination of intertidal areas likely
* Severe impacts to waterfowl and fur-bearing mammals (coating and ingestion)
* Long-term contamination of sediments possible
* Weathers very slowly
* Dispersion seldom effective
* Shoreline cleanup difficult under all conditions

SHORELINE TYPE CODES

1 - Exposed wave-cut cliffs
2 - Exposed wave-cut platforms
3 - Fine-grained sand beaches
4 - Coarse-grained sand beaches
5 - Mixed sand and gravel (or shell) beaches
6 - Gravel beaches and riprap structures
7 - Exposed tidal flats
8 - Sheltered rocky shores
9 - Sheltered tidal flats
10- Fringing and extensive salt marshes

COUNTERMEASURE	SHORELINE TYPES									
	1	2	3	4	5	6	7	8	9	10
1) No Action										
2) Manual Removal										
3) Passive Collection (sorbents)										
4) Debris Removal										
5) Trenching										
6) Sediment Removal										
7) Cold Water Flooding (deluge)										
8) Cold Water Washing										
a) Low Pressure (< 50 psi)										
b) High Pressure (< 100 psi)										
9) Warm Water Washing/Mod.-High Pressure										
10) Hot Water/High Pressure Washing										
11) Slurry Sand Blasting										
12) Vacuum										
13) Sediment Reworking †										
14) Excavation, Cleansing, and Replacement										
15) Cutting Vegetation *										
16) Chemical Treatment †										
a) Oil Stabilization with Elastomizers										
b) Protection of Beaches										
c) Cleaning of Beaches										
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18) Nutrient Enhancement †										
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5 Treatment Methods Not Requiring Regional Response Team Consideration

The following section lists and describes those techniques that have been approved by the Regional Response Team (RRT), Local Response Team, and / or the Area Committee. Methods and equipment currently in use for these approved shoreline treatment methods are described in some detail below. These methods, when used according to the guidelines in this manual, may be used on most sites as part of the OSC-directed response. It should be noted that some of these methods may require other authorizations or permits before work begins. Currently approved methods are:

1 No Action
2 Manual Removal
3 Passive Collection (Sorbents)
4 Debris Removal
5 Trenching
6 Sediment Removal
7 Ambient-Water Flooding (Deluge)
8a Ambient-Water / Low-Pressure Washing
8b Ambient-Water / High-Pressure Washing
9 Warm-Water / Moderate-to-High-Pressure Washing
10 Hot-Water / High-Pressure Washing
11 Slurry Sand Blasting
12 Vacuum
13 Sediment Reworking *
14 Sediment Removal, Cleansing, and Replacement *
15 Cutting Vegetation *

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* May require special consideration

1. No Action

Objective

No attempt is made to remove stranded oil, because there is no proven effective method for cleanup, or it is determined that cleanup will be more harmful to the habitat than leaving the oil in place.

Description

No action is taken. However, the OSC continues to monitor the incident.

Applicable Shoreline Types

Can be used on all shoreline types.

When To Use

If the shoreline is extremely remote or inaccessible, when natural removal rates are very fast, or cleanup actions will do more harm than leaving the oil to be removed naturally.

Biological Constraints

This method may be inappropriate for areas where high numbers of mobile animals (birds, marine mammals, crabs, etc.) use the intertidal zone or adjacent nearshore waters.

Environmental Effects

Intertidal — The same as the oil.

Subtidal — The same as the oil.

2. Manual Removal

Objective

Removing stranded surface oil with hand tools and manual labor.

Description

Removing surface oil and oily debris by manual means (hands, rakes, shovels, etc.) and placing in containers for removal from the shoreline. No mechanized equipment is used.

Applicable Shoreline Types

Can be used on all shoreline types.

When To Use

Generally used on shorelines where the oil can be easily removed by non-mechanical means. Most appropriate for light to moderate oiling conditions.

Biological Constraints

Foot traffic over sensitive areas (shellfish beds, tidal flats, bird nesting areas, turtle nesting beaches, marshes, etc.) is to be restricted. May be periods when shoreline access is restricted (e.g., bird nesting, turtle nesting).

Environmental Effects

Intertidal — Minimal if surface disturbance by cleanup activities and work force movement is limited.

Subtidal — None.

3. Passive Collection (Sorbents)

Objective

Removal of oil by adsorption onto oleophilic material placed in the intertidal zone.

Description

Sorbent material is placed on the surface of the shoreline substrate allowing it to absorb oil as it is released by tidal or wave action. Oil removal is dependent on the capacity of the particular sorbent, energy available for lifting oil off the shoreline, and degree of weathering.

Applicable Shoreline Types

Can be used on any shoreline type, especially riprap and on intertidal vegetation.

When to Use

When the shoreline oil is mobile and transport of oil is expected on or off the site. The oil must be of a viscosity and thickness to be released by the substrate and absorbed by the sorbent. Often used as a secondary treatment method after gross oil removal, and along sensitive shorelines where access is restricted.

Biological Constraints

None, although this method can be slow, thus allowing oil to remain in critical habitats during sensitive periods of time.

Environmental Effects

Intertidal — There may still be significant amounts of oil remaining on the shoreline after the sorbents are no longer effective. Also, if all the sorbents are not recovered, they will become oily debris which does not degrade.

Subtidal — None.

4. Debris Removal

Objective

Removal of contaminated debris and seagrass wrack.

Description

Manual or mechanical removal of debris from the upper beach face and the zone above high tide beyond the normal wash of waves.

Applicable Shoreline Types

Can be used on any shoreline type where safe access is allowed.

When to Use

When driftwood, marine debris, and seagrass wrack are heavily contaminated and either a potential source of chronic oil release, an aesthetic problem, or a source of contamination for other organisms on the shoreline.

Biological Constraints

Disturbance to adjacent upland areas should be minimized. Foot traffic over sensitive intertidal areas (tidal flats, bird nesting areas, turtle nesting beaches, marshes, etc.) is to be restricted. May be periods when shoreline access is restricted (e.g., bird nesting, turtle nesting).

Environmental Effects

Intertidal — None.

Subtidal — None.

5. Trenching

Objective

Remove subsurface oil from permeable substrates.

Description

Dig trenches to the depth of the oil and remove oil floating on the water table by vacuum pump or super sucker. Water flooding or high-pressure spraying at ambient temperatures can be used to flush oil to the trench.

Applicable Shoreline Types

Can be used on beaches ranging in grain size from fine sand to gravel. Trenching should not be used in areas where there are known cultural resources in the intertidal zone.

When To Use

When large quantities of oil penetrate deeply into permeable sediments and cannot be removed by surface flooding. The oil must be liquid enough to flow at ambient temperatures.

Biological Constraints

Trenches should not be dug in the lower intertidal when seagrasses and organisms are abundant.

Environmental Effects

Intertidal — On gravel beaches, there may be a period of beach instability as the sediments are redistributed after the trenches are filled in.

Subtidal — None.

6. Sediment Removal

Objective

Removal of surface oiled sediments.

Description

Oiled sediments are removed by either manual use of hand tools or mechanical use of various kinds of motorized equipment. The oiled material must be transported and disposed of off-site.

Applicable Shoreline Types

Can be used on any shoreline with surface sediments. On rocky coasts, only manual removal is feasible. When using equipment on beaches, special supervision is required to minimize sediment removal. Sediment removal should not be used in areas where there are known cultural resources in the intertidal zone.

When to Use

When only very limited amounts of oiled sediments have to be removed. Should not be considered where beach erosion may result. Care should be taken to remove the sediments only to the depth of oil penetration, which can be difficult with heavy equipment.

Biological Constraints

Excavating equipment must not intrude upon sensitive habitats or areas of known cultural resources in the intertidal zone. Only the upper intertidal and supratidal areas should be considered for sediment removal to minimize disturbance of biological communities in the subtidal, particularly when coral reefs and seagrass beds occur very close to shore. There may be site-specific constraints limiting placement of equipment and temporary sediment storage piles in the backshore. Replaced material must be free of oil and toxic substances.

Environmental Effects

Intertidal — The equipment is heavy, and required support personnel is extensive. May be detrimental if excessive sediments are removed without replacement. All organisms resident in the beach will be affected, though the need for removal of the oil may be determined to be the best overall alternative.

Subtidal — Release of oil and fine-grained oily sediments to the water during sediment removal activities and tidal flushing of the excavated beach surface.

7. Ambient-Water Flooding (Deluge)

Objective

To wash surface oil and oil from crevices and rock interstices to water's edge for collection.

Description

A large diameter header pipe is placed parallel to the shoreline above the oiled area. A flexible perforated header hose is used during deluge of intertidal shorelines to better conform to their profiles. Ambient seawater is pumped through holes in the header pipes and flows down the beach face to the water. On porous beaches, water flows through the substrate pushing loose oil ahead of it (or floats oil to the water's surface) then transports the oil down slope for pickup. Flow is maintained as long as necessary to remove the majority of free oil. Oil is trapped by booms and picked up with a skimmer or other suitable equipment.

Applicable Shoreline Types

Beaches with sediments coarser than sand, and gently sloping rocky shorelines. Generally not applicable to mud, sand, vegetated, or steep rocky shorelines.

When to Use

On heavily oiled shorelines when the oil is still fluid and loosely adhering to the substrate; and where oil has penetrated into gravel beaches. This method is frequently used in combination with other washing techniques (low or high pressure, ambient or warm water).

Biological Constraints

Not appropriate at creek mouths. Where seagrass beds or tidal flats occur adjacent to the shoreline, flooding should be restricted to tidal stages when these sensitive habitats are under water, to prevent secondary oiling.

Environmental Effects

Intertidal — Habitat may be physically disturbed and smothered as sand and gravel components are washed down slope. Organisms may be flushed into lower tidal zones.

Subtidal — Oiled sediment may be transported to shallow subtidal areas, contaminating them and burying benthic organisms and seagrasses.

8a. Ambient-Water / Low-Pressure Washing

Objective

Remove liquid oil that has adhered to the substrate or man-made structures, pooled on the surface, or become trapped in vegetation.

Description

Low-pressure washing (<50 psi) with ambient seawater sprayed with hoses is used to flush oil to the water's edge for pickup. Oil is trapped by booms and picked up with skimmers or sorbents. Can be used with a deluge system on beaches to prevent released oil from re-adhering to the substrate.

Applicable Shoreline Types

On heavily oiled gravel beaches, riprap, and seawalls where the oil is still fresh and liquid. Also, in marshes and mangroves where free oil is trapped.

When to Use

Where adhered oil is still fresh and must be removed due to continued release of oil.

Biological Constraints

May need to restrict use of flushing to certain tidal elevations so that the oil / water effluent does not drain across sensitive low-tide and shallow subtidal habitats. In marshes, use only at high tide and either from boats or the high-tide line to prevent foot traffic in vegetation.

Environmental Effects

Intertidal — If containment methods are not sufficient, contamination may be flushed into lower intertidal zone.

Subtidal — Oiled sediment may be transported to shallow subtidal areas, contaminating them and burying benthic organisms and seagrasses.

8b. Ambient-Water / High-Pressure Washing

Objective

Remove oil that has adhered to hard substrates or man-made structures.

Description

Similar to low-pressure washing except that water pressure is up to 100 psi. High-pressure spray will better remove oil that has adhered to rocks. When water volumes are low, workers may need to place sorbents directly below treatment areas to prevent the released oil from adhering to downstream sediments.

Applicable Shoreline Types

Riprap and seawalls. Can be used to flush floating oil or loose oil out of tide pools and between crevices on riprap.

When To Use

When low-pressure washing is not effective for removal of adhered oil, which must be removed due to continued release of oil. When directed water jet can remove oil from hard-to-reach sites. To remove oil from man-made structures for aesthetic reasons.

Biological Constraints

May need to restrict use of flushing to certain tidal elevations so that the oil / water effluent does not drain across sensitive low-tide and shallow subtidal habitats.

Environmental Effects

Intertidal — Removes many organisms on the surface. May drive oil deeper into the substrate or cause sediment erosion of the finer-grained fraction if water jet is improperly applied. If containment methods are not sufficient, contamination may be flushed into lower intertidal zone.

Subtidal — Oiled sediment may be transported to shallow subtidal areas, contaminating them and burying benthic organisms and seagrasses.

9. Warm-Water / Moderate-to-High-Pressure Washing

Objective

Mobilize thick and weathered oil adhered to rock surfaces prior to flushing it to the water's edge for collection.

Description

Heated seawater (ambient to 90°F) is applied at moderate-to-high pressure to mobilize weathered oil that has adhered to rocks. The warm water may be sufficient to flush the oil down the beach. If not, "deluge" flooding and additional low- or high-pressure washing can be used to float the oil to the water's edge for pickup. Oil is trapped by booms and picked up with skimmers or sorbents.

Applicable Shoreline Types

Gravel beaches, riprap, and seawalls that are heavily oiled. However, large volumes of water or a deluge system will be needed to prevent the oil from being driven in deeper into the sediments.

When To Use

When the oil has weathered to the point that low-pressure washing with ambient water is not effective for removal of adhered oil, which must be removed due to continued release of oil. To remove oil from man-made structures for aesthetic reasons.

Biological Constraints

Must restrict use to certain tidal elevations so that the oil / water effluent does not drain across sensitive low-tide habitats (damage can result from exposure to oil, oiled sediments, and warm water). Should be restricted adjacent to stream mouths, tide pool communities, and similar rich intertidal communities.

Environmental Effects

Intertidal — Can kill or remove most organisms. If containment methods are not sufficient, contamination may be flushed into lower intertidal zones that would otherwise not be oiled. May drive oil deeper into the substrate or cause sediment erosion of the finer-grained fraction if water jet is improperly applied.

Subtidal — Oiled sediment may be transported to shallow subtidal areas, contaminating them and burying benthic organisms and seagrasses.

10. Hot-Water / High-Pressure Washing

Objective

Dislodge trapped and weathered oil from inaccessible locations and surfaces not amenable to mechanical removal.

Description

Water heaters mounted offshore on barges or small land-based units heat water to temperatures from 90°F up to 170°F, which is usually sprayed by hand with high-pressure wands. Used without water flooding, this procedure requires immediate use of vacuum (vacuum trucks or super suckers) to remove the oil / water runoff. With a deluge system, the oil is flushed to the water's surface for collection with skimmers or sorbents.

Applicable Shoreline Types

Gravel beaches, riprap, and seawalls that are heavily oiled. However, large volumes of water or a deluge system will be needed to prevent the oil from being driven in deeper into the sediments.

When To Use

When the oil has weathered to the point that even warm water at high pressure is not effective for removal of adhered oil, which must be removed due to continued release of oil. To remove oil from man-made structures for aesthetic reasons.

Biological Constraints

Restrict use to certain tidal elevations so that the oil / water effluent does not drain across sensitive low-tide habitats (damage can result from exposure to oil, oiled sediments, and hot water). Should be restricted near stream mouths, tide pool communities, etc. Released oil must be recovered to prevent further oiling of adjacent environments.

Environmental Effects

Intertidal — All attached organisms in the direct spray zone will be removed or killed, and significant mortality of the lower intertidal communities will result even when used properly. Where the intertidal community is rich, the tradeoff between damage to the intertidal community from the hot-water washing versus potential damage from leaving the oil has to be weighed. May drive oil deeper into the substrate or cause sediment erosion of the finer-grained fraction if water jet is improperly applied.

Subtidal — Oiled sediment may be transported to shallow subtidal areas, contaminating them and burying benthic organisms and seagrasses.

11. Slurry Sand Blasting

Objective

Remove heavy residual oil from solid substrates.

Description

Use of sandblasting equipment to remove oil from the substrate. May include recovery of used (oiled) sand in some cases.

Applicable Shoreline Types

Seawalls and riprap. Equipment can be operated from boat or land.

When to Use

When heavy oil residue is remaining on the shoreline, which needs to be cleaned for aesthetic reasons, and even hot-water wash is not effective.

Biological Constraints

Not to be used in areas of high biological abundance on the shoreline directly below or adjacent to the structures.

Environmental Effects

Intertidal — Complete destruction of all organisms in the intertidal zone.

Subtidal — Possible smothering of subtidal organisms with sand. When the used sand is not recovered, introduces oiled sediments into the subtidal habitat.

12. Vacuum

Objective

Remove free oil pooled on the substrate or from the water's surface in sheltered areas.

Description

Use of a vacuum unit with a suction head to recover free oil. The equipment can range from small portable units that fill individual 55-gallon drums to large supersuckers that are truck-mounted and can lift large rocks. Can be used with water spray systems to flush the oil towards the suction head.

Applicable Shoreline Types

Can be used on any shoreline type if accessible. May be mounted offshore on barges, onshore on trucks, or as individual units on boats or ashore at low tide.

When to Use

When free, liquid oil is stranded on the shoreline (usually along the high-tide line) or trapped in vegetation that is readily accessible.

Biological Constraints

Special restrictions should be identified for areas where foot traffic and equipment operation should be limited, such as mangrove forests. Operations in wetlands are to be very closely monitored, with a site-specific list of restrictions.

Environmental Effects

Intertidal — Minimal impacts if used properly and minimal substrate is removed.

Subtidal — None.

13. Sediment Reworking

Objective

Rework oiled sediments to break up the oil deposits, increase its surface area, and mix deep subsurface oil layers that will expose the oil to natural removal processes and enhance the rate of oil degradation.

Description

Beach sediments are rototilled or otherwise mechanically mixed with the use of heavy equipment on sand or gravel beaches. The oiled sediments in the upper beach area may also be relocated lower on the beach to enhance natural cleanup during reworking by wave activity (berm relocation).

Applicable Shoreline Types

Should be used only on beaches exposed to significant wave activity. Tilling-type activities work best on beaches with a significant sand fraction; large equipment can be used to relocate sediments up to boulder size. Sediment reworking should not be used in areas where there are known cultural resources in the intertidal zone.

When to Use

On beaches with significant amounts of subsurface oil, where sediment removal is unfeasible (due to erosion concerns or disposal problems); also where surface oil deposits have started to form pavements or crusts.

Biological Constraints

Could not be used on beaches near shellfish-harvest or fish-spawning areas, or near bird nesting or concentration areas because of the potential for constant release of oil and oiled sediments. Sediment reworking should be restricted to the intertidal, to prevent disturbance of the biological communities in the shallow subtidal.

Environmental Effects

Intertidal — Due to the mixing of oil into sediments, this process could further expose organisms living below the original layer of oil. Repeated mixing over time could delay the reestablishment of organisms. Relocated sediments would bury and kill organisms. There may be a period of beach instability as the relocated sediments are redistributed.

Subtidal — There is a potential for release of contaminated sediments to the nearshore subtidal habitats.

14. Sediment Removal, Cleansing, and Replacement

Objective

To remove and clean oiled sediments, then replace them on the beach.

Description

Oiled sediments are excavated using heavy equipment on the beach at low tide. The sediments are loaded into a container for washing. Cleansing methods include hot-water wash or physical agitation with a cleansing solution. After the cleansing process, the rinsed materials are returned to the original area. Cleaning equipment must be placed close to beaches to reduce transportation problems.

Applicable Shoreline Types

Sand- to boulder-sized beaches, depending on the limitations of the cleanup equipment. The beaches must be exposed to wave activity, so that the replaced sediments can be reworked into a natural distribution. Sediment removal should not be used in areas where there are known cultural resources in the intertidal zone.

When to Use

Applicable on beaches with large amounts of subsurface oil, where permanent removal of sediment is undesired and other cleanup techniques are likely to be ineffective.

Biological Constraints

Excavating equipment must not intrude upon sensitive habitats. Only the supratidal and intertidal areas should be considered. There may be site-specific constraints limiting placement of temporary sediment storage piles. Replaced material must be free of oil and toxic substances. The washing must not change the grain size of the replaced material, either by removal of fines or excessive breakage of friable sediments.

Environmental Effects

Intertidal — All resident organisms will be affected, though the need for removal of the oil may be determined to be the best overall solution. Equipment can be heavy, large, and noisy; disrupting wildlife. Transportation to site may entail aircraft, land vehicles, or barges, contributing to environmental disruption. There may be a period of beach instability as the replaced sediments are redistributed.

Subtidal — May release oil and fine-grained oily sediments into the water during excavation and tidal flushing of beach sediments and exposed excavations. Adjacent seagrass and coral reef communities may be at risk.

15. Cutting Vegetation

Objective

Removal of oiled vegetation to prevent oiling of wildlife.

Description

Manual cutting of oiled vegetation using weed eater or by hand, and removal of cut vegetation with rakes. The cut vegetation is bagged immediately for disposal.

Applicable Shoreline Types

Marshes composed of emergent, herbaceous vegetation; oiled seagrass blades. Mangrove forests are not included.

When to Use

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 to remove or reduce the risk to acceptable levels.

Biological Constraints

Strict monitoring of the operations must be conducted to minimize the degree of root destruction and mixing of oil deeper into the sediments. Access to bird nesting areas should be restricted during nesting seasons.

Environmental Effects

Intertidal — Removal of the vegetation will result in loss of habitat for many animals. Cut marsh areas will have reduced plant growth for up to two years. Trampled areas (which are inevitable) will recover much slower. Along exposed shorelines, vegetation may not regrow, resulting in erosion and permanent loss of the habitat.

Subtidal — Long-term impacts would include increased sediment load in the subtidal area as a result of increased erosion in the intertidal area. For removal of oiled seagrass blades, disruption of the roots can result in total destruction of the bed.

6 Treatment Methods Requiring Regional Response Team Approval

Research and development is ongoing for both new and improved oil spill treatment methods. Various chemical and biological degradation techniques are currently being tested for effectiveness and toxicity, and they may be approved for use in certain situations. Methods considered to be of potential use in this area are described below.

16a Chemical Oil Stabilization with Elastomizers
16b Chemical Protection of Beaches
16c Chemical Cleaning of Beaches
17 In-situ Burning of Shorelines
18 Nutrient Enhancement
19 Microbial Addition

16a. Chemical Oil Stabilization with Elastomizers

Objective

Solidify or gelatinize oil on the water's surface or a beach to keep it from spreading or escaping, and to speed recovery rate and efficiency.

Description

Chemical agent enhancing polymerization of the hydrocarbon molecules applied by semi-liquid spray or as a dry chemical onto the oil in the proper dosage. Depending on the nature and concentration of the polymerizing agent, the oil can be rendered viscoelastic, but still fluid, gelatinous, or semisolid. The primary purpose is to stabilize the oil, keeping it from spreading or escaping, causing oiling elsewhere. May reduce the solubility of the light (and more toxic) fractions, by locking them into the polymer. This reduces both air and water exposure. Depending on the beach type and equipment used, recovery may be enhanced.

Applicable Shoreline Types

Suitable on shorelines of low permeability where heavy oil has pooled on the surface, except vegetated shorelines.

When to Use

When heavy concentrations of liquid oil are on the substrate and adjacent water body, and physical removal can not be completed prior to the next tide so that the oil is likely to move to a more sensitive shoreline type. Should be used in conjunction with booming or other physical containment.

Biological Constraints

Not suitable for vegetated or riprap shore types. Should be avoided when birds or other wildlife that may be more adversely impacted by the congealed oil can not be kept away from the treated shoreline. The congealed oil may stick to vegetation and wildlife, increasing physical damage to both. On riprap the congealed oil may remain in crevices where it may hamper recovery and prolong the release of sheens.

Environmental Effects

May enhance the smothering effect of oil on intertidal organisms. Thus, the treatment should be considered only for heavily oiled beaches where smothering effects are already maximal. The congealed oil may stick to vegetation and wildlife increasing physical damage, such as impaired flight or thermoregulation in birds whose feathers become oiled.

16b. Chemical Protection of Beaches

Objective

Pretreat shoreline to prevent oil from adhering to the substrate.

Description

Certain types of water-based chemicals, some of which are similar in composition to dispersants, are applied to beaches in advance of the oil.

Applicable Shoreline Types

Coarse- and fine-grained sand beaches, seawalls and piers (particularly piers or waterfront facilities that are of historical significance), wave-cut platforms, and riprap.

When to Use

When oil is projected to impact an applicable shoreline, particularly those that have high recreational or aesthetic value.

Biological Constraints

May not be suitable for nutrient-rich environments, particularly in confined waters. The toxicity of shoreline treatment products is reportedly much less than that of oil, but the toxicity of each product should be evaluated prior to consideration for use.

Environmental Effects

The long-term environmental effects of these procedures are unknown. A toxic effect of the chemical can be anticipated. Additionally, the nutrient load to nearshore and interstitial waters may lead to eutrophication. Whether the predicted reduced residence time of the oil on the beach will increase the survival rate for sessile and interstitial organisms is unknown.

16c. Chemical Cleaning of Beaches

Objective

To increase the efficiency of oil removal from contaminated areas.

Description

Special formulations, which can be characterized as weak dispersants, are applied to the substrate, as a presoak and/or flushing solution, to soften weathered or heavy oils to aid in the efficiency of flushing treatment methods. The intent is to be able to lower the temperature and pressure required to mobilize the oil from the substrate.

Applicable Shoreline Types

On any shoreline where deluge and water flushing procedures are applicable.

When to Use

When the oil has weathered to the point where it will not flow using warm to hot water. This approach may be most applicable where flushing decreases in effectiveness as the oil weathers.

Biological Constraints

Will require extensive biological testing for toxicity and water quality sampling prior to receiving approval for use. The concern is that the treated oil will be dispersed in the water column, and thus impact water column and subtidal organisms. Field tests will be required to show that use of a beach cleaner does not reduce overall recoverability of the oil. Use may be restricted where suspended sediment concentrations are high, adjacent to wetlands and tidal flats, and near sensitive subtidal resources.

Environmental Effects

If more oil is dispersed into the water column, there could be more oil sorbed onto suspended sediments and transferred to subtidal habitats, particularly along sheltered shorelines.

17. In Situ Burning of Shorelines

Objective

Removal of oil from the shoreline by burning.

Description

Oil on the shoreline is burned, usually when it is on a combustible substrate such as vegetation, woody material, and other debris. Oil can be burned off of nonflammable substrates with the aid of a burn promoter.

Applicable Shoreline Types

On any shoreline type except tidal flats and mangroves.

When to Use

Early in the spill event, after ensuring that the product is ignitable.

Biological Constraints

Should only be considered for use in the upper intertidal or supratidal zones since destruction of plants and animals from heat and burn promoters will be extensive. This technique is subject to restrictions and permit requirements established by federal, state and local laws. It should not be used to burn PCBs, wastes containing more than 1,000 parts per million (ppm) of halogenated solvents, or other substances regulated by the U. S. Environmental Protection Agency (EPA).

Environmental Effects

Little is known about the relative effects of burning oiled wetlands compared to other techniques or natural recovery. Burning may cause significant air pollution, which must be considered when weighing the potential benefits and risks of the technique. The combustion products may travel great distances before deposition.

18. Nutrient Enhancement

Objective

To speed the rates of natural microbial degradation of oil by addition of nutrients (specifically nitrogen and phosphorus). Microbial biodegradation is the conversion by microorganisms of dissolved and dispersed hydrocarbons into oxidized products via various enzymatic reactions. Some hydrocarbons are converted to carbon dioxide and cell material, while others are partially oxidized and/or left unaltered as a residue.

Description

Nutrients are applied to the shoreline in one of several methods: soluble inorganic formulations that are dissolved in water and applied as a spray at low tide, requiring frequent applications; slow-release formulations that are applied as a solid to the intertidal zone and designed to slowly dissolve; and oleophilic formulations that adhere to the oil itself, thus they are sprayed directly on the oiled areas.

Applicable Shoreline Types

Could be used on any shoreline type where safe access is allowed.

When to Use

On moderately to heavily oiled shorelines, after other techniques have been used to remove as much oil as possible; on lightly oiled shorelines where other techniques are not effective; and where nutrients are a limiting factor in natural degradation. Potentially for the treatment of subsurface oil.

Biological Constraints

Not applicable in shallow water, poorly flushed, restricted embayments where nutrient overloading may lead to eutrophication, or where toxicity of nutrients, particularly ammonia, is of concern. There must be no risk of oxygen depletion. Use is to be restricted adjacent to stream mouths, tide pools, or other rich intertidal communities. Contact toxicity of oleophilic formulations may restrict areas of direct application. Bioassay test results should be carefully evaluated, as other chemicals in the formulations could be toxic to aquatic organisms.

Environmental Effects

Acute toxicity from direct application to intertidal organisms may result from different formulations. Also, toxic effects may occur from the release of ammonia to the water column and interstitial water. There may be localized zones of oxygen depletion, particularly in the interstitial water.

19. Microbial Addition

Objective

To speed the rates of natural microbial degradation of oil by addition of nutrients and microbial products. Microbial biodegradation is the conversion by microorganisms of dissolved and dispersed hydrocarbons into oxidized products via various enzymatic reactions. Some hydrocarbons are converted to carbon dioxide and cell material, while others are partially oxidized and/or left unaltered as a residue.

Description

Formulations containing hydrocarbon-degrading microbes and fertilizers are added to the oiled area. The argument is made that indigenous organisms will be killed by the oil, so new microbial species need to be added to begin the process of biodegradation. To date, microbial addition has not been shown to work better than fertilizer alone in field tests.

Applicable Shoreline Types

Could be used on any shoreline type where safe access is allowed.

Biological Constraints

Not applicable in shallow water, poorly flushed, restricted embayments where nutrient overloading may lead to eutrophication, or where toxicity of nutrients, particularly ammonia, is of concern. There must be no risk of oxygen depletion. Use is to be restricted adjacent to stream mouths, tide pool communities, etc. Bioassay test results should be carefully evaluated, as other chemicals in the formulation could be toxic to aquatic organisms.

Environmental Effects

Yet to be evaluated for full-scale field applications. There is a potential for the introduction of pathogens from contaminated formulations.

Appendix A

Guidelines for Treatment Operations

General Guidelines

Ensure familiarity and compliance with approved treatment methods, approved shoreline segment work plans, advisories, and special instructions. Restrict all access to wetlands and tidal flats, except with special authorization.

Conditions to avoid

- Treatment techniques (such as high pressure and hot water) that dislodge intertidal vegetation and invertebrates, e.g., mussels, barnacles, snails
- Clearing marshes and vegetated shorelines (the presence of algae does not characterize a vegetated shoreline)

Actions to encourage

- Boom off mud/grass flat adjacent to treatment areas to prevent further contamination.
- Boom off tidal creeks to prevent further contamination.
- Minimize impact to uncontaminated lower intertidal zones, including:
  - land crews during tides that cover the lower intertidal zone
  - avoid high-/low-pressure washing where possible
  - work heavily oiled upper beach zone hen lower intertidal zones are covered by high tides
  - employ sorbents along riprap and below oiled upper beach to protect lower intertidal zone from oiling

Ensure that all signs of human activity are removed when cleanup is completed. Ensure that all trash and wastes are removed daily:

- Oil trapped in booms must be picked up before the next tide cycle
- All food and associated trash must be removed each day to minimize attracting wildlife into contaminated areas

Guidelines Specific to Biological Resources

Advisories and special instructions may address:

- bird concentration areas (nesting sites, colonies, rookeries, etc.)
- live / dead animal collection policy
- protection of cultural resources
- marine mammal haulouts
- collection of eagle feathers and marine mammal parts
- cutting bull kelp
- cutting oiled fucus

Appendix B includes existing “best management practices” for specific issues addressed during previous spills, which can be used as the basis for developing regional guidelines.

Appendix B

Best Management Practices

Specialized Areas of Concern - National

(The following notices are provided as guidelines.)

Marine Mammal Notice
Collection of Eagle Feathers and Marine Mammal Parts
Protection of Cultural Resources
Instruction for the Disposition of Dead and Live Wildlife

Marine Mammal Notice

(Developed by NOAA in 1989 during the *Exxon Valdez* oil spill.)

To reduce stress caused by unnecessary disturbance to marine mammal haulouts and improve the changes for wildlife survival, an aircraft advisory is issued for coastal areas affected by the spill. These advisories request that pilots stay at least one-half mile offshore and 1000 feet above ground level from areas of wildlife concentrations and critical habitats. These areas are shown on maps and distributed to pilots. The most critical areas to avoid are: (list critical areas).

No person, except an authorized government official, will approach, molest, or take a seal or sea lion, regardless of whether the animal is oiled, distressed, lethargic, or abandoned. This reminder is necessitated by the widespread activities of oil spill cleanup personnel in areas where seals and sea lions are giving birth to pups. Although casual and distant human / marine mammal interactions may not always be avoidable, they are, to varying degrees, harmful to the animal. The following explanation and guidance with respect to seal pups is offered in the interest of avoiding law violations and minimizing human-induced mortality among marine mammals.

Live seal pups are to be left undisturbed, whether or not they have oil on them. A pup not accompanied by an adult and / or appearing emaciated may not be abandoned. Females commonly leave their pups alone for extended periods during foraging trips. Newborn and young pups appear emaciated before acquiring fat through nursing. It is not possible to distinguish between a normal pup and one that is truly distressed. In the presence of humans, female seals may only approach their pups at night to nurse them, making determination of abandonment difficult to establish. True abandonment is unlikely, barring death or serious injury to the mother.

Pup deaths will greatly increase if oiled animals are picked up and subjected to the stress of handling, transport, and rehabilitation centers. Unlike sea otters and birds, external oiling does not adversely affect a seal’s heat conservation ability or indicate a need for human assistance. Persons finding seals, sea lions, whales, or porpoises that appear to be in distress should contact NOAA Fisheries. Do not touch or closely approach these animals.

Collection of Eagle Feathers and Marine Mammal Parts

In response to inquiries about collecting eagle feathers and marine mammal parts by personnel involved in cleanup activities during a spill, the laws and regulations dealing with the collection and possession of such materials are summarized below.

Collection of Eagle Feathers: The Eagle Act (Public Law 95-616, 92 Stat. 3114, 16 U.S. Code 668) *prohibits* the collection and possession of any eagle parts, including feathers.

Collection of Marine Mammal Parts: The Marine Mammal Protection Act of 1972 (Public Law 92-522, 88 State. 1027, 95 Stat. 979, 16 USC 1372) generally prohibits the collection and possession of any marine mammal parts. Under 50 CFR 18.26, the collection of certain dead marine mammal parts is allowed, as follows:

a Any bones, teeth or ivory of any (non-endangered) dead marine mammal may be collected from a beach or from land within 1/4 of a mile of the ocean. The term “ocean” includes bays and estuaries.

b Marine mammal parts so collected may be retained if registered within 30 days with an agent of the National Marine Fisheries Service, or an agent of the U.S. Fish and Wildlife Service.

c Registration shall include (1) the name of the owner, (2) a description of the article to be registered, and (3) the date and location of collection. Items so collected and registered must be retained in the ownership of the collector. *The sale of such items is prohibited.*

Protection of Cultural Resources

Shoreline cleanup operations have the potential for damaging important archaeological and cultural resources. Authorized shoreline cleanup procedures may uncover undiscovered archaeological features or artifacts. To assist in their identification, drawings of the types of artifacts that might be found in the intertidal zone and along the shoreline by cleanup crews are included. Cleanup personnel should be aware of the policy that anyone found vandalizing or appropriating cultural materials will be subject to full prosecution under the Archaeological Resources Protection Act. If response personnel find any cultural resources (fossils, archaeological or historical artifacts), the following steps should be taken immediately:

1. Leave the cultural materials in place at the site of discovery and mark with flagging tape.
2. Stop cleanup activities in the surrounding area.
3. Inform a designated state representative.

Instruction for the Disposition of Dead and Live Wildlife

(Derived from the Wildlife Protection Guidelines, Alaska RRT 1991)

Dead Animals

1. Collect all dead animals (except whale and other large forms), including scavenged carcasses, to discourage further scavenging in oiled areas.
2. Wear gloves when handling dead animals.
3. Use a shovel or spade to uncover and remove carcasses partially covered by sand, wood, or other debris.
4. Place carcasses in double plastic garbage bags. Place all animals from one beach in one bag, if possible. Close securely with masking tape.
5. Complete an animal collection form or provide the following information:
   - beach name or location where carcasses were recovered
   - date
   - name and address of collector
   - species, age, and sex of collected animals .

   If any of this information is not available or questionable, this fact should be recorded so that additional examinations of the animals can be conducted.
6. Place the form or list in a ziplock baggie and place the baggie outside the first garbage bag but inside the second. Bring the dead animals to a designated recovery site

Live Animals

Authorization for animal rescue must be given by the appropriate State or Federal agency prior to the rescue and rehabilitation of oiled wildlife. Long-handled nets, rags, or towels are recommended for capturing live, oiled birds. Wear gloves to keep from getting oiled. Do not wash oiled birds. It is more important to keep them warm. Place them in a covered cardboard box. It is okay to keep more than one bird and multiple species in the same box. Do not attempt to give birds fluids; they should be taken to a rehabilitation center as soon as possible. For live birds, the following information should be reported:

- ✎ beach name or location where animal was recovered
- ✎ species, age, and sex of collected animals
- ✎ date and name and address of collector
- ✎ condition of the animal

Do not attempt capture of live sea otters without prior authorization from the appropriate agency. Inexperienced people can cause otters additional injuries. In addition, otters may bite and cause infections. A bite from an otter may result in inflammation of the joints and inability to bend one's fingers. Live, oiled otters are to be reported to the designated agency contact for the spill.

Appendix C

NOAA Scientific Support Coordinators

For more information about developing and applying shoreline countermeasures, contact the appropriate NOAA Scientific Support Coordinator for your area.

District	Address	Phone
1 Stephen Lehmann	NOAA SSC HAZMAT First CG District (mer) 408 Atlantic Avenue Boston, MA 02110	(w) 617-223-8016 (fax) 617-439-0468
1/5 Ed Levine	NOAA SSC HAZMAT Building 100, Box 2 Governors Island New York, NY 10004-5000	(w) 212-668-6428 (fax) 212-668-6370
2/9 Ken Barton	NOAA SSC HAZMAT c/o USCG Marine Safety Division AJC Federal Building 1240 E. Ninth Street Cleveland, OH 44199	(w) 216-522-7760 (fax) 216-522-7759
5 Gary Ott	NOAA SSC HAZMAT USCG RTC Yorktown (t-mer) Yorktown, VA 23690-5000	(w) 804-898-2320 (fax) 804-898-2296
7 Brad Benggio	NOAA SSC HAZMAT Miami Federal Build Rm 1119 51 S.W. First Ave, PO Box 83 Miami, FL 33130	(w) 305-530-7931 (fax)305-530-7932
8 Mike Barnhill	NOAA SSC HAZMAT Cdr Eighth CG District (m-ssc) Hale Boggs Federal Bldg 500 Camp Street New Orleans, LA 70130-3396	(w) 504-589-6901 (fax)504-589-4999
11 Jim Morris	NOAA SSC HAZMAT 501 West Ocean Blvd. Rm 5110	(w) 310-980-4107 (fax) 310-980-4109 Long Beach, CA 90802

13/14 Sharon Christopherson	NOAA/HAZMAT 7600 Sand Point Way N.E. Seattle, WA 98115-0070	(w) 206-526-6829 (fax) 206-526-6329

District	Address	Phone
17 John Whitney	NOAA SSC HAZMAT Peterson Towers Bldg 510 L Street, Ste #100 Anchorage, AK 99501	(w) 907-271-3593 (fax) 907-271-3139

Glossary

Aerobic

Able to live or grow only where air or free oxygen is present.

Anaerobic

Able to live and grow where there is no air or free oxygen.

Annual

A plant that lives only one year or season.

Aromatic

Organic compounds containing any of a series of benzene ring compounds. They are unsaturated organic ring compounds with low to high boiling points. The lighter components are generally acutely toxic to aquatic life.

Benthos

The plants and animals that live in and on the bottom of a water body.

Berm

A wedge-shaped sediment mass built up along the shoreline by wave action. Sand berms typically have a relatively steep seaward face (beach face) and a gently sloping surface (berm top). A sharp crest (berm crest) usually separates the two oppositely sloping planar surfaces on top of the berm. Berms on sand beaches are eroded away during storms, thus a berm may not be present if the beach is visited shortly after a storm. On gravel beaches, however, steep and high storm berms are activated and refurbished during storms.

Biota

Animal and plant life characterizing a given region. Flora and fauna, collectively.

Booms

Both containment and absorbent booms are used for the collection, deflection, and containment of spreading oil. Containment booms are somewhat rigid structures extending both above and below the water acting as barriers to surface oil. Primary containment booms are usually deployed close to oiled shorelines to trap oil being flushed from beaches before it is collected. Secondary containment booms are deployed farther out to trap oil that leaks past primary booms. Absorbent boom is used along the shore-water interface to collect oil dislodged during treatment operations. It is important that sorbent boom be changed once the sorbent capacity is reached. Great care should be taken to seal the shore ends of booms so that no oil can get past. This is particularly difficult at rocky shorelines, or areas strewn with boulders and cobbles. The use of sorbent pads or other materials, such as “pom poms,” can be effective sealants.

Brackish

Intermediate in salinity (0.50 to 17.00 parts per thousand) between sea water and fresh water.

Dispersant

Chemical agent used to disperse and suspend oil in water leading to enhanced dispersal and biodegradation.

Emulsification

The process by which oil is mixed with water.

Erosion

The wearing away by action of water or wind on unprotected or exposed earth.

Estuary

<u>Classic</u> <u>definition</u> A drowned river valley that has a significant influx of fresh water and is affected by the tides. Most of the coastal water bodies in the mid-Atlantic region are estuaries (e.g., Chesapeake Bay, Delaware Bay).

Evaporation

The conversion of a fluid—including hydrocarbons—to a gaseous state.

Fertilizer

A substance or agent that helps promote plant or seed growth.

Flushing

Use of a water stream to make oil flow to a desired location or recovery device.

Habitat

The chemical, physical, and biological setting in which a plant or animal lives.

Intertidal

The part of the shoreline that lies between high-tide and low-tide water levels.

Lagoon

A shallow, linear, and usually oblong water body, located parallel with and connected to a larger water body by one or more inlet channels.

Marsh fringe

The edge of the marsh adjacent to the water.

Mobile oil

Oil that can refloat when water is applied (as in high tide).

Mousse

A type of oil/water emulsion which can contain up to 70 percent water.

Non-persistent

Decomposed rapidly by environmental action.

Oleophilic

A material that has affinity for oil.

Penetration

Downward motion of oil into sediments from the surface driven by gravitational forces.

Perennial

Vegetation that continues to grow for several years.

Permeability

The degree to which fluids can flow through a substance. Measured in Darcys. Permeability is not equal to porosity. High porosity of a material does not insure high permeability. A substance cannot be permeable without having some degree of porosity.

Pooled oil

Oil thickness exceeds one centimeter. This need not be uniform.

Porosity

The volume of void spaces in a sediment mass, measured in percent.

Riprap

(a) A layer of large, durable fragments of broken rock, specially selected and graded, and thrown together irregularly or fitted together. Its purpose is to prevent erosion by waves or currents and thereby preserve the shape of a surface, slope, or underlying structure. It is used for irrigation channels, river-improvement works, and revetments for shore protection.

Recontamination

Contamination by oil of an area that was previously cleaned.

Rhizome

A rootlike stem under or along the ground, ordinarily in a horizontal position, which usually sends out roots from its lower surface and leafy shoots from its upper surface.

Skimmer

A mechanical device that removes an oil film from the water surface.

Oil skimmers collect oil spilled on, or released to, the water's surface. They come in a wide range of shapes and sizes. Skimmers generally have a higher recovery rate than sorbents, providing enough oil is present to justify the costs for its use. Skimmers are usually equipped with storage space for collected oil. Oil is herded to a collection point along a containment boom located close to shore yet in water of sufficient depth for the skimmer to function. Two types of skimmers currently in use are described below. Other types of skimmers are being tested for possible use at a later date.

> Band, or "rope," skimmers use an oleophilic material such as polypropylene. Oil is collected by a floating, continuous rotating band or "rope" drawn through an oil slick or along the water's edge of a contaminated area. Adhered oil is wrung from the band by a squeeze roller and collected in an oil sump. These bands are used in either static

(stationary) or dynamic (towed) modes. Bands can be torn by solids or skimmed debris. Efficiency is high in calm waters, poor in choppy waters and waves.
Belt skimmers use an oleophilic belt mounted on the front of a small vessel. The oleophilic belt pushes the floating oil below the waterline. Oil not adsorbed by the belt is collected into a holding area located behind the belt. Oil carried up the belt is recovered at the top of the system by a squeeze belt or scraper blade. It is then pumped into a storage container. These skimmers can not operate in shallow waters or tight areas.

Slurry

A suspension of particles in water.

Solubility

The amount or fraction of a substance (e.g., oil) that dissolves into the water column, measured in ppm.

Solvent

A chemical agent that will dissolve oil.

Specific gravity

The measure of the density of a substance such as oil or sea water, usually determined at 20°C, compared to the density of pure water at 4°C. Thus, specific gravity varies slightly with temperature.

Sorbent

All sorbent materials work on the same principles—oil adheres to the outside of the material or sorbs into the material by capillary action. There are three basic types of sorbent materials: mineral based, natural organic, and synthetic organic. Currently, only synthetic organic sorbents are being used in the field in the form of booms, pads, and mops. Peat is currently in the testing and demonstration phase.

Stain

Oil that is visibly present but cannot be scraped off with a fingernail.

Substrate

The substance, base, or nutrient on which, or the medium in which, an organism lives and grows, or the surface to which a fixed organism is attached; e.g., soil, rocks, and water.

Subtidal

That part of the coastal zone that lies below the lowest low-tide level, so that it is always underwater.

Supratidal

Above the normal high-tide line.

Tarballs

Lumps of oil (<10 cm in diameter) weathered to a high density semisolid state.

Toxicity

The inherent potential or capacity of a material (e.g., oil) to cause adverse effects in a living organism (Rand and Petrocelli, 1985).

Viscosity

Flow resistance; referring to internal friction of a substance (e.g., oil) that is a function of the oil type and temperature.

Vacuum systems

Used to recover oil collected behind containment booms along the beach face and in the water during shoreline flushing operations. Where equipment access allows, vacuums can be used to remove pools of oil directly from shorelines and surfaces of heavily oiled rocks. Two vacuum systems currently in use are described below.

> The first system is classified as a vacuum device, but requires a high-velocity air stream, @ 150 mph, to draw oil, water, and debris into the unit’s collection chamber. Due to the 6- to 12-inch diameter of the inlet hose, it rarely becomes clogged by debris. The inlet nozzle should always be placed slightly above (never below) the fluid’s surface. The distance at which it is held above the fluid is critical to limit the amount of water intake. This system is suitable for picking up weathered oil, tar balls, and mousse from water or shorelines, and to vacuum oil from skimming vessels, boomed areas, or debris-laden sites. The primary advantage is its ability to pick up oil of any viscosity and, where necessary, lift fluid more than 30 feet. The system can pick up

and decant simultaneously. The main disadvantages are that it usually picks up a high water/oil ratio, and can be difficult to repair in the field.

The second system, barge-mounted vacuum trucks, use high-suction pumps and a cylindrical chamber capable of sustaining very low internal pressure, i.e., minus 12 psi. Vacuum is created in the chamber, and a 3- to 4-inch diameter hose is usually placed slightly below the surface of a floating oil slick, allowing a mixture of water and oil to enter the collection chamber. The position of the open end of the vacuum hose is critical. If it is placed too far down into the oil slick, recovered fluid will be mostly water; if not deep enough, air will be sucked into the system, and much of the vacuum will be lost. The primary advantages of the vacuum truck system are: it can recover fluid of nearly any viscosity; it has a rapid pickup rate of thick oil layers; and it can recover a wide variety of small debris. Primary disadvantages are its limited lift, no more than 20 to 30 feet, and the length of time required to reestablish a vacuum if air enters the hose. As with the other vacuum, this one also picks up a high water/oil ratio.

Weathering

Natural influences such as temperature, wind, and bacteria that alter the physical and chemical properties of oil.

Weir

A vertical barrier placed just below the surface of the water so that a floating oil slick can flow over the top.

Wetlands (as defined by the Annotated Code of Maryland Title 9)

State wetlands: Lands below the mean high-tide line affected by the regular rise of tide.
Private wetlands: Lands bordering on state tidal wetlands, below the mean tide line subject to the effects of the regular rise and fall of tide. Lands able to support growth of wetland vegetation.

Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, and is at least periodically saturated with or covered by water (Cowardin et al. 1979).

Wrack

Accumulations of plant debris that is deposited at or above the high-tide line (e.g., *Spartina* or seagrass debris).

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New Orleans Area Contingency Plan

Chapter 9000
Appendix G
Shoreline Countermeasures and Matrices

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Under Development

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New Orleans Area Contingency Plan

Chapter 9000, Appendix H Wildlife Response Plan

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New Orleans Area Contingency Plan

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Wildlife Response Plan

Introduction and Background

The purpose of this Wildlife Response Plan is to outline the responsibilities of the Wildlife Branch within a Unified Command structure during an oil spill, describe the procedures to be used, and to identify the personnel and equipment necessary to meet wildlife protection responsibilities of the responsible party and the Federal and State governments during a spill. The mission of the Wildlife Branch is to minimize the adverse impacts of oils spills and oil spill response on wildlife.

The New Orleans Area Wildlife Response Plan contains:

- Statutory policy and procedural basis for Wildlife Branch operations;
- Activation criteria and factors to consider when developing response actions; and
- Organizational infrastructure for wildlife response operations.

When oil spills occur, the Incident Command System (ICS) is used as the organizational structure to coordinate the response actions. The ICS organizational structure typically includes the Unified Command and the Operations, Planning, Logistics, and Finance Sections. The actual response organization will grow to fit the level of response necessary for a specific incident. Response actions concerning the protection, identification, rescue, processing, and rehabilitation of oiled wildlife are performed by the Wildlife Branch within the Operations Section.

It is the policy of the New Orleans Area Committee (NOAC) that representatives of the U.S. Fish and Wildlife Service Regional office (USFWS) or Louisiana Department of Wildlife and Fisheries (LDWF) will assume the positions of Director and/or Deputy Director of the Wildlife Branch, as appropriate. The Branch Director position may be filled by NOAA National Marine Fisheries Service (NMFS) if USFWS or LDWF chooses to defer the position to NMFS. In this case, NMFS may provide a more experienced Branch Director given the circumstances of the incident. The Wildlife Branch Director position will be delegated to the LDWF for spills that occur within Louisiana State

Waters or on a State Wildlife Management Area or State refuges. Delegation of the position may change during an incident of extended duration.

Appointment of other parties, including a qualified Responsible Party representative, to one of these positions may be made by a USFWS or LDWF representative or their designee at any time during an incident for such periods of time as may be deemed appropriate. The use of a Responsible Party representative in the Wildlife Branch, i.e. Deputy Branch Director, may be beneficial to the operations of the Branch as it helps expedite logistical and finance needs. If this occurs, it should be verified that the Responsible Party representative has prior experience with a wildlife response event.

Within the Wildlife Branch there are four Groups who report to the Wildlife Branch Director: the Wildlife Reconnaissance Group; the Bird Recovery and Rehabilitation Group; the Marine Mammal Recovery and Rehabilitation Group and the Sea Turtle Recovery and Rehabilitation Group. The roles, responsibilities, and duties of these Groups, and individuals within these Groups, are described in detail in the Wildlife Branch Positions and Responsibilities section.

Coordination between the Wildlife Branch and the Environmental Unit, a part of the Planning Section, is critical. Wildlife Branch field staff perform reconnaissance by land, boat, and air. Environmental Unit staff gathers information regarding wildlife impacts through aerial over flights, field observers, and through on-the-ground Shoreline Cleanup Assessment Techniques (SCAT) teams. The Wildlife Branch and Environmental Unit share information so that it can be used by the Planning and Operations Sections to aid in strategic assessment and planning of response strategies. The Wildlife Branch Director is responsible for keeping the Unified Command informed of the status of affected wildlife during the response through the Operations Section Chief and the Situation and Environmental Units in the Planning Section.

While the organizational structure, roles, and responsibilities remain the same regardless of the location and type of material spilled (i.e., oil or hazardous substance, marine or inland environments), some functions may be altered as appropriate.

This plan has been developed to meet portions of the NOAC's Fish and Wildlife and Sensitive Environments Plan requirements set forth in the National Contingency Plan (NCP), 40 CFR Part 300.210 (c)(4).

Federal Mandates

The Federal Oil Pollution Act 1990 (OPA 90), incorporated into the NCP, requires that a Fish and Wildlife and Sensitive Environments Plan be developed in consultation with the USFWS, the National Oceanic and Atmospheric Administration (NOAA), and other interested parties, including state fish and wildlife agencies (33 U.S.C. 1321(d)(2)(M)). The plan must include “immediate and effective protection, rescue, rehabilitation of, and minimization of risk of damage to fish and wildlife resources and habitats that are harmed or that may be jeopardized by a discharge”. Additionally, 30 CFR Part 300.210(c)(4) sets forth the requirements for this plan to be an annex to Area Contingency Plans. The Wildlife Response Plan has been written in conjunction with other sections of the NOACP to address the federal requirements. Certain other federal and state laws also apply to oil spill response. Of particular concern is compliance with the Migratory Bird Treaty Act, Marine Mammal Protection Act, Endangered Species Act, and state wildlife rehabilitation rules.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703-711, protects most bird species in the United States and requires specific authorization (or exemptions) to conduct activities that may result in a “take” of migratory birds. “Take” is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct”. Most response actions that would result in a take are permitted by issuance of a Migratory Bird Rehabilitation Permit (50 CFR Part 21.31). A rehabilitation permit authorizes recovery, temporary possession, transport, and rehabilitation of oiled migratory birds. The permit provisions also allow authorized individuals to euthanize migratory birds that are medically determined to have poor prospects of survival. Permitted rehabilitators must be authorized to work on a specific oil spill incident by USFWS, LDWF and the Federal On-Scene Coordinator (FOSC). USFWS policy requires spill responders to comply with the care standards outlined in *Best Practices for Migratory Bird Care During Oil Spill Response*, which is incorporated as a requirement of the NOACP. This Wildlife Response Plan adopts the operational guidelines as well as the standard of care requirements of the *Best Practices for Migratory Bird Care During Oil Spill Response*. (http://www.fws.gov/contaminants/OtherDocuments/best_practices.pdf).

The Migratory Bird Rehabilitation Permit stipulates that specific authorization to remove dead oiled birds must be obtained from the USFWS for each spill incident. The Wildlife Branch, in consultation with the trustee agencies, will develop protocols and authorizations for removing dead oiled birds for each incident.

Endangered Species Act

The Endangered Species Act of 1973 (ESA), 16 U.S.C. 1531-1543, has strict permit requirements for the handling of threatened and endangered species (listed species). Permitting requirements apply (with a few exceptions) for any species listed as threatened or endangered. A Migratory Bird Rehabilitation Permit (see above) authorizes the recovery, temporary possession, transport, and rehabilitation of oiled threatened and endangered species of migratory birds with no additional ESA permits required. ESA permit/authorization is needed for other threatened and endangered species, such as manatees.

In the event of an oil spill or hazardous substance release, the ESA must be considered in the development of Federal response activities and actions during an oil spill response. As the spill response occurs, the FOSC must consult with the natural resource trustees as laid out in Section V.B of the *Inter-agency Memorandum of Agreement Regarding Oil Spill Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act (ESA MOA)*. The Environmental Unit as outlined in the ESA MOA will address ESA Section 7 Consultation requirements. However, the Wildlife Branch will be instrumental in documenting the effects of response actions on listed species. Coordination between the Wildlife Branch and the Environmental Unit is critical to accomplishing this task.

There is a contingency under the Marine Mammal Protection Act that gives a waiver for the "take" of marine mammals by Federal or State employees for the health and safety of the animals or for human safety. There is no such exemption under the Endangered Species Act but, a scientific research and enhancement permit (No. 932-1489) held by

NOAA's Marine Mammal Health and Stranding Response Program covers oil spill-related actions under the MMPA and ESA.

Marine Mammal Protection Act

Under the Marine Mammal Protection Act (MMPA), 16 U.S.C. 1379, Section 109(h)(1)), federal, state, and local government officials, or persons designated under MMPA Section 112(c) by the relevant Secretaries of the Departments of the Interior or Commerce, may take marine mammals during the course of their official duties if such taking is for the protection or welfare of the mammal, the protection of public health and welfare, or the non-lethal removal of nuisance animals. Government contractors conducting officially authorized oiled wildlife spill response related activities and acting under the direct supervision of the Wildlife Branch Director are regarded as spill response employees and may take marine mammals *if* the Wildlife Branch *is activated* and the Wildlife Branch Director is authorized pursuant to Section 109(h) of the Marine Mammal Protection Act and implementing regulations (USFWS, National Marine Fisheries Service, state wildlife agency), or is designated by the National Oceanic and Atmospheric Administration under 16 U.S.C. 1382 Section 112(c). “Take” is considered appropriate for the purposes of recovery and transport of marine mammals (alive or dead) to a designated location, rehabilitation by an authorized facility, return to the wild, or for the collection of evidence. If wildlife response personnel are contract employees of a non-government entity and not otherwise authorized pursuant to Section 109(h) or 112 (c) of the Marine Mammal Protection Act, authorization to take marine mammals during spill response activities must be obtained directly from the appropriate Federal trustee agency (USFWS or NOAA National Marine Fisheries Service). Likewise, if the Wildlife Branch is not activated, authorization to take marine mammals must be obtained directly from the appropriate federal trustee agency (USFWS or NOAA National Marine Fisheries Service) pursuant to 16 U.S.C. 1382 Section 112(c).

Hazing or Deterrence Actions

Hazing or deterrence may be utilized by the Wildlife Branch to keep un-oiled wildlife away from oil. No Federal permits are required for non-lethal deterrence of migratory birds (50 CFR Part 21.41) (Note: this exemption does not apply to eagles and endangered species). The ESA does not specifically authorize deterrence and preemptive capture of endangered species. The Wildlife Branch, in consultation with the appropriate trustee agencies, will develop response strategies for deterrence and preemptive capture of endangered species for a specific spill incident. Strategies for hazing or abatement will likely vary seasonally for most bird species. “Take” of endangered species resulting from approved response actions will be deemed incidental to the primary action of the spill response and will be covered by the ESA Section 7 Emergency Consultation process, unless otherwise authorized by a permit. See ESA section above.

Natural Resource Trustees for Wildlife

Trustee agencies will provide input into the selection of response methods used so that wildlife operations comply with each trustee agency governing laws and obligations to preserve and protect wildlife and habitat. During a spill response, wildlife trustee agencies will advise the Wildlife Branch Director about local wildlife resources, sensitive species or habitats, logistical considerations, and other issues that arise.

Federal trustee agencies that are most likely to participate in Wildlife Branch decisions and response activities are as follows:

- Department of the Interior
    - Bureau of Indian Affairs
    - Bureau of Land Management
    - National Park Service
    - U.S. Fish and Wildlife Service

- Department of Commerce
    - NOAA, Office of Response and Restoration
    - NOAA, National Marine Fisheries Service
    - NOAA, National Marine Sanctuaries

- Department of Agriculture
    - U.S. Forest Service
    - APHIS Wildlife Services

- Department of Defense (military lands)

The U.S. Coast Guard and the U.S. Environmental Protection Agency are not trustee agencies for natural resources but are the primary lead federal agencies during a spill response and also participate in the Wildlife Branch decisions. In any spill the potentially responsible party or discharger is responsible to federal and state resource trustees, to federally recognized Indian Tribes, and to foreign trustees, all of whom are empowered to assess impacts and seek compensation for injuries to natural resources which have been caused by a discharge of oil or release of a hazardous substance. State trustee agencies that are most likely to participate in Wildlife Branch decisions and response activated under the NOACP and may include:

- Louisiana Department of Wildlife and Fisheries (Primary State Trustee for Wildlife)
- Louisiana Department of Environmental Quality
- Louisiana Department of Natural Resources (Tidelands)
- Louisiana Oil Spill Coordinator's Office

Indian Tribes retain sovereign authority to manage wildlife resources issues within reservation boundaries. Consultation and coordination is necessary with Tribal governments whose lands may be impacted by an oil spill. Regardless of whether an oil spill occurs directly on Tribal lands or moves onto or through Tribal lands, Tribes have an important role in developing wildlife response actions affecting Tribal resources. Tribes may have additional natural resource interests related to retained rights outside of reservation lands. In such circumstances, the Wildlife Branch will work in coordination with affected Tribes to develop appropriate wildlife response strategies to address wildlife and Tribal concerns, in compliance with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), DOI Secretarial Order 3206, USFWS Native American Policy, as well as compliance with the NOACP.

Agreement Regarding Wildlife Response Activities

In order to provide an efficient and coordinated response, principle federal and state fish and wildlife trustees may enter into cooperative agreements regarding a variety of issues that arise during spills of oil and hazardous substances. These issues include agency response roles, reconnaissance, capture, treatment, rehabilitation, and release of injured wildlife.

Response Planning

The primary purpose of the Wildlife Branch is to provide the best achievable care for impacted wildlife and to minimize wildlife losses, including preventing injury to wildlife or habitats from both the oil and from the implementation of response activities. However, undertaking an effective wildlife response requires planning and preparation before the need to respond to an actual incident.

State and Federal Trustees are encouraged to work with the oil industry and New Orleans Area wildlife rescue and rehabilitation organizations to prepare an adequate response capability for Wildlife Branch operations. Preparation involves assessing potential impacts to wildlife; ensuring adequate equipment, personnel, and wildlife response protocols are available; and practicing the planned response through oil spill exercises. In particular, oiled wildlife rehabilitation requires large amounts of space, water, and personnel, and these resources are not readily available without prior planning.

Personnel Safety

Worker safety must be considered before any wildlife response effort is conducted. Therefore, all Wildlife Branch activities must conform to the Site Safety Plan for the response. All workers must be current in Occupational Safety and Health Administration (OSHA) information and training that relates to safety of working in an environment with uncontrolled oil products. Additional safety requirements may be included and all personnel involved in Wildlife Branch operations must have appropriate job specific safety training for the task(s) to be performed as well as utilize appropriate personal protective equipment. Those people involved with animal handling should be trained in techniques that ensure worker safety and present the least amount of stress to wildlife.

Appropriate bio-security measures will be utilized to reduce the risk of transmission of infectious diseases between wildlife and personnel during an oiled wildlife response.

Wildlife Branch

Activation of the Wildlife Branch

Every spill will be assessed for potential impacts to wildlife. The Wildlife Branch will be activated when either a Federal or State trustee agency, responsible party, or the Unified Command determines that an oil spill is in the vicinity of wildlife resources (mammals or birds), or has a trajectory that puts wildlife resources at risk. Once this determination has been made, the Operations Section Chief and the Unified Command will be notified when the Wildlife Branch is operational. As described in the ***Response Actions*** section below, the Wildlife Branch will be developed to appropriately respond to the anticipated magnitude of wildlife impacts.

Designation of Wildlife Branch Director

Representatives of the USFWS, LDWF, or NMFS, as appropriate, will assume the position of Director and/or Deputy Director of the Wildlife Branch. This designation may be made on a case-by-case basis or through a pre-existing agreement. Appointment of other parties, including qualified Responsible Party representatives, to one of these positions may be made by a USFWS or LDWF representative or their designee at any time during an incident, and for such periods of time as may be deemed appropriate. Unless otherwise indicated by USFWS and LDWF, the Wildlife Branch Director position will be delegated to the Louisiana Department of Wildlife and Fisheries (LDWF)for spills that occur within Louisiana State Waters or on a Wildlife Management Area or refuge. Delegation of the position may change during a spill of extended duration.

Wildlife Branch Organization

The Wildlife Branch Director oversees operations of the Wildlife Branch (see Figure 1) and reports to the Operations Section Chief. Within the Wildlife Branch, four Groups report to the Wildlife Branch Director:

- Wildlife Reconnaissance- aerial, ground, and on-water reconnaissance of wildlife in the spill area.

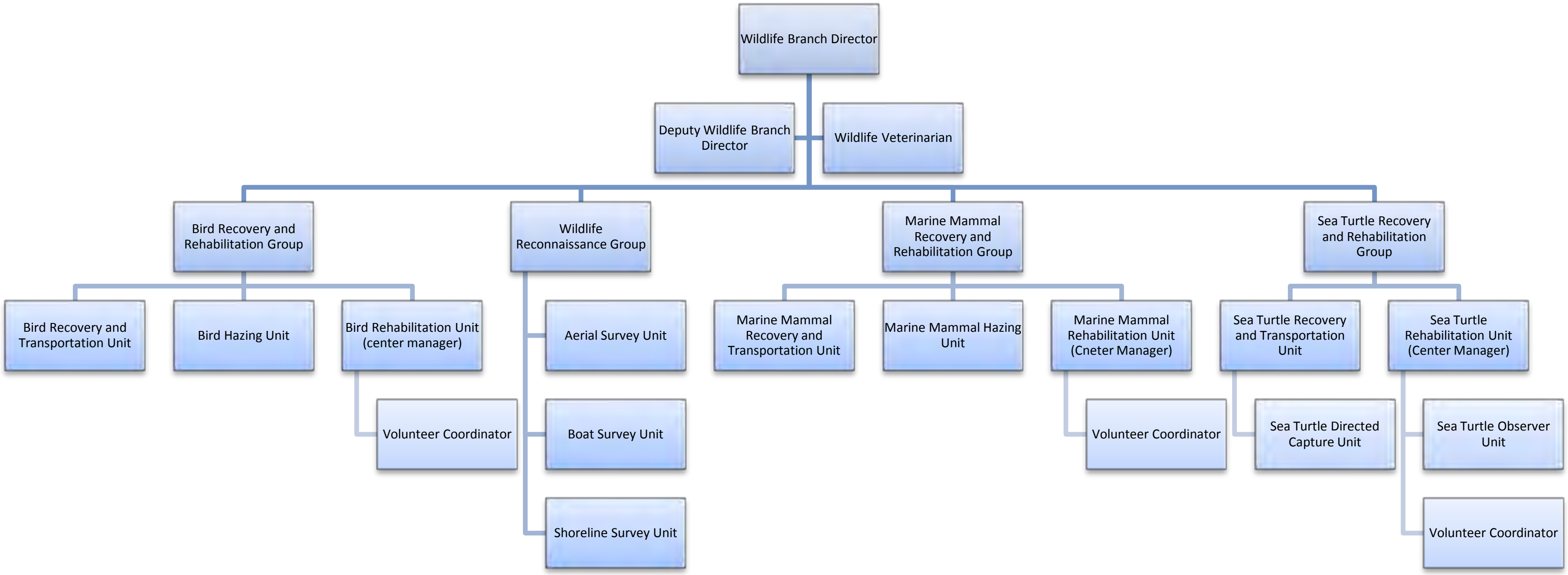
- Bird Recovery and Rehabilitation- search, recovery, transport, rehabilitation, documentation and hazing/deterrence of birds.

- Marine Mammal and

- Sea Turtle Recovery and Rehabilitation- search, recovery, transport, rehabilitation, documentation, and hazing/deterrence of marine mammals.

To ensure Wildlife Branch objectives are achieved with maximum efficiency, the Wildlife Branch Director coordinates and manages the activities of all personnel in the Wildlife Branch who fall under the authority of the Unified Command during a spill response. These include federal, state, and local agencies along with commercial and non-profit organizations responsible for wildlife. The Wildlife Branch Director will manage all personnel and equipment supplied by the Potentially Responsible Party to the Wildlife Branch.

The Wildlife Branch includes the following Groups, which operate under direction of the Wildlife Branch Director: Wildlife Reconnaissance, Bird Recovery and Rehabilitation, and Marine Mammal and Sea Turtle Recovery and Rehabilitation. This organizational structure is expanded beyond the structure described In the Incident Management Handbook (USCG COMDTPUB P3120.17A), which includes only the Wildlife Recovery Group and the Wildlife Rehabilitation Center.


Wildlife Branch Director
Deputy Wildlife Branch Director
Wildlife Veterinarian
Bird Recovery and Rehabilitation Group
Wildlife Reconnaissance Group
Marine Mammal Recovery and Rehabilitation Group
Sea Turtle Recovery and Rehabilitation Group
Bird Recovery and Transportation Unit
Bird Hazing Unit
Bird Rehabilitation Unit (center manager)
Volunteer Coordinator
Aerial Survey Unit
Boat Survey Unit
Shoreline Survey Unit
Marine Mammal Recovery and Transportation Unit
Marine Mammal Hazing Unit
Marine Mammal Rehabilitation Unit (Cneter Manager)
Volunteer Coordinator
Sea Turtle Recovery and Transportation Unit
Sea Turtle Directed Capture Unit
Sea Turtle Rehabilitation Unit (Center Manager)
Sea Turtle Observer Unit
Volunteer Coordinator

Wildlife Branch Operations

Duties and Responsibilities

Once activated, the Wildlife Branch Director is responsible for ensuring that the appropriate protocol and process is followed during the search, recovery, and rehabilitation of impacted wildlife. The Wildlife Branch Director will make recommendations to the Unified Command through the Operations Section Chief regarding the need for additional Wildlife Branch resources based on anticipated wildlife impacts and associated field operations.

The Wildlife Branch, working for the Operations Section Chief, will develop operational strategies, tactics and resource needs for operations activities for the Branch in the Incident Action Plan. The Branch Director or one of the Branch staff will work closely with the Site Safety Plan specific to wildlife response activities. Operations activities may include wildlife deterrence, conducting wildlife search and recovery, transportation of oil-impacted wildlife, rehabilitation of wildlife, and release of rehabilitated wildlife. The Wildlife Branch Director will implement the operational guidelines as well as the standard of care requirements of the *Best Practices for Migratory Bird Care during Oil Spill Response*, *NOAA Marine Mammal Health and Stranding Response Program, Marine Mammal Oil Spill Response Guidelines*, and other appropriate guidance in all aspects of Wildlife Branch operations.

Wildlife Branch activities affect and interact with numerous other sections of the Incident Command and it is important that good communications are established and maintained between the Wildlife Branch and other responders. In particular, coordination between the Wildlife Branch and the Environmental Unit, a part of the Planning Section, is essential. The Planning Section may assign a Wildlife Technical Specialist to help with coordination. The Wildlife Branch Director is responsible for keeping the Operations Section Chief and Unified Command informed about the status of branch operations.

The Wildlife Branch is responsible for providing information to the Unified Command, the Planning Section, and the Public Information Officer/Joint Information Center relative to the daily numbers of alive and dead animals and their status. At the direction of the Operations Section Chief, the Wildlife Branch Director or a member of the Branch staff will attend tactics meetings, planning meetings, and Unified Command briefings. The Branch will also coordinate with Air Operations regarding wildlife reconnaissance/recovery flights, and coordinate with the Logistics Section in accordance with existing IC/UC policy for any materials needed. The Wildlife Branch is also responsible for working with the Planning Section, Demobilization Unit to develop the Wildlife Branch Demobilization Plan.

Response Actions

Activities associated with the activation of the Branch will be appropriate to the size of the spill. Activation of personnel and equipment is based primarily on anticipated adverse effects on wildlife. Depending on the size of the incident, the Wildlife Branch may range in size from just the Branch Director position to the full activation of the organization displayed in figure 1 including the associated equipment and personnel resources. Development of Wildlife Branch operations is an iterative, dynamic process that calls for good information, knowledge, experience, and judgment. It is important to understand that “activation” of the Branch does not mean that a full-scale wildlife response will be mounted. The level of response is completely dependent on the number of animals that may potentially be impacted.

On every spill response, the first action of the Wildlife Branch must be to deploy trained observers to the spill site to determine the extent of the initial and anticipated wildlife impacts in a timely manner. The ability to effectively determine the size and scale of the wildlife response is highly dependent on getting trained observers on-scene quickly. The initial observers must be trained personnel because the impact oil and other hazardous materials has on wildlife is not always obvious to the average responder. Oiling from light petroleum products, unlike heavy petroleum products, can be especially difficult to determine without the use of a trained observer. Unless heavily oiled, impacted wildlife may be mobile and may not remain at the site of the initial oiling. Results of the initial reconnaissance will determine the size and complexity of the Wildlife Branch and the subsequent deployment of personnel and equipment. This involves establishing the Wildlife Branch organizations, notifying the appropriate federal and state trustees, and determining rehabilitation facility needs. The number of animals affected, or potentially affected, will determine the number and type of personnel and equipment resources that are needed. The Wildlife Branch will work with Logistics to obtain resources, personnel, and equipment. Deterrence, search and recovery, primary care, rehabilitation, and release activities will proceed as deemed necessary and appropriate by the Wildlife Branch Director, with the approval of the Unified Command.

Oiled Bird Response

Birds are the most common wildlife affected by oil spills, especially marine birds, waterfowl, shorebirds, gulls, and predatory birds. These birds spend the majority of their time on or near the water's surface which puts them in direct contact with oil. When the feathers of a bird become oiled, they lose their capacity to insulate the bird's skin from the water. Once the water is allowed to come in contact with the bird's skin the bird becomes hypothermic, lethargic, and unable to feed and preen. Eventually the birds attempt to escape the water by beaching themselves. Oiled birds are prime targets for predatory and scavenging animals. This scavenging then leads to secondary oiling and further spread of the oil. It is important to retrieve alive and dead birds. The survival rate of rehabilitated birds depends greatly on conducting a quick response and using appropriate personnel and facilities.

The following table provides response actions needed when planning for oiled wildlife rescue and rehabilitation operations. The response resource for each specific spill should be developed on a case-by-case basis and the size of the Wildlife Branch will adjust as more accurate information about the spill incident and wildlife impacts become available. Most spill incidents in the New Orleans Area would utilize a Level IV wildlife response. Some extraordinary circumstances would require mobilization at Levels III or II from the outset. The Wildlife Branch will notify the Operations Section Chief promptly of needed changes in the deployment of personnel and equipment. The numbers depicted in the table are only rough estimates and are subject to change depending on spill conditions.

	Level IV	Level III*	Level II*	Level I*
Projected Number of Oiled Birds	1-15	16-100	101-500	500+
Personnel				
Wildlife Branch Director	1	1	1	1
Wildlife Veterinarian**	1	1	1-2	1-2
Deputy Wildlife Branch Director	0	0-1	1	1-2
Bird Recovery & Rehabilitation Group Supervisor	0-1	1	1-2	2
Deputy Bird Recovery and Rehabilitation Group Supervisor	0	0	0	1
Bird Recovery and Rehabilitation Group Staff	0-4	1-4	5+	5+
Bird Recovery & Transportation Unit Leader	0-1	1	1-2	2
Bird Recovery & Transportation Unit Staff**	1+	2	6+	12+
Bird Rehabilitation Unit Leader	0-1	1	1-2	1-2
Bird Rehabilitation Unit Staff**	4+	8+	25+	50+
Volunteer Coordinator	0-1	1	1-2	2-3
Bird Hazing Unit Leader	0-1	0-1	1-2	1-2
Bird Hazing Unit Staff **	0-3	0-3	5+	5+
Wildlife Reconnaissance Group Supervisor	0-1	1	1-2	2
Aerial Survey Unit Leader	0-1	0-1	1	1
Aerial Survey Unit Staff**	1	1-2	2-4	5+
Boat Survey Unit Leader	0-1	0-1	1	1

Boat Survey Unit Staff**	0-2+	2+	5+	10+
Shoreline Survey Unit Leader	0-1	0-1	1	1
Shoreline Survey Unit Staff**	0-2+	2+	20+	40+

Equipment				
Facility - Permanent or temporary	1	1+	2+	4+
Stabilization Facility	0	0	2+	4+
Primary Care Facility	0-1	0-1	2+	4+
Vehicle – Recovery	0-4	0-4	6+	12+
Vehicle – Transport	1	1+	4+	8+
Boat – Capture	0-2	0-2	4+	8+
ATVs	0-2	0-2	4+	8+
Air (helicopter)/land/water reconnaissance	0-1	0-1	1-2	1-2

1- The number of staff and equipment are based on a spill involving average sized birds (i.e.; gadwall or wigeon), with moderate oiling, that are easily accessible.

Size of birds and degree of oiling may require substantially different personnel and equipment resource. When marine mammals are affected, personnel and equipment requirements may double in number to account for separate response efforts. Note: Response levels are numbered consistent with National Incident Management System (NIMS compliant)

*The logistical needs of the Wildlife Branch are substantially different at the lower and upper ends of the range of projected oiled birds for each level

** These staff generally are not in the Command Post because they are in the field or at the rehabilitation facility. The other staff may or may not be located at the command post.

Sea Turtles

Sea turtles are commonly found feeding in the coastal marine waters of Louisiana, although nesting is quite uncommon. Since sea turtles spend significant amounts of time at the surface and below the surface feeding, they may experience both external and internal oiling. Sea turtles impacted in nearshore waters may strand while sea turtles impacted offshore may remain there until detected. If promptly captured and treated, the survival rate of sea turtles is high. Spills pose logistical operational challenges, especially offshore, that must be promptly identified. The Sea Turtle Recovery and Rehabilitation Unit will develop a response plan including the following:

- Designate a wildlife coordinator;
- Develop an aerial survey plan to detect stranded and offshore animals;
- Develop capture, triage, and transport protocols;
- Identification of rehabilitation facilities and mobile treatment units;
- Rehabilitation, release, and tracking plans;
- Formation of a documentation team to follow Natural Resource Damage Assessment procedures, chain of custody. procedures, and storage of specimens;
- Designate a volunteer coordinator;
- Identify training requirements for personnel and volunteers;
- Identify equipment caches and needed resources for sea turtle response;
- Identify vessel requirements for response and coordination with vessels of opportunity; and
- Support and resources required for offshore capture teams, monitors, and transport personnel.

Marine Mammals

There are 21 species of cetaceans (whales and dolphins) in the Gulf of Mexico inhabiting a broad range of habitats, from offshore (including continental shelf) and coastal ecosystems to bays, sounds, and estuaries (inshore). Manatees are also present in the Gulf of Mexico. All marine mammals are protected under the Marine Mammal Protection Act and some are also protected under the U.S. Endangered Species Act. Cetaceans fall under the jurisdiction of NOAA Fisheries and manatees fall under the jurisdiction of the U.S. Fish and Wildlife Service. Evidence suggests that marine mammals are unlikely to detect and avoid spilled oil and exposure can result in population level impacts (e.g. Matkin et al., 2008).

Marine Mammal Strandings and Mortalities

Regional marine mammal stranding networks should be notified by NOAA Fisheries and/or the U.S. Fish and Wildlife Service that a spill has occurred and that strandings should be reported directly to the Wildlife Branch via the 1-800 hotline number activated during the spill. If a carcass is found and NOAA Fisheries/U.S. Fish and Wildlife Service authorize a necropsy, the necropsy should follow established protocols in NOAA's Marine Mammal Oil Spill Response Guidelines (Johnson and Ziccardi, 2006) and be coordinated with NOAA Fisheries/U.S. Fish and Wildlife Service.

Live stranded marine mammals should be evaluated by trained marine mammal veterinarians and transported by trained, authorized personnel only to NOAA/U.S. Fish and Wildlife Service authorized rehabilitation facilities that meet the criteria established by NOAA Fisheries in their *Final Policy and Best Practices - Standards for Rehabilitation Facilities* (February 2009) and the U.S. Fish and Wildlife Service (for manatees).

Wildlife Branch Positions and Responsibilities

Duties and issues that relate to a specific position are listed under that position in the sections that follow. Not all positions will be staffed at each spill, therefore the duties described below need to be distributed to staff on hand.

Wildlife Branch Director

The Wildlife Branch Director is responsible for managing all wildlife rescue and rehabilitation operations and personnel. The Branch Director activates and supervises wildlife operations in accordance with the Incident Action Plan and directs its execution. In addition, the Branch Director directs the Branch Operations, requests resources, coordinates release of resources with the Planning Section, ensures coordination with other Sections or Units within the Incident Command, and reports to the Operations Section Chief. The magnitude of the event and the potential for wildlife to be impacted will dictate the level of staffing in the Wildlife Branch. Smaller spills will generally have less staff. Under these circumstances the Branch Director may have to take on additional responsibilities beyond those described below. In addition to the general duties listed above, the Wildlife Branch Director's duties include but are not limited to:

- Supervises the Wildlife Reconnaissance Group (coordinating aerial, shoreline, and on-water wildlife surveys), the Bird Recovery and Rehabilitation Group, and the Marine Mammal Recovery and Rehabilitation Group;
- Attends tactics meetings, planning meetings, and Unified Command briefings;
- Develops the Branch-specific portion of the Incident Action Plan for the next operational period (2006 Incident Management Handbook, p. 19-17);
- Manages and tracks Wildlife Branch personnel using an appropriate tracking system;
- Oversees the preparation of work order forms for Incident Action Plan preparation and logistics tracking;
- Provide updates to the Unified Command, Planning Section, and Public Information Officer/Joint Information Center regarding the status of wildlife and stranded marine mammals (alive and dead, observed and captured);
- Ensures that wildlife samples are collected in coordination with the Sampling Specialist;
- Identified methods to minimize collateral damage to wildlife and habitat from recovery, transportation, and reconnaissance operations;
- Ensures that qualified personnel perform wildlife recovery and rehabilitation safely and properly and under the appropriate authority (e.g. Stranding Agreements, permits, etc);

- Establishes the oiled wildlife hotline to enable public reporting of oiled wildlife;
- Ensures appropriate use, maintenance, and disposition of ICS forms (documentation);
- Maintains Unit/Activity Log (ISC 214);
- Updates the media as requested by the Unified Command;
- Identifies resources that can be released and develops and implements Wildlife Branch Demobilization Plan; and
- Ensures Wildlife Branch personnel have appropriate/required training and certifications.

Deputy Wildlife Branch Director

The Deputy Wildlife Branch Director reports to the Branch Director and serves as a key member of the Branch Management Team. Duties of the Deputy Branch Director include, but are not limited to:

- Attend to Wildlife Branch Director responsibilities when the Director is absent;
- Develop and disseminate Branch organization chart;
- Ensure that Group and Team leaders are provided with appropriate job descriptions and job aids;
- Develops Wildlife Branch Safety Plan in concert with the Safety Officer, ensures that all personnel assigned to the Branch receive a daily pre-operational safety briefing and a post-operational de-briefing, and records a summary each day as a part of the Unit Log (ICS 214);
- Coordinate and document personnel and logistical support needs with Group Supervisors, prepare logistical requests to the Logistics Sections;
- Serve as direct liaison between the Branch and the Resources at Risk (RAR) Specialist and Shoreline Cleanup and Assessment Technique Team Leader(s) in the Environmental Unit;

- Provide operational updates to the Situation Unit;
- Coordinate the development of standardized evidentiary protocols with U.S. Fish and Wildlife Service's law enforcement, National Marine Fisheries Service Office of Law Enforcement, and Natural Resource Damage Assessment representatives, ensuring that the needs of each entity are met;
- Coordinate with the Bird and Marine Mammal Recovery and Rehabilitation Group Leaders to determine logistical needs for:
    - Search and recovery
    - Field tagging of dead and alive animals
    - Transporting dead and alive animals
    - Necropsy of dead animals
    - Identification of a central wildlife processing center
    - Treatment and rehabilitation facilities
    - Veterinary Services
- Serve as a direct liaison with the Logistics Section to ensure proper documentation and timely processing of requests;
- Coordinate the oiled wildlife hotline; and
- Maintain Unit/Activity Log.

Wildlife Veterinarian

The Wildlife Veterinarian reports to the Branch Director, works closely with the Bird Recovery and Rehabilitation Supervisor, and is responsible for ensuring impacted animals are getting appropriate medical treatment. The Wildlife Veterinarian works with the Branch Director and Trustee agencies to develop euthanasia protocols appropriate for each spill incident.

For marine mammals, each stranding network partner generally has an experienced Veterinarian to help respond to live stranded animals and for rehabilitation. The Wildlife Branch Veterinarian may oversee these pre-identified Veterinarians, but should not be a substitute for these experienced marine mammal veterinarians. Euthanasia protocols exist for marine mammals and shall be followed. New protocols shall not be developed by the Wildlife Veterinarian.

Wildlife Reconnaissance Group

The Wildlife Reconnaissance Group is responsible for determining the location and movement of animals that may be, or already have been, impacted. Daily and seasonal movement of birds and mammals necessitate rapid, real-time characterization and reconnaissance of wildlife concentrations. The Reconnaissance Group consist of the Aerial, Boat, and Shoreline Survey Units. Each unit may be composed of multiple teams. The Reconnaissance Group is responsible for coordinating surveys that occur in a habitat for threatened or endangered species and/or in sensitive areas such as State/Federal refuges, wildlife management areas, National Marine Sanctuary, Congressionally Designated Wilderness Areas. Depending on the spill size, Wildlife Reconnaissance Group Teams may be integrated with Recovery and Transportation Unit teams or Shoreline Cleanup and Assessments Teams, although this is not desirable because it may over-task the teams. Experienced personnel are essential for effective wildlife reconnaissance and surveillance. Observers should be able to identify wildlife species, behavioral characteristics associated with oil impacts, and be knowledgeable about local ecological factors and landscape.

Reconnaissance Group personnel may include professional wildlife biologists, trustee agency representatives, contractors, and other trained personnel. If specialized surveys for threatened and endangered species are needed, additional wildlife specialists may be called in by the Reconnaissance Group Supervisor or Wildlife Branch Director. These specialists will advise the Branch Director and the Unified Command about threats to listed species, the locations and numbers of oiled animals, and the need for capture, deterrence, or other protection strategies. These experts will typically use species-specific observation protocols.

Bird Recovery and Rehabilitation Group

The Bird Recovery and Rehabilitation Group is responsible for wildlife deterrence, recovering dead birds, capturing live birds, transporting them to processing centers, and providing medical care to impacted animals. Wildlife recovery by any agency or organization must be done under the direction of the Wildlife Branch, with approval of the Unified Command. Recovery and Rehabilitation Group personnel activated must comply with agreements and permits from the appropriate management agencies (i.e. State Fish and Wildlife agencies and USFWS). Recovery and Rehabilitation Group personnel are drawn from state and federal trustee agencies and approved contractors. Trained, qualified volunteers can be used as long as they comply with the New Orleans Area Volunteer Policy (Chapter 9000, Appendix K) including ensuring appropriate training requirements and Occupational Safety and Health Administration standards are met. The Bird Recovery and Rehabilitation Group is made up of three units: Bird Recovery and Transportation; Bird Rehabilitation; and Bird Hazing. Depending on the spill size, these Units may not be staffed or may be staffed by dozens of highly-trained individuals. Depending on spill size, Recovery and Transportation teams may be integrated with Wildlife Reconnaissance Group teams or Shoreline Cleanup and Assessment Technique Teams.

Bird Recovery and Transportation Unit

The Bird Recovery and Transportation Unit is responsible for recovering alive and dead oiled birds and transporting them to rehabilitation facilities. Success at recovering impacted birds (especially mobile birds) depends on proper technique and timing. Only trained staff should recover live birds. Once captured, impacted live birds should be transported to the designated primary care or rehabilitation facility as soon as possible. Appropriate measures must be undertaken by the Wildlife Branch to ensure that dead animals are recovered, appropriately identified, documented, and held until the trustees approve disposal, or as directed by appropriate trustee agencies. The prompt removal of disabled and dead oiled animals from the environment can be critical to minimize the effects of secondary oiling such as poisoning of predators and scavengers. The Wildlife Branch, in consultation with the trustee agencies, will develop incident specific protocols and authorizations for removing and handling dead oiled birds for each incident. All alive, disabled, and freshly-dead animals, oiled and un-oiled, should be recovered and processed for triage and rehabilitation or for processing and storage, as appropriate or as directed by an appropriate trustee agency.

Bird Rehabilitation Unit

The Bird Rehabilitation Unit is responsible for ensuring that alive birds exposed to oil receive the best achievable care and for ensuring that oiled birds are properly documented, sampled, tracked, and released. The Bird Rehabilitation Unit is responsible for the oversight of all rehabilitation facilities whether they are permanent or mobile. When rehabilitated animals are ready for release, clean, non-oiled release sites should be chosen in consultation with state wildlife agency.

Facilities designed for oil spill response must meet minimum space requirements and incorporate all required aspects of bird treatment and rehabilitation. Facilities must comply with Federal and State regulations and must meet minimum recommendations in *Best Practices for Migratory Bird Care during Oil Spill Response.* An ideal facility should include:

- Areas for intake, physical exam, and evidence processing;
- Space for a veterinary hospital with isolation capabilities;
- Indoor bird housing and caging;
- Food storage and preparation facilities;
- Animal washing and rinsing areas;
- Indoor drying pens;
- Outdoor pool and flight pen areas;
- Pathology facilities;
- An area with restrooms, separate rooms for eating and volunteer training;
- Administrative offices with multiple phone and fax lines and with conference space;
- Storage;
- Access to a large parking area;

- Adequate ventilation, hot and cold water, and climate control;
    - Adequate drainage;
    - Adequate water supply (high pressure);
    - On-demand hot water heater;
- Security capabilities for the facility;
- Quiet area away from any highway, construction or other loud noises that can stress the birds;
- Area that’s easy to secure to minimize unauthorized entry.

Bird Hazing Unit

The Bird Hazing Unit is responsible for determining when and if bird deterrence operations should take place. The recommendation will be guided by site-specific and species-specific factors present at the time of the oil spill and availability of proven deterrence techniques. If deterrence is determined to be appropriate, the Unit should develop a site-specific deterrence plan in consultation with appropriate trustee agencies. Deterrence should be considered in heavily impacted habitats, particularly when clean sites are present in the area. Wildlife that has already been oiled should not be dispersed, because this can lead to the introduction of oiled animals into uncontaminated areas and populations. Rather, oiled animals should be captured as soon as practical.

Deterrence devices include both visual and auditory techniques. A variety of deterrence devices are available and can be deployed to meet the situation including helicopters, fixed-wing aircraft, propane cannons, shell crackers, bird bombs, screamers, launchers, airboats, ATVs, sonic buoys, Mylar tape, lasers, flags, distress and alarm calls, and effigies. Pre-emptive capture is another means of keeping wildlife away from oil and cleanup operations. The use of Pre-emptive capture operations shall be directed by the Branch Director and expert team members and will depend on the habitat in the focus area, species threatened and seasonality.

Deterrence activities must take place only under the authority and oversight of trustee agencies, in coordination with the Unified Command. The recommendation to haze will be guided by site-specific and species-specific factors at the time of the spill and availability of proven deterrence techniques. The Bird Recovery and Rehabilitation Group Supervisor direct the Bird Hazing Unit.

Marine Mammal Recovery and Rehabilitation Group

The Marine Mammal Recovery and Rehabilitation Group is responsible for the recovery and rehabilitation of impacted marine mammals. This involves deterrence and hazing of animals, recovering dead or alive stranded marine mammals, transporting them to facilities for necropsy and sampling (dead), or rehabilitation (alive), and providing medical care to impacted animals. These activities are performed in close coordination with the Unified Command along with state and federal trustee agencies and local or other participating Marine Mammal Stranding Network organizations. Wildlife recovery by any agency or organization must be conducted under the direction of the Unified Command. Their activities must comply with agreements and permits from the appropriate management agencies (i.e., LDWF, NOAA National Marine Fisheries Service, USFWS).

Recovery and Rehabilitation Group personnel are drawn from state and federal trustee agencies and approved contractors. Unlike other Wildlife Branch Groups/Units , Marine Mammal Recovery and Rehabilitation personnel will include a high proportion of federal trustee personnel and professional wildlife responders/rehabilitators from federally approved organizations (through the local or other participating Marine Mammal Stranding Networks). Trained, qualified volunteers can be used as long as they comply with the New Orleans Area Volunteer Policy (Appendix L) including ensuring appropriate training requirements and Occupational Safety and Health Administration standards are met. Trained, qualified volunteers must also have the appropriate authority under the MMPA/ESA to respond to marine mammals (Stranding Agreement, permit, etc.).

Marine Mammal Recovery Transportation Unit

The Marine Mammal Recovery Transportation Unit is responsible for recovering alive and dead impacted marine mammals and transporting them to facilities for rehabilitation or necropsy. The Marine Mammal Recovery and Transport Unit will evaluate the need to capture free-swimming impacted marine mammals on a case-by-case basis. If marine mammals are determined to be ill and require retrieval, capture will be instituted by the Marine Mammal Recovery and Transportation Unit, in conjunction with NOAA National Marine Fisheries Service (for cetaceans), USFWS (for manatees), and sufficiently trained and experienced capture personnel (members of the Marine Mammal Stranding Network). Success at recovering marine mammals depends on proper technique and timing. Only trained personnel should recover live marine mammals. Once captured, impacted live marine mammals should be transported to the designated primary care or rehabilitation facility as soon as possible. Appropriate measures must be undertaken by the Wildlife Branch to insure that dead animals are recovered appropriately, identified, documented, and held until the trustees approve disposal. The prompt removal of disabled and dead oiled animals from the environment can be critical to minimize the effects of secondary oiling such as poisoning of predators and scavengers. All alive, disabled, and freshly dead animals, oiled and un-oiled, should be recovered and processed for triage and rehabilitation or for the processing and storage, as appropriate. A Marine Mammal Stranding Report must be submitted for dead marine mammal sightings and upon capture and transport of live mammals.

Marine Mammal Rehabilitation Unit

The Marine Mammal Rehabilitation Unit is responsible for ensuring that cetaceans and manatees exposed to oil receive the best achievable care and for ensuring that oiled marine mammals are properly documented, sampled and tracked. Wildlife care includes triage, stabilization, intake/documentation, treatment, rehabilitation and release. The Marine Mammal Volunteer Coordinator also works under this group.

When rehabilitated animals are ready for release, clean, non-impacted release sites should be chosen after consulting the appropriate trustee agency or agencies. While exceptions can be made during spill emergencies, some agencies have specific requirements or policies regarding releasing animals on their properties. For cetaceans, *NOAA Fisheries Final Policies and Best Practices- Standards for Release* (February 2009), must also be followed and approval issued by the NOAA Southeast Regional Administrator. As a part of spill response actions, marine mammals are tagged and, in some cases, fitted with telemetry equipment for post-release monitoring. To guide the Marine Mammal Rehabilitation Unit in the treatment of remaining animals, wildlife pathologists or Marine Mammal Stranding Network veterinarians may conduct necropsies on animals during a spill response. However, the Wildlife Branch Director or his designee must obtain preapproval from the Unified Command for such examinations. In addition, representatives of the appropriate federal trustee agency may need to be present and have specific samples collected and analyzed.

Marine Mammal Hazing Unit

The Marine Mammal Hazing Unit is responsible for determining when and if marine mammal deterrence operations should take place. Deterrence of marine mammals is very similar in nature and function to that of birds, as detailed above. Deterrence activities must take place only under the authority and oversight of trustee agencies in coordination with the Environmental Unit. The Wildlife Branch Director will make the recommendation to haze to the Operations Section Chief. The recommendation will be guided by site-specific and species-specific factors present at the time of the spill and availability of proven deterrence techniques. All deterrence activities must be conducted under the appropriate authority. Deterrence activities, observations, and results are to be reported to the Marine Mammal Recovery and Rehabilitation Group Supervisor, who will report to the Wildlife Branch Director and the Planning Section's Environmental Unit Leader.

Sea Turtle Recovery and Rehabilitation Group

The Sea Turtle Recovery and Rehabilitation Group is responsible for the recovery and rehabilitation of impacted sea turtles. This involves deterrence and hazing, recovering dead or capturing live oiled sea turtles, transporting them to processing centers, and providing medical care to impacted animals. These activities are performed in close coordination with the Unified Command along with state and federal trustee agencies. Wildlife recovery by any agency or organization must be conducted under the direction of the Unified Command. Their activities must comply with agreements, permits, and policies from the appropriate management agencies (i.e., State Fish and Wildlife agencies, NOAA Fisheries Service, USFWS).

Recovery and Rehabilitation Group personnel are drawn from state and federal trustee agencies and approved contractors. Unlike other Wildlife Branch Groups/Units, sea turtle personnel will include a high proportion of state and federal trustee personnel and professional wildlife rehabilitators from approved organizations and stranding network partners. Trained, qualified volunteers can be used as long as they comply with NOAA Fisheries Service and USFWS policies and requirements, and the New Orleans Area

Volunteer Policy (Appendix L) including ensuring appropriate training requirements and Occupational Safety and Health Administration standards are met.

Sea Turtle Recovery and Rehabilitation Unit

The Sea Turtle Recovery and Rehabilitation Unit evaluate the need to capture live sea turtles in the water on a case-by-case basis. Responders under Unified Command may be directed to recover animals following protocols and report them to the Wildlife Branch for transport and/or treatment. Appropriate measures must be undertaken by the Wildlife Branch to insure that dead animals are recovered appropriately, identified, documented, and held until the trustees approve disposal. Release criteria and monitoring/tracking plans for rehabilitated sea turtles will be developed. The Sea Turtle Transportation and Rehabilitation Unit will work closely with the Documentation coordinator.

The Sea Turtle Recovery Transportation Unit is responsible for recovering alive and dead impacted sea turtles and transporting them to rehabilitation facilities.

The Sea Turtle Recovery and Transportation Unit generally collects all stranded animals and all dead animals whether in the water or on the beach. The prompt removal of disabled and dead oiled animals from the environment can be critical to minimize the effects of secondary oiling such as poisoning of predators and scavengers.

Sea Turtle Directed Capture Unit

For offshore spills, directed captures of sea turtles may be required. A plan will be instituted by the Sea Turtle Directed Capture Unit in conjunction with NOAA Fisheries Service, and authorized capture personnel. Any live-captured sea turtles should be properly treated and transported to the designated primary care or rehabilitation facility in coordination with the Sea Turtle Recovery and Transportation Unit as soon as possible. All live sea turtles collected should be processed and rehabilitated in approved rehabilitation facilities following protocols developed during the response.

Sea Turtle Observer Unit

The use of observers to document sea turtle impacts, verify implementation of best management practices, and to collect data will be administered through the Wildlife Branch in close coordination with the Environmental Unit of the Planning Section.

Volunteers

Spill incidents that impact wildlife often generate significant interest from the general public to volunteer their efforts. Some of these volunteer workers will be assigned jobs where they are compensated; others will be assigned work where they do not receive compensation. Regardless of where and how this volunteer work force is put to use, they must be managed and appropriately trained. During a spill, the Wildlife Branch Director, in coordination with the Bird and/or Marine Mammal Recovery & Rehabilitation Group Supervisors, will determine the need to request volunteer assistance. If volunteers are used during a spill response, a volunteer coordinator (reporting to the appropriate Recovery & Rehabilitation Group Leader and coordinating with the overall volunteer coordinator in the Planning Section) shall be identified to direct volunteer notification, training and “employment” activities.

Volunteers shall be brought into the incident in accordance with the guidelines outlined in Chapter 9000 Appendix L.

Demobilization of Wildlife Operations

Upon conclusion of Wildlife Branch operations, its activities are demobilized following the standard checkout procedures identified through the ICS and the Unified Command. Wildlife Branch demobilization only occurs after a conclusive determination by the Wildlife Branch Director in consultation with the Groups within the Wildlife Branch and other trustee agencies and land managers that all wildlife affected by the spill have been accounted for in response operations.

Demobilization of the Wildlife Branch often lags behind that of other response operations for several reasons, such as animals remaining in rehabilitative care, the presence of residual oil, and the presence of visibly oiled marine mammals, sea turtles, and free-flying birds. The last resource of the Unified Command to be demobilized may be rehabilitation personnel, equipment and facilities used during the spill. Because cleaning, treatment and rehabilitation of oiled and injured wildlife may last several weeks to months, animals brought into the rehabilitation center late in the response may require care after other response resources have demobilized. During that time, as more animals are released and fewer animals remain in care, personnel and equipment resources will be gradually demobilized as appropriate.

Louisiana Wildlife Rescue Organizations

The following is a list of permitted Wildlife Rescue Organizations located in Louisiana.

Agency Name	Point of Contact Name	Incident Type	City	State	Day Phone
Wildlife Response Services LLC.	Rhonda Murgatroyd	Oil Spill	Seabrook	TX	(281) 326-0905
Wildlife Center of Texas	Sharon Schmalz	Oil Spill	Houston	TX	(713) 861-9453
	Lisa Smith	Oil Spill	Newark	DE	(302) 737-9543

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SPECIAL MONITORING of APPLIED RESPONSE TECHNOLOGIES

Developed by:

U.S. Coast Guard
National Oceanic and Atmospheric Administration
U.S. Environmental Protection Agency
Centers for Disease Control and Prevention
Minerals Management Service

Smoke rising from the *New Carissa*, February 1999. Photo by USCG

Change 12
August 27, 2010

SMART is a living document

SMART is a living document. We expect that changing technologies, accumulated experience, and operational improvements will bring about changes to the SMART program and to the document. We would welcome any comment or suggestion you may have to improve the SMART program.

Please send your comments to:

SMART Mail
NOAA OR&R
7600 Sand Point Way N.E.
Seattle, WA 98115
USA

Fax: (206) 526-6329

Or email to:
smart.mail@noaa.gov

SMART approval status

As of January, 2001 EPA Regions II, III, and VI adopted SMART. It was reviewed and approved by the National Response Team (NRT).

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SMART is a Guidance Document Only

Purpose and Use of this Guidance:

This manual and any internal procedures adopted for its implementation are intended solely as guidance. They do not constitute rulemaking by any agency and may not be relied upon to create right or benefit, substantive or procedural, enforceable by law or in equity, by any person. Any agency or person may take action at variance with this manual or its internal implementing procedures. Mention of trade names or commercial products does not constitute endorsement or recommendation for their use by the USCG, NOAA, EPA, CDC, or the Government of the United States of America.

TABLE OF CONTENT

INTRODUCTION

The need for protocols to monitor response technologies during oil spills has been recognized since the early 1980s. Technological advances in dispersant applications and in situ burning (referred to as *applied response technologies*) have resulted in their increased acceptance in most regions in the U.S. Many regions have set up pre-approval zones for dispersant and in-situ burn operations, and established pre-approval conditions, including the requirement for monitoring protocols. This reaffirms the need for having national protocols to standardize monitoring, especially when the Federal Government assumes full responsibility for the response under the National Oil and Hazardous Substances Pollution Contingency Plan (Title 40 CFR Part 300). Protocols are also needed to serve as guidelines for assisting or overseeing industry's monitoring efforts during spills.

In November 1997, a workgroup consisting of Federal oil spill scientists and responders from the U.S. Coast Guard, the National Oceanic and Atmospheric Administration, the U.S. Environmental Protection Agency, and the Centers for Disease Control and Prevention, convened in Mobile, Alabama to draft guidelines for generating this protocol. The workgroup built upon currently available programs and procedures, mainly the Special Response Operations Monitoring Program (SROMP), developed in 1994, and lessons learned during spill responses and drills. The result of this collaboration is the Special Monitoring of Applied Response Technologies (SMART) program.

SMART establishes a monitoring system for rapid collection and reporting of real-time, scientifically based information, in order to assist the Unified Command with decision-making during in situ burning or dispersant operations. SMART recommends monitoring methods, equipment, personnel training, and command and control procedures that strike a balance between the operational demand for rapid response and the Unified Command's need for feedback from the field in order to make informed decisions.

SMART is not limited to oil spills. It can be adapted to hazardous substance responses where particulate air emissions should be monitored, and to hydrocarbon-based chemical spills into fresh or marine water.

General Information on SMART Modules

A. General Considerations and Assumptions

Several considerations guided the workgroup in developing the SMART guidelines:

1. SMART is designed for use at oil spills both inland and in coastal zones, as described in the National Oil and Hazardous Substances Pollution Contingency Plan.

2. SMART does not directly address the health and safety of spill responders or monitoring personnel, since this is covered by the general site safety plan for the incident (as required by 29 CFR 1910.120).

3. SMART does not provide complete training on monitoring for a specific technology. Rather, the program assumes that monitoring personnel are fully trained and qualified to use the equipment and techniques mentioned and to follow the SMART guidelines.

4. SMART attempts to balance feasible and operationally efficient monitoring with solid scientific principles.

5. In general, SMART guidelines are based on the roles and capabilities of available federal, state, and local teams, and NOAA's Scientific Support Coordinators (SSC). The SSC most

often fills the role of Technical Specialist, mentioned throughout the document. Users may adopt and modify the modules to address specific needs.

6. SMART uses the best available technology that is operationally practical. The SMART modules represent a living document and will be revised and improved based on lessons learned from the field, advances in technology, and developments in techniques.

7. SMART **should not** be construed as a regulatory requirement. It is an option available for the Unified Command to assist in decision-making. While every effort should be made to implement SMART or parts of it in a timely manner, **in situ burning or dispersant application should not be delayed** to allow the deployment of the SMART teams.

8. SMART is not intended to supplant private efforts in monitoring response technologies, but is written for adoption and adaptation by any private or public agency. Furthermore, users may choose to tailor the modules to specific regional needs. While currently addressing monitoring for in-situ burning and dispersant operations, SMART will be expanded to include monitoring guidelines for other response technologies.

9. It is important that the Unified Command agree on the monitoring objectives and goals early on in an incident. This decision, like all others, should be documented.

B. Organization

The SMART document is arranged in modules. Each module is self-sustaining and addresses monitoring of a single response technology. The modules are divided into three sections:

Section 1: Background Information provides a brief overview of the response technology being used, defines the primary purpose for monitoring, and discusses monitoring assumptions.

Section 2: Monitoring Procedures provide general guidelines on what, where, when, and how to monitor; information on organization; information flow; team members; and reporting of data.

Section 3: Attachments provide detailed information to support and expand sections 1 and 2.

MONITORING DISPERSANT OPERATIONS

1. BACKGROUND

1.1 Mission Statement

To provide a monitoring protocol for rapid collection of real-time, scientifically based information, to assist the Unified Command with decision-making during dispersant applications.

1.2 Overview of Dispersants

Chemical dispersants combine with oil and break a surface slick into small droplets that are mixed into the water column by wind, waves, and currents. The key components of a chemical dispersant are one or more surface-active agents, or surfactants. The surfactants reduce the oil-water interfacial tension, thus requiring only a small amount of mixing energy to increase the surface area and break the slick into droplets.

Several actions must occur for a surface oil slick to be chemically dispersed:

- The surfactant must be applied to the oil in an appropriate ratio;
- The surfactant must mix with the oil or move to the oil/water interface;
- The molecules must orient properly to reduce interfacial tension;
- Energy (such as waves) must be applied to form oil droplets; and
- The droplets must not recoalesce significantly.

Dispersants can be applied by air from airplanes and helicopters, by land using pumping/spray systems, or by boat. They are usually applied in small droplets and in lower volumes than the oil being treated.

1.3 Monitoring Dispersant Application

When dispersants are used during spill response, the Unified Command needs to know whether the operation is effective in dispersing the oil. The SMART dispersant monitoring module is designed to provide the Unified Command with real-time feedback on the efficacy of dispersant application. Data collected in Tier III of the SMART dispersant protocol may be useful for evaluating the dilution and transport of the dispersed oil. **SMART does not monitor the fate, effects, or impacts of dispersed oil.**

Dispersant operations and the need to monitor them vary greatly. Therefore, SMART recommends three levels (or tiers) of monitoring.

1. Tier I employs the simplest operation, visual monitoring, which may be coupled with Infra Red Thermal Imaging or other remote detection methods.

2. Tier II combines visual monitoring with on-water teams conducting real-time water column monitoring at a single depth, with water-sample collection for later analysis. **While fluorometry remains the most technologically advantageous detection method, other approaches may be considered. The performance-based guidelines provided in attachment 10 define SMART Dispersant Module Criteria for instrument selection and validation**

3. Tier III expands on-water monitoring to meet the information needs of the Unified Command. It may include monitoring at multiple depths, the use of a portable water laboratory, and/or additional water sampling. Tier III monitoring might for example include the redeployment of the monitoring team to a sensitive resource (such as near a coral reef system) as either a protection strategy or to monitor for evidence of exposure. In addition, Tier III might include the use of the monitoring

package for activities unrelated to actual dispersant operations such as monitoring of natural dispersion or to support surface washing activities where water column concerns have been identified. Any Tier III operation will be conducted with additional scientific input from the Unified Command to determine both feasibility and help direct field activities. The Scientific Support Coordinator or other Technical Specialists would assist the SMART Monitoring Team in achieving such alternative monitoring goals.

2. MONITORING PROCEDURES

2.1 Tier I: Visual Observations

Tier I recommends visual observation by a trained observer. A trained observer, using visual aids, can provide a general, qualitative assessment of dispersant effectiveness. Use of guides such as the NOAA *Dispersant Application Observer Job Aid* is recommended for consistency. Observations should be photographed and videotaped to help communicate them to the Unified Command, and to better document the data for future use.

When available, visual monitoring may be enhanced by advanced sensing instruments such as infrared thermal imaging. These and other devices can provide a higher degree of sensitivity in determining dispersant effectiveness.

Visual monitoring is relatively simple and readily done. However, visual observations do not always provide confirmation that the oil is dispersed. Tier II provides a near real-time method using water column monitoring via a direct reading instrument and water sampling.

2.2 Tier II: On-Water Monitoring for Efficacy

Sometimes dispersant operations effectiveness is difficult to determine by visual observation alone. To confirm the visual observations, a monitoring team may be deployed to the dispersant application area to confirm the visual observations by using real-time monitoring and water sampling. SMART defines it as Tier II monitoring.

Tier II prescribes single depth monitoring at 1-meter but rough field conditions may force continuous flow monitoring at increased depths of up to 2 meters. Water sampling may be conducted in concert with in-situ monitoring rather than collecting samples from the flow-through hose. Such a change may reduce direct comparisons between field instrument and laboratory verifications, but the data is still expected to meet mission requirements.

A water-column monitoring team composed of at least one trained technician and a support person is deployed on a suitable platform. Under ideal circumstances, the team collects data in three primary target locations: (1) background water (no oil); (2) oiled surface slicks prior to dispersant application, and (3) post-application, after the oil has been treated with dispersants. Data are collected in real-time by both a built-in data-logging device and by the technician who monitors the readings from the instrument's digital readout and records them in a sampling log. The sampling log not only provides a backup to the data logger, but allows the results to be communicated, near real-time, to the appropriate technical specialist in the Unified Command. Data logged by the instrument are used for documentation and scientific evaluation.

The field team should record the time, instrument readings, and any relevant observations at selected time intervals. Global Positioning System (GPS) instruments are used to ascertain the exact position of each reading.

If feasible, water samples should be collected in bottles to validate and quantify monitoring results. Samples should be collected at the outlet port or discharge side of the monitoring instrument to ensure the integrity of the readings. Exact time and position is noted for each sample taken to correlate the instrument reading. The number of water samples taken reflects the monitoring effort. Generally, five samples collected for each data run is considered adequate in addition to background samples. The water samples are stored in a cooler and sent to a laboratory for future analysis.

2.3 Tier III: Additional Monitoring

Tiers I and II provide feedback to the Unified Command on the effectiveness of dispersant application. If dispersants are effective and additional information on the movement of the dispersed oil plume is desired, SMART Tier III procedures can address this need.

Tier III follows Tier II procedures, but collects information on the transport and dispersion of the oil in the water column. It helps to verify that the dispersed oil is diluting toward background levels. Tier III is simply an expanded monitoring role that is intended to meet the needs of the Unified Command.

Tier III monitoring may be conducted as follows:

1. Multiple depths with one instrument: This monitoring technique provides a cross-section of relative concentrations of dispersed oil at different depths, measuring the dilution of dispersed oil down to background levels. When transecting the dispersant-treated slick (as outlined for Tier II) the team stops the vessel at location(s) where elevated readings are detected at 1 meter and, while holding position, the team monitors and collects samples at multiple increments down to a maximum depth of 10 meters. Readings are taken at each water depth, and the data recorded both automatically in the instrument data logger and manually by the monitors. Manual readings should be taken at discreet time intervals of 2 minutes, 5 minutes, etc. as specified by the Monitoring Group Supervisor or as indicated in a written sampling plan developed by the Dispersant Technical Specialist.

2. Transect at two different depths: This technique also looks at changes in concentration trends, but uses two monitoring instruments at different depths as the monitoring vessel transects the dispersed oil slick while making continuous observations. It is done as follows:

   Monitoring is conducted at two different depths, 1 and 5 meters, or any two water depths agreed upon by the Incident Commander or the Unified Command. Two sampling setups and two separate monitoring instruments are used on a single vessel. The vessel transects the dispersant-treated slick as outlined in Tier II, except that now data are collected simultaneously for two water depths. While the data logger in each instrument automatically records the data separately, the monitoring team manually records the data from both instrument simultaneously at discrete time intervals of 2 minutes, 5 minutes, etc, as specified by the Monitoring Group Supervisor or the sampling plan developed by the Dispersant Technical Specialist. Comparison of the readings at the two water depths may provide information on the dilution trend of the dispersed oil.

3. Water parameters: In addition to instrument data, the Unified Command may request that water physical and chemical parameters be measured. This can be done by using a portable lab connected in-line with the instrument to measure water temperature, conductivity, dissolved oxygen content, pH, and turbidity. These data can help explain the behavior of the dispersed oil. The turbidity data may provide additional information on increased concentrations of dispersed oil if turbidity is elevated. The other physical and chemical parameters measure the characteristics of the water column that could possibly affect the rate of dispersion.

4. As in Tier II, water samples are collected, but in greater numbers to help validate instrument readings.

Calibration and documentation used for Tier II are valid for Tier III as well, including the use of a check standard to verify instrument response. Because of the increased complexity of Tier III, a dispersant technical specialist (e.g., member of the scientific support team) should be on location to assist the monitoring efforts.

A critical point to keep in mind is that in the hectic and rapidly changing conditions of spill response, flexibility and adaptability are essential for success. The sampling plan is dictated by many factors such as the availability of equipment and personnel, on-scene conditions, and the window of opportunity for dispersant application. The need for flexibility in sampling design, effort, and rapid deployment (possibly using a vessel of opportunity), may dictate the nature and extent of the monitoring. To assist the monitoring efforts, it is important that the unified command agrees on the goals and objectives of monitoring and chooses the Tier or combination thereof to meet the needs of the response.

2.4 Mobilizing Monitoring Resources

Dispersant application has a narrow window of opportunity. Time is of the essence and timely notification is critical. It is imperative that the monitoring teams and technical advisors are notified of possible dispersant application and SMART monitoring deployment as soon as they are considered, even if there is uncertainty about carrying out this response option. Prompt notification increases the likelihood of timely and orderly monitoring.

The characteristics of the spill and the use of dispersants determine the extent of the monitoring effort and, consequently, the number of teams needed for monitoring. For small-scale dispersant applications, a single visual monitoring team may suffice. For large dispersant applications several visual and water-column monitoring teams may be needed.

2.5 Using and Interpreting Monitoring Results

Providing the Unified Command with objective information on dispersant efficacy is the goal of Tier I and II dispersant monitoring. When visual observations and on-site water column monitoring confirm that the dispersant operation is not effective, the Unified Command may consider evaluating further use. If, on the other hand, visual observations and/or water column monitoring suggest that the dispersant operation is effective, dispersant use may be continued.

When using fluorometry, the readings will not stay steady at a constant level but will vary widely, reflecting the patchiness and inconsistency of the dispersed oil plume. Persons reviewing the data should look for trends and patterns providing good indications of increased hydrocarbon concentrations above background. As a general guideline only, a fluorometer signal increase in the dispersed oil plume of five times or greater over the difference between the readings at the untreated oil slick and background (no oil) is a strong positive indication. This should not be used as an action level for turning on or off dispersant operations. The final recommendation for turning a dispersant operation on or off is best left to the judgment of the Technical Specialist charged with interpreting the data. The Unified Command, in consultation with the Technical Specialist, should agree early on as to the trend or pattern that they would consider indicative or non-indicative of a successful dispersant operation. This decision should be documented.

2.6 SMART as Part of the ICS Organization

SMART activities are directed by the Operations Section Chief in the Incident Command System (ICS). A "group" should be formed in the Operations Section to direct the monitoring effort. The head of this group is the Monitoring Group Supervisor. Under each group there are teams: Visual

Monitoring Teams and Water Column Monitoring Teams. At a minimum, each monitoring team consists of two trained members: a monitor and an assistant monitor. An additional team member could be used to assist with sampling and recording. The monitor serves as the team leader. The teams report to the Monitoring Group Supervisor, who directs and coordinates team operations, under the control of the Operations Section Chief.

Dispersant monitoring operations are very detailed. They are linked with the dispersant application, but from an ICS management perspective, they should be separated. Resources for monitoring should be dedicated and not perform other operational functions.

2.7 Information Flow and Data Handling

Communication of monitoring results should flow from the field (Monitoring Group Supervisor) to those persons in the Unified Command who can interpret the results and use the data. Typically this falls under the responsibility of a Technical Specialist on dispersants in the Planning Section of the command structure. For the U.S. Coast Guard, the technical specialist is the Scientific Support Coordinator. Note that the operational control of the monitoring groups remains with the Operations Section Chief, but the reporting of information is to the Technical Specialist in the Planning Section.

The observation and monitoring data will flow from the Monitoring Teams to the Monitoring Group Supervisor. The Group Supervisor forwards the data to the Technical Specialist. The Technical Specialist or his/her representative reviews the data and, most importantly, formulates recommendations based on the data. The Technical Specialist communicates these recommendations to the Unified Command.

Quality assurance and control should be applied to the data at all levels. The Technical Specialist in the Planning section is the custodian of the data during the operation. The data belongs to the Unified Command. The Unified Command should ensure that the data are properly stored, archived, and accessible for the benefit of future monitoring operations.

3. ATTACHMENTS

The following attachments are designed to assist response personnel in implementing the SMART protocol. A short description of each attachment is provided below. Attachments may be modified as required to meet the stated objectives. **These attachments are still valid related to the use of the Turner Design AU-10 instrument package. Should monitoring teams choose to change to alternative instrument packages, like protocols would be required to insure proper training, documentation, and QA/QC.**

Number	Title	Description
3.1	Roles and Responsibilities	Detailed roles and responsibilities for responders filling monitoring positions
3.2	Command, Control, and Data Flow	An ICS structure for controlling monitoring units and transferring monitoring results
3.3	Dispersant Observation General Guidelines	General guidelines for Tier I monitoring
3.4	Dispersant Observation Training Outline	Outline of what should be covered for Tier I observation training
3.5	Dispersant Observation Checklist	Equipment and procedure checklist for Tier I monitoring
3.6	Dispersant Observation Pre-Flight List	A checklist for getting air resources coordinated and ready for Tier I monitoring
3.7	Dispersant Observation Reporting Form	A form for recording Tier I observations
3.8	Dispersant Monitoring Training Outline	A training outline for water column monitoring done in Tiers II and III
3.9	Dispersant Monitoring Job Aid Checklist	A list of the tasks to accomplish before, during, and after the monitoring operations
3.10	Dispersant Monitoring Performance Guidelines	A list of performance guidelines for monitoring dispersants
3.11	Dispersant Monitoring Field Guidelines	Field procedures for using Tier II and III monitoring protocols
3.12	Dispersant Monitoring Water Sampling	Procedures for collecting water samples for Tiers II and III
3.13	Dispersant Monitoring Recorder Sheet	A form for recording fluorometer readings for Tiers II and III

3.1 Roles and Responsibilities

3.1.1 Visual Monitoring Team

The Visual Monitoring Team is ideally composed of two persons: a Monitor and an Assistant Monitor.

The Monitor:

- Functions as the team leader
- Qualitatively measures dispersant effectiveness from visual observation
- Communicates results to the Monitoring Group Supervisor.

The Assistant Monitor:

- Provides photo and visual documentation of dispersant effectiveness
- Assists the Monitor as directed.

3.1.2 Water-Column Monitoring Team

The Water-Column Monitoring Team is composed of a minimum of two persons: a Monitor and Assistant Monitor. They shall perform their duties in accordance with the Tier II and Tier III monitoring procedures.

The Monitor:

- Functions as the team leader
- Operates water-column monitoring equipment
- Collects water samples for lab analysis
- Communicates results to the Monitoring Group Supervisor.

The Assistant Monitor:

- Provides photo and visual documentation of dispersant effectiveness
- Assists Monitor as directed
- Completes all logs, forms, and labels for recording water column measurements, water quality measurements, interferences, and environmental parameters.

3.1.3 Monitoring Group Supervisor

The Monitoring Group Supervisor:

- Directs Visual Monitoring and Water Column Monitoring teams to accomplish their responsibilities
- Follows directions provided by the Operations Section in the ICS
- Communicates monitoring results to the Technical Specialist in the Planning Section
- The Monitoring Group Supervisor may not be needed for a Tier I deployment. In these cases, the Visual Monitoring Team monitor may perform the duties of the Monitoring Group Supervisor.

3.1.4 Dispersant Monitoring Technical Specialist (Federal: NOAA SSC)

The Technical Specialist or his/her representative:

- Establishes communication with the Monitoring Group Supervisor
- Advises the Group Supervisor on team placement and data collection procedures
- Receives the data from the Group Supervisor
- Ensures QA/QC of the data, and analyzes the data in the context of other available information and incident-specific conditions
- Formulates recommendations and forwards them to the Unified Command
- Makes the recommendations and data available to other entities in the ICS
- Archives the data for later use, prepares report as needed.

3.2 Command, Control, and Data Flow

In general, dispersant monitoring operations take place as an integral part of the Incident Command System (see Figures 1 and 2).

Dispersant monitoring operations are tactically deployed by the Operations Section Chief or deputy, in cooperation with the Technical Specialist (SSC) in the Planning Section regarding the specifics of the monitoring operations, especially if they affect the data collected. The Monitoring Group Supervisor provides specific on-scene directions to the monitoring teams during field deployment and operations.

The observation and monitoring data flow from the Monitoring Teams to the Monitoring Group Supervisor. After initial QA/QC the Group Supervisor passes the data to the Technical Specialist to review, apply QA/QC if needed, and, most importantly, formulate recommendations based on the data. The Technical Specialist forwards these recommendations to the Unified Command.

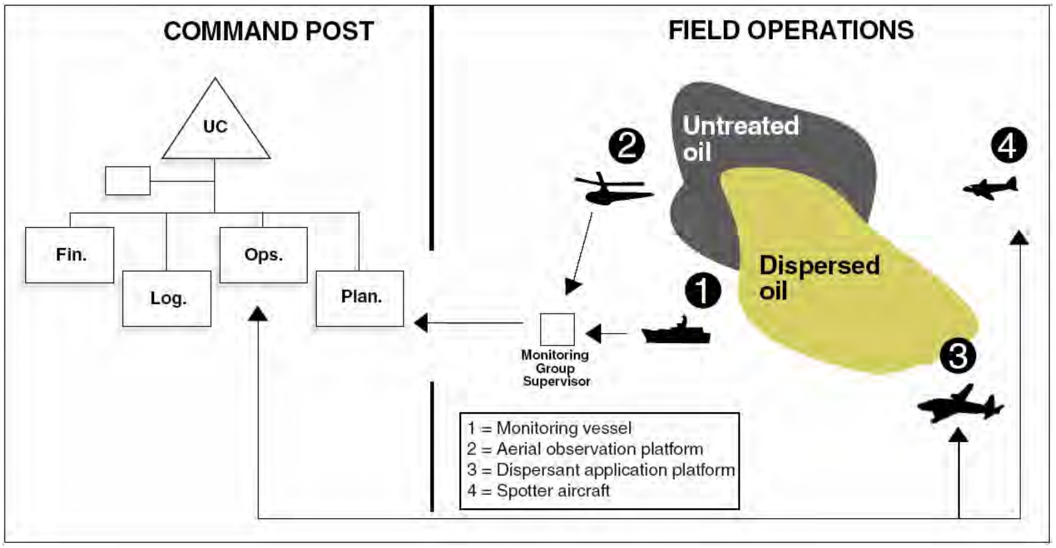

Figure 1. Command, control, and data flow during dispersant monitoring operations.

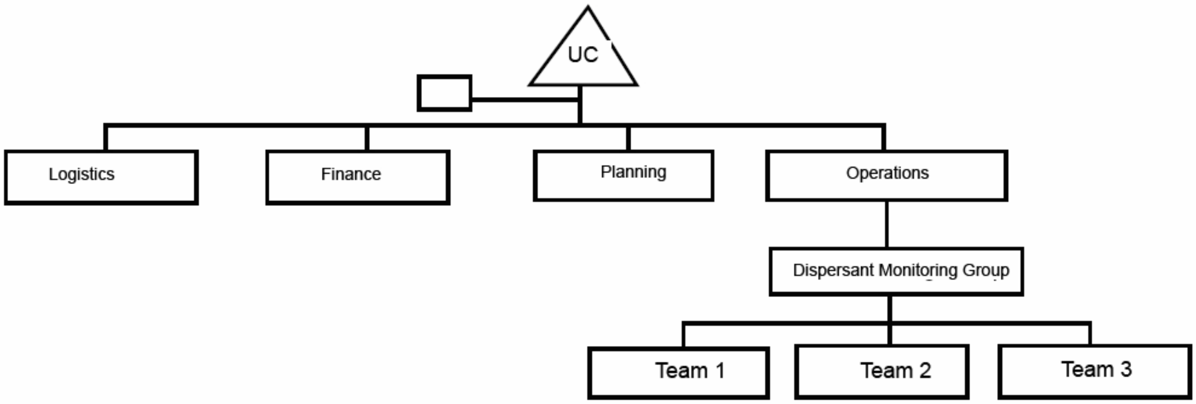

Figure 2. The Dispersant Monitoring Group in the ICS structure.

3.3 Dispersant Observation General Guidelines

3.3.1 Goal

The goal of Tier I monitoring is to identify oil, visually assess efficacy of dispersants applied to oil, and report the observations to the Unified Command with recommendations. The recommendations may be to continue, to modify, or to evaluate further monitoring or use because dispersants were not observed to be effective.

3.3.2 Guidelines and Pointers

3.3.2.1 Reporting Observations

- The observer does not make operational decisions, e.g., how much dispersant to apply, or when and where to apply it. These decisions are made at the Operations Section level, and the observer makes observations based on those decisions.

- Different observers at the same site may reach different conclusions about how much of the slick has been dispersed. For that reason, a comprehensive standard reporting criteria and use of a common set of guidelines is imperative. Use of the NOAA *Dispersant Application Observer Job Aid* is highly encouraged.

3.3.2.2 Oil on the Water

- Oil surface slicks and plumes can appear different for many reasons including oil or product characteristics, time of day (different sun angles), weather, sea state, rate at which oil disperses. The use of the NOAA *Open Water Oil Identification Job Aid for Aerial Observation* is highly recommended.

- Low-contrast conditions (e.g., overcast, twilight, and haze) make observations difficult.

- For best viewing, the sun should be behind the observer and with the aircraft at an altitude of about 200 - 300 feet flying at a 30-degree angle to the slick.

3.3.2.3 Dispersant Applications

- During dispersant application, it may be impossible to determine the actual area of thickest oil concentrations, resulting in variable oil/dispersant application rates. This could lead to variations in the effectiveness of application. The observer should report these conditions.

- Initial applications may have a herding effect on the oil. This would cause the slick to appear to be shrinking when, in fact, it is the dispersant “pushing” the oil together. Due to this effect, in some cases, the oil slick may even disappear from the sea surface for a short time.

- After dispersant application, there may be color changes in the emulsified slick due to reduction in water content and viscosity, and changes in the shape of the slick, due to the de-emulsification action of the dispersant.

- Many trials have indicated that dispersants apparently modify the spreading rates of oils, and within a few hours treated slicks cover much larger areas than control slicks.

- In some situations, especially where there may be insufficient mixing energy, oil may resurface.

3.3.2.4 Effective/Ineffective Applications

- Dispersed oil plume formation may not be instantaneous after dispersant application. In some cases, such as when the oil is emulsified, it can take several hours. A dispersed oil plume may not form at all.

- The appearance of the dispersed plume can range from brown to white (cloudy) to no visible underwater plume (this is why Tier II may be necessary).

- Sometimes other things such as suspended solids may resemble dispersed oil.

- The visibility of the dispersed plume will vary according to water clarity. In some cases, remaining surface oil and sheen may mask oil dispersing under the slick and thus interfere with observations of the dispersed oil plume.

- Dispersed oil plumes are often highly irregular in shape and non-uniform in concentration. This may lead to errors in estimating dispersant efficiency.

- If a visible cloud in the water column is observed, the dispersant is working. If a visible cloud in the water column is not observed, it is difficult to determine whether the dispersant is working.

- If there are differences in the appearance between the treated slick and an untreated slick, the dispersant may be working.

- Boat wakes through oil may appear as a successful dispersion of oil; however, this may be just the vessel wake breaking a path through the oil (physically parting the oil), not dispersing it.

3.4 Dispersant Observation Training Outline

Below is a suggested outline for dispersant observation training.

Topics and sub-topics	**Duration**
Observation Platforms	30 min.
• Helo or fixed-wing, separate from application platform • Safety considerations: daylight; safe flying conditions • Logistical considerations: personnel; equipment; communication • Planning an over-flight	
Oil on water	1 hour
• Physical properties • Different types of oil • Chemistry, crude vs. refined product • Appearance and behavior • Effects of wind, waves, and weather	
How dispersants work	45 min.
• Method of action • Compatible/incompatible products • Appropriate environmental conditions (wave energy, temperature, salinity, etc.) • Oil weathering • Oil slick thickness • Beaching, sinking, etc.	
Dispersant application systems	45 min.
• Platform: boat, helo, plan • Encounter rate • Importance of droplet size • Dispersant-to-oil ratio (dosage)	
• Effective application	45 min.
• Hitting the target • Dispersal into water column • Color changes • Herding effect	
• Ineffective application	30 min.
• Missing the target • Oil remaining on surface • Coalescence and resurfacing	
• Wildlife concerns	30 min.
• Identifying marine mammals and turtles • Rafting birds	
• Documenting observations	30 min.
• Estimating surface coverage • Photographs: sun reflection effects, use of polarizing filter, videotaping • Written notes and sketches	
• Reporting observations	30 min.
• Calibrating eyeballs • Recommended format • Information to include • Who to report to • Coordination with water-column monitoring	

3.5 Dispersant Observation Checklist

Below is a dispersant observation checklist. Check √ the items/tasks accomplished.

Check √	**Item**
	Observation Aids
	Base maps / charts of the area
	Clipboard and notebook
	Pens / pencils
	Checklists and reporting forms
	Handheld GPS with extra set of batteries
	Observation job aids (*Oil on Water & Dispersant Observation*)
	Still camera
	Extra film
	Video camera
	Binoculars
	Safety Equipment
	Personal flotation device
	Emergency locator beacon
	Survival equipment
	NOMEX coveralls (if available)
	Coldwater flotation suit (if water temperature requires)
	Intercom
	Direct communications back to the Incident Command Post
	Safety Brief
	Preflight safety brief with pilot
	Safety features of aircraft (fire extinguishers, communications devices, emergency locator beacon, flotation release, raft, first aid kit, etc.)
	Emergency exit procedures
	Purpose of mission
	Area orientation / copy of previous over-flight
	Route / flight plan
	Duration of flight
	Preferred altitude
	Landing sites
	Number of people on mission
	Estimated weight of people and gear
	Gear deployment (if needed, i.e., dye marker, current drogue)
	Frequency to communicate back to command post

3.6 Dispersant Observation Pre-Flight List

Spill Information	
Incident Name:	
Source Name:	
Date / Time Spill Occurred	
Location of Spill: Latitude	Longitude
Type of Oil Spilled:	Amount of Oil Spilled:
Weather On Scene	
Wind Speed and Direction	
Visibility:	Ceiling:
Precipitation:	Sea State:

Aircraft Assignments

Title	Name	Call Sign	ETD	ETA
Spotter (s)				
Sprayer (s)				
Observer (s)				
Monitor (s)				
Supervisor				

Safety Check

Check all safety equipment. Pilot conducts safety brief

Entry/Exit Points

	Airport	Tactical Call Sign
Entry:		
Exit:		

Communications (complete only as needed; primary/secondary)

Observer to Spotter (air to air)	VHF	UHF	Other
Observer to Monitor (air to vessel)	VHF	UHF	Other
Observer to Supervisor (air to ground)	VHF	UHF	Other
Supervisor to Monitor (ground to vessel)	VHF	UHF	Other
Monitor to Monitor (vessel to vessel)	VHF	UHF	Other

3.7 Dispersant Observation Reporting Form

Names of observers/Agency: ____

Phone/pager: ____________________ Platform: _____________________

Date of application: __________ Location: Lat.: _________ Long.: _________

Distance from shore: ________________

Time dispersant application started: _________ Completed: _____________

Air temperature: ______ Wind direction ________ Wind speed: _________

Water temperature: _____ Water depth: ______ Sea state: __________

Visibility: _____________________

Altitude (observation and application platforms): ______________________

Type of application method (aerial/vessel): ___________________________

Type of oil: _________________________________

Oil properties: specific gravity ______ viscosity _______ pour point _________

Name of dispersant: ____

Surface area of slick: ____

Operational constraints imposed by agencies: _____________________________

Percent slick treated: _____ Estimated efficacy: ________________________

Visual appearance of application: ______________________________________

Submerged cloud observed?____

Recoalescence (reappearance of oil): ___________________________________

Efficacy of application in achieving goal (reduce shoreline impact, etc.): __________

____

Presence of wildlife (any observed effects, e.g., fish kill): ___________________

Photographic documentation: ____

Lessons learned: ____

____

3.8 Fluorometry Monitoring Training Outline

3.8.1 General[1]

Training for Tier II and III monitoring consists of an initial training for personnel involved in monitoring operations, Group Supervisor training, and refresher training sessions every six months. Emphasis is placed on field exercise and practice.

3.8.2 Basic Training

Monitor Level Training includes monitoring concepts, instrument operation, workprocedures, and a field exercise.

Topic	**Duration**
Brief overview of dispersant monitoring. Review of SMART: What is it, why do it, what is it good for.	1 hour
Monitoring strategy: who, where, when. Reporting	1 hour
Basic instrument operation (hands-on): how the fluorometer works, how to operate: brief description of mechanism, setup and calibration, reading the data, what the data mean, troubleshooting; using Global Positioning Systems; downloading data; taking water samples	3 hours
Field exercise: Set up instruments within available boat platforms, measure background water readings at various locations. Using fluoroscein dye or other specified fluorescent source monitor for levels above background. Practice recording, reporting, and downloading data.	3-4 hours

3.8.3 Group Supervisor Training

Group Supervisor training may include:

- Independent training with the monitoring teams; or
- An additional structured day of training as suggested below

Topic	**Duration**
Review of ICS and role of monitoring group in it, roles of Monitoring Group Supervisor, what the data mean, QA/QC of data, command and control of teams, communication, and reporting the data.	1 hour
Field exercise. Practice deploying instruments in the field with emphasis on reporting, QA/QC of data, communication between teams and the Group Supervisor, and communication with the Technical Specialist.	3-6 hours
Back to the base, practice downloading the data.	30 min.
Lessons learned.	30 min.

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[1] This training is designed for fluorometers. Other instruments could provide valid results, and may be suitable for SMART operations.

3.8.4 Refresher Training

Topic	**Duration**
Review of SMART: What is it, why do it, what is its purpose.	15 min.
Monitoring and reporting: Who, where, and when; level of concern; what the data mean; communication; and reporting the data	30-45 min.
Basic instrument operation (hands-on): how the fluorometer works and how to operate it; brief description of the mechanism, setup, calibration, reading data, and troubleshooting; using GPS.	2 hours
Downloading data	30 min.
Field exercise: Outside the classroom, set up instrument on a platform, and measure background readings. Using fluorescence or other common input sources, monitor fluorescence levels. Practice recording, reporting, and downloading data.	1-3 hours
Lessons learned	30–45 min.

3.9 Dispersant Monitoring Job Aid Checklist

This checklist is designed to assist SMART dispersant monitoring by listing some of the tasks to accomplish before, during, and after the monitoring operations.

Check √	Item	Do
	Preparations	
	Activate personnel	• Contact and mobilize the monitoring teams and Technical Specialist (SSC where applicable)
	Check equipment	• Check equipment (use checklists provided) • Verify that the fluorometer is operational • Include safety equipment
	Obtain deployment platforms	Coordinate with incident Operations and Planning Section regarding deployment platforms (air, sea, land)
	Amend site safety plan	Amend the general site safety plan for monitoring operations.
	Monitoring Operations	
	Coordinate plan	• Coordinate with the Operations Section Chief • Coordinate with Technical Specialist
	Conduct briefing	• Monitoring: what, where, who, how • Safety and emergency procedures
	Deploy to location	Coordinate with Operations Section.
	Setup instrumentation	• Unpack and set up the fluorometer per user manual • Record fluorometer response using the check standards
	Evaluate monitoring site	• Verify that the site is safe • Coordinate with spotter aircraft (if available)
	Conduct monitoring (See attachment 11 for details)	• Background, no oil present • Background, not treated with dispersants • Treated area
	Conduct data logging (see attachment 12)	• Date and time • Location (from GPS) • Verify that the instrument data logger is recording the data • Manually record fluorometer readings every five minutes • Record relevant observations
	Conduct water sampling (see attachment)	• Collect water samples post-fluorometer in certified, clean, amber bottles for lab analysis
	Conduct photo and video documentation	• Document relevant images (e.g., monitoring procedures, slick appearance, evidence of dispersed oil)
	Conduct quality assurance and control	• Instrument response acceptable? • Check standards current? • Control sampling done at oil-free and at untreated locations? • Water samples in bottles taken for lab analysis? • Date and time corrected and verified? • Any interfering factors?

	Report (by Teams)	Report to Group Supervisor: • General observation (e.g., dispersed oil visually apparent) • Background readings • Untreated oil readings • Treated oil readings
	Report (by Group Supervisor)	Report to Technical Specialist: • General observation • Background readings • Untreated oil readings • Treated oil readings
	Report by Technical Specialist (SSC)	Report to Unified Command: • Dispersant effectiveness • Recommendation to continue or re-evaluate use of dispersant.
	Post monitoring	
	Conduct debrief	• What went right, what can be done better • Problems and possible solutions • Capture comments and suggestions
	Preserve data	• Send water samples to the lab • Download logged data from fluorometer to computer • Collect and review Recorder data logs • Correlate water samples to fluorometer readings • Generate report
	Prepare for next spill	Clean, recharge, restock equipment

3.10 Dispersant Monitoring Performance Guidelines

SMART does not require nor endorse a specific instrument or brand for dispersant monitoring. Rather, SMART specifies performance criteria, and instruments meeting them may be used for monitoring.

1) Instrument package must be field rugged and portable. Instrument package must be able to operate from a vessel or small boat under a variety of field conditions, including air temperatures between 5 and 35°C, water temperatures between 5 and 30°C, seas to 5 feet, humidity up to 100%, drenching rain, and even drenching sea spray. The criteria for field deployment should be limited by the safety of the field monitoring team and not instrument package limitations.
2) Instrument package must be able to operate continuously in real-time or near-real time mode by analyzing seawater either in-situ (instrument package is actually deployed in the sea) or ex-situ (seawater is continuously pumped from a desired depth).
3) Monitoring depth must be controllable to between 1 meter and 3 meters. Discrete water sampling for post-incident laboratory validation is required at the same depths as actual instrument monitoring. Note, actual analysis of water samples collected may or may not be required by the FOSC.
4) Instrument must be able to detect dispersed crude oil in seawater. To allow a wide range of instruments to be considered, no specific detection method is specified. If fluorometry is used, the excitation and emission wavelengths monitored should be selected to enhance detection of crude oil rather than simply hydrocarbons, in order to reduce matrix effects (for the Turner AU-10, long wavelength kits developed for oil detection are preferred over the short wavelength kits developed by the manufacture for other applications).
5) Instrument must be able to provide a digital readout of measured values. Given that different oils that have undergone partial degradation due to oil weathering will not provide consistent or accurate concentration data, measured values reported as "raw" units are preferred for field operations over concentration estimations that might be misleading as to the true dispersed oil and water concentrations.
6) In additional to a digital readout (as defined above), the instrument must be able to digitally log field data for post-incident analysis. Data logging must be in real-time, but downloading of achieved data is not required until after the monitoring activity, i.e., downloading the raw data to a computer once the boat has returned from the field operation is acceptable.
7) For instrument validation prior to operational use, the instrument must have a minimum detection limit (MDL) of 1 ppm of dispersed fresh crude oil in artificial seawater and provide a linear detection to at least 100 ppm with an error of less than 30% compared to a known standard. The preferred calibration oil is Alaskan North Slope Crude or South Louisiana Crude (the oils specified by the EPA's Dispersant Effectiveness). Similar dispersible crude oils may be used if availability is a limitation (diesel fuel is not a suitable substitute). Some method of instrument calibration or validation is required on-scene prior to any operational monitoring for Quality Assurance/Quality Control (QA/QC). In the past, the use of a fluorescent dye at a concentration that would provide an equivalent value of 18 ppm for fresh ANS Crude was used for both calibration and field validation.

3.11 Dispersant Monitoring Field Guidelines

3.11.1 Overview

Dispersant monitoring with fluorometers employs a continuous flow fluorometer at adjustable water depths. Using a portable outrigger, the sampling hose is deployed off the side of the boat and rigged so that the motion of the boat's propeller or the wake of the sampling boat does not disrupt the sampling line. The fluorometer is calibrated with a check standard immediately prior to use in accordance with the operator's manual. In addition, water samples are collected for confirmation by conventional laboratory analysis.

3.11.2 Tier II Monitoring Operations

3.11.2.1 Monitoring Procedures

Monitoring the water column for dispersant efficacy includes three parts:
1. Water sampling for background reading, away from the oil slick;
2. Sampling for naturally dispersed oil, under the oil slick but before dispersants are applied; and
3. Monitoring for dispersed oil under the slick area treated with dispersants.

3.11.2.2 Background sampling, no oil

En route to the sampling area and close to it, the sampling boat performs a monitoring run where there is no surface slick. This sampling run at 1-meter depth (or deeper depending on sea state conditions) will establish background levels before further sampling.

3.11.2.3 Background sampling, naturally dispersed oil

When reaching the sampling area, the sampling boat makes the sampling transects at 1-meter depths across the surface oil slick(s) to determine the level of natural dispersion before monitoring the chemical dispersion of the oil slick(s).

3.11.2.4 Monitoring of dispersed oil

After establishing background levels outside the treated area, the sampling boat intercepts the dispersed subsurface plume. The sampling boat may have to temporarily suspend continuous sampling after collecting baseline values in order to move fast enough to intercept the plume. The sampling boat moves across the path of the dispersed oil plume to a point where the center of the dispersed plume can be predicted based on the size of the treatment area and the locations of new coordinates. The sampling boat may have to be directed by an aerial asset to ensure correct positioning over the dispersed slick.

When conducting the monitoring, the transects consist of one or more "legs," each leg being as close as possible to a constant course and speed. The recommended speed is 1-2 knots. The monitoring team records the vessel position at the beginning and end of each leg.

The instrument data may be reviewed in real time to assess the relative enhanced dispersion of the water-soluble fraction of the oil. Figure 1 shows an example of how the continuous flow data may be presented.

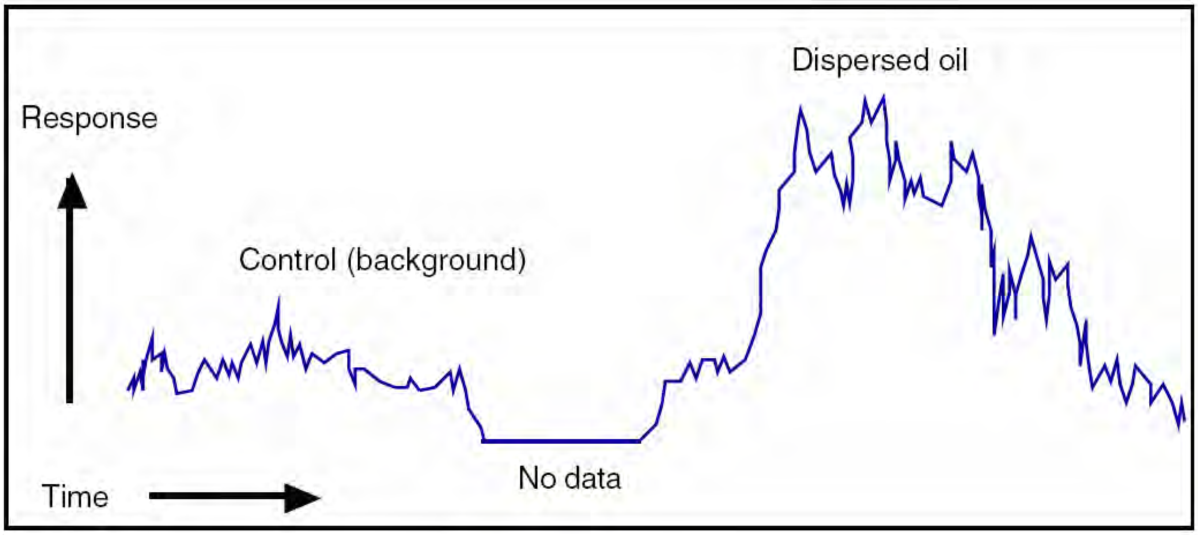

Figure 1. Example of a graphical presentation of fluorometer data.

3.11.3 Tier II Monitoring Locations: The Box Coordinates Method

The observation aircraft identifies the target slick or target zone for the sampling vessel by a four-corner box (Figure 2). Each corner of the box is a specific latitude/longitude, and the target zone is plotted on a chart or map for easy reference. The sampling vessel positions near the slick and configures the fluorometer sampling array. The pre-application sampling transect crosses the narrow width of the box. After completing the sampling transect, the sampling vessel waits at a safe distance during dispersant application. Data logging may continue during this period. Fifteen to twenty minutes after dispersants have been applied, the observation aircraft generates a second box by providing the latitude and longitude coordinates of the four corners corresponding to any observed dispersed oil plume. The post-application transect is identical to the pre-application transect. If no plume is observed, the sampling vessel samples the same transect used for pre-application.

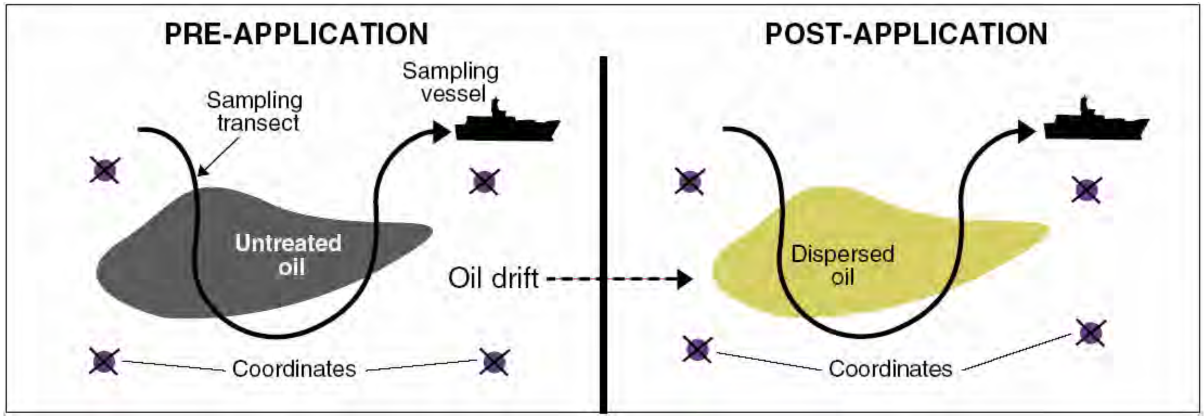

Figure 2. The box coordinates Method.

3.11.4 Tier III Monitoring Operations

If monitoring indicates that dispersant application is effective, the Unified Command may request that additional monitoring be done to collect information on the transport and dilution trends of the dispersed oil. Tier III may be conducted to address this information need. Tier III is highly flexible. Any Tier III operation will be conducted with additional scientific input from the Unified Command to determine both feasibility and help direct field activities. The Scientific Support Coordinator or other Technical Specialists would assist the SMART Monitoring Team in achieving such alternative monitoring goals.

3.11.4.1 Multiple Depths with One Instrument

This monitoring technique provides a cross section of relative concentrations of dispersed oil at different depths. To conduct this operation, the team stops the vessel while transecting the dispersant-treated slick at a location where the fluorometry monitoring at the one-meter depth indicated elevated readings. While holding steady at this location, the team lowers the fluorometer sampling hose at several increments down to approximately ten meters (Figure 7). Monitoring is done for several minutes (2-3 minutes) for each water depth, and the readings recorded both automatically by the instrument's data logger and manually by the monitoring team, in the data logging form. This monitoring mode, like Tier II, requires one vessel and one fluorometer with a team to operate it.

3.11.4.2 Simultaneous Monitoring at Two Different Depths.

If two fluorometers and monitoring setups are available, the transect outlined for Tier II may be expanded to provide fluorometry data for two different water depths (one and five meters are commonly used). Two sampling set-ups (outriggers, hoses, etc.) and two separate fluorometers (same model) are used, all on a single vessel, with enough monitoring personnel to operate both instruments. The team transects the dispersant-treated slick as outlined in Tier II, but simultaneously collect data for two water depths (Figure 7).

While the data logger in each instrument is automatically recording the data separately, the monitoring teams manually record the data from both instruments at the same time. Comparison of the readings at the two water depths may provide information on the dilution trend of the dispersed oil.

If requested by the Unified Command, water chemical and physical parameters may be collected by using a portable water quality lab in-line with the fluorometer to measure water temperature, conductivity, dissolved oxygen content, pH, and turbidity. These data can help explain the behavior of the dispersed oil.

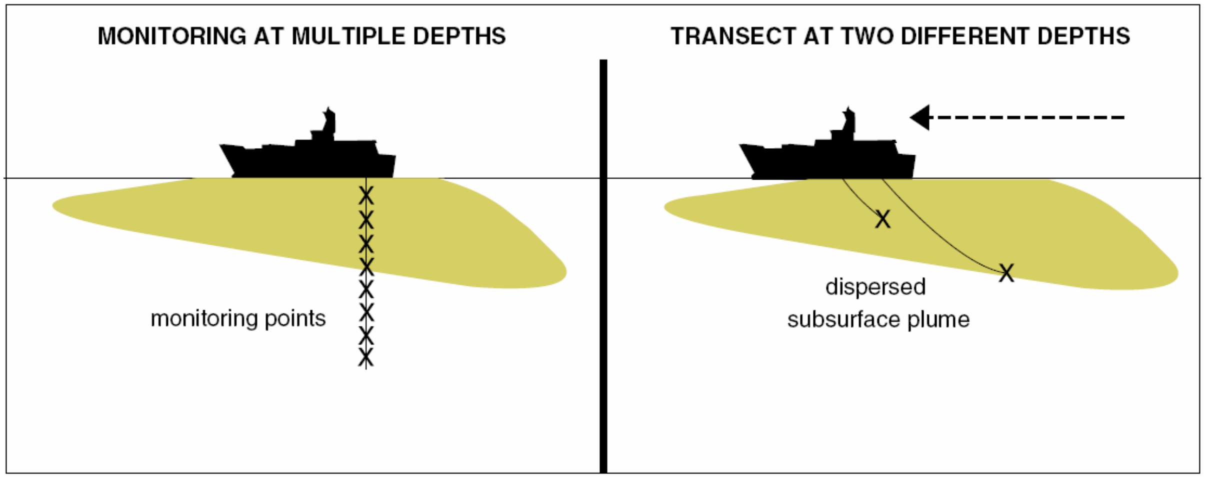

Figure 3: Monitoring options for Tier III.

3.12 Dispersant Monitoring Water Sampling

3.12.1. Purpose

Collection of water samples during Tier II and III monitoring should assist in correlating instrument readings in the field to actual dispersed oil concentrations in the water column. The samples provide validation of the field monitoring. The following guidelines were drafted for flow-through fluorometers. The procedures must be modified for alternative instruments. Such modifications might include discrete water sampling in concert with monitoring. The guidelines provided below are general, and should serve as an initial starting point for water sample collection. The number of samples collected may vary, depending on the operation and the need for verification.

3.12.2. Guidelines

3.12.2.1 Equipment

1. Certified pre-cleaned amber 500-ml bottles with Teflon™-lined caps.
- For Tier II, a minimum of six bottles is required.
- For Tier III, a minimum of thirteen bottles is required.

2. Labels for bottles documenting time and location of collection.

3. Observation notes corresponding fluorometer readings to water sample collection, and any other observations.

3.12.2.2 Procedure

1. Open valve for water sample collection and allow water to run for ten seconds before opening and filling the bottle.

2. Fill the bottle to the top and allow no headspace in bottles after sealing.

3. Label bottle with exact time of initial filling from the fluorometer clock as well as sampling depth, transect, and the distance of water hose from the outflow port of the fluorometer to the actual collection point of the water sample (to account for residence time of water in the hose)

4. Store filled bottles in a cooler with ice while on the monitoring vessel. Keep refrigerated (do not freeze) after returning to shore and send to the laboratory as soon as possible.

5. Measure and record the length of the hose between the fluorometer outlet and the bottle end, hose diameter, and flow rate (by filling a bucket). This will assist in accurately linking water sample results to fluorometer readings.

3.12.2.3 Number of Samples

1. Collect one water sample per monitoring depth during the background (no oil) transect. The fluorometer readings prior to collection should be relatively constant.

2. Collect two samples per monitoring depth during the pre-dispersant monitoring (under untreated oil slick). Try to collect water samples correlating with representative fluorometer values obtained.

3. Collect approximately three samples per monitoring depth during the post-dispersant transects. These samples should represent the range of high, middle, and low values obtained from the fluorometer screen.

4. Label the bottles and store them in a cooler with ice. Do not freeze. Enter water sample number, time, and correlated fluorometer reading in the Recorder Log for future data processing

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3.13 Dispersant Monitoring Recorder Form

Date:_________________ Fluorometer #:_______________
Project: ________________________ Platform: __________________________
Monitoring Start/End Time: __________
Team members: ____
On-scene weather (log all possible entries) Wind direction from: _____ Wind speed: _______
Sea state: ___________ Cloud cover: ____________ Visibility: _____________
Air temp. :__________ Sea temp.: _____________

Comments should include: Presence or lack of surface oil or dispersed oil plume, whether conducting background run, transect in relation to slick, instrument or gear problem, or any other noteworthy event. Positions should always be recorded when a sample is taken. Otherwise, a log entry every five minutes is sufficient.

Time	**Water depth**	**Fluorometer reading**	**GPS reading**	**Sample taken?**	**Comments & observations**
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
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			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		
			lat:________________ long:		

MONITORING IN-SITU BURNING OPERATIONS

1. BACKGROUND

1.1 Mission Statement

To provide a monitoring protocol for rapid collection of real-time, scientifically based information to assist the Unified Command with decision-making during in situ burning operations.

1.2 Overview of In situ Burning

In situ burning of oil may offer a logistically simple, rapid, and relatively safe means for reducing the net environmental impact of an oil spill. Because a large portion of the oil is converted to gaseous combustion products, in situ burning can substantially reduce the need for collection, storage, transport, and disposal of recovered material. In situ burning, however, has several disadvantages: burning can take place only when the oil is not significantly emulsified, when wind and sea conditions are calm, and when dedicated equipment is available. In addition, in situ burning emits a plume of black smoke, composed primarily (80-85%) of carbon dioxide and water; the remainder of the plume is gases and particulates, mostly black carbon particulates, known as soot. These soot particulates give the smoke its dark color. Downwind of the fire, the gases dissipate to acceptable levels relatively quickly. The main public health concern is the particulates in the smoke plume.

With the acceptance of in situ burning as a spill response option, concerns have been raised regarding the possible effects of the particulates in the smoke plume on the general public downwind. SMART is designed to address these concerns and better aid the Unified Command in decisions related to initiating, continuing, or terminating in situ burning.

2. MONITORING PROCEDURES

2.1 General Considerations

In general, SMART is conducted when there is a concern that the general public may be exposed to smoke from the burning oil. It follows that monitoring should be conducted when the predicted trajectory of the smoke plume indicates that the smoke may reach population centers, and the concentrations of smoke particulates at ground level may exceed safe levels. Monitoring is not required, however, when impacts are not anticipated.

Execution of in situ burning has a narrow window of opportunity. It is imperative that the monitoring teams are alerted of possible in situ burning and SMART operations as soon as burning is being considered, even if implementation is not certain. This increases the likelihood of timely and orderly SMART operations.

2.2 Sampling and Reporting

Monitoring operations deploy one or more monitoring teams. SMART recommends at least three monitoring teams for large-scale burning operations. Each team uses a real-time particulate monitor capable of detecting the small particulates emitted by the burn (ten microns in diameter or smaller), a global positioning system, and other equipment required for collecting and documenting the data. Each monitoring instrument provides an instantaneous particulate concentration as well as the time-weighted average over the duration of the data collection. The readings are displayed on the instrument's screen and stored in its data logger. In addition, particulate concentrations are logged manually every few minutes by the monitoring team in the recorder data log.

The monitoring teams are deployed at designated areas of concern to determine ambient concentrations of particulates before the burn starts. During the burn, sampling continues and readings are recorded both in the data logger of the instrument and manually in the recorder data log. After the burn has ended and the smoke plume has dissipated, the teams remain in place for some time (15-30 minutes) and again sample for and record ambient particulate concentrations.

During the course of the sampling, it is expected that the instantaneous readings will vary widely. However, the calculated time-weighted average readings are less variable, since they represent the average of the readings collected over the sampling duration, and hence are a better indicator of particulate concentration trend. When the time-weighted average readings approach or exceed the Level of Concern (LOC), the team leader conveys this information to the In-Situ Burn Monitoring Group Supervisor (ISB-MGS) who passes it on to the Technical Specialist in the Planning Section (Scientific Support Coordinator, where applicable), which reviews and interprets the data and passes them, with appropriate recommendations, to the Unified Command.

2.3 Monitoring Locations

Monitoring locations are dictated by the potential for smoke exposure to human and environmentally sensitive areas. Taking into account the prevailing winds and atmospheric conditions, the location and magnitude of the burn, modeling output (if available), the location of population centers, and input from state and local health officials, the monitoring teams are deployed where the potential exposure to the smoke may be most substantial (sensitive locations). Precise monitoring locations should be flexible and determined on a case-by-case basis. In general, one team is deployed at the upwind edge of a sensitive location. A second team is deployed at the downwind end of this location. Both teams remain at their designated locations, moving only to improve sampling capabilities. A third team is more mobile and is deployed at the discretion of the ISB-MGS.

It should be emphasized that, while visual monitoring is conducted continuously as long as the burn takes place, air sampling using SMART is not needed if there is no potential for human exposure to the smoke.

2.4 Level of Concern

The Level of Concern for SMART operations follows the National Response Team (NRT) guidelines. As of March 1999, the NRT recommends a conservative upper limit of 150 micrograms of PM-10 per cubic meter of air, averaged over one hour. Furthermore, the NRT emphasizes that this LOC does not constitute a fine line between safe and unsafe conditions, but should instead be used as an action level: If it is exceeded substantially, human exposure to particulates may be elevated to a degree that justifies precautionary actions. However, if particulate levels remain generally below the recommended limit with few or no transitory excursions above it, there is no reason to believe that the population is being exposed to particulate concentrations above the EPA's National Ambient Air Quality Standard (NAAQS).

It is important to keep in mind that real-time particulate monitoring is one factor among several, including smoke modeling and trajectory analysis, visual observations, and behavior of the smoke plume. The Unified Command must determine early on in the response what conditions, in addition to the LOC, justify termination of a burn or other action to protect public health. The Unified Command should work closely with local Public Health organizations in determining burn termination thresholds.

When addressing particulate monitoring for in situ burning, the NRT emphasizes that concentration trend, rather than individual readings, should be used to decide whether to continue or terminate the burn. For SMART operations, the time-weighted average (TWA) generated by the particulate monitors should be used to ascertain the trend. The NRT recommends that burning not take place if the air quality in the region already exceeds the NAAQS and if burning the oil will add to the particulate exposure concentration. SMART can be used to take background readings to indicate whether the region is within the NAAQS, before the burn operation takes place. The monitoring teams should report ambient readings to the Unified Command, especially if these readings approach or exceed the NAAQS.

2.5 SMART as Part of the ICS Organization

SMART activities are directed by the Operations Section Chief in the Incident Command System (ICS). It is recommended that a "group" be formed in the Operations Section that directs the monitoring effort. The head of this group is the Monitoring Group Supervisor. Under each group there are monitoring teams. At a minimum, each monitoring team consists of two trained members: a monitor and assistant monitor. An additional team member could be used to assist with sampling and recording. The monitor serves as the team leader. The teams report to the Monitoring Group Supervisor who directs and coordinates team operations, under the control of the Operations Section Chief.

2.6 Information Flow and Data Handling

Communication of monitoring results should flow from the field (Monitoring Group Supervisor) to those persons in the Unified Command who can interpret the results and use the data. Typically, this falls under the responsibility of a Technical Specialist on in-situ burning in the Planning Section of the command structure.

The observation and monitoring data will flow from the Monitoring Teams to the Monitoring Group Supervisor. The Group Supervisor forwards the data to the Technical Specialist. The Technical Specialist or his/her representative reviews the data and, most importantly, formulates recommendations based on the data. The Technical Specialist communicates these recommendations to the Unified Command.

Quality assurance and control should be applied to the data at all levels. The Technical Specialist is the custodian of the data during the operation, but ultimately the data belongs to the Unified Command. The Unified Command should ensure that the data are properly archived, presentable, and accessible for the benefit of future monitoring operations.

3. ATTACHMENTS

The following attachments are designed to assist response personnel in implementing the SMART protocol. A short description of each attachment is provided below.

Number	Title	Description
3.1	Roles and Responsibilities	Provides detailed roles and responsibilities for responders filling monitoring positions
3.2	Command, Control, and Data Flow	A suggested ICS structure for controlling monitoring units and transferring monitoring results
3.3	ISB Monitoring Training Outline	General training guidelines for ISB monitoring
3.4	ISB Monitoring Job Aid Checklist	A checklist to assist in assembling and deploying SMART ISB monitoring teams
3.5	ISB Monitoring Equipment List	A list of equipment needed to perform SMART operations
3.6	ISB Monitoring Instrumentation Requirements	Abbreviated performance requirements for particulate monitors
3.7	ISB Monitoring Recorder Sheet	A template for manual recording of burn data
3.8	ISB Monitoring Possible Locations	An example of monitoring locations for offshore ISB operations
3.9	ISB Monitoring Data Sample: Graph	An example of real ISB data

3.1 Roles and Responsibilities

3.1.1 Team Leader

The Team Leader

- Selects specific team location
- Conducts monitoring
- Ensures health and safety of team
- Ensures monitoring QA/QC
- Establishes communication with the group supervisor
- Conveys to him/her monitoring data as needed

3.1.2 Monitoring Group Supervisor

The Group Supervisor

- Oversees the deployment of the teams in the group
- Ensures safe operation of the teams
- Ensures QA/QC of monitoring and data
- Establishes communication with the field teams and the command post
- Conveys to the command post particulate level trends as needed
- Addresses monitoring technical and operational problems, if encountered

3.1.3 In-Situ Burn Technical Specialist

The Technical Specialist or his/her representative

- Establishes communication with the Monitoring Group Supervisor
- Receives the data from the Group Supervisor
- Ensures QA/QC of the data
- Analyzes the data in the context of other available information and incident-specific conditions, formulates recommendations to the Unified Command
- Forwards the recommendations to the Unified Command
- Makes the recommendations and data available to other entities in the ICS, as needed
- Archives the data for later use

Role and function	**Training**	**Number**
Monitoring Team Leader Leads the monitoring team	SMART Monitor Training	3
Monitor Assistant Assists with data collection.	SMART Monitor Training	3
Group Supervisor Coordinates and directs teams; field QA/QC of data; links with UC.	SMART Monitor training. Group Supervisor training	1 per group
Technical Specialist Overall QA/QC of data; reads and interprets data; provides recommendations to the Unified Command	SMART Monitor training. Scientific aspects of ISB	1 per response

3.2 Command, Control, and Data Flow

In general, in situ burn monitoring operations take place as an integral part of the Incident Command System (Figures 1 and 2).

ISB monitoring operations are directed by the Operations Section Chief or deputy. The Operations Section Chief provides the Monitoring Group Supervisor with tactical directions and support regarding deployment, resources, communications, and general mission as adapted to the specific incident. The Operations Section consults with the ISB monitoring Technical Specialist about the specifics of the monitoring operations, especially if they affect the data collected. The Monitoring Group Supervisor provides specific direction to the monitoring teams during field deployment and operations.

The observation and monitoring data flow from the Monitoring Teams to the Monitoring Group Supervisor. After initial QA/QC the Group Supervisor passes the data to the Technical Specialist. The Technical Specialist or his/her representative reviews the data, applies QA/QC if needed, and, most importantly, formulates recommendations based on the data. The Technical Specialist forwards these recommendations to the Unified Command.

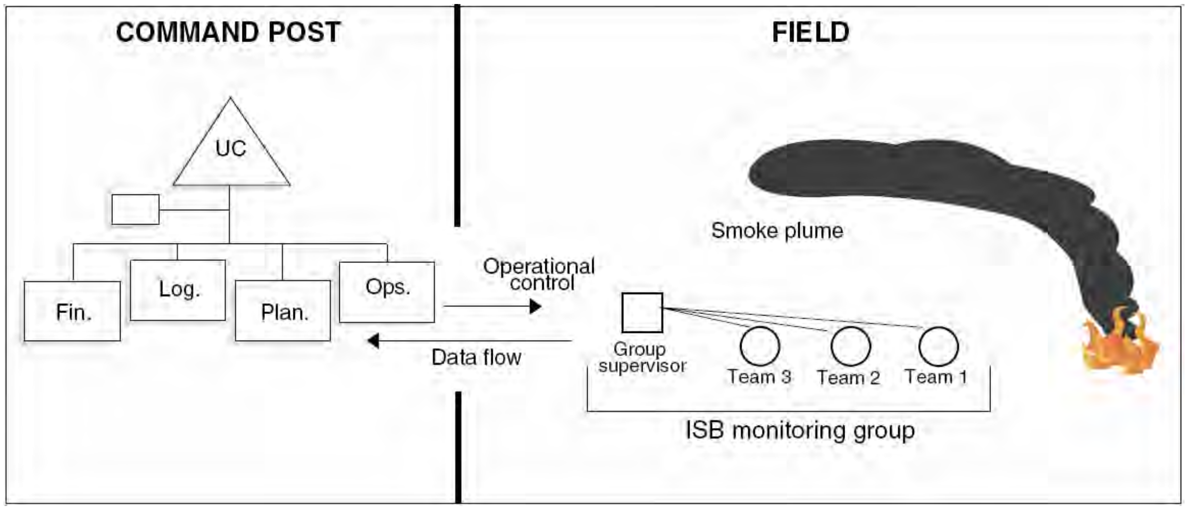

Figure 1. Command, control, and data flow during in-situ burning monitoring operations.

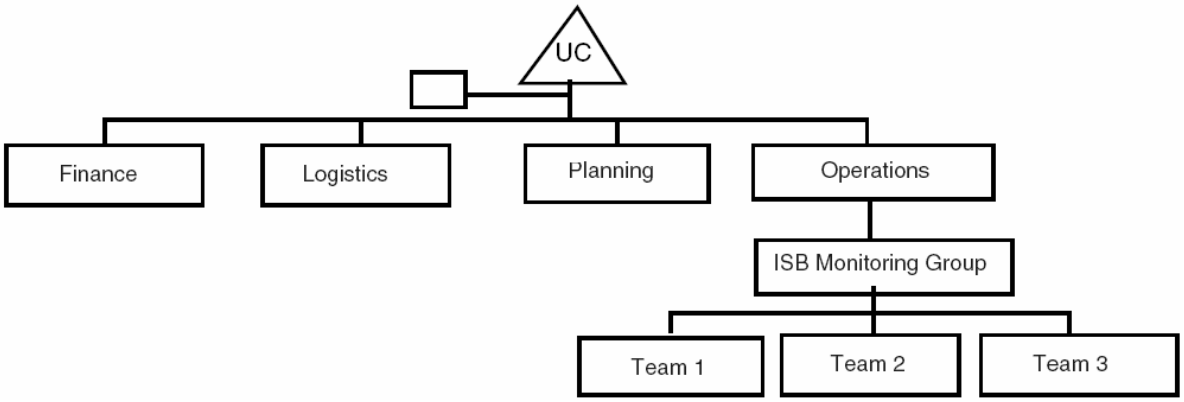

Figure 2. ISB Monitoring Group in the ICS organization.

3.3 ISB Monitoring Training Outline

3.3.1 General

Training for in-situ burning monitoring operations consists of an initial Monitor Level Training for all, Group Supervisor Training for supervisors, and refresher training sessions every six months for all.

3.3.2 Monitor Level Training

The Monitor Level Training includes monitoring concepts, instrument operation, work procedures, and a field exercise.

Topic	Duration
• Brief review of in-situ burning. • Review of SMART: What is it, why do it, what is it good for.	1 hour
• Monitoring strategy: Who, where, when. • Open water, inland. • Reporting: What and to whom • LOC: What is the LOC, how to report it. • Instantaneous reading vs. TWA, use of recorder data sheet	1 hour
• Basic instrument operation (hands-on): How the particulate monitoring instrument works, and how to operate it: brief description of mechanism, setup, and calibration, reading the data, what do the data mean; trouble shooting. • Using GPS • Downloading data	2 hours
Field exercise: Set up the instruments outdoors and measure background readings. Using a smoke source monitor for particulate levels, practice recording the data and reporting it. When done, practice downloading the data.	4 hours

3.3.3 Group Supervisor Training

Group Supervisor training may include two options:

- Independent training at each unit; or
- An additional structured day of training as suggested below

Topic	Duration
• Review of ICS and the role of the Monitoring Group in it • Roles of Monitoring Group Supervisor • What the data mean • QA/QC of data • Command and control of teams • Communication with the Technical Specialist	1 hour
Field exercise: Practice deploying instruments in the field with emphasis on reporting, QA/QC of data, communication between teams and the group supervisor, and group supervisor to the Technical Specialist.	3-6 hours
Back to the base, practice downloading the data	30 min.
Lessons learned	30 min.

3.3.4 Refresher Training

Topic	**Duration**
Review of SMART: What is it, why do it, what is it good for.	15 min.
• Monitoring and reporting: Who, where, and when • Level of concern • What do the data mean • Reporting the data • Work with the Technical Specialist (SSC).	30-45 min.
• Basic instrument operation (hands-on): How the monitoring instrument works, how to operate it; brief description of mechanism, setup, and calibration; • Reading the data, trouble-shooting. • Using GPS.	2 hours
Downloading data	30 min.
• Field exercise: Outside the classroom, set up the instrument and measure background readings. Using a smoke source, monitor particulate levels. • Practice recording the data and reporting it. • Back to the base, download data.	1-2 hours

3.4 ISB Monitoring Job Aid Checklist

This checklist is designed to assist SMART in situ burning monitoring by listing some of the tasks to accomplish before, during, and after the monitoring operations.

Check √	Item	Do
	Preparations	
	Activate personnel	Notify monitoring personnel and the Technical Specialist (SSC where applicable)
	Conduct equipment check	• Check equipment using equipment checkup list. • Verify that the monitoring instruments are operational and fully charged • Include safety equipment
	Coordinate logistics	Coordinate logistics (e.g., deployment platform) with ICS Operations
	Amend Site Safety Plan	Amend site safety plan to include monitoring operations
	Monitoring Operations	
	Monitoring Group setup	• Coordinate with Operations Section Chief • Coordinate with Technical Specialist
	Conduct Briefing	• Monitoring: what, where, who, how • Safety and emergency procedures
	Deploy to location	Coordinate with Operations Section Chief
	Select site	• Safe • Consistent with monitoring plan • As little interference as possible • Communication with Group Supervisor and UC possible
	Set up instrumentation	Unpack monitoring instruments and set up, verify calibration, if applicable
	Mark position	• Use GPS to mark position in recorder sheet • Re-enter position if changing location
	Collect background data	Start monitoring. If possible, record background data before the burn begins
	Collect burn data	• Continue monitoring as long as burn is on • Monitor for background readings for 15-30 minutes after the smoke clears
	Record data	Enter: • Instantaneous and TWA readings every 3-5 minutes, or other fixed intervals • Initial position from GPS, new position if moving • Initial wind speed and direction, air temperature, relative humidity, re-enter if conditions change
	Conduct quality assurance and control	• Verify that instrument is logging the data • Record data, location, relative humidity, temp, wind, interferences in the recorder data sheet • Note and record interference from other sources of particulates such as industry, vehicles, vessels

	Report by team	Report to Group Supervisor: • Initial background readings • TWA readings (every 15 min.) • TWA readings when exceeding 150 µg/m^3, (every 5 min.) • Interferences • Safety problems • QA/QC and monitoring problems
	Report by Group Supervisor	Report to the Technical Specialist (SSC): • Initial background readings • TWA, when exceeding 150 µg/m^3 • Data QA/QC and monitoring problems
	Report by Technical Specialist (SSC)	Report to the Unified Command: • TWA consistently exceeding 150 µg/m^3 • Recommend go/no-go
	Post Monitoring	
	Debrief and lessons learned	• What went right, what went wrong • Problems and possible solutions • Capture comments and suggestions
	Preserve data	• Download logged data from monitoring instrument to a computer • Collect and review Recorder data logs • Generate report
	Prepare for next burn	Clean, recharge, restock equipment

3.5 ISB Monitoring Equipment List

(For each team, unless otherwise noted)

Check √	Item	Qty	Remarks
	Particulate monitoring instrument, accessories and manuals	1 or more	
	Computer and cables	1/group	Should include downloading software
	Printer	1/group	
	Recorder data sheets	10	
	Write-in-the-rain notebooks, pens	3	
	Job aid check list	1	
	GPS	1	
	Extra batteries for GPS	1 set	
	Radio	1	
	Cell phone	1	
	Binoculars	1	
	Stop watch	1	
	Camera	1	digital camera or camcorder optional
	Film	3	
	Thermometer	1	
	Humidity meter	1	
	Anemometer	1	

3.6 Particulate Monitor Performance Requirements

SMART does not require nor endorse a specific brand of particulate monitoring instrument. Rather, SMART specifies performance criteria, and instruments meeting them may be used for ISB monitoring.

Performance Criteria

- Rugged and portable: The monitor should be suitable for field work, withstand shock, and be easily transportable in a vehicle, small boat or helicopter. Maximum size of the packaged instrument should not exceed that of a carry-on piece of luggage
- Operating temperature: 15-120 ºF
- Suitability: The instrument should be suitable for the media measured, i.e., smoke particulates
- Operating duration: Eight hours or more
- Readout: The instrument should provide real-time, continuous readings, as well as time-weighted average readings in ug/m3
- Data logging: The instrument should provide data logging for 8 hours or more
- Reliability: The instrument should be based on tried-and-true technology and operate as specified
- Sensitivity: A minimum sensitivity of 1 µg/m^3
- Concentration range: At least 1-40000 µg/m^3
- Data download: The instrument should be compatible with readily available computer technology, and provide software for downloading data

3.7 ISB Monitoring Possible Locations

Monitoring locations are dictated by the potential for smoke exposure to human populations. In general, the monitoring teams deploy where the potential for human exposure to smoke is most probable. Precise monitoring locations should be flexible and determined on a case-by-case basis. In the figure below, one team is deployed at the upwind edge of a sensitive location (e.g., a town). A second team deploys at the downwind end of this location. Both teams stay at the sensitive location, moving only to improve sampling capabilities. A third team is more mobile, and deploys at the discretion of the Group Supervisor.

It should be emphasized that, while visual observation is conducted continuously as long as the burn takes place, air sampling using SMART is not required if there is no potential for human exposure to the smoke.

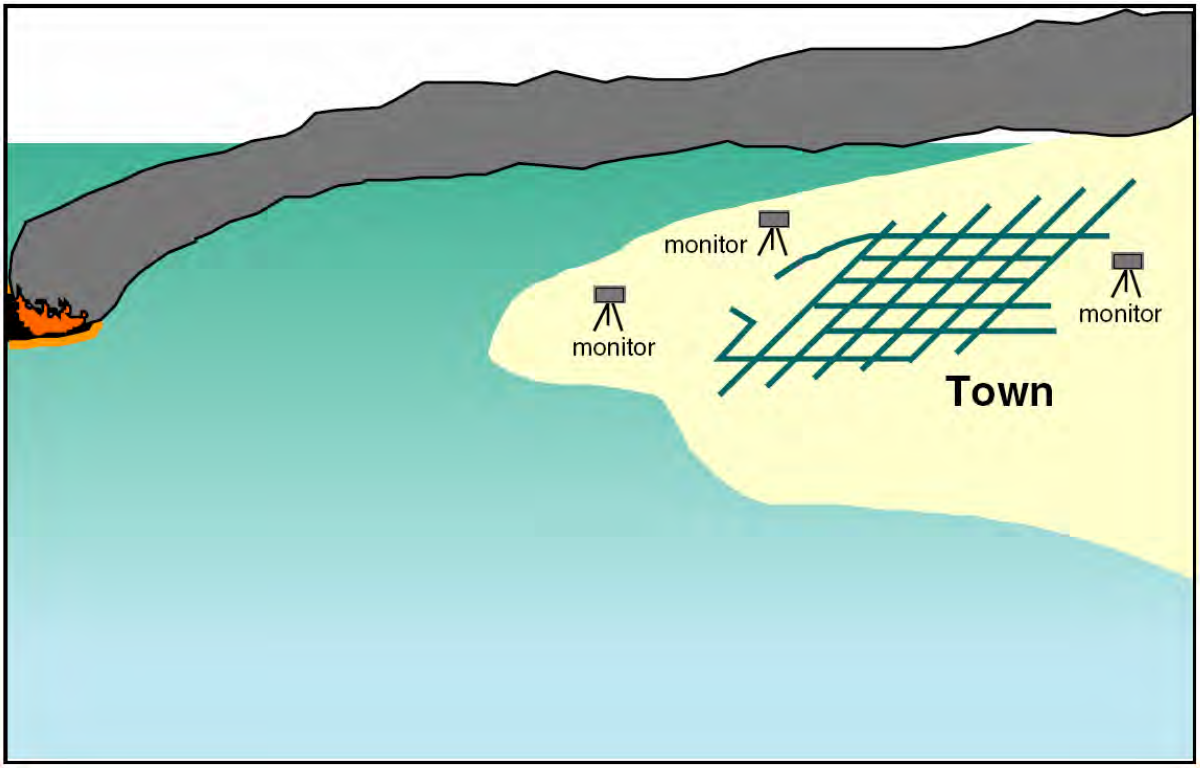

Figure 1. Possible locations of monitors (not to scale).

3.8 ISB Monitoring Recorder Sheet

Date: __________ General Location: ________________________________

General information	Weather information
Recorder name	Temperature
Operator name	Wind direction
Vehicle/vessel #	Wind speed
Monitoring Instrument #	Relative humidity
Burn #	Cloud cover
Calibration factors:	

Comments should include: location of the smoke plume relative to the instrument, interfering particulate sources, any malfunction of the instrument

Time	GPS reading	Particulates concentration	Comments & observations
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
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	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	
	lat:_______________ long:	Inst: ________ TWA:	

3.9 ISB Monitoring Data Sample: Graph

The graph below represents field monitoring data from a test burn smoke plume near Mobile, Alabama, on September 25, 1997, after the data were downloaded from the instrument. The graph (Figure 1) portrays the differences between the transient instantaneous readings (Conc.) and the time weighted average readings (TWA). Note that while instantaneous readings varied widely, the TWA remained relatively constant throughout the burn. The TWA provides an indication of the concentration trends, which is a more stable and reliable indicator of exposure to particulates.

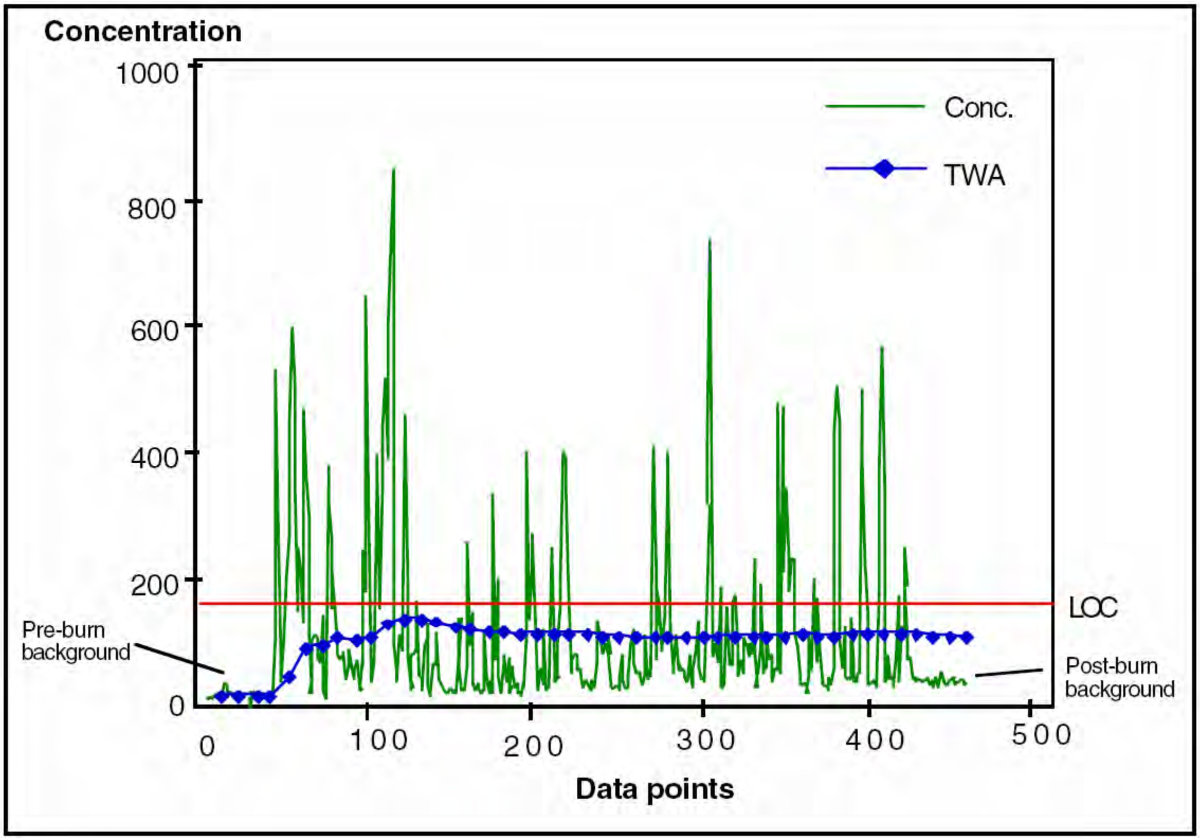

Figure 1. Graph of instantaneous and TWA particulate concentrations

SMART RESOURCES

Comments and suggestions on the SMART program and document
Fax: (206) 526-6329; Email: smart.mail@noaa.gov

SMART Web Sites
http://response.restoration.noaa.gov/smart

In-situ Burning Page
http://response.restoration.noaa.gov/ISB

Dispersant Guided Tour
http://response.restoration.noaa.gov/dispersantstour

Dispersant Application Observer Job Aid
http://response.restoration.noaa.gov/dispersants_jobaid

US Coast Guard
http://www.uscg.mil/

USCG National Strike Force
http://www.uscg.mil/hq/nsfweb

NOAA OR&R
http://response.restoration.noaa.gov

EPA ERT
http://www.ert.org

CDC
http://www.cdc.gov/

MMS Oil Spill Response Research Program
http://www.mms.gov/taroilspills/

OHMSETT Facility
http://www.ohmsett.com/

New Orleans Area Contingency Plan

Chapter 9000
Appendix I
Special Monitoring of Applied Response Technologies (SMART)

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New Orleans Area Contingency Plan

Chapter 9000
Appendix J
Places of Refuge

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix J Places of Refuge

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Places of Refuge Policy

Introduction

A ship in need of assistance may require a temporary place of refuge with adequate water depth for lightering or repairs in order to protect the marine environment. Ships may need to be brought into a harbor, anchored, or moored in protected waters, or temporarily beached in order the safely make repairs and stop the loss of oil or other hazardous substances. Disabled ships need to be repaired in order to resume safe navigation and prevent a shipwreck resulting in the loss of fuel and/or cargo. If leaking ships are not repaired, spilled oil and hazardous substances may affect the public health, environmental resources, and shorelines.

There is no single place of refuge for all ships and all situations. Decisions relating to Places of Refuge encompass a wide range of security, environmental, social, economic, and operational issues that vary according to each situation, including the environmental sensitivity and protected status of the areas within or adjacent to a potential place of refuge. The initial decision to permit a ship to seek a place of refuge, as well as the decisions and actions implementing that decision, are inherently based upon an assessment of the risk factors involved and the exercise of sound judgment and discretion.

Places of Refuge are sites that could potentially be used for a disabled or damaged ship needing shelter for repairs. While information on potential sites may be pre-inventoried, this does not imply that any of these sites will be the location of choice in a future event. Selection of a place of refuge by the US Coast Guard Captain of the Port in consultation with other Federal agencies, State, Tribal, and Local governments, and other stakeholders will always be made on a case by case basis. If time allows the Captain of the Port will activate a Unified Command under the Incident Command System (ICS) to address a request for a place of refuge.

When a Place of Refuge incident occurs that is likely to involve more than one Area Contingency Plan, existing cross-jurisdictional protocols will be activate.

This section incorporates a decision-making process for Masters to use when requesting a place of refuge. The guidelines in this section incorporate the Guidelines on Places of Refuge for Ships in need of Assistance adopted by the International Maritime Organization (IMO), and assume use of ICS to manage the incident.

When safety of life is involved, existing search and rescue conventions and protocols should be used. When a ship is in need of assistance but safety of life is not involved, these guidelines should be followed to evaluate whether a ship should remain in the same position, continue on its voyage, be brought into a place of refuge, taken out to sea, or intentionally scuttled in deep water.

Purpose

- To provide a decision making process for response to requests for Places of Refuge; and

- To apply existing procedures for coordinated trans-boundary and trans-jurisdictional decision-making when necessary in responding to a request for a place of refuge.

Definitions

Ship in need of assistance means a ship in a situation, apart from one requiring rescue of persons on board, which could lead to loss of the vessel or an environmental or navigational hazard.

A *ship* is defined as any vessel (self propelled or non self propelled) that can be used for the commercial carriage of cargo or passengers, as well as non-commercial applications, including but not limited to freight ships, tank ships, deck barges, tank barges, and large yachts.

Place of refuge means a place where a ship in need of assistance can take action to stabilize its condition, reduce the hazards to navigation, and to protect human life and the environment. Places of Refuge can be man-made harbors, port, natural embayments, or offshore waters.

MAS means a Maritime Assistance Service, as defined in the International Maritime Organization’s resolution. PLEASE NOTE: In the US and Canada, the United State Coast Guard and the Canadian Coast Guard respectively are the agencies responsible for receiving reports and serving as the point of contact for the shipmaster while notifying reports and serving as the point of contact for the shipmaster while notifying other agencies in the event of an incident.

Guidelines mean each of the decision-making guidelines and matter set forth above and below. Notwithstanding any such word ad “may,” “should,” “will,”

”must,” or “shall,” these guidelines are intended solely as factors that may be considered during the execution and implementation of any such decisions.

Force Majeure is a doctrine of international law which confers limited legal immunity upon vessels which are forces to seek refuge or repairs within the jurisdiction of another nation due to uncontrollable external forces or conditions. This limited immunity prohibits coastal state enforcement of its laws which were breached due to the vessel’s entry under force majeure.

Jurisdiction

Under 33 CFR Part 6.04, the U.S. Coast Guard Captain of the Port (COTP) has authority to order ships into and out of ports, harbors, and embayments in order to protect the public, the environment and maritime commerce. The COTP is the designated Federal On-Scene Coordinator (FOSCR) for the U.S. coastal zone. Per the National Contingency Plan (NCP), 40 CFR part 300. There may be some maritime homeland security situation where the COTP, acting as the Federal Maritime Security Coordinator, may have access to Sensitive Security Information (SSI) and/or classified information- not readily shareable with other stakeholders- that may impact the final disposition of a vessel requesting “Force Majeure” or permitting a vessel to seek a place of refuge or approval of a salvage plan. These circumstances are dealt with on a case by case basis and information shared with other agencies is on a “need to know” basis.

The State of Louisiana has the authority to represent and protect State interests for incidents within State waters. The State has jurisdiction over state-owned shoreline and in near-shore waters out to three miles.

Local governments or port authorities may have authority over near-shore waters including ports and harbors. If so, a local government or port representative may serve as a Local On-Scene Coordinator per the NOACP.

Natural Resource agencies have authority to manage their lands, marine areas, wildlife, habitat, and natural resources as mandated in their laws and regulations. Natural Resource agencies fill position in ICS and provide resource information to the UC. In addition, Natural Resource agencies are member of the Region VI Regional Response Team (RRT).

Tribal governments may own land and have fishing rights in marine areas that could be impacted by a ship seeking a place of refuge. If so, a tribal government representative(s) may fill position in ICD or may serve as a Local On-Scene Coordinator per the NOACP.

The Master of the ship has control of the ship and is responsible for requesting a place of refuge from the COTP. The Master provides details on the status of the ship and justification for needing a place of refuge in accordance with the IMO Guidelines on Places of Refuge.

Management Structure to Address Places of Refuge

If time allows, the COTP should consult with appropriate federal, state, and local stakeholders via the RRT or other appropriate mechanism to address a request for a place of refuge. A Unified Command (UC) may be activated as required. The UC should provide an opportunity for consultation with resource agencies, tribal governments, local authorities, and other stakeholders as appropriate. Technical specialists, such as marine engineers, maritime pilots, vessel inspectors/surveyors, or salvers may be activated to assist in managing the incident. The UC should utilize the checklists provided in this manual, based on per-identified information whenever available, to determine the risk associated with the request. Once identified, an analysis should be performed balancing the public and environmental risks with the risks to the shop and the ship/cargo owner in order to decide is and where to move a ship in need of assistance.

If there is not time to activate a UC or the RRT, the COTP should make the decision whether to grant or deny the request for a place of refuge. To the extent possible, the COTP should use the checklists provided in this manual, and reference pre-identified information on potential Places of Refuge for the immediate are in order to select an appropriate site. Following the decision, the COTP should immediately notify appropriate stakeholders.

Appendix I contains a list of potential stakeholders for ships requiring a place of refuge.

This policy provides a template for pre-identified information to support the decision making checklists below, consistent with section 3.5-3.6 of the IMO Guidelines on Places of Refuge for Ships in Need of Assistance.

Decision –Making Process

The COTP in consultation with the UC, if formed, and if available the RRT, should perform an objective analysis of the advantages and disadvantages of allowing or not allowing a ship in need of assistance to proceed to a place of refuge, to the extent possible. This analysis should identify the potential environmental, social, economic, and security impacts at the site. The COTP will consider these multiple factors to determine the appropriate course of action to prevent and mitigate the short- and long-term impacts to public health and the environment, local commerce, the ship and the ship/cargo owners.

The COTP should evaluate consequences to the vessel and the environment:

- If the ship remains in the same position;
- If the ship continues on its voyage;
- If the ship reached a place of refuge;
- If the ship is taken out to sea; or
- If the ship is intentionally scuttled in deep water.

The decision-making process should evaluate each of these options using the following steps to determine if a ship in need of assistance should be granted a place of refuge. These steps are not in prioritized order, but should be addressed as part of a total assessment for each of the five options above.

Step 1

The Master of the vessel, or his/her representative (the operating company and/or salver), should request a place of refuge from the appropriate COTP. The Master should provide as much information as possible, including:

- The status of the ship. Crew, passengers, and weather;
- Medical issues, deaths, or needs of assistance and the specific assistance required;
- Intended actions and potential consequences if the request for a Place of Refuge is denied;
- If the ship is flooding, whether the pumping system is operable and is keeping up with the flooding rate;
- Status of vessel steering, propulsion, and firefighting capability;
- The steps already taken to mitigate the problem, and results;
- What needs or requirements will the ship have once in a place of refuge; and

- Status of notifications completed by Master: i.e. owners/operators/agents/Qualified Individuals/Class Society, etc.

Step 2

When time allows, the COTP should consult with appropriate agencies via the RRT to address the issue, and activate a UC when the situation dictates.

If there is not time to consult with partner agencies, the COTP should grant or deny the request for a place of refuge, and inform the State, other concerned agencies, and appropriate stakeholders at the earliest time to determine is any protective measures are required.

Step 3

In either case, the COTP or UC should:

Require the vessel Master, owner/operator, or agent; Qualified Individual etc. to contract with a salver and oil spill response organization (OSRO), or other specialized contractor if this has not already been done;

As the situation dictates, establish a command post and prepare to initiate a response;

If the vessel is drifting, determine its trajectory to shore and potential impact sites;

Notify the Federal Bureau of Investigation (FBI) Intelligence Coordination Center or the DHS Homeland Security Operations Center if there are any security concerns;

When appropriate and if time allows, dispatch an inspection team with expertise appropriate to the situation to board the ship and evaluate conditions, depending on risk, sea conditions, security risk, nature of distress etc;

Confer with the USCG MSC Ship Salvage Group, the vessel owners or naval architects;

Evaluate the following factors to determine if the ship in need of assistance should remain in the same position, continue on its voyage, be taken out to sea, intentionally scuttled, or be directed to a place of refuge.

Human Health & Safety

[ ] Safety and Health condition of those on board as well as risk to public safety

Environment

[ ] The environmental consequences of staying put, continuing on its voyage, being taken out to sea, being intentionally scuttles in deep water, or going to a place of refuge (reference Step 5 below)

Ship Status & Risk Factors

[ ] The type and size of the ship

[ ] The status/seaworthiness of the ship, in particular buoyancy, stability, structural integrity, availability of propulsion and power generation, docking ability, progressive deterioration, etc…

[ ] Types, quantities, hazards, and condition of petroleum products, hazardous substances, and/or other cargo onboard

[ ] The impending threat to the ship or need for a pilot

[ ] Weather conditions and forecasts

[ ] The Master's ability to navigate the ship or need for a pilot

[ ] Distance and estimated time to reach a place of refuge

[ ] Vessel traffic in the area where the ship is currently located

[ ] Mitigation measures already taken

[ ] Determine crew status, health, staffing levels, etc…

Response & Salvage Resources

[ ] Availability or rescue tugs/tow vessels of sufficient size and power to aid the ship in distress

[ ] Salvage and spill response resources on-scene with the ship and available during transit

[ ] Vessel traffic in the potential destination area

[ ] Access to a pier or dock with repair facilities

[ ] Whether salvage and lightering can safely be performed at each alternative location

Other Command Management Factors

[ ] Provisions of financial security and insurance by the ship owner/operator

[ ] Agreement by the Master and owner/operator of the ship to the proposals of the COTP/UC

[ ] Public expectations and media outreach

[ ] Capability of Master to detain crew on board until cleared by Customs and Border Protection and the USCG

Step 4

If the COTP/UC determines that the risks are generally acceptable to direct a ship into a place of refuge, the following factors should be further evaluated to determine a specific place.

Human Health & Safety

[ ] Assessment of human factors, including crew fatigue and overall health

[ ] Safety of persons at or near the place of refuge with regard to risks of explosion, fire, and pollution

[ ] Security concerns associated with a port or harbor area

[ ] Available emergency response capabilities and evacuation routes and facilities

[ ] Available fire-fighting and police capabilities

Environment

[ ] Potential environmental and cultural impacts of pollution (reference Step 5 below) or the response to a pollution incident

[ ] Existing resource protection strategies and availability or response resources to implement the strategies

[ ] Status of potential Place of Refuge (protection status, commercial area, near population centers)

Port or Anchorage Area Criteria

[   ] The type and size of the ship in relation to the size of the place of refuge

[   ] Adequate water depth to accommodate the ship

[   ] Navigational approach, including vessel traffic and associated risks

[   ] Pilotage requirements

[   ] Tides and currents

[   ] Seasonal conditions

[   ] Anchoring ground or suitable docking facilities

[   ] Availability of repair facilities such as dry docks, workshops, and cranes

[   ] Military operations in vicinity

[   ] Availability of cargo transfer and storage facilities

[   ] Land/and/or Air access

[   ] Weather and sea state including prevailing winds

[   ] Requirements from port authorities, area landowners/managers

[   ] Are the proposed activities specifically prohibited and/or are there permitting or notification requirements that need to be followed

Beaching Site Criteria

[   ] Depth of water, not covering vessel deck

[   ] The type of shore bottom

[   ] Navigational approach and pilotage requirements

[   ] Seasonal conditions

[   ] The openness of the site to ocean waves/currents

[   ] Land and/or air access

[   ] Prevailing wind patterns and forecasts

[   ] Tidal range

[   ] Vessel stability and structure for beaching

Economic Factors

[   ] Potential economic impacts of pollution

[   ] Potential disruptions to other port operations or marine commerce

[   ] Potential impacts on local fisheries, commercial fisheries, and/or natural resources exposed on the transit route

[   ] Economic impact of the decision on the ship owner/operator and the cargo owner

[   ] Economic impact related to loss of natural resources, area quality and recreational use

Response, Salvage, Firefighting, and Repair Resources

[   ] Available salvage and spill response resources

[   ] Available firefighting resources

[   ] Availability or appropriate and compatible lightering equipment and receiving vessels

[   ] Availability of product storage (e.g., tank barge, shore-side storage tank, other ships)

[   ] Availability of skilled labor and trained personnel

[   ] Access to repair equipment and facilities

[   ] Salvage and response vessel access to the Place of Refuge

Other Command Management Factors

[   ] Liability, insurance, and compensation issues and limits

[   ] Requirements of jurisdictional authorities for financial responsibility and bonding

[ ] Required notifications such as maritime pilots, Immigration, Customs, and security

[ ] Transitional or trans-jurisdictional coordination agreements/plans, if applicable

[ ] Public expectations and media outreach

Step 5

To protect environmental, historic, and cultural resources, the COTP/UC should determine the presence of and proximity to the following for any Place of Refuge location:

[ ] Resources at risk such as threatened or endangered species, seasonal breeding locations, or designated critical habitat

[ ] Essential fish habitat

[ ] Maricultural/aquaculture facilities

[ ] Other priority sensitive areas, including cultural and historic properties

[ ] Other resources, lands and/or waters with special designations

[ ] Offshore fisheries

[ ] Near shore fisheries

[ ] Subsistence use patterns and treaties

[ ] Recreation/tourism information

[ ] Spill trajectories

Step 6

After the final analysis has been completed and a decision made, the COPT or UC through a formal document (such as a Decision Memo), should ensure that other authorities and stakeholders are appropriately informed.

Area List of Potential Stakeholders for Incident-Specific Consultation Regarding Places of Refuge

The NOAC should ensure that current contact information is available through the committee members for the categories listed below:

- Federal On-Scene Coordinator
- State On-Scene Coordinator
- Federal Natural Resource Trustees
- State Natural Resource Trustees
- Federally-Recognized Tribes or First Nations
- Land Owners/Land Managers in addition to trustees identified above
    - Local (e.g., borough/municipal) governments
    - Potentially impacted facility owners
    - Port Authorities
- Other Stakeholders or Agencies
    - Regional Citizen Advisory Councils or other appropriate public interest groups
    - Harbor Safety Committees
    - Selected commercial operator (e.g., fish hatcheries, agriculture sires)
    - Immigration, Customs, the Federal Bureau of Investigation, the Department of Homeland Security, and the Federal Emergency Management Agency
    - Maritime pilot groups serving the area
    - Center of Disease Control/State and Local Health Departments

Template for Pre-Identifying Information Necessary for Responding to Requests for Places of Refuge

Ideally, the NOAC should gather information on all potential Places of Refuge within the boundaries of the committee.

This appendix provides a template for the collection of general information on the planning as well as specific information on sites such as docks and piers, anchorages and moorings, and possible beaching sites. The checklists in this template support the decision making checklist in the Places of Refuge Manual by providing for the advance collection of information and are therefore crucial to expediting a Place of Refuge decision-making process.

While information on possible sites may be pre-inventoried, this does not imply that any of these sites will be the location of choice in a future event. Selection of a place of refuge by the COTP in consultation with other agencies and stakeholders will always be made on a case-by-case basis.

A workgroup may be established to pre-identify information on coastal port or places that will give the COTP valuable information on a decision to choose a Place of Refuge in an emergency situation. The workgroup may include representatives from the USCG, the State, Local and Natural Resource Agencies, and marine pilots associations. In addition, native tribes and other interested and knowledgeable stakeholders should be invited to participate.

General Information

[ ] Casualty risk associated with the routine vessel traffic routes in the planning area

[ ] Availability of rescue tugs/tow vessels of sufficient size and power to aid in the vessel in distress and predicted arrival times

[ ] Salvage, lightering, firefighting, and spill response resources available to this jurisdiction, including delivery times

[ ] Transnational or trans-jurisdictional coordination agreements/plans, is applicable

[ ] Shorelines likely to be impacted either during transits to a place of refuge or if refuge is denied:

- Shoreline names and locations as appropriate

- Shoreline types and generally acceptable cleaning methods
- Description of sensitive resources/areas along the coastlines likely to be impacted, including fisheries, aquaculture sites, cultural and historic sites, Threatened and Endangered species, subsistence use, recreation/tourism, or specially designated lands or waters
- Existing resource protection strategies
- General wind/wave/current information and source for real-time tide/wind/wave/current information
- Seasonal conditions
- Potential risks to populations along the coasts with regard to explosion, fire and pollution; availability of evacuation routes
- General information on coastal vessel traffic patterns
- Other pertinent information

Information for Use in Choosing Places of Refuge

Docks and Piers

For each site:

[ ] Site number (to correspond to map/chart showing location)

[ ] Site name

[ ] Site location

[ ] Water depth at mean low tide

[ ] Beach/shoreline types and generally

[ ] Bottom types

[ ] General wind/wave/current information

[ ] Openness of the site to ocean waves/currents

[   ] Source for real-time tide/wind/wave/current information

[   ] Seasonal conditions

[   ] Standard navigational approach, including vessel traffic patterns and associate risks

[   ] Pilotage requirements

[   ] Nearby port operations and potential impacts

[   ] Brief description of port facilities

[   ] Brief description of repair facilities/capabilities/skilled labor

[   ] Availability or cargo transfer and storage facilities

[   ] Land and/or air access

[   ] Risk to persons at or near the location with regard to explosion, fire, and pollution; availability or evacuation routes

[   ] Description of sensitive resources/areas at the site and along potential access routes to that site, including fisheries, aquaculture sites, cultural and historic sites, Threatened and Endangered species, subsistence use, recreation/tourism, or specially designated lands or waters

[   ] Existing resource protection strategies

[   ] Availability of salvage, spill response, and emergency response resource including police and firefighting

[   ] Security measures in place

[   ] Requirements for permission from area landowners/managers

[   ] Financial assurance requirements of port authorities

[   ] Liability and compensation issues and limits

[   ] Required notification such as Immigration or Customs

[ ] Identification of Stakeholders including 24/7 contact information

[ ] Other pertinent information

Anchorage and Moorings

For each site:

[ ] Site number (to correspond to map/chart showing location)

[ ] Site name

[ ] Site location (descriptive and lat/long coordinates)

[ ] Water depths at mean low tide

[ ] Beach/shoreline types and generally accepted cleaning methods

[ ] Bottom types

[ ] General wind/wave/current information

[ ] Openness of the site to ocean waves/currents

[ ] Source for real-time tide/wind/wave/current information

[ ] Seasonal conditions

[ ] Standard navigational approach, including vessel traffic and associated risks

[ ] Pilotage requirements

[ ] Nearby port operations, if any, and potential impacts

[ ] Brief description of the facilities (if any)

[ ] Availability of cargo transfer and storage vessels

[ ] Land and/or air access

[ ] Risks to persons at or near the location with regard to explosion, fire, and pollution; availability of evacuation routes

[ ] Description of sensitive resources/area at the site and along potential access routes to that site, including fisheries, aquaculture sites, cultural and historic sites, Threatened and Endangered species, subsistence use, recreation/tourism, or specially designated lands or waters

[ ] Existing resource protection strategies

[ ] Availability of salvage, spill response, and emergency response resource, including police and firefighting, and their potential access to the site

[ ] Security measures in place

[ ] Requirements for permission from area landowners/managers, is applicable

[ ] Financial accordance requirements of local port authorities, is applicable

[ ] Liability and compensation issues and limits

[ ] Required notifications such as Immigration or Customs

[ ] Identification of stakeholders including 24/7 contact information

[ ] Other pertinent information

Beaching Sites

For each site:

[ ] Site number (to correspond to map/chart showing location)

[ ] Site name

[ ] Site location (descriptive and lat/long coordinates)

[ ] Water depths at mean low tide

[ ] Beach/shoreline types and generally accepted cleaning methods

[ ] Bottom types

[ ] General wind/wave/current information

[ ] Openness of the site to ocean waves/currents

[   ] Source for real-time tide/wind/wave/current information

[   ] Seasonal conditions

[   ] Standard navigational approach, including vessel traffic and associated risks

[   ] Pilotage requirements

[   ] Nearby port operations, if any, and potential impacts

[   ] Brief description of the facilities (if any)

[   ] Availability of cargo transfer and storage vessels

[   ] Land and/or air access

[   ] Risks to persons at or near the location with regard to explosion, fire, and pollution; availability of evacuation routes

[   ] Description of sensitive resources/area at the site and along potential access routes to that site, including fisheries, aquaculture sites, cultural and historic sites, Threatened and Endangered species, subsistence use, recreation/tourism, or specially designated lands or waters

[   ] Existing resource protection strategies

[   ] Availability of salvage, spill response, and emergency response resource, including police and firefighting, and their potential access to the site

[   ] Security measures in place

[   ] Requirements for permission from area landowners/managers, is applicable

[   ] Financial accordance requirements of local port authorities, is applicable

[   ] Liability and compensation issues and limits

[   ] Required notifications such as Immigration or Customs

[   ] Identification of stakeholders including 24/7 contact information

[   ] Other pertinent information

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*

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 ☐											

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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 ☐ Outer Boots/Glove Removal ☐ Suit/Gloves/Boot Disposal ☐	Suit Wash ☐ Decon Agent: Water ☐ Other ☐ Specify:	Bottle Exchange ☐ Outer Suit Removal ☐ Inner Suit Removal ☐ SCBA/Mask Removal ☐	SCBA/Mask Rinse ☐ Inner Glove Removal ☐ Work Clothes Removal ☐ Body Shower ☐	Intervening Steps ☐Specify:

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: Fire ☐ Explosion ☐ Other ☐	11.b. Evacuation Alarms: Horn ☐ # Blasts ☐ Bells ☐ #Rings ☐ Radio Code ☐ Other:	11.c Emergency Prevention and Evacuation Procedures: Safe Distance:

12. a. Communications: Radio ☐ Phone ☐ Other ☐	12.b. Command #:	12.c. Tactical #:	12.d. Entry #:

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. <u>Controls</u>: 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 - Security Perimeter - Decontamination Line - Locations of Hazards - Places of Refuge - 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

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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)

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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:	<u>Potential Health Effects</u>: 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

***** *By signing this document, I am stating that I have read and fully understand the plan and/or information provided to me.*

ICS-208-CG SSP-I (rev 9/06): Worker Acknowledgement

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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	☐	

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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: <u>tanks and vaults</u> 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 _____

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: 4/5/01**	**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	<u>Controls</u>: 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: 4/5/01**	**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: 4/5/01**	**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: 4/5/01**	**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: 4/5/01**	**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: 4/5/01**	**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:			
Start Shift [ ] Pre-Entry [ ] Exit [ ] End of Shift [ ] Specify Other:			
Start Shift [ ] Pre-Entry [ ] Exit [ ] End of Shift [ ] Specify Other:			
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Last Updated: 4/5/01	**SSP-Attach 6: Record of Safety Briefings** **Page ____ of _____**

CG ICS SSP SPECIFIC HAZARD ATTACHMENT	1. Hazard Helicopter Operations Additional Attachments:	2. Helicopter Location	3. Emergency contacts:

Activity	**Safe Work Practice**	4. **Checked [✓]**
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	-	
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	-	

5. Prepared by:	6. Date/time briefed:	**Last Updated: 4/5/01**	**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 [✓]**
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: 4/5/01**	**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 [✓]**
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: 4/5/01**	**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: 4/5/01**	**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: 4/5/01**		**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	*Group I* Jellyfish, Portuguese Man-o-war Anemones Corals Hydras *Group II* 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 *Group I* - Do not rub or scratch affected area - Sprinkle alcohol on affected area, follow with meat tenderizer or talcum if available (denatures toxin) *Group II* - 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: 4/5/01**	**SSP-Attach 11: Animal Hazards** **Page 2 of ______**

New Orleans Area Contingency Plan

Chapter 9000
Appendix K
Health and Safety Policy

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix K Health and Safety Policy

Table of Contents

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Health and Safety Policy

Background

This policy was developed to provided Federal and State health and safety guidance for oil/hazardous substance incidents within the boundaries of the New Orleans Area Committee.

Purpose

The Purpose of health and safety efforts conducted during an environmental emergency are to ensure the protection of the responders, clean-up crews and the public from the possible hazards. The guidance contained in this policy document is intended to assist Safety Officers to establish, manage, and operate a safe spill response to the reported incident.

Health and Safety

Federal Health and Safety Guidance

Federal and state government employees, private industry employees, and other contract personnel involved in oil spill response activities must comply with all applicable worker health and safety laws and regulations. The Occupational Safety and Health (OSH) Act was enacted December 29, 1970 and granted authority to the Secretary of Labor to promulgate, modify, and revoke safety and health standards. The primary federal regulations for hazardous waste operations and emergency response are found in 29 CFR Part 1910.120. This regulation specifies the safety and health requirements for employees involved in clean-up operations at uncontrolled hazardous waste sites being cleaned up under government mandate and in certain hazardous waste treatment, storage, and disposal operations conducted under the Resource Conservation and Recovery Act of 1976 (RCRA). The regulations apply to both emergency response and post-emergency response clean-up of hazardous substance spills.

The definition of hazardous substance used in these regulations in much broader than CERCLA, encompassing all materials listed in 49 CFR Part 172. Thus, most oils and oil spill responses are covered by these regulations. Response policies shall be consistent with federal regulations.

The Occupational Safety and Health Administration (OSHA) classifies an area impacted by oil as an uncontrolled hazardous waste site. The role of the site safety and health supervisor is to assess the site, determine the safety and health hazards present, and determine if Federal OSHA regulations apply. If an OSHA field compliance officer is on scene, he/she should be consulted to determine the applicability of OSHA regulations. Disputes should be referred to the Department of Labor representative of the RRT.

One key provision of the OSH Act provided 50/50 funding to those states that developed their own state program, which is at least as effective as the federal program in providing safe and healthful employment. The State of Louisiana does not have a federally approved state managed program and, therefore, all workers involved with oil spill response activities must comply with the federal regulations.

Louisiana State Health and Safety Guidance

Federal regulations specify minimum training levels for responders to hazardous substance incidents. OSHA enforces the requirements for federal and private workers. State and local employees must follow the same regulations.

Safety Officer Advance Planning

The incident Safety Officer (SOFR) will need personnel and equipment very quickly in the event of an incident. It would be beneficial, if possible, to have preset lists of resources, equipment, personal protective equipment (PPE), and personnel for a large incident that could be pared down for smaller incidents. This will allow the SOFR to get a request into the Logistics Section quickly while the SOFR beings to tackle the chaotic issues at the beginning of an incident. A go kit with information resources preprinted, or on computer disk (laptop and personnel printer if available) and some safety and detection equipment would increase the response effectiveness of the SOFR. A good Site Safety and Health plan (see below) form that the SOFR is familiar with will be a good guide/checklist to cover the safety issues of an incident and quickly develop the site safety plan. This type of preplanning is critical to allow the SOFR to quickly respond to the needs of the personnel responding to an incident.

Site Safety and Health Plans

The following site safety and health plans can be used as a general guide to facilitate rapid development of site safety and health plans during spill response. They are NON-MANDATORY guidelines intended to support appropriate site-specific sit planning. They were developed for response personnel involved in EMERGENCY and/or POST-EMERGENCY operations and may not provide sufficient detail for long-term remedial sites.

A generic site safety and health plan is provided for oil/hazardous substance responses along with a PROPOSED ASTM STANDARD Site Safety and Health Plan for oil spill response. Both documents provide a set of attachments that should be used as needed. The generic and proposed ASTM standard site safety plans are not intended to satisfy all requirements for written procedures. A site-specific site safety and health plan must be backed up by other documents which add more detailed information which may not necessarily be needed in the field (EXAMPLES: a site safety and health program, a respiratory protection program, or a medical monitoring program.)

Once the PROPOSED ASTM STANDARD is approved this will replace the generic Site Safety and Health Plan in the policy.

ICS Compatible Site Safety and Health Plan

Purpose

The ICS compatible Site Safety and Health Plan, ICS Form 208, is designed for safety and health personnel that use ICS. It is compatible with ICS and is intended to meet the requirements of the Hazardous Waste Operations and Emergency Response regulation (29 CFR 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 primary designed for oil and hazardous substance incidents, the plan can be used from all hazard situations. The most up-to-date ICS compatible Site Safety and Health Plan, ICS Form 208 can be found at the USCG Homeport internet site Http://homeport.uscg.mil/mycg/portal/ep/home.do, click on library, click on Incident Command System ICS and click on Coast Guard ICS Forms (Individual).

Development

The ICS compatible Site Safety and Health Plan was initiated at USCG Headquarters, Office of Response in 1998. Several Coast Guard personnel were involved in the development and review of the plan. The plan was then reviewed and refined by industry representatives.

Emergency Safety and Response Plan (Form SSP-A)

Purpose

The Emergency Safety and Response Plan provides the SOFR and ICS personnel a plan for safe guarding personnel during the initial emergency phase of the response. It is only used during the emergency phase of the response, which is defined as a situation involving as uncontrolled release/discharge. It is also intended to meet the requirements of the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulation, 29 CFR Part 1910.120.

Preparation

The SOFR or his/her designated staff starts the Emergency Site Safety and Response Plan. They initially address the hazards common to all operations involved in the response (initial site characterization). Outside support organizations must be contacted to ensure the plan is consistent with other plans (local, state, other federal plans). Form SSP-G need not be completed if this form is used. When the operation proceeds into the post-emergency phase (site stabilized and clean-up operations begun) forms SSP-B and SSP-G should be used. For large incidents, the Emergency Site Safety and Response Plan complements the Incident Action Plan. For smaller incidents, the Emergency Site Safety and Response Plan complements ICS Form 201.

Distribution

The Emergency Safety and Response Plan is completed by the SOFR and forwarded to the Planning Section Chief. Copies are made and attached to the Assignment List(s), ICS Form 204. The Operations Section Chief, Directors, Supervisors, or Leaders get a copy of the plan. They must ensure it is available on site for all personnel to review. The SOFR is responsible for ensuring that the Emergency Site Safety and Response Plan properly addresses the hazards of the operation. The SOFR accomplishes this through on site enforcement and feedback to the operational units.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time Prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Attachments	Enter attachments. Material Safety Data Sheets are mandatory under 1910.120. Safe Work Practices may also be attached.
5	Organization	List the personnel responsible for these positions. IC and SOFR are mandatory.
6	Physical Hazards & Protection	Check off the physical hazards at the site. Identify the major tasks involved in the response (skimming, lightering, overpacking, etc.) Check off the controls that would be used to safeguard workers from the physical hazards for each major task.
7	Chemicals	List the chemicals involved in the response. Chemicals may be listed numerically. Check

		off hazards, potential health effects, pathway of dispersion, and exposure route to the chemical. Numbers corresponding to the chemical may be entered into the check blocks to differentiate. Check off PPE to be used. Identify the type of PPE selected (for example: gloves: butyl rubber).
8	Instruments	Indicate the instruments being used for monitoring. List the action levels adjacent to the instruments being used. Identify the chemicals being monitored. List the physical parameters of the chemicals. Use a separate form for additional chemicals monitored.
9	Decontamination	Check off the decontamination steps to be used. Numbers may be entered to indicate the preferred sequence. Identify any intervening steps necessary on the form or in a separate attachment.
10	Site Maps	Draw a rough site map. Ensure all the information listed is identified on the map.
11	Potential Emergencies	Identify any potential emergencies that may occur. If none, so state. Check off the appropriate alarms that may be used. Identify emergency prevention and evacuation procedures in the space provided or on a separate attached sheet.
12	Communications	Indicate type of site communications (phone, radio). Indicate phone numbers for frequencies for the command, tactical, and

		entry functions.
13	Site Security	Identify the personnel assigned. Identify security procedures in the space provided or on a separate attached sheet. Identify the equipment needed to support security operations.
14	Emergency Medical	Identify the personnel assigned. Identify emergency medical procedures in the space provided or on a separate attached sheet. Identify the equipment needed to support security operations.
15	Prepared by:	Enter the name and position of the person completing the worksheet
16	Date/time briefed	Enter the date/time the document was briefed to the appropriate workers and by whom.

Site Safety Plan (Form SSP-B)

Purpose

The Site Safety Plan provides the SOFR and ICS personnel a plan for safeguarding personnel during the post-emergency phase of an incident. The post-emergency phase is when the situation is stabilized and cleanup operations have begun. SSP-B is intended to meet the requirements of the HAZWOPER regulation, 29 CFR Part 1910.120.

Preparation

The SOFR or his/her designated staff starts the Site Safety Plan. They initially address the hazards common to all operations involved in the response (initial site characterization). The plan is then reproduced and, as a minimum, sent to ICS Group/Division Supervisors. They amend it according to unique job or on-scene hazards with support from the SOFR and/or his/her staff (detailed site characterization). The plan is continuously updated to address changing conditions. During the first hours of the response, where most response functions are in the emergency phase, the SOFR may chose to use the Emergency Safety and Response Plan (SSP-A) in place of the Site Safety Plan. For large incidents, the SSP-B compliments the Incident Action Plan. For smaller incidents, the SSP-B compliments ICS Form 201. The SOFR is encouraged to use the HAZWOPER Compliance Checklist (Form SSP-K) to ensure the Incident Action Plan and the 201 address the requirements and all other pertinent ICS forms (203, 205, 206, etc.) are completed.

Distribution

The initial Site Safety Plan completed by the SOFR is forwarded to the Planning Section Chief. Copies are made and attached to the Assignments List(s), ICS Form 104. The Operations Section Chief, Directors, Supervisors, or Leaders get a copy and make on site amendments specific to their operation. They must also ensure it is available on site for all personnel to review. The SOFR provides personnel from his/her staff to assist in the detailed site characterization. The SOFR is responsible for ensuring that the Site Safety Plan for each assignment properly addresses the hazards of that assignment. The SOFR shall ensure completion of the Worker Acknowledgement Form (SSP-I).The SOFR accomplishes this through on site enforcement and feedback to the operational units.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/time Prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the Safety Officer and means of contact

5	Group/Division Sup Strike Team/TF Leader	The Supervisor/leader who receives this form will enter their name here
6	Location & size of site	Enter the geographical location of the site and the approximate square area
7	Site Accessibility	Check the block(s) if the site is accessible by land, water, air, etc.
8	For Emergency Contact	Enter the name and way to contact the individual who handles emergencies.
9	Attachments	Enter attachments. Material Safety Data Sheets are mandatory under 1910.120. Safe Work Practices may also be attached.
10	Job/Task Activity	Enter Job/Task & Activities, list hazards, list potential injury and health effects, check exposure routes and identify controls. If more detail is needed for controls, provided attachments.
11	Prepared by	Enter the name and position of the person completing the worksheet
12	Briefed on ______ by	Enter the sate/time the document was briefed to the appropriate workers and by whom

Site Map for Site Safety Plan (SSP-C)

Purpose

The Site Map for the Site Safety Plan is required by 29 CFR Part 1910.120. It provides, in one place, a visual description of the site, which can help ICS personnel locate hazards, identify evacuation routes, and places of refuge.

Preparation

The Site Map for the Site Safety Plan can be completed by the SOFR, his/her staff, or by ICS personnel (Group Supervisors, Task Force/Strike Team Leaders) working at a site with unique and specific hazards. One or several maps may be developed, depending on the size of the incident and the uniqueness of the hazards. The key is to ensure that the workers using the map(s) can clearly identify the work zones, locations, of hazards, evacuation routes and places of refuge.

Distribution

This form must be located with the Site Safety Plan (SSP-B). It therefore follows the same distribution route.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignments applies
4	Safety Officer	Enter then name of the Safety Officer and means of contact

5	Supervisor/Leader	The Supervisor/Leader who receives this form will enter their name here
6	Location & size of site	Enter the geographical location of the site and the approximate square area.
7	Site Accessibility	Check the block(s) if the site is accessible by land, water, air, etc.
8	For Emergency Contact	Enter the name and way to contact the individual who handles emergencies
9	Include	Ensure the map includes the listed items provided in this block
10	Prepared by	Enter the name and position of the person completing the worksheet
11	Briefed on _________ by	Enter the date/time the document was briefed to the appropriate workers and by whom

Emergency Response Plan (ICS Form 208D)

Purpose

The Emergency Response Plan provides information on measures to be taken in the event of an emergency. It is used in conjunction with the Site Safety Plan (Form SSP-B). It is required by 29 CFR Part 1910.120.

Preparation

The SOFR, his/her staff member if the Site Supervisor/Leader prepares the Emergency Response Plan. A copy of the Medical Plan (ICS Form 206) shall always be attached to this form.

Distribution

This form must be located with the Site Safety Plan (SSP-B). It therefore follows the same distribution.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time Prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the Safety Officer and means of contact
5	Supervisors/Leader	The Supervisor/Leader who receives this form will enter their name here
6	Location & size of site	Enter the geographical location of the site and the approximate square area
7	For Emergency Contact	Enter the name and way to contact the individual who handles emergencies
8	Attachments	Enter attachments. ICS Form 206 must be included
9	Emergency Alarm	Enter a description of the sound of the emergency alarm and its location
10	Backup Alarm	Enter a description of the sound of the emergency alarm and its location
11	Emergency Hand	Enter the emergency hand signals to be used

	Signals	
12	Emergency Personal Protective Equipment Requires	Enter the emergency PPE that may be needed in the event of an emergency
13	Emergency Notification Procedures	Enter the procedures for notifying the appropriate personnel and organizations in the event of an emergency
14	Places of Refuge	Enter by name the place of refuge personnel can go to in the event of an emergency
15	Emergency Decon & Evacuation Steps	Enter emergency decontamination steps and evacuation procedures
16	Site Security Measures	Enter site security measures needed for emergencies
17	Prepared by	Enter the name and position of the person completing the worksheet
18	Briefed on ______ by	Enter the date/time the document was briefed to the appropriate workers and by whom

Daily Air Monitoring Log (Form SSP-E)

Purpose

The Daily Air Monitoring Log provides documentation of air monitoring conducted during an incident. The log is supplement to the Site Safety Plan (SSP-B). It is only required when performing air monitoring operations. The information used from the log can help update the Site Safety Plan.

Preparation

Persons conducting monitoring complete the Daily Air Monitoring Log. Normally these are air-monitoring units under the Site Safety Officer. If there is a decision not to monitor during a spill, the reasons must be available on site, readily available and briefed to all impacted ICS personnel.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time Prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the Safety Officer and means of contact
5	Location & size of site	Enter the geographical location of the site and the approximate square area
6	Hazards of concern	Enter the hazards being monitored
7	Action Levels	Enter the hazards being monitored
8	Weather	Enter weather information. Ensure units of measure are listed. Include wind direction and wind speed.
9	Air Monitoring Data	Enter the instruments type and number, persons monitoring, results with appropriate units, location of reading, date and time of reading, interferences and comments. Detection limits of the instruments used should be captured in 9.g, interferences and comments.
10	Safety Officer Review	The Safety Officer must review and sign the form

Personal Protective Equipment (SSP-F)

Purpose

The Personal Protective Equipment (PPE) Form is a list of PPE to be used in operations. The listing of PPE is required by 29 CFR Part 1910.120.

Preparation

The PPE form is completed by the SOFR, or his/her staff. PPE common to all ICS Operations personnel is addressed first. Jobs with unique PPE requirements (i.e. fall protection) are addressed next. When the form is delivered on site, the ICS Director, Supervisor, or Leader may amend the list to ensure personnel are adequately protected from job hazards. It must be completed prior to the onset of any operation, unless addressed elsewhere by Standard Operating Procedures.

Distribution

This form must be located with the Site Safety Plan (SSP-B). It therefore follows the same distribution.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time Prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the Safety Officer and means of contact
5	Supervisor/Leader	The Supervisor/Leader who receives this

		form will enter their name here
6	Location & size of site	Enter the geographical location of the site and the approximate square area
7	Hazard(s) Addressed	Enter the hazards that need to be safeguarded against
8	For emergencies Contact	Enter the name and way to contact the individual who handles emergencies
9	Equipment	List the equipment needed to address the hazards. If pre-designed Safe Work Practices are used, indicate here and attach form
10	References consulted	List the references used in making the selection of PPE
11	Inspection procedures	Enter the procedures for inspecting PPE prior to donning. If pre-designed Safe Work Practices are used, indicate here and attach to form
12	Donning Procedures	Enter the procedures for putting on the PPE. If pre-designed Safe Work Practices are used, indicate here and attach to form
13	Doffing Procedures	Enter the information for removing the PPE. Of pre-designed Safe Work Practices are used, indicate here and attach to form
14	Limitations and Precautions	List the limitations and precautions when using PPE. Include the maximum time to be inside the PPE. Heat Stress concerns, psychomotor skill detraction and other factors

15	Prepared by	Enter the name as position of the person completing the worksheet
16	Briefed on _______ by	Enter the date/time the document was briefed to the appropriate workers and by whom

Decontamination

Purpose

The Decontamination form provides information on how workers can avoid contamination and how to get decontaminated. It is a supplemental form to the Site Safety Plan.

Preparation

The Decontamination Form can be completed by the SOFR, and member of his/her staff, or by the Group/Division Supervisor, Task Force/Strike Team Leader on the site.

Distribution

This form must be located with the Site Safety Plan (SSP-B). It therefore follows the same distribution.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time Prepared	Enter date (month, day, year) prepared

3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the Safety Officer and means of contact
5	Supervisor/Leader	The Supervisor/Leader who receives this form will enter their name here
6	Location & size of site	Enter the geographical location of the site and the approximate square area
7	For emergencies Contact	Enter the name and way to contact the individual who handles emergencies
8	Hazard(s) Addressed	Enter the hazards that need to be safeguarded against
9	Equipment	List the equipment needed to address the hazards. If pre-designed Safe Work Practices are used, indicate here and attach form
10	References consulted	List the references used in making the selection for PPE
11	Contamination Avoidance Practices	Enter procedures for personnel to avoid contamination. If pre-designed Safe Work Practices are used, indicate there and attach to form
12	Decon Diagram	Draw a diagram for the decontamination operation. If pre-designed Safe Work Practices are used, indicate here and attach to form
13	Decon Steps	List the decontamination steps
14	Prepared by	Enter the name and position of the person completing the worksheet
15	Briefed on ____ by	Enter the date/time the document was briefed to the

		appropriate workers and by whom

Site Safety Enforcement Log (SSP-H)

Purpose

The Site Safety Plan Enforcement Log is used to help enforce safety during an incident.

Preparation

The SOFR and/or his/her staff complete the Site Safety Plan Enforcement Log. The log is completed as Safety personnel are on scene reviewing the site. It should be completed at a minimum once per day. The number of enforcement logs to be completed depends on the size of the incident. Enough should be completed to ensure that site safety is being adequately enforced.

Distribution

The Site Safety Enforcement Log, when completed, is delivered to the SOFR. The SOFR can use the form to amend the Site Safety Plan (SSP-A or B).

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time Prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the Safety Officer and means of contact
5	Supervisor/Leader	The Supervisor/Leader who receives this form will enter their name here

6	For emergencies Contact	Enter the name and way to contact the individual who handles emergencies
7	Attachment	List any attached supporting documentation
8	Job/Task Activity	Enter only those Job Task/activated for which a deficiency is noted
	Hazards	Enter the hazards not being sufficiently addressed
	Deficiency	Enter the deficiency
	Action Taken	Enter the corrective action taken to address the deficiency
	Safety Plan Amended?	Enter whether the onsite safety plan was amended
	Signature of Supervisor/Leader	Ensure the Supervisor/Leader signs the form to acknowledge the deficiency
9	Prepared by	Enter the name and position of the person completing the worksheet
10	Briefed on____ by	Enter the date/time the document was briefed to the appropriate workers and by whom

Worker Acknowledgement Form (SSP-I)

Purpose

The Worker Acknowledgement form is used to document workers who have received safety briefings.

Preparation

Those personnel responsible for conduction safety briefings complete this form initially. Once the briefings are completed, workers who were briefed print their name, sign, date, and indicate the time of the briefing.

Distribution

This form is returned to the SOFR or designated representative at the end of each operational period.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Site Location	Indicate the location where the briefings are held
3	Attachment	Indicate any attachments used as part of the briefings
4	Type of briefing	Check the block next to the type of briefing
5	Presented by	Enter the name of the person conducting the briefing
6	Date	Enter the date of the briefing
7	Time	Enter the time of the briefing
8	Worker Name	Workers receiving the briefing print their name, sign, date, and enter the time they acknowledge the briefing

Emergency Safety and Response Plan Compliance Checklist (SSP-J)

Purpose

The purpose of the Emergency Safety and Response Plan 1910.120 Compliance Checklist is to ensure that incident response operations are in compliance with 29 CFR part 1910.120, HAWOPER. It also identifies how from SSP-J can be used to satisfy the HAZWOPER requirements. This checklist is an optional form.

Preparation

The Emergency Safety and Response Compliance Checklist is completed by the SOFR or his/her staff as frequent as necessary whenever the SOFR wants to ensure regulatory compliance. It is best used in conjunction with the Site Safety Plan Enforcement Log (SSP-H). The Site Safety Plan Forms (A-G) best meet some of the requirements. The Incident Action Plan is suited to address other requirements, and the SOFR should ensure the IAP addresses them. Other requirements are performance based and are best evaluated on scene by the SOFR or his/her staff

Distribution

The SOFR should maintain the Emergency Safety and Response Plan 1910.120 Compliance Checklist.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies

4	Supervisor/Leader	The Supervisor/Leader who receives this form will enter their name here
5	Location of site	Enter site location
6	Cites	These are the regulatory cites within 1910.120. The major headings are highlighted in bold. Informational cites or cites that are duplicative are not included
7	Requirements	This lists the requirements in a question format. Some require documentation or some form of action.
8	ICS Form	List this requirements covered in SSP-A
9	Check Block	Enter the check if the site satisfies the requirement
10	Comments	This provides additional information on the requirement. The user may also enter comments
11	Prepared by	Enter the name and position of the person completing the worksheet

HAZWOPER 1910.120 Compliance Checklist

Purpose

The purpose of the HAZWOPER 1910.120 Compliance Checklist is to ensure that incident response operations are in compliance with 29 CFR Part 1910.120, HAZWOPER. It also identified how other ICS forms can be used to satisfy the HAZWOPER requirements. This is an optional form.

Preparation

The HAZWOPER 1910.120 Compliance Checklist is completed by the SOFR or his/her staff as frequently as necessary whenever the SOFR wants to ensure regulatory compliance. It is best used in conjunction with the Site Safety Plan Enforcement Log (SSP_H). The Site Safety Plan Forms (A-G) best meet some of the requirements. The Incident Action Plan is suited to address other requirements, and the SOFR should ensure the IAP addresses them. Other requirements are performance based and are best evaluated on scene by the SOFR or his/her staff.

Distribution

The HAZWOPER 1910.120 Compliance Checklist should be maintained by the SOFR.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Supervisor/Leader	The Supervisor/Leader who receives this form will enter their name here
5	Location of site	Enter site location
6	Cites	These are the regulatory cites within 1910.120. The major headings are highlighted in bold. Informational cites or cites that are duplicative are not included

7	Requirements	This lists the requirements in a question format. Some require documentation or some form of action.
8	ICS Form	List those ICS Forms that cover the requirement. **IAP designations mean it should be covered in the IAP, it does not guarantee it is covered. The SOFR must ensure this.**
9	Check Block	Enter the check if the site satisfies the requirement
10	Comments	This provides additional information on the requirement. The user may also enter comments
11	Prepared by	Enter the name and position of the person completing the worksheet

HAZWOPER 1910.120 Drum Compliance Checklist

(SSP-L)

Purpose

The purpose of the HAZWOPER 1910.120 Drum Compliance Checklist is to ensure that incident response operations are in compliance with 29 CFR Part 1910.120, HAWOPER whenever drums are encountered during an incident. This is an optional form.

Preparation

The HAZWOPER 1910.120 Drum Compliance Checklist is completed by the SOFR of his/her staff as frequently as necessary whenever the SOFR wants to ensure regulatory compliance. It is best used in conjunction with the Site Safety

Plan Enforcement Log (SSP-H). This Site Safety Plan Forms (A-G) best meet some of the requirements. Other requirements are performance based and are best evaluated on scene by the SOFR or his/her staff.

Distribution

The HAZWOPER 1910.120 Drum Compliance Checklist should be maintained by the SOFR.

Instructions

Item#	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident
2	Date/Time prepared	Enter date (month, day, year) prepared
3	Operational Period	Enter the time interval for which the assignment applies
4	Safety Officer	Enter the name of the SOFR and means of contact
5	Supervisor/Leader	The Supervisor/Leader who receives this form will enter their name here
6	Location & Size of the site	Enter the geographical location of the site and the approximate square area
7	For Emergencies Contact	Enter the name and way to contact the individual who handles emergencies
8	Note	Tanks and vaults should also be treated in the same manner as described in the checklist (1910.120(j)(9).
9	Cites	These are the regulatory cites within 1910.120. The major headings are highlighted in bold. Informational cites or cites that are duplicative are not included

10	Requirements	This lists the requirements in a question format. Some require documentation or some form of action.
11	Check Block	Enter the check if the site satisfies the requirement
12	Comments	This provides additional information on the requirement. The user may also enter comments
13	Prepared by	Enter the name and position of the person completing the worksheet

Site Safety Plan Attachments (SSP-ATTACH 1-#)

Purpose

The Site Safety Plan attachments provide ready-made safe work practices for the SOFR and ICS Personnel. They are optional documents designed to assist the SOFR in communicating and enforcing control of safety hazards. They were derived from the U.S. Coast Guard’s national Strike Force’s Guide for Developing Oil Spill Site Safety Plans (NSFCCINST N16465.2).

Preparation

The SSP-Attachments require little to no preparation. Some of them have blank sections (due to information changing) that are required to be filled in by the SOFR or his/her staff. The SOFR is encouraged to use the format presented by the attachments for developing his/her own additional safe work practices.

Distribution

These forms must be located with the Site Safety Plan (SSP-A/B). They are therefore following the same distribution.

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New Orleans Area Contingency Plan

Chapter 9000
Appendix L
Volunteer Policy

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix L Volunteer Plan

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix L Volunteer Plan

Volunteer Policy

Use of Volunteers during a Pollution Incident

The demands of an incident may exceed the resources of government organizations. Volunteers can support response efforts in many ways but the use of volunteers during an oil spill response is not automatic. The decision to employ volunteers will take into account the benefits that might be gained and the safety and liability realities. The UC, in the early stages of the event, will make the decision whether volunteers will be employed and capabilities in which they can serve.

The use of volunteers to assist in oil spill responses is recognized in the NCP, 40 CFR Part 300.185(c). The definition section of the NCP includes “volunteer” as follows:

A Volunteer is any individual accepted to perform services by the lead agency which has authority to accept volunteer services (examples: See 16 U.S.C. 742f(c)). A volunteer is subject to the provisions of the authorizing statute and the NCP.

Volunteers fall into two general categories:

Affiliated Volunteers

Affiliated volunteers are those individuals associated with an Affiliated Volunteer Organization prior to an incident. They usually have received sufficient training to allow them to contribute to their host organization, although individuals may not be trained in oil spill response. Affiliated Volunteer Organizations generally hold a non-profit status and provide some form of training, maintain an affiliated volunteer database, and have volunteer functions to facilitate current volunteer experience and communication. These groups also accept donations of money or materials.

Convergent Volunteers

Convergent volunteers are individuals not affiliated with an existing Affiliated Volunteer Organization. After a spill has occurred, convergent volunteers may express a spontaneous desire to participate in a response effort, but may have little to no oil spill response training. Oil spills typically receive significant press coverage and produce strong public concern for public health and injury to wildlife and the environment. This visibility and concern motivates citizens to assist where they can in the oil spill response. The ability to give the public an opportunity to volunteer during an oil spill can be helpful for their emotional experience and can assist in altering public perception in a positive manner.

Human health and safety is the first priority in a decision regarding use of volunteers. The benefit of volunteer efforts must be weighed against concerns for volunteer safety. Based on the conditions specific to an incident, the UC will determine the suitability of integrating volunteers, whether affiliated or convergent, into an oil spill response.

Unaffiliated/Convergent Volunteer Management Planning

Local government and nonprofit sector agencies are generally responsible for the mobilization, management, and support of volunteers, with support from the State and Federal levels. Specialized planning, information sharing, and management structure are necessary to coordinate efforts and maximize the benefits of volunteer involvement.

Consistent and timely communication should be utilized in order to educate the public, minimize confusion, and clarify expectations. Volunteers can be successful participants in emergency management systems when they are flexible, cooperative, aware of risks, and willing to be coordinated by local emergency management experts. Ideally, all volunteers should be affiliated with an established organization and trained for specific disaster response activities. However, the spontaneous nature of individual volunteering is inevitable; therefore it must be planned for and managed.

The successful integration of citizen involvement in an emergency management setting is imperative to prepare for, respond to, recover from, and mitigate the effects of disasters in our communities. Therefore, all unaffiliated volunteers should be directed toward State Volunteer Coordinators or non-governmental organizations.

Volunteer Organization in ICS

During an initial response before volunteer interests have been expressed, the ICS structure may not contain positions specifically dedicated to volunteer management. As the Unified Command (UC) becomes aware of individuals or organizations interested in providing volunteer services, the UC should make assignments for a Volunteers Unit in the Planning Section. During preparation for the tactics meeting phase of the Planning “P”, the Resource Unit Leader (RESL), Planning Section Chief (PSC), and Operations Section Chief (OSC) will determine specific roles, site locations, safety requirements, and required number of volunteers needed in the applicable operational period. When the UC approves the use of volunteers, the UC will have the options of:

- Assigning a Volunteer Coordinator within the Planning Section if volunteer interest is low;
- Assigning a Volunteer Unit Leader (VUL) within the Planning Section if volunteer interest is moderate; or
- Expanding the Command Staff to include a Volunteer Officer (VO).

The UC will supply logistical support to volunteers while operationally deployed (regardless of status condition), engage in logistical support, and continue this relationship with volunteers regarding and issues resulting from volunteerism during the response. Volunteers will not report directly to the Command Post for registration and training, but will be registered, trained, and deployed from an alternate location.

If the UC makes a decision to coordinate with Local Government in using volunteers (other than oiled wildlife), Local Government representatives will be notified via the LNO or the VUL. Local Government will advise the UC regarding their ability to assist in the requested volunteer effort. If a particular local government cannot assist in volunteer coordination, the UC or VUL can request a neighboring city or Parish to facilitate volunteer coordination for the un-assisting local government. After participating local governments partners have received, registered, and trained the requisite volunteers, that local agency will continue to coordinate with the VUL in the management of volunteers throughout the response. Volunteers shall only be deployed through direct written tasking from the UC during the tactics meeting via the IAP process.

Volunteer Coordinator/ Volunteer Unit Leader

The National Response Framework identifies the VUL as ideally being a Federal, State, or local official trained in managing volunteers, knowledgeable in contingency operations, and capable of providing leadership. This guidance should also be considered when assigning a Volunteer Coordinator for incidents with low volunteer interest.

In the event that volunteer interest during an incident is low, a Volunteer Coordinator will be assigned within the Planning Section to handle all volunteer associated issues. The Volunteer Coordinator workload should be periodically evaluated by the PSC to determine if assigning a VUL is necessary, as volunteer interest may change dramatically during an incident.

For incidents with moderate to high volunteer interest, a VUL will be established under the Planning Section. To effectively manage volunteers the VUL should have additional staff trained in the managing and training of volunteers. This staff should include representatives from local government agencies within the affected jurisdictions, as much as possible.

The VUL is responsible for managing and overseeing all aspects of volunteer participation, including coordination with local government agencies. The VUL is part of the Planning Section and reports to the Resource Unit Leader. The VUL responsibilities include:

- Ensure proper registration, tracking, and implementation of volunteers, according to UC guidance;
- Coordinate with RUL to determine where volunteers are needed;
- Coordinate with the JIC to advise the public of scheduled volunteer information sessions, where/how to register volunteer interest, whether volunteers are/are not needed; how volunteers might interfere with response workers and the limited roles volunteers may perform if needed (i.e. potential health risks; cannot pick up oiled rocks or wildlife unless specially trained);
- Identify any necessary skills and training needs;
- Verify minimum additional training needed, as necessary, with the SOFR or units requesting volunteers (if special skills are required);
- Activate, as necessary, standby contractors for various training needs;
- Activate pre-identified and pre-trained volunteers as necessary;
- Coordinate with Logistics Section Chief for Volunteer housing and meal accommodations;
- Assist with volunteer special needs, as possible; and
- Maintain Unit/Activity Log (ICS form 214).

Federal Agency Volunteer Management Policy

The three primary federal regulations governing oil spill response, 40 CFR Part 300, 29 CFR Part 1910.120 (Occupational Safety and Health Standards/Hazardous Waste Operations and Emergency Response) and 40 CFR Part 311 (Worker Protections) do not exclude the use of volunteer organizations. However, all spill response operations must comply with these regulations. 29 CFR Part 1910.120 outlines various health and safety requirements for different on-site activities. In addition, various federal property owners (e.g. DOD and DOE) may have specific regulations, policies, or national security concerns regarding the use of volunteers. The Cost Guard requires a “hold harmless” clause to be signed by each volunteer. The legal representative of these organizations must be consulted prior to employing volunteers.

Policy/Regulations/Other Guidance

- June 2009 COMDTNOTE (081453Z) “Use of Volunteers During Oil Spills; Interim Policy”.
- Emergency Response Program to Hazardous Response Releases, 29 CFR 1910.120(q); see also Appendix E.
- 8182 Department of Labor OSHA 3172.
- 40 CFR Part 311.
- http://www.training.fema.gov/is/ (free IS100 and IS700 training).

Volunteer Policy of the NOACP

The general policy accepted by the NOACP is that volunteers will normally be used in low risk activities and only after receiving safety training appropriate for their designated activities. If volunteers are used for higher risk activities such as wildlife rehabilitation or pre-cleaning beaches, specialized training and, in some cases, licensing may be required.

Volunteers associated with an Affiliated Volunteer Organization and with documented specialized training will be given higher priority.

Convergent volunteers must participate through either local government or an Affiliated Volunteer Organization.

Use of unpaid, Convergent Volunteers will supplement, not replace, the work of professional responders.

For safety, liability, and management reasons, volunteers will not be used during hazardous substance or WMD incidents.

Health and Safety Standards

The minimum training required for volunteers involved in removal operations should be consistent with the Hazardous Waste Operations (HAZWOPER) standards set forth in Emergency Response Program to Hazardous Response Releases, 29 CFR Part 1910.120(q).

Some states have federally approved state plans outlining health, safety, and training requirements based on HAZWOPER standards. These states are called state-plan states. Louisiana is NOT an OSHA state-plan state and therefore does not have an OSHA approved state-plan to which can be referred. If volunteer tasks do not require HAZWOPER, such training should not be conducted or mandated.

Safe Use/Training of Volunteers

- Appropriate training shall be provided to volunteers prior to participation in spill response.

- In accordance with the National Contingency Plan for Oil and Hazardous Substances (40 CFR Part 300), volunteers SHOULD NOT participate in the physical removal or clean-up activities during the oil spill response and should be limited to non-hazardous activities.

- Volunteers SHOULD NOT be deployed or be used in exclusionary hot zones.

- Volunteers who do take part in spill response operations must be trained in accordance with 29 CFR Part 1910(q) and any applicable state requirements.

- 29 CFR Part.120, Appendix E, Section C, ‘Emergency response training”, provides OSHA’s recommendations to employers, employees or volunteers in public sector emergency response organizations if they are outside of Federal OSHA jurisdiction.

- Volunteers should have IS100 and IS700 training if they will be assigned any duties within the Incident Command Post. This training is free at http://www.training.fema.gov/is/.

Basic Guidelines on Handling Volunteers

Volunteer coordination in an oil spill offers complications not normally encountered in response. Some considerations may include:

- Unaffiliated/Convergent volunteers who arrive unannounced should be escorted by authorized safety personnel.
- Using volunteers at the Incident Command Post may create an information security risk. Volunteers should not have access to certain information not previously determined to be releasable to the public. Any requests for information shall be subject to the Freedom of Information Act (FOIA) process and/or authorized by the PIO.
- There are many agencies involved in oil spill response, The UC should be aware of any litigious issues between agencies, OSROs, and subsequent access to sensitive or confidential information.
- Volunteers should not be deployed or used in the same locations as the Oil Spill Removal Organizations (OSROs), Natural Damage Assessment (NRDA) teams, or Wildlife Search and Collection Teams, unless previously authorized and approved.

State Volunteer Coordinators

Volunteer Louisiana

620 Florida Street, Suite 210
Baton Rouge, LA 70801-1306

Contact: Janet Pace, Executive Director
Phone: (225) 342-3125
Fax: (225) 342-0106
Email: jpace@crt.la.gov

Contact: Nicholas Auck, Director of Volunteer Outreach
Phone: (225) 342-6289
Email: Nauck@crt.la.gov
Website: www.VolunteerLouisiana.gov

Oil Spill Response Volunteer Louisiana Hotline

Phone: (866) 448-5816
Website: http://www/volunteerlouisiana.gov/, http://emergency.louisiana.gov/

Volunteer Assignments

The following is a pre-established list of where volunteers may be utilized during an incident; however, the UC may perform a risk-benefit analysis to determine if properly trained volunteers may be used for tasks not specified on this list. At a minimum, all volunteers are required to attend a 2-hour Workplace Health and Safety Training and Site Safety Training, prior to conducting any volunteer work.

Accounts Specialist

Maintains files and accounts of expenses attributable to the volunteer effort; communicates with Finance Section to determine accounting needs and system to be used.

Skills Required: Must be detail oriented; experienced with 10-key data entry and be familiar with common computer software accounting and spreadsheet systems

Training required: 2-Hour Workplace Health and Safety Training, Site Safety

Administrative Coordinator/Office Manager

Oversees office administration activities, supervises work of file and data specialists; oversees development, maintenance and accuracy of computer and paper files of volunteer records; procures and distributes reports and provides updates to the VUL as required.

Skills Required: Good working knowledge of computer work processing and spreadsheet software, as well as excellent organizational, supervisory, and communication skills.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Command Center Administrative Specialist

Provides backup and supplemental skills for IC/UC Command Center staff.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Communications Specialist

Established and maintains the volunteer communication plan. Tests and sustains communication equipment and bulletin board. Compiles updates of volunteer needs.

Skills Required: Public commutations background with knowledge of local communications and systems preferred.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Computer Operator

Enter personnel information into established computer database.

Skills Required: Familiarity with computer use.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Crowd Control/Site Security

Volunteers may be used in cooperation with law enforcement officers to set up police barricades as long as the work does not involve physical contact with onlookers. Oversees access points to ensure only authorized persons enter and habitat is protected. Task may include boat operators directing other vessels away from contaminated areas while allowing work vessels in. Boat operators will not be allowed in the hot zone. Boat operators may transport assessment teams or cleanup crews in areas outside the hot zone. Security personnel should be prepared to direct volunteers to appropriate information sites.

Skills Required: Experience in oil and storm-spotting and law enforcement preferred. Experience in boat operations, if applicable. Must be able to lift 35 lbs.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Data Entry Specialist

Enters information into established computer databases(s).

Skills Required: Familiarity with computer use. Particular software may be taught on the job if necessary.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Documentation Unit Worker

Responsible for the maintenance of accurate, up-to-date volunteer-related files. Documentation includes reports, training, communication logs, injury claims, situation status reports, and documentation from the following Volunteer Unit entities: Interviewer, Liaison Chief, Medical Unit Worker, Orientation and Training Coordinator, Photographer, PIO, Safety Officer Assistant, Scheduler/Time Card Assistant. Ensures each section is maintaining and providing appropriate documents (including volunteer signatures). Receives, complies, and organizes all volunteer-related paperwork and training. Store files for legal, analytical, and historical purposes. Position will provide duplication and copying services for all other sections.

Skills Required: Excellent organizational, filing, copying; and communication skills. Must be detail oriented.

Training Required: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS700.

Driver

Provides ground transportation services as needed; may transport people using a sedan or van; may transport wildlife and wildlife food to various facilities or sites by truck; loads and unloads coolers used to transport animal food; picks up food from suppliers and delivers to facilities; keeps vehicle bed clean (if applicable). All driving responsibilities require current driver's license, clean driving record, and proof of insurance.

Training Required: Site Safety, 4-Hour HAZWOPER Awareness Level

Equipment Repair Technician

Maintains and repairs vehicles and response equipment after decontamination.

Skills Required: A background in mechanics as applicable. Must be able to lift 35 lbs.

Training Required: Site Safety, 4-Hour HAZWOPER Awareness Level

File Clerk/Office Assistant

Performs general office tasks; files documents in office as appropriate; prepares outgoing memos and mail; sends and receives faxes; makes photocopies.

Skills Required: Telephone skills, word processing, and development of graphic presentations. Computer spreadsheet/database experience is desirable but not required.

Training Required: 2-Hour Workplace Health and Safety, Site Safety

First Aid Responder

Provides emergency first aid for volunteers and other responders.

Skills Required: Current First Aid Certification.

Training Required: 2-Hour Workplace Health and Safety (If the Volunteer will be acting as a First Aid Responder in the Warm or Hot Zone shall be trained 24-Hour HAZWOPER) Site Safety.

Food Unit Worker

Supplies food and water for responders (outside the hot zone) and volunteers, including those in remote locations. Sets up and breaks down refreshment stations for responders outside the hot zone.

Skills Required: Experience in the food industry/catering preferred. Current State Food Handler's Permit required. Must be able to lift 35 lbs. All driving responsibilities require current driver's license, clean driving record, and proof of insurance (if personal vehicle is used).

Training Required: Workplace Health and Safety, Site Safety.

Housing/ Lodging Assistant

Works with the Facilities Unit of the Logistics Section to identify housing for volunteers; receives housing requests; procures and distributes housing materials (sleeping bags, blankets, tents), if necessary; makes housing assignments and maintains expense records related to housing.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Information Management Assistant

Coordinates and insures adequate information technology is provided for volunteer management. Oversees operation of phone bank. Matches volunteers to volunteer agencies in conjunction with the interviewer and Scheduler/Time Card Assistant. Works with the Communications Specialist and File Clerk/ Office Assistant. Ensures the utilization of data entry procedures to expedite information-sharing.

Skills Required: Knowledge of information management technologies. Familiarity with computers, job-related applications, and phone skills.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Interpreter

Interprets/translates within the Volunteer Unit as needed. May assist the UC.

Skills Required: Credentials from an organization such as the American Consortium of Certified Interpreters preferred, but not necessary. Ability to speak, read, and write applicable languages preferred.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Interviewer

Works with the Volunteer Unit, processing volunteers who arrive in the area or persons referred to the Volunteer Unit by a local agency; establishes rapport with prospective volunteers to appropriate tasks or jobs based on their experience and current volunteer job needs in the response effort.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Liaison Chief

Serves as a contact point between the Volunteer Officer, Volunteer Coordinator, or Volunteer Unit Leader and agencies in need of volunteers. Distributes Volunteer Request Forms to entities that may request volunteers. Relays requests for volunteers to the Volunteer Officer, Volunteer Coordinator, or Volunteer Unit Leader. Works with the Interviewer to determine volunteer placement, the Orientation and Training Coordinator to ensure applicable training, and the Scheduler/Time Card Assistant to determine volunteer availability. Provides copies of Volunteer Request Forms to the Documentation Unit Worker.

Skills Required: Must be detail-oriented with good communication skills and possess a strong command of the English language.

Training Requirements: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS 700.

Medical Unit Worker

Works with the Safety Officer Assistant and the Medical Unit Leader in the Logistic Section. Responsible for developing the Volunteer Medical Plan, procedures for managing medical emergencies, providing medical aid when necessary, and assisting Finance/Administration with processing injury-related claims. Work as a First Aid Responder dispatcher. Transports sick or injured personnel. Provides copies of all signed volunteer injury-related documentation to the Documentation Unit Worker.

Skills Required: Current First Aid and CPR Certification. Must be able to lift 35 lbs. Certified Emergency Medical Services Technicians preferred. Automated external defibrillator training preferred. All driving responsibilities require current driver's license, clean driving record, and proof of insurance (if personal vehicle is used). Experience in hospital administration or a related field preferred.

Training Required: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS700.

Orientation and Training Coordinator

Upon receipt of volunteer placement information from the Interviewer, ensures all training requirements are fulfilled. Receives signed Volunteer Waiver and Release of Liability Forms. Coordinated training and orientation sessions with the help of the Training Assistant. Ensures all Health and Safety requirements are met. Provides copies of all signed training documentation and Release of Liability Forms to the Documentation Unit Worker.

Skills Required: Knowledge of applicable laws, regulations, and training requirements. A working knowledge of the Volunteer Plan (can be trained on-site). Must be detail-oriented with good communication skills and possess a strong command of the English language.

Training Requirements: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS700.

Personnel Support

Provides messages and other general coordination support activities for responders and volunteers such as doing laundry.

Training Required: 2-Hour Workplace Health and Safety Site Safety.

Photographer

Provides photographic coverage of the incident for data collection, historic documentation, and future training purposes.

Skills Required: Experience with still photography and/or handheld video photography is required. Experience with photographing wildlife, preferably in documentary and fast action settings is desirable.

Equipment Required: Personal photographic equipment.

Training Required: 24-Hour HAZWOPER, Site Safety.

Public Information Assistant

Responsible for the formulation and release of information of volunteer activities to the PIO. Prepares volunteer press releases as needed. All press releases must be approved through the UC and the PIO before being released to the public. Organizes materials for use in media briefings/ press releases. Provides all press releases to Documentation Unit Worker.

Skills Required: Experience in communications, journalism, or public relations with project leader responsibility preferred. Strong written and oral presentation skills.

Training Required: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS700.

Pre-Impact Beach Cleanup/Surveillance

Conducts pre-impact shoreline debris removal (removes non-oiled debris and trash prior to oiling). Patrols outside the known hot zone for potential strikes. Volunteers are to report stranded or free-floating oil to the Safety Officer Assistant and leave the area immediately. Volunteers are not allowed in the hot zone. Works as a field observer, including beach conditions and weather surveillance. Relays information concerning oiled wildlife and hazing effectiveness to wildlife services.

Skills Required: Must be able to lift 35 lbs. Experience in oil and storm-spotting .preferred.

Training Required: Site Safety, 4-Hour HAZWOPER Awareness Level.

Receptionist

Greets personnel arriving at ICP and directs them through the processing stages.

Training Required: 2-Hour Health and Safety, Site Safety

Runner/Courier

Shuttles messages and materials among incident locations, such as between the ICP to other spill response sites.

Skills Required: Must possess a valid driver’s license, clean driving record, and proof of insurance.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Safety Officer Assistant

Works with the Medical Unit Worker(s) and Safety Officer. Assists in developing Site Safety Plans. Ensures proper PPE distribution through the Supply Assistant.

Ensures volunteer adhesion to both the Medical Plan and the Site Safety Plans. Ensures Volunteer Emergency Action Plans are completed and readily available. Ensures volunteers know how to report injuries. Documents volunteer injuries. Addresses safety concerns. Provides copies of volunteer signed documentation to the Documentation Unit Leader.
Skills Required: Familiarity with the Medical Plan, Emergency Action Plans, and Site Safety Plans. Excellent writing and organizational skills. Current first aid and CPR certification preferred. Experience in a safety-related field desirable.

Training Required: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS700.

Scheduler/Time Card Assistant

Assures maintenance of sign-in and sign-out records for volunteers and responders; ensures that all volunteers and responders on site are properly cleared and trained (and are not exceeding scheduled hours, in accordance with the UC guidance); develops and monitors scheduling to ensure that sufficient volunteers are on hand at all times, according to the needs of the sites, facilities and staff.

Training Required: 2-Hour Workplace Health and Safety, Site Safety

Supply Assistant

Assists with identification of logistical requirements with issue and control of personal equipment and supplies to volunteers and potentially responders.

Skills Required: Experience in ordering, issuing, stocking, accounting for, maintenance, and recovery of equipment and supplies from user personnel.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Technical Support Specialist

This position is opened only upon request from the Scientific Support Coordinator (SSC) or Environmental Unit Leader. Supports the SSC. Identifies environmentally sensitive areas, species of concern, and pertinent cultural/historical resources. Provides GIS/mapping and computer support, weather forecasts, and current and tide data to help determine spill trajectory, fate, and impacts.

Skills required: Must have extensive knowledge of area and applicable tasks. The SSC will determine additional skills needed.

Training Required: 2-Hour Workplace Health and Safety, Site Safety, IS100 and IS700. Additional training is task-specific and to be determined by the SSC

Traffic Monitor

Oversees site access points to ensure only authorized persons enter, ensures habitat protection.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Training Assistant

Coordinates required trainings, arranges for class presentations by trainers, oversees audiovisual equipment and programming, schedules volunteer training sessions.

Skills Required: Excellent organizational and communications skills.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Transportation Assistant

Works with the Transportation Unit of the Logistics Section to determine volunteer transportation needs including frequency, routing, and type of transportation (car, van, truck, commercial shuttle, bus); determines volunteer drop-off and pick-up schedules for multiple sites; coordinates and verifies appropriate volunteer driver authorizations; monitors vehicle condition and maintenance among vehicles assigned to volunteer use, in accordance with the guidance of the UC and maintains appropriate vehicle use records.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Volunteer Supervisor

Monitors volunteers to ensure they are following health and safety practices.

Training Required: 2-Hour Workplace Health and Safety, Site Safety, additional trainings may apply depending on volunteer supervisory assignment. At a minimum the Volunteer Supervisor must be trained at or above the level of the volunteer workforce being supervised.

Wildlife Notification

See Pre-Impact Beach Cleanup/Surveillance. As part of beach control activity, volunteers may be used to notify wildlife services, USFWS and LWLF of injured wildlife and hazing effectiveness. Volunteers are not allowed to handle or transport wildlife without proper certification. Urges public to avoid areas and wildlife that are affected as untrained people can cause further damage to the environment and stress on wildlife.

Skills Required: Experience with wildlife and background in the natural sciences preferred.

Training Requirements: Site Safety, 4-Hour HAZWOPER Awareness Level

Wildlife Recovery and Rehabilitation

Wildlife recovery and rehabilitation organizations generally manage their own database of trained volunteers that operate outside the scope of this plan. Therefore, volunteers in this area are only utilized if wildlife services exhaust resources. Approval from the USFWS and LDWF and the lead wildlife response organization is needed before volunteers are assigned any position in wildlife recovery, rehabilitation, or release. Volunteers are not allowed to handle or transport wildlife without proper certification.

Wildlife Rehabilitation Facility Maintenance Specialist

May include carpentry, air conditioning, plumbing, welding, and electrical support to the wildlife rehabilitation facility as requested. Involves pool/cage construction and maintenance. Volunteers are not allowed to handle or transport wildlife without proper certification

Skills Required: Skills applicable to maintenance task. Must be able to lift 35 lbs.

Training Required: 2-Hour Workplace Health and Safety, Site Safety.

Wildlife Rehabilitation Facility Support Specialist

Cleans animal pens and holding areas. Moves and cleans equipment as needed. Prepares food and feeds wildlife. Volunteers are not allowed to handle or transport wildlife. Washes vehicles, washes and folds towels used for drying animals, and cleans and disinfects carrying cages and other animal capture and transport equipment following decontamination. Follows established protocols.

Skills Required: Experience with wildlife and background in the natural sciences preferred. Custodial experience preferred. Must be able to life 35 lbs.

Training Required: Site Safety, 4-Hour HAZWOPER Awareness Level

Use of Volunteers within Specific ICS Units

Location of VOLUNTEER JOB *Noted with a C if appropriate for Convergent Volunteers	Task	Training
Logistics Branch		
C	Inventory Control Photocopying, filing, clerical support Distribution of PPE, equipment, supplies Construction of support structures	2-Hour Workplace Health and Safety, Site Safety Unless otherwise noted in Job Description
Transportation Unit		
C	Driver (Carpools, Trucking) Scheduling Dispatching Runner	2-Hour Workplace Health and Safety, Site Safety Unless otherwise noted in Job Description
Interpretation		
C	Language translation (this will fall into any function needing language support)	2-Hour Workplace Health and Safety, Site Safety
Medical Assistance Unit		
C	Inventory and delivery of medical supplies First Aid Responder	2-Hour Workplace Health and Safety, Site Safety Unless otherwise noted in Job Description

Personnel Services Unit		
C	Housing Assistant Laundry Services	2-Hour Workplace Health and Safety, Site Safety
Public Information Unit		
C	Receptionist Volunteer registration, scheduling coordination Photocopying, filing, clerical support Media monitoring, recording, Web searches Community door to door distribution	
On-Scene		
C	On-Scene Support, Driver, First Aid Responder, Volunteer Supervisor, and Traffic Monitor	See specific Job Description. At minimum 2-Hour Workplace Health and Safety, Site Safety. If operating in the warm or hot zone shall have the 24-Hour HAZWOPER
Shoreline Cleanup		
	Clean-up of non-oiled debris and materials prior to oil impact ONLY Beach Patrol/Wildlife Notification See below for information on utilizing volunteers for shoreline clean-up.	2-Hour Workplace Health and Safety, Site Safety, 4 Hour HAZWOPER

Use of Volunteers for Shoreline Cleanup

Volunteers will not be automatically be used for shoreline cleanup. The benefit of volunteer efforts must be weighed against concerns for public safety.

Based on the conditions specific to that incident the UC will determine the suitability of employing volunteers for shoreline cleanup missions. When considering the use of volunteers of federally administered lands, the FOSC will consult with and gain the concurrence of the cognizant Federal Lands Manager prior to the use of volunteers on Federal Lands.

In reviewing the potential use of volunteers in shoreline clean-up mission the UC will consider the following factors:

- Primary safety hazards (volume, exposure potential, size type, and toxicity of discharged oil)
- Secondary safety hazards (sneaker waves, tides, visibility, slips/falls)
- OSHA guidance
- Possible clean-up locations
- Logistics and administrative support requirements (Training, PPE, Multi-jurisdictional coordination, public information)
- Local government desire to manage volunteers (including recruiting, administering, training, deployment, recovery/decontamination)
- Weather/tidal conditions

Volunteer Training Courses

Volunteers will be given appropriate training before being assigned. Training must be current. Any prior volunteer HAZWOPER training shall be renewed with new oil spill training sessions to satisfy a current oil spill volunteer response. This may cause delays in assignment if the volunteer has to be trained at the spill site, but it will avoid needless injuries. Volunteers must be trained to perform the tasks they are asked to do. An inexperienced and untrained volunteer will not be assigned to perform a task requiring training and/or experience.

24-Hour HAZWOPER

Is for volunteers identified prior to a spill who will back up the Wildlife Rehabilitation Unit capturing oil birds and mammals. They would be in the hot or warm zone, within permissible exposure limits. The Wildlife Rehabilitation Unit has been given primary responsibility for capture and care of oiled wildlife; therefore, other volunteers will be called only when the capacity of the Wildlife Rehabilitation Unit is exhausted.

8-Hour HAZWOPER

Is required for volunteers who have had the 24 hour training, but need an annual refresher to be current. The Office of Oil Spill Prevention and Response will provide refresher training for a pre-determined number of volunteers who are identified as Wildlife Rehabilitation Unit back-up.

4-Hour HAZWOPER

If the supply of 24-Hour HAZWOPER trained volunteers is exhausted and more are needed to back-up the Wildlife Rehabilitation Unit at an incident, a 4-Hour on-scene HAZWOPER training will be given to non-24-Hour trained volunteers. Individuals trained at the 4-Hour level may use this training only once, at a single incident. If the individual finds that they may need to attend future spills, this person must secure training at the appropriate level.

4-Hour Hazard Communications (HazCom)

For volunteers who could be a back-up in a rehabilitation facility. There is no refresher. The volunteer cannot be in the warm or hot zone. The 4-Hour HazCom includes:

- Fundamentals of Toxicology
- Chemical/physical properties of petroleum products
- Physical Hazards (noise, thermal, lifting safety, slips, trips, and falls, and electrical safety.)
- Biological Hazards (zoonotic diseases, soil/water borne diseases, alligators, snakes, spiders and insects of concern)
- Personal protective equipment (boots, gloves, work suits, safety glasses, and hearing protectors).
- Decontaminations of personnel and equipment

- Reporting injuries (worker compensations forms and deadlines)

2-Hour Workplace Health and Safety Training

This training will be conducted onsite for volunteers who will be working in the support zone (will not be in the warm or hot zone). The 2-Hour training includes:

- Physical Hazards (safe lifting, slips, trips, and falls; general office ergonomics, general electrical safety).
- Chemical hazards (toner, disinfectants, rubber cement, etc.)
- Safe Driving
- Rest breaks/replacement for exhauster workers
- Reporting of injuries, worker compensations forms and deadlines.)

Site Safety

This training is to orient the volunteers of specific hazards at the site of the spill.

Wildlife Rehabilitation Facilities

USFWS and LDWF will contact licensed rehabilitators and participate in the identification of rehabilitation supply needs. These oil spill wildlife rehabilitation organizations will clean and rehabilitate oiled animals captured by the aforementioned entities. Wildlife rehabilitation organizations not recognized by USFWS and LDWF are not viable responders, and therefore irrelevant to volunteer activities. Rehabilitators and trained personnel working with them (those named in their permit) are the only persons permitted to collect and rehabilitate oiled wildlife.

Policy Regarding Donations

The Volunteer Unit does not accept donations.

Press Releases

The example press release contained in this plan is to be revised to accommodate each specific incident and issued through the PIO. As an incident and the status of volunteer utilization changes, the Volunteer Officer, Volunteer

Coordinator, or the Volunteer Unit Leader prepares additional press releases and presents them to the UC and the PIO or JIC Manager for approval for editing and distribution to the media.

Demobilization and Debriefing

As the need for volunteers winds down, the UC will de-activate the Volunteer Unit. As activities subside at the Volunteer Unit the Volunteer Officer, Volunteer Coordinator, or the Volunteer Unit Leader will manage ongoing volunteer operations. Final duties for the Volunteer Unit staff should include coordinating debriefing opportunities for volunteers, as well as any follow-up recognition that local governments or the State/province would like to provide to citizens who volunteered their time and energy in the response.

Guidelines on Personal Protective Equipment

This list identifies the suggested minimum PPE for volunteers. A basic assumption is that the atmosphere is safe to breathe and work in; therefore respiratory protection is not necessary. The primary hazards encountered during response activities for a coastal area are slips, trips, and falls.

- Suggested minimum PPE:
    - Impermeable jacket, pants, and gloves
    - Safety boots that may be cleaned and reused (Hazmat over-boots may be used over shoes)
    - Eye protection (goggles)
    - Head protection (hard hat)

- NOTE: Expect to dispose of gloves, overboots, and synthetic coveralls after each days use.

- Other PPE to consider depending on site, environmental conditions, extent of duties, and nature of work:
    - Chest waders
    - Day-glow vest
    - Ear plugs
    - Heavy fabric work gloves
    - Personal flotation device (life jacket)
    - Safety glasses or face shields

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Volunteer ICS-204

5. Operations Personnel			
Operations Section Chief		Division/Group Supervisor	
Branch Director		Supervisor Number	

6. Resources Assigned					
ST/TF/Single Resource	Leader	# of Persons	Trans. Needed	Drop Off PT/Time	Pick Up PT/Time
Logistics Unit					
Transportation Unit					
Food Preparation					
Medical Assistance					
*Shoreline					
Personnel Services					
Public Relations					

7. Control Operation

01 Safety Officer per 10 volunteers

8. Special Instructions

Volunteers will NEVER be in contact with potential contaminants or pollutants.

9. Division/Group Communication Summary							
Function	System	Channel	Frequency	Function	System	Channel	Frequency
Command				Support			

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Volunteer Request Form

Date/Time: ___________________________
Requesting Organization/ Agency/Unit: ____________________________________
Name of Contact: ___________________ Phone: ____________ Fax: __________

VOLUNTEER NEEDS

Total Number of Volunteers Needed: ______
Job Title/Description: ____

Duties	Experience/ Skills	Training Provided?

Equipment/Special Clothing Needs: _______________________________________
Description of Training to be provided: ____________________________________
Job Location: ____
Date/ Time Volunteers Needed: ____

Please Check if Available: _____ Restrooms _____ Parking

_____ Safety Equipment _____ Telephone

_____ Transportation to Work Site

Volunteer(s) should report to the following person for additional training/instruction: _____________________________________
Name: ____________________________ Phone: ____________ Fax: __________
Location: ____

For Office Use Only

Follow up date & time: ____________________________
Follow up action: ________________________________
Position(s) filled? _________________
Volunteer Name(s): ____

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Sample Volunteer Press Release *

(City Name) –In response to the approximate ___ -gallon oil spill in/at ________, the Unified Command has activated the Volunteer Hotline #: 800-XXX-XXXX. Hotline staff will record the caller's name, telephone number, availability, and applicable skills or training. The caller will be informed if or when volunteers will be utilized for spill response and briefed on other event-specific information as needed.

Federal, State, and local government s have determined what tasks are appropriate for volunteer effort, have identified and pre-trained an existing group of volunteers statewide, and have developed a system to activate those volunteers. The system will be activated if the Unified Command at the spill decides that volunteers are needed for the response effort. At that time a volunteer operations center will be established. If additional volunteers are needed, the hotline listing will be publicized through the news media.

The public is advised to stay away from the spill site, as their presence can hamper clean-up efforts and increase danger factors. Oil is a hazardous material, and to work in or near the oil, one is required to complete 8 to 40 hours of training in Hazardous Waste Operations and Emergency Response (HAZWOPER). Additionally, for the safety of both the public and animals, only trained wildlife specialists should attempt to handle oiled wildlife.

The public can help at this by reporting any oiled animals to the Oiled Wildlife Hotline #: 800-XXX-XXXX (not the volunteer hotline #). Trained professional entities that focus on individual oiled animals and their survival after an oil spill will be notified. Modern technology, properly equipped facilities, and new rehabilitation protocols standardize care throughout the State, increasing wildlife survival rates. Wild animals' survival rates increase with a decrease of human contact.

Please call the Volunteer Hotline number for frequent updates.

* All press releases must be approved by the Unified Command/PIO before statements are released to the media/public.

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Volunteer Timesheet

Volunteer Name: ____

Telephone Number: ____

Date	Start Time	Stop Time	Total Hours	Functions Performed/ Daily Supervisor

Supervisor Signature: ____

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Volunteer Operations Center (VOC) Guidance

Establishment
In setting up the VOC, the Volunteer Officer/Coordinator/Unit Leader should consider the following:

- Arrange space to allow for foot traffic and to maximize wall space.
- Face tables and chairs so that information can be viewed easily.
- Allow enough space, pens, clipboards, etc. so that volunteers can fill out registration materials.
- Clearly identify the reception desk/area.
- Provide seating.
- Post signs directing potential volunteers to the building/room.
- In the event of a large spill response where sufficient staffing is available at the VOC and volunteer needs are extensive, set up stations for each major class of work, such as:
  - Administration/Clerical
  - Wildlife Rehabilitation Center
  - Pre-impact Beach Cleanup/Surveillance
  - Logistical
  - Technical
  - Medical
  - Public Relations
- Assign early volunteers as couriers, brining information about volunteer needs from the ICP to the VOC.
- Set aside time and space for training and orientation.
- Set up an information bulletin board. This area may serve as an informal information and referral area.

Early volunteers should be used to supplement staffing of the VOC. Early staffing needs at the VOC include (see Volunteer Assignments for more details):

- Receptionist
- Administrative Coordinator/Officer Manager
- Driver
- Interviewer
- Communications Specialist
- Information Management Chief
- Liaison Chief
- Medical Unit Worker
- Orientation and Training Coordinator
- Public Relations and Community Liaison
- Safety Officer Assistant
- Scheduler/Time Card Assistant
- Volunteer Supervisor
- Runner/Courier

Volunteers arriving on-scene that have not first checked in must be referred back to the VOC for assignment.

Recommended Equipment Set-up (adjust according to size and scope of operation):

- Waiting area- any couches or comfortable chairs available, locate near entrance.
- Reception Station- Near entrance, 1-2 tables, 3 chairs.
- Registration Station- 2-3 rectangular tables, 6-8 chairs.
- Volunteer Officer/Coordinator/Unit Leader’s Desk- a desk or small table, 2 chairs
- **Orientation and Training Station- One rectangular table or two small tables, 3-4 chairs**

VOC Equipment and Supplies List

Many of the following items can be gathered prior to an incident and kept in a "Go-Kit" ready to deploy upon activation. It is especially helpful to have copies of all the necessary forms for registering and placing volunteers so they are organized and ready to go. "Go-kits" can also contain basic office supplies, local maps, cellular phones, and any other items useful for beginning operations.

- Guidelines on PPE
- Volunteer Timesheets
- Volunteer Waivers and Release of Liability
- Authorization to Use Private Vehicle Forms
- Volunteer Registration Forms
- HAZCOM training course description
- Emergency Action Plan training description
- HAZWOPER training course descriptions
- Workplace Health and Safety training description
- ICS course descriptions
- Volunteer Position Descriptions
- Volunteer section of ACP
- Local maps
- Poster board and large marker pens (for signage)
- Clipboards
- Pens and pencils
- Folder and labels
- Stapler, paper, staplers, pencil sharpener, tape, scissors, post-it notes, push pins, etc.
- Spiral notebooks (to create logbooks)
- Duct tape
- Fax machine
- Phones and phone lines
- Printers
- Copier
- Computers
- Bulletin boards
- Cellular phones
- Several large tables and chairs to set up stations for medium to large-scale operation
- Volunteer Instructions

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Sample Volunteer Registration Form

If this document is retained and filed by a federal agency, do NOT file by name or other personally identifiable information of the volunteer. Doing so may be a violation of the Privacy Act, 5 U.S.C. 552a.

Volunteer Registration Form

Name: ____ Date: _______________________

Phone (day): ___________________(eve.) ___________________ (fax):_____________

E-mail: ____

Address: ____

Age (must be over 18): _________

Present employer: __________________________ Occupation: ___________________

Availability: _________________________________

Do you have a current Driver's License? ____________

Are you affiliated with any response organization/volunteer group? If so, which?

____

____

Are you in good health and not pregnant? ____________________________________

Do you suffer from any heart or respiratory condition? _________________________

Are you able to lift 35 lbs? _____________

Health Insurance Provider/Contact information: _______________________________

____

Do you speak any language other than English? ___________

Are you certified in any of the following? Certification Type/Agency* Exp. Date

Bird Rescue/Rehab.: ____

Hazmat/HAZWOPER: ____

First Aid/CPR: ____

Coast Guard licenses: ____

ICS Training: ____

Other training/experience: ____

Oil spill experience: ____

Placement Preference:

Wildlife Rehabilitation Center _________

Pre-impact Beach Cleanup/Surveillance____________

Administrative/Clerical __________Basic Needs/Logistics _________

Technical ________ Mechanical _________ Public Relations ___________

Other: ____

Geographic area preference: ____

Emergency Contact

Name: ____

Phone (day and eve.)____

Address: ____

Signature: ____________________________________ Date: _________________

Printed Name: ____

New Orleans Area Contingency Plan

Chapter 9000
Appendix M
Joint Information Center Manual

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix M Joint Information Center Manual

Table of Contents

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Joint Information Center Manual

Introduction

This guide is designed to help communicators during response to environmental emergencies that do or may occur in the New Orleans Area Committee's area of responsibility. In recognition of the National Response Plan, Emergency Support Function #15- External Affairs Annex is included in the Resources Section. This JIC Guide is based on and draws heavily from the Nation Response Team (NRT) JIC Model.

National Response Plan, Emergency Support Function #15- External Affairs Annex: http://www.fema.gov/pdf/emergency/nrf/nrf-esf-15.pdf

Incident Management System

Functional Units

The NOACP requires the use of the National Incident Management System to manage environmental emergencies. The organization of incident management is built around five major functions, including:

Command

The Command sets objectives and priorities; has overall decision-making responsibility. The Information Officer and the Liaison Officer are appointed by and report directly to the Incident Commander.

Operations

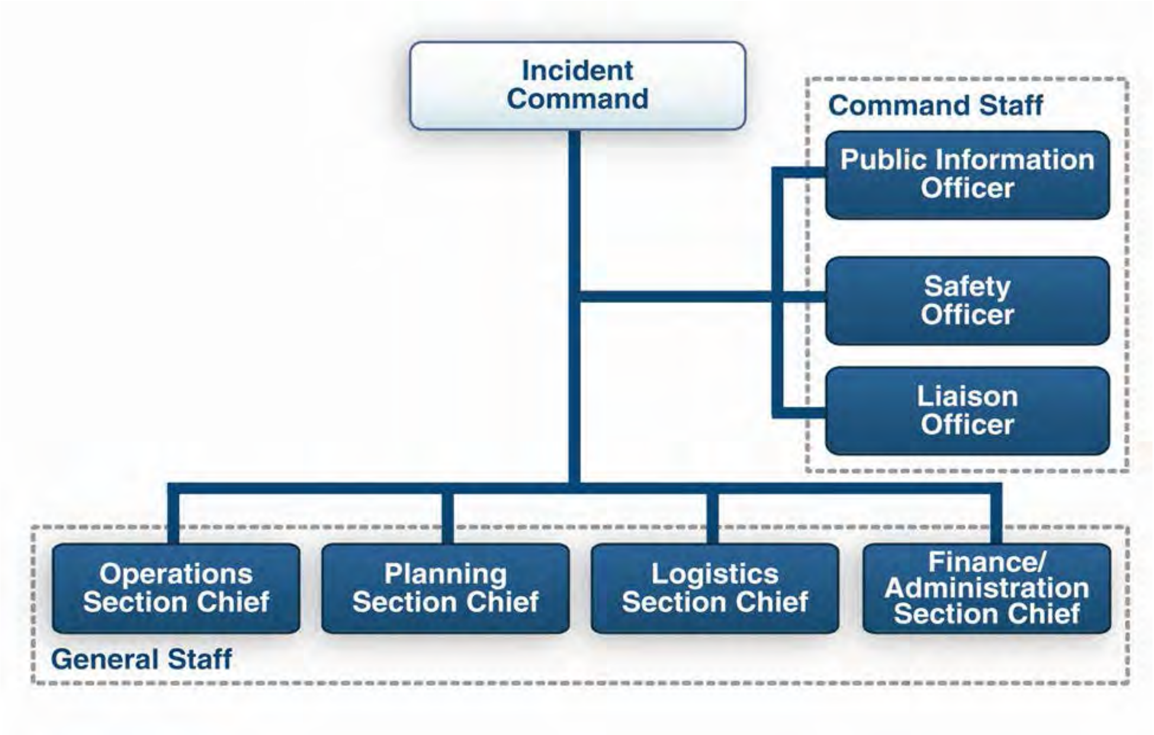
The Operations function conducts tactical operations to carry out response; develop tactical objectives and directs all resources.

Planning

The Planning function develops plans to accomplish objectives; collects, evaluates, and provides most incident information; maintains resource status.

Finance/Administration

The Finance/Administration function monitors and analyzes costs; provides accounting, procurement, and time recording.



Mandates

Certain federal laws require incident response to be managed or co-managed by a Federal On-Scene Coordinator (FOSCR) for the U.S. Environmental Protection Agency (EPA) or the U.S. Coast Guard (USCG) and, in some cases, the U.S. Department of Defense (DOD) or the U.S. Department of Energy (DOE). In addition, some of these laws grant broad legal authorities to the Federal On-Scene Commander.

Individual state mandates also contain requirements for designation of a State On-Scene Coordinator. For certain types of incidents, on-scene coordination may be delegated from a federal agency to a state counterpart. Federal on-scene coordination using ICS is required under these mandates or programs:

- National Oil and Hazardous Substance Pollution Contingency Plan;
- Comprehensive Environmental Response, Compensation, and Liability Act;
- Oil Pollution Act;
- Clean Water Act; and

- Occupational Safety and Health Act.

Unified Command

When multiple organizations are involved in response, a Unified Command (UC) is established and may be composed of up to five on-scene coordinators, on each representing federal, state, tribal, and local jurisdictions, and the responsible party, if known. A Joint Information Center (JIC) is activated when the UC model is used.

Joint Information System

In response to most “routine” or “minor” environmental incidents, public information activities are carried out by the lead response agency, in coordination with other organizations. In these cases, the lead Information Officer usually conducts activities from the office or another remote location, as directed by the Incident Commander, via phone and e-mail with agency counterparts. Early notification and coordination includes timely review of draft news releases and other materials, and collaboration to determine other information needs.

Public Records

Most information (with the exception of information about active enforcement, investigations and security sensitive matters) collected, generated, or distributed during incident response is part of the public record and can be potentially released to the media and public if requested. All response personnel should adhere to these public trust responsibilities and ensure that copies of all documents are maintained and submitted daily to the Documentation Unit.

Initial Information Officer- Pre-JIC

When an incident occurs, there is high demand for quick information. Public perception is often shaped by impression formed in the first few hours of response.

When a state environmental or emergency management agency, the Coast Guard or the EPA first learns about a spill, the respective Information Officers should quickly contact one another to share information in an effort to release a joint media statement. The goal should be to get this first release issued within 30 minutes of the initial notification and no longer than two hours after notification is received.

Until a JIC is established, communication with the media and other key audiences is carried out by a lead agency’s information office, either remotely or on-site. This Initial Information Officer carries out activities with or without assistance. The time needed to travel to the command post and have basic JIC operations in place will affect decisions about how and by whom communications are conducted. For example, issuing the initial news release within 30 to 120 minutes of notification may require that facts be provided over the phone or electronically to an agency Information Officer operating from the office of a remote location.

The Initial Information Officer is concerned with both communications (who to communicate with, both media and public) and logistics (how to communicate), if operating from the command post or remote locations.

In order to build trust with the public and among agencies responding to the incident, every press release should include a “cooperative response statement.” This statement should include, by name, all the primary participating agencies responding to the spill incident.

Activities of Initial Information Officer

The following activities include tasks an Initial Information Officer should accomplish within the first 24 hours of an incident response to set up a functional JIC:

- Share latest information immediately with other lead agencies;
- Sign in and receive necessary identification or clearance if operating on-scene (consider having the federal Transportation Worker Identification Credential (TWIC) card;
- Make contact with the Incident Commander or Unified Command;
- Obtain objectives for the response;
- Establish a dedicated phone line, e-mail address and Website, is possible, for inquiries from the media;
- Gather basic facts about the incident- who, what, when, where, how;
- Make contact with the Situation Unit Leader and Environmental Unit Leader for incident information;
- Draft, spell-check, and proofread news releases and information released to a Website;
- Obtain, review, and approve all news releases and Web information by Incident Commander or Unified Command;
- Proofread and finish release. (If significant changes are made, the release must be re-approved by the Incident Commander or Unified Command);

- Obtain approval for fact sheets and Web-based information;
- Attach or post fact sheets, photographs, video footage or other information if relevant to the incident;
- Distribute initial news release to media, affected agencies, and other audiences within 30 minutes whenever possible, but no later than two hours;
- Contact other local agency communicators for assistance/information about their community;
- Respond to media calls and other requests for information;
- Conduct media interviews;
- Begin to develop a media plan, setting the next time and place for updates, briefings, news conference, etc. This should be closely coordinated with the Incident Commander and the Planning Section Chief;
- File copies or create a log of callers, time of calls, questions, and responses;
- Find answers to questions by media or key audiences;
- Brief the next shift of Information Officers; and
- Assess the need for community relations personnel.

Joint Information Center

A Joint Information Center (JIC) is created under the Unified Command to effectively manage communication resources and public message when multiple organizations are involved in incident response. The need to form a JIC is determined by the Incident Commander or Unified Command as advised by the incident Information Officer. Ideally, a JIC should be located in or near the incident command post and staffed by personnel from the participating organizations. If the JIC is located in the command post it is imperative any media representatives present be given an adequate work space that is physically separated from working Command and General Staff personnel. Satellite JICs may be needed for response to major incidents involving large geographic areas.

Primary JIC Objectives

- Gather, package, and distribute accurate information and data in a timely manner;
- Inform the public, primarily thought the news media and a dedicated Website;
- Analyze public perception and community expectations; and
- Evaluate communications.

Overall JIC Objectives

- Gather, analyze, produce, and distribute information about the incident;
- Ensure timely release of accurate information to media and other audiences;
- Establish and maintain the official incident Website;
- Review, for approval or revisions, any public information developed in response to the incident by other agencies;
- Capture digital images in video and photos for use by response organizations and media;
- Develop, recommend, and execute public information products, plans, and strategies;
- Coordinate closely with the Liaison Officer;
- Monitor and measure media content and public perception of the incident;
- Inform the Incident Commander/ Unified Command regarding public reaction, attitudes, and needs;
- Prepare appropriate response personnel for news conferences and interviews;
- Identify and correct rumors and misinformation;
- Evaluate response communications when the JIC is deactivated; and
- Produce a log and organize all JIC materials for distribution to the Documentation Unit each day.

JIC Set-up and Logistics

A Logistics Section staff member, in consultation with local community leader(s) or state emergency management agency, may help select a location for and set up the JIC. A dedicated Information Technology Specialist may also be recruited. JIC spaces should:

- Be located in or as near the command post as possible;
- Be large enough to accommodate the anticipated number of JIC personnel and the Liaison Officer, is possible, working in a given shift;
- Have adequate numbers of tables, chairs, and AC outlets or power strips approved within fire codes;
- Accommodate a phone bank with dedicated lines and computers connected to the internet; and
- Provide quick access to printers, copier(s), fax, and e-mail.

Two things are needed immediately:

- A phone- if landlines are initially scarce, consider using a dedicated landline to take incoming calls from media and use cell phones to call out; and
- A computer with necessary software, printer, and internet capability, Electronic distribution of news releases can be handles by the JIC or by an office of a participating agency.

JIC Deactivation

The Incident Commander/Unified Command, with advice from the Information Officer (PIO), determined when to deactivate the JIC. When deactivating a JIC:

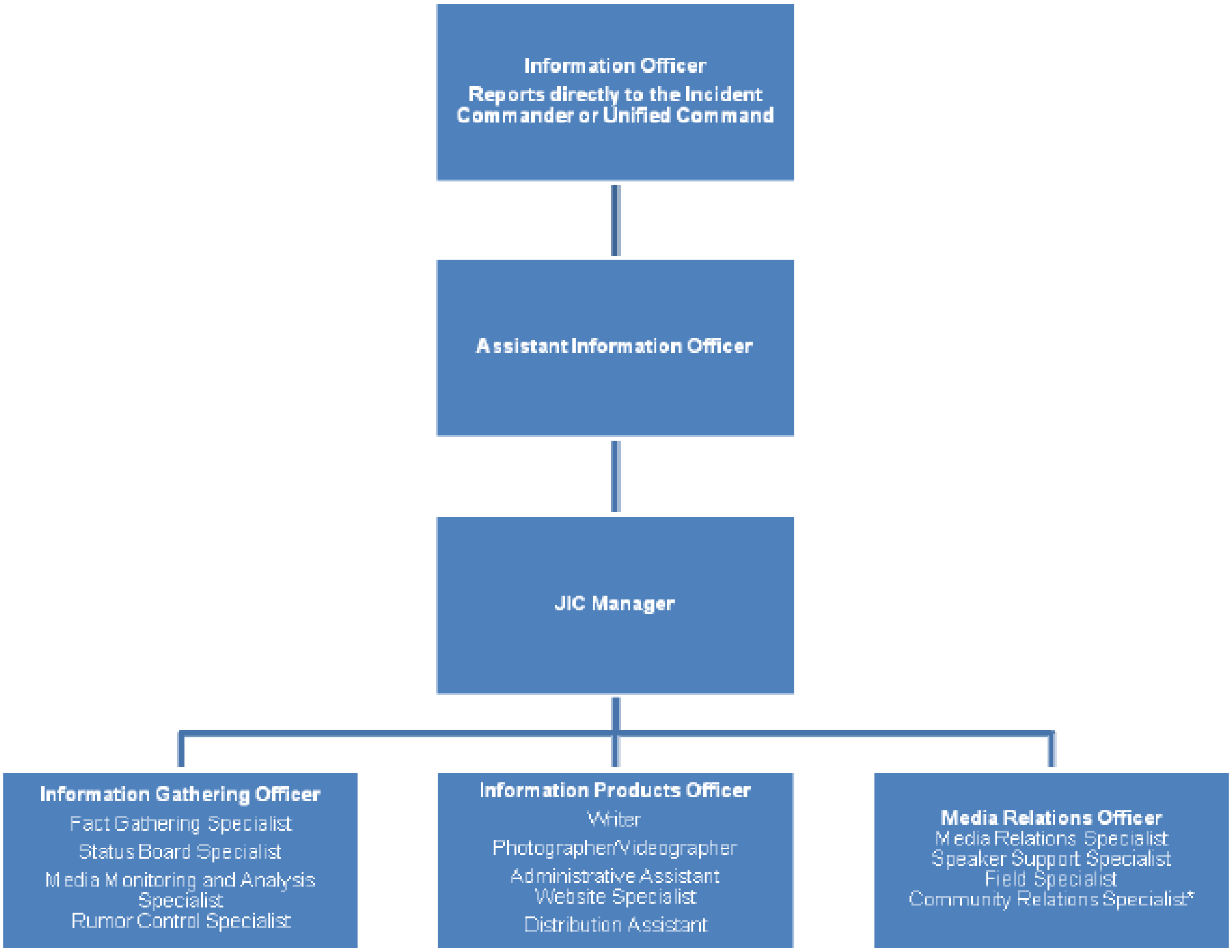
- Notify community and local officials about closing and provide regional contact information;
- Notify media and agency communication managers about closing and provide regional contact information;
- Prepare comprehensive deactivation news release for lead-agency headquarters approval and distribution;
- Provided casebooks to communications managers whose organizations will assume responsibility for ongoing information;

- Complete after-action report and participate in evaluation discussions;
- Return equipment and supplies;
- Update list of equipment and supplies; and
- Inventory and replenish “got kits”.

JIC Organization, Positions, and Responsibilities

JIC Organization

A JIC is flexible organization that can expand or contract, depending on the incident and number of available personnel. Staff within the JIC may be assigned to fill different roles from day to day, depending on priorities. While no two JICs are structured exactly the same, they should generally operate with key functional units filled by one or more personnel.



*An incident may require a significant community relations effort. In these cases, a separate Community Relations Unit should be formed.

Incident Information Sources

The Situation Unit within the Planning Section generates and coordinates nearly all incident information. JIC personnel should review the job description found in the Field Operations Guide for Resource Unit Leader, Situation Unit Leader, and Environmental Unit Leader and be familiar with the information these groups can provide the JIC. A schedule must be established for information updates from these groups each day that conforms as closely as possible to the Planning Cycle established by the Planning Section Chief. Determine what visual materials or displays you will need for a press conference, work with the Situation Unit Leader to produce maps, or order display needs from the Logistics Section.

Examples of displays include:

- Base Maps- used in the field by field observers; these depict where the oil is, from a ground perspective, and where workers are;
- Over Flight Map- used during over flights and depict where oil and equipment actually are located;
- Resource Status Map- depict where majority of response resources are operating;
- Situation Maps- depict where the oil is located; also depict various Geographical Response Plans (GRPs) in the area, staging areas, command post, and other relevant materials;
- Natural Resources at Risk and Protection Strategy Maps- show where natural, cultural, and economic resources at risk are located and activities being done to protect them;
- Trajectory Maps- depict where the National Oceanic and Atmospheric Administration (NOAA) think the oil will go over time;
- Road Maps-depict road closures;
- Nautical Charts; and
- Digital Photographs and/or Video.

Information Officer (IO)

The New Orleans Area Committee (NOAC) prefers that the responsible party not fill the IO position. This applies to both government agency and private industry responsible parties. However, the RRT/NOAC recognizes that the Unified Command holds the discretion to fill the position with whomever they choose. Unified Command should consider credibility with the media and public, as well as previous experience in drills or spills, familiarity with the NOAC and policies within Emergency Support Function #15. Upon concurrence of the Unified Command, the responsible party may fill the IO position.

The NOAC encourages responsible parties to designate as Assistant Information Officer (see below) to participate in meetings attended by the IO and to be present during briefings by the IO or delegate.

The IO is appointed by and reports to the Incident Commander or Unified Command. The IO should be trained in ICS, be familiar with the NOACP, and be experienced in public affairs, public speaking, crisis communication, media relations, and principles of JIC management.

The IO will:

- Oversee JIC operations in accordance with this JIC Manual, ensuring adequate space, equipment, and personnel are available;
- Appoint personnel to key positions based on skill level and previous training;
- Participate in Unified Command meetings and provide advice for handling issues;
- Develop public information plans, goals, and strategies for specific operational periods;
- Analyze public perception and make necessary strategic adjustments;
- Provide direction for handling controversial and sensitive issues;
- Establish daily schedules for news conferences, briefings, tours and public meetings. These should be closely coordinated with the Operational Planning Cycle. This ensures that the IO has the latest information available;
- Prepare Unified Command for news conferences;
- Moderate news conference and assist with public meetings. It is suggested that the task of news conference moderator be assigned to someone other than the responsible party, if the responsible party is filling the IO position;
- Conduct media briefings;
- Develop plans for media tours and assist the Liaison Officer with VIP tours and visits;
- Obtain approval from the Unified Command to disseminate public information products;

- Seek general approval from Unified Command to post simple, factual updates to the Incident Website without UC review;

- Monitor traditional, electronic and social media, correct misinformation and identify trends and issues;

- Coordinate exchange of information among other sections and participating agencies; and

- Resolve disputes among JIC personnel or organizations involved with public information.

Assistant Information Officer

The Assistant IO (from the responsible party) helps the IO by carrying out assignments and tasks as directed by the IO. The Assistant IO may attend all the same meetings as the IO. The Assistant IO should have the same level of technical capacity and qualifications as the primary IO, and should be prepared to assume the duties if the IO is unable to carry them out. Unlike a deputy, the assistant does not have decision-making authority unless specifically delegated by the IO and cannot step in for the IP in his/her absence.

JIC Manager

When a JIC Manager is required he/she is appointed by and reports to the IO to supervise and coordinate activities of the Information Gathering, Information Products, and Media Relations Units. The position should be filled by an experiences public information specialist with a similar level of technical capability and qualifications as the primary IO. They must be familiar with ICS. Necessary skills include managing people and projects, writing, editing, proofreading, and community and public outreach skills.

The JIC Manager:

- Ensures JIC operations and personnel are functioning well and promptly addressing emerging needs;

- Assigns JIC positions, work, and deadlines;

- Notifies agency communications managers when the JIC has been activated;

- Reviews and revises, when necessary, public information materials developed by government agencies prior to Web-posting or distribution;

- Sets staff work hours and daily JIC operations schedule;
- Established internal communication procedures;
- Ensures approved, spell-checked news releases adhere to Associated Press style and other materials are distributed internally and externally;
- Requests Information Technology (IT) support from the Logistics Unit to install and provide expertise in computers and telephone equipment or programs; (JIC IT support typically is most needed in the first days of incident response and for ongoing periodic troubleshooting);
- Completes daily unit log;
- Ensures all JIC costs are accounted for, including travel and other reimbursement vouchers, and provided to the Finance/Administration Section; and
- Briefs JIC personnel at the beginning of each shift.

Information Gathering Unit

Information Gathering personnel are responsible for gathering, analyzing, and displaying up-to-date information about incident response. They also monitor and respond to traditional and social media coverage and attempt to control rumors. Information Gathering positions should be assigned to people with any combination of skills in public affairs, crisis response, journalism, JIC operations and management.

Information Gathering personnel:

- Gather, manage, and analyze information from all parts of the JIC and Unified Command;
- Post and distribute incident information to JIC personnel and to the Documentation Unit for posting in the command post;
- Respond rapidly to requests for information from Media Relations Specialists;
- Analyze and respond to media and social media reports; and
- Respond rapidly to breaking news and rumors.

Fact Gathering Specialist

Fact Gathering Specialists gather, analyze, and distribute up-to-date information about incident response to other JIC personnel. A Fact Gathering Specialist essentially fills the role of “internal reporter” and must possess good listening, note-taking, and writing skills. Fact Gatherers should be familiar with ICS, especially the Planning Section’s Situation Unit, and have a working knowledge of key concepts, terminology including Operations Sections briefings and Planning Section meetings. Fact Gathering Specialists should also request the Situation Unit Leader obtain specific types of information for the JIC.

The Fact Gathering Specialist:

- Attends Planning/Situation meetings, takes good notes, and seeks clarification when needed;
- Routinely checks for new or updated information from the Situation Unit;
- Quickly finds and provides answers to questions from JIC personnel; and
- Located fact sheets, maps, aerial photos, and other resources to be attached to and distributed with news releases or posted on the incident Website.

Media Monitoring and Analysis Specialist

The Media Monitoring and Analysis Specialists evaluate the content and accuracy of news and social media reports and identifies and trends or developing issues. Persons in this position should provide daily or more frequent coverage synopses of prominent/sensitive issues, inaccuracies and viewpoints and recommendations for corrections to the Media Relations Officer.

The Media Monitoring and Analysis Specialist:

- Monitor blogs and social media/networking sites;
- Monitors, clips, and distributes all incident-related news from print and electronic media;
- Gathers perspectives from the media, public, affected communities and other stakeholders about the progress of the response efforts; and
- Identifies potential issues of concern, problems and rumors and reports information to the PIO, Rumor Control Specialist, and appropriate agency or staff.

Rumor Control Specialist

The Rumor Control Specialist receives, verifies, and ensures that facts are disseminated to dispel false rumors regarding the incident.

The Rumor Control Specialist:

- Monitors incoming emails, online communities (blogs, social networks), local print and broadcast media to evaluate/validate rumors;

- Receives rumor reports from others in response (e.g., Media Relations Specialist or Community Relations Specialist or those who work with the media or the public in the field);

- Identifies and reports rumors that may cause great concern or problems to the Information Gathering Officer, Information Products Officer, Media Relations Officer, and Community Relations Officer/Specialist; and

- Reports results of each rumor investigation to Unit Officers noted above.

Information Products Unit

Information Products personnel are responsible for developing, writing, and distributing information-based materials. Information Products positions should be assigned to people with some combination of skills in public information, journalism, photography, web management, desktop publishing, ICS and JIC experience.

Writer

Writers produce news releases and nearly all other print material. At least one and often more, news releases should be produced each day. Other products include fact sheets, talking points, meeting agendas, and presentation materials. Depending on staffing levels and skills, Writers may collaborate with Media Relations Specialists (see below), who format material for posting on the official incident Website and provide that material to other organizations for posting.

Writers should posses a combination of skills in writing, editing, design, and layout. The Writer:

- Develops communication and outreach products (e.g., news releases, talking points, briefings, fliers, fact sheets, public service announcements, etc);

- Takes publication-quality digital photographs for media and other users;

- Produces digital broadcast-quality video clips, radio feeds, and Public Service Announcements; and

- Develops briefing packets and handouts for news conferences, VIP tours, public meetings and other venues.

Photographer/Videographer

The Photographer/Videographer shoots high quality digital photos or video for release to the public and media. Personnel in this position should possess advance skills and experience in digital photography, digital videography, and digital editing and broadcast productions. In addition, it is possible that the Safety Officer my require HAZWOPER certification for the Photographer/Videographer to capture images from the hazard site.

The Photographer/Videographer:

- Shoots and edits photographs of high (print) quality;

- Shoots and edits video of broadcast quality;

- Catalogs and manages all photos and videos;

- Provides all photo and video to the Administrative Assistant for the casebook and the Website Specialist for the JIC Website; and

- Obtain high quality photos or video from responders when possible.

Administrative Assistant

An Administrative Assistance provides support to the Information Products Officer and his/her staff. This position ensures all information posted on the incident Website is timely, accurate, continuously updated, and approved by the Unified Command.

The Administrative Assistant:

- Provides support from media briefings and town meetings:

- Works with Logistics Section to obtain set up and run audio/visual support for briefings;

- Provides all JIC files and products to the Documentation Unit by the end of each shift;

- Establishes contacts and schedules regular times to retrieve information from all sections within the ICS structures;

- Catalogs, files and copies all JIC printed materials; and

- Produces and maintains a casebook.

Website Specialist

The Website Specialist ensures all information posted on the incident Website is timely, accurate, continuously updated, and approved by the Unified Command. The position also provides material to other organizations for Web posting and, if practical, monitors those Websites. The position should be filled by a person with strong skills in creating and formatting Web pages and working with digital images.

The Website Specialist may be located in the command post or in a response agency's office to:

- Maintain and update incident Website and incident social media accounts;

- Route email inquiries to Media or Community Relations Specialists;

- Ensure appropriate approval of all items prior to posting on incident Website, blog, or social media accounts;

- Maintain JIC blog is applicable;

- Use Incident Website and social media accounts as forums to address questions, concerns, or misinformation found on other Websites, blogs, and chat rooms; and

- Establish a link that directs users to the incident Website when the command post is deactivated.

Distribution Assistant

Distribution Assistants are appointed by and report to the JIC Manager. They are responsible for e-mailing news releases, fact sheets, and other materials developed for the media and public. They may also distribute information door-to-door, when necessary. Coordination with the Liaison Officer will ensure distribution to numerous non-media audiences.

Media Relations Unit

The Media Relations Unit is largely responsible for communication with the media and the public. Personnel selected for these positions must possess experience in journalism, media relations, public affairs, public speaking, and crisis communications.

Media Relations Personnel:

- Provide support of news conferences, briefings, public meetings, tours, and other activities;
- Support development and modification of communications and outreach strategies;
- Support development of materials and logistics for VIP tours;
- Field inquiries from reporters (Stay on message. Stick with facts approved by Unified Command);
- Serve as incident spokesperson in print and broadcast media;
- Assist in organizing and hosting news conferences, media briefings, and public meetings;
- Coordinate with the Liaison Officer;
- Analyze news coverage and community feedback to determine effectiveness of communication efforts;
- Recommend and develop strategies for providing information to news media;
- Escort reporters and other during tours;
- Develop and implement community outreach programs;
- Identify and correct rumors or misinformation;
- Maintain records of media calls;
- Maintain contacts list of media; and
- Promote story and feature ideas to target media.

Media Relations Specialist

Media Specialists rely on Fact Gathering Specialists to provide and update information. Media Relation Specialists should have experience interacting with the media. Media Relations Specialists:

- Serve as incident spokespeople;
- Staff the media phone-bank and respond quickly to information requests, using talking points, news releases, and fact sheets as resources;
- Conduct print and broadcast media interviews;
- Prepare speakers prior to interviews; and
- Provide other Media Relations and JIC support as assigned.

Speaker Support Specialist

Speaker Support Specialists coordinate meetings, interviews and other engagements.

Speaker Support Specialists:

- Identify, schedule, and prepare response personnel and subject matter experts for news briefings and interviews;
- Advise the PIO and JIC Manager on times for news briefings; and
- Work with the Administrative Assistant regarding the set-up and audiovisual needs for news briefings and media interviews.

Field Specialist

Field Specialists provide support to the media and various JIC personnel in the field. Field Specialists:

- Coordinate with the Safety Officer to make sure that it is safe to escort people to the incident scene;
- Ensure that media are properly prepared with information and equipment prior to field visits; and
- Accompany media to incident scene and other field locations.

Community Relations Specialist

Community Relations Specialists are appointed by and report to the JIC Manager. However, they may work jointly with, or directly for, the Liaison Officer, depending on incident-specific needs. The Community Relations Specialist should possess skills in public involvement, community outreach, public speaking, listening, and strategy development.

The Community Relations Specialists disseminates site-specific information developed by the Information Gathering Unit to the local community by methods other than mass media. Dissemination methods include:

- Community and public meetings;
- Community bulletin boards;
- Community Websites;
- Community Web calendar(s);
- Walk-in or walk-up information centers;
- Central community phone hotline (part of JIC; use “dispatchers” to take all initial calls from both media and public; information about wildlife or where spilled oil is located must be reported to the Operations Section);
- Recorded message information;
- Door-to-door canvassing;
- Use of volunteers to disseminate community information;
- Contacts with schools and churches and community centers; and
- Contacts with non-profit and service organizations, including neighborhood groups.

A Community Relations Specialist:

- Assists the Liaison Officer with arranging tour logistics for elected officials;

- Assesses public perception, summarizes public concerns, or analyzes content when requested by the IO or JIC Manager;
- Elevates important community concerns or site-specific knowledge through the proper chain of command;
- Interprets (oral) or translates (written) incident information for non-English speaking communities;
- Provides background and context to the IO and JIC Manager about affected communities including information about local economics and cultural concerns, past impacts from spills or other disasters/emergencies, organizations that can provide community and individual support, and opinion leaders;
- Maintains records of public calls;
- Recommends and coordinates community outreach efforts or programs; and
- Determines need for and format of public meetings and other public gatherings.

JIC Protocols and Procedures

A JIC is responsible for media relations and public information during incident response. The following protocols and procedures guide JIC activities.

Unified Command Approves News Releases

Unified Command must approve all news releases prior to distribution. The Unified Command should review draft releases for factual accuracy while avoiding copy-editing.

The IO is responsible for ensuring the Unified Command review and approval occurs quickly. If approval is delayed because of a disagreement about factual statements, the IO should employ two tactics:

- Re-word statement to satisfy Unified Command; or
- Delete disputed statement(s) and try to resolve any issue before the next news cycle.

Unified Command Approval of Web Content, Publications, and other Materials

Besides press releases, the Unified Command must also approve other public information developed by individual agencies responding to an incident. Review and approval must occur prior to publication, Web posting, or distribution. The IO or delegate will help facilitate this process. Whenever possible, review is completed as soon as practical, but no more than within two hours. In some instances, such as posting simple factual updates from the Situation Unit (ICS-209-OS), the IO may negotiate with Unified Command whether these products need their prior review.

Coordination of Public Information among Other Agencies

Coordination of public information by other agencies is required when the IO or JIC Manager notifies agency communication managers that a JIC has been activated. Coordination also occurs when public information specialists operate from their agency officers to form a “virtual JIC.” Especially in the case of a virtual JIC, the IO should ensure that news releases list points of contact from all organizations participating in the JIC. The coordination loops help avoids surprises and aids Unified Command to speak with a consistent voice. The Information Officer, on behalf of the Unified Command, may be called upon to resolve disagreements that may arise.

Coordination with the Liaison Officer

Coordination with the Liaison Officer is an important responsibility of JIC personnel. A Liaison Officer is appointed by and reports to the Unified Command. The Liaison Officer is the point of contact for federal, state, and local agency representatives and elected officials with a vested interest in the response. Calls received by the hotline may be directed to the Liaison Officer. The Liaison Officer coordinates all calls from public and private entities offering assistance or requesting information. The IO is responsible for ensuring that the Liaison Officer’s messages are consistent with those from the JIC.

Communications Plan

Communication plans for the JIC provide the context and tactics for achieving communication objectives. These plans should not be confuses with the communications plan developed by the Communications Unit of the Logistics Section for the operational and tactical response. Plans are developed by the Information Officer for a specific operational period to help the JIC “get ahead of a story” or anticipate issues, pitfalls, problems, and opportunities. Personnel from various parts of the incident command may be responsible for certain plan deliverables. Any response personnel affected by a communication plan should be included as early as possible.

Incident Website and Social Media Accounts

The incident Website may include news releases, fact sheets, photographs, video clips, maps, and other approves documents. The Website Specialist works closely with the JIC Manager to ensure all information posted is accurate, updated, and approved.

As early as possible after the initial response, the PIO is advised to secure general consent from Unified Command to post simple factual updates on the website and via established social media accounts without further Unified Command involvement/approval. Such approval is meant to help the JIC be the first and best source of information. This will also help the Information Products and Media Relations Units manage rumors and supply time-sensitive and vetted information from a single release point.

Documents to the Documentation Unit

All documents generated by the JIC must be provided to the Planning Section's Documentation Unit at the end of each shift. These materials include:

- News releases;
- Fact sheets;
- Other material developed for the media or public;
- Talking points;
- Media query forms;
- Rumor forms;
- Phone messages;
- Copies of electronic messages, such as emails and social media entries; and
- Communications plans.

While electronic files may be kept, a hard copy is vital for overall documentation of incident response from all sections of Unified Command. The Administrative Assistant is responsible for collecting all documentation at the end of a shift and providing it to the Documentation Unit.

News Releases

A news release is a written document distributed to media via e-mail within 30 minutes of response activation and thereafter as needed. The JIC should strive to meet news cycles (10:30 to 11 a.m. and 3:30 to 4 p.m.) and provide up-to-date information as much as possible throughout each operational period. The process can be streamlines by following these guidelines:

- Limiting length to 250-300 words- about one printed page;
- Using 12 point Times Roman or 11 point Arial fonts (universal for all computers);
- Using quotes judiciously- if at all. Deciding who is quoted and what they say can take considerable time, but quotes can be important statements of empathy. Early narrative news releases represent the best place opportunities for quotes – ongoing releases are largely quantitative in content and don’t need quotes;
- Avoiding logos or other layout flourishes that can keep press releases from getting past newsroom spam blocking programs and complicated electronic transmittal;
- Summarizing quantitative information; and
- Using an asterisk to indicate new information when updating frequently.

Procedures for News Releases

Write, edit, spill-check, and proofread draft release;

Get review, approval from Unified Command or Incident Commander. (If significant changes are made, the news release must be re-approved by the Incident Commander or Unified Command);

Proofread and finish approved release;

The news release should have “Joint Information Center” in the heading even though it may be distributed by a state agency, Coast Guard, EPA, etc;

Post on JIC tracking board. Distribute to Unified Command and the Planning Section Distribution Unit to ensure distribution within the command post; and

Use news releases as key information sources when responding to calls and conducting JIC briefings/tours.

The news release process should roughly follow this process:

- ***Fact Gathering Specialist***: Attends briefings or meeting, and obtains news information from Situation Unit; provides information to the Writer(s).
- ***Writer***: Writes news release, spell-checks, and proofreads; provides draft to the IO for approval by UC.
- ***IO***: Obtains approval from UC and returns to Writer.
- ***Writer***: Incorporates changes and finishes the release. If changes are substantive, IO resubmits to UC for approval.
- ***Website Specialist***: Formats and posts on incident Website.
- ***Distribution Assistant***: Distributes to Media Relations Specialist; externally via e-mail and internally to designated locations.

News Release Distribution

Timely distribution is crucial. Electronic distribution can be handled by either the JIC or a response agency's office- whichever is most expedient and up-to-date. News release and updated should be distributed to:

- News media;
- Governor's Officer;
- JIC Staff and other interested personnel in the response organization;
- Response organizations' headquarters and/or regional offices;
- State and congressional elected officials from that area;
- Tribal officials;
- Local officials and local emergency management departments;
- Special publications; and
- Environmental and other advocacy organizations.

The Community Relations Specialist and Liaison Officer are responsible for non-media distribution and they jointly maintain those distribution lists.

Handling Media Calls

The JICs primary activity is handling media phone calls and electronic queries. News releases provide the basic reference for Media Relations Specialists who field calls from reporters or conduct on-camera interviews. It is essential adequate personnel be assigned to the media phone bank. Media Relations Specialists should use Media Query forms to track all media calls, questions, and answers. As much as possible, incoming calls from reporters should not be transferred to voice mail.

News Conferences

News conferences should be held when there is new, important information. A news conference is generally held within the first 12-24 hours of a response and thereafter daily- even twice a day- for major incidents. The Incident Commander or Unified Command personnel are the main speakers at news conferences; however, technical specialists from other sections may also be needed. Personnel from nearly all positions in the JIC will play some part in preparation.

News conferences should not be held inside the incident command post due to privacy concerns and potential distractions to respond personnel. Establish a consistent area to conduct media news conference/ interviews that will not impact response personnel. To hold a news conference:

- Select the appropriate time- typically about two hours before news deadlines (10 a.m. or 3 p.m.), or as soon as possible after a major development;

- Whenever possible, select and schedule a location that is easily accessible, has power and plenty of parking, minimal background noise, and a good backdrop;

- Set up space (audio-visual, chairs, public address system, etc.);

- Notify media about time, location for the news conference, including a map or driving directions;

- Produce briefing packets with news releases, fact sheets, FAQs, maps, etc;

- Identify speakers’ order of presentation;

- Schedule and conduct speaker preparation in advance of the news conference. Speaker preparation is essential. Time spent will depend on incident circumstances. Each speaker should have one to three main messages that contribute to a good overall picture;

- Develop or rehearse Q&A for each speaker- not for distribution but help each member of the Unified Command think ahead about answers to questions that may be asked;
- Appoint a news conference moderator- usually the IO- who will:
  - Greet the assembly;
  - Explain the purpose of the news conference;
  - Set the agenda;
  - Introduce the speakers;
  - Discuss format;
  - Call on reporters;
  - Provide sources for additional information;
  - Control the amount of time spent on any given subject; and
  - End the news conference on time.
- Sign in attendees;
- Call on local reporters first or early in the Q&A;
- Assign a JIC staff person to record the event with a digital recorder or camera;
- Assign a JIC staff person to take written notes of each question asks (and by whom), and answers given; and
- Assist reporters with any additional need immediately following the news conference.

Moderators

Moderators set the tone and facilitate news conferences and public meetings. Have a predetermined message for each news conference. Provide correct spelling and titles for any speaker or place names with peculiar spellings. State the speakers' organizations and positions in the in the Unified Command.

- Do not let any one speaker or reporter dominate the news conference. Limit each speaker to about three minutes. Stick to that time.

- Remain available after the news conference.

Media Briefings

Media briefings are less formal than a news conference and generally done by the IP or designee. A media briefing quickly provides certain types of information such are where cleanup crews will be working or where photographers can camera crews can get photo and video footage. They are a good way to also give reporters the day's general schedule and time of the next news conference, public meeting, etc. Send an advisory to reporters or make calls at least an hour in advance of JIC media briefings. All meetings and briefings should be schedules on the daily meeting schedule, ICS Form 230, so that no conflicts occur.

Tours for Media and VIPs

Tours for media and VIPs should be planned for early in major incidents. Several JIC personnel will be involved in logistics, preparation, and escort. Coordination occurs with the Liaison Officer, Safety Officer, and Logistics Section to address protocol, safety requirements, transportation, and escort concerns. The Unified Command should be informed and may wish to accompany certain VIPs. To coordinate a tour:

- Work with the Operations Section to choose a few good vantage points for viewing incident effects and response work;

- Work with the Operations Section to make sure affected field personnel are alerted to tour schedules and that someone is designated to answer questions about their work;

- Work with the Logistics Section to arrange for group transportation;

- Obtain necessary safety gear and safety briefing for group members;

- Prepare information packets and talking points for tour guides, using only information approved by the Unified Command;

- Choose a technical responder, such as someone working in the Planning Section Environmental Unit, to accompany the tour and answer technical questions; and

- Drive and time the tour in advance.

Media Pools

Media pools (for tours) may be necessary if access is restricted and should be used only as a last resort. Reporters don't like them, but will accept the decision if they understand the necessity. The IO will determine the need for media pools. It is key that journalists selected for media pools understand they are expected to supply copy, video, audio, or still photographs to all reporters requesting the material. Make sure local reporters are included in pools whenever possible. Follow the steps above for media tour preparation. A media pool should consist of:

- One TV video crew (camera operator, sound technician, and reporter);
- One still photographer from wire service, newspaper, or magazine;
- One print reporter from wire service, newspaper, or magazine; and
- One radio reporter.

Editorial Board Meetings

An editorial board meeting might be requested if an incident command post operated longer than 10 days- or when there is strong and substantial public interest. Editors are a conduit to community opinion leaders. A JIC representative requests a meeting with a newspaper's managing editor and opinion page editor. Two or three Unified Command representatives should attend. Reporters may or may not be present.

Editorial board meetings do not typically result in a story, but may result in an opinion piece or serve as background for future stories. Editorial board participants should receive as much speaker preparation as they would before a news conference. Editorial board meetings are nearly always held at the newspapers primary office. To prepare for an editorial board meeting:

- Review articles about the incident and editorials from previous days and weeks to have a sense about what editors are thinking and reporters are writing;
- Develop two to three key messages for each speaker;
- Conduct a dry run of speakers and prepare with Q&A;
- Develop information packets that include names and contact numbers;
- Provide corrections if the paper has published serious factual errors its reporters and/or editors have refused to correct. Do not belabor minor points; and

- Expect the meeting to last 30-45 minutes.

Community Relations Protocols and Procedures

Public Meetings

Public meetings are necessary under a variety of circumstances. Many JIC personnel play a role in organizing and hosting public meetings. The JIC Manager works with the Community Relations Specialist and Liaison Officer as well as other JIC staff to determine the need and format of meetings. Options include open house events with multiple information displays, or more traditional venues featuring speakers with audience questions. The Liaison Officer coordinated with local elected officials who may- or may not- wish to participate. A representative of the responsible party, if known, should consider using a public meeting as an opportunity to express regret about the incident.

Based on the IO's recommendations, Unified Command will make decisions on whether to hold public meetings and/or mobilize a Community Relations Specialist or Unit. IO recommendations should be based on one or more factors including:

- Injuries or deaths as a result of the incident;
- Potential health risks;
- Degree of community outrage, fear, grief;
- Damage to the natural environment or potential harm to wildlife;
- Proximity of incident, command center, or staging area to neighborhoods, schools, and other key community resources;
- Lack of local news and information sources or disproportionate media attention;
- Need for road detours and other emergency measures;
- Damage to or restriction from community resources like parks or public buildings;
- Damage to cultural resources;
- Response efforts continuing for several days or more;
- Widespread rumors and other unconfirmed or inaccurate information; and

- A community's or responsible party's past history with a disaster or emergency response.

To prepare for a public meeting:

Select the time and a location that is easily accessible and Americans with Disabilities Act (ADA) compliant, with plenty of parking, power, and minimal background noise. It is always best to conduct a meeting at the end of the work day to ensure adequate time for community members to arrive after getting off work;

Determine meeting format (open house, audio/visual presentation, panel discussion, web conference);

Ensure adequate set-up (tables, chairs, easels, displays, sound system, etc);

Identify speakers with technical expertise (health, wildlife, fish/shell fish, tribal interests, economic impacts, etc);

- Schedule and conduct speaker preparation;
- Arrange for language interpreters, if needed;
- Develop talking points and internal Q&A for speakers;
- Develop and package handouts and presentation materials;
- Appoint a meeting moderator;
- Staff a sign-in table and information posts; and
- Handle inquiries from media and public.

Community Bulletin Boards

Community bulletin boards can be places at frequently-visited locations in communities such as grocery stores, libraries, schools, churches, Chamber of Commerce office, fire stations, ferry terminal, bus stops, park-and-rides, tourist information center, public boat launches/marinas, coffee shops, community centers, and fishing licensing outlets.

These bulletin boards convey information that is especially pertinent to local residents or recreationists, including road closures, transportation detours, boating restrictions, health considerations, reporting oiled birds or wildlife, etc. Posted materials can include maps, fact sheets, news releases, and contact information. Bulletin boards must be updated frequently. Postings must be removed when information is outdated or no longer relevant.

Community Websites

Community Websites and community Web calendars can also serve as credible communication tools for the same type of information posted on community bulletin boards. Some public access channels can also provide simultaneous webcasting and/or cable broadcasting of meetings.

Information Centers

Walk-in or walk-up information centers should be considered when there is a high demand for public information due to circumstances such as evacuations, human health risks, property damage, and environmental damage.

Telephone Hotlines

Telephone hotlines or recorded message lines can be a useful tool to provide residents with a phone call number dedicated for community calls. This helps ensure citizen calls are not pre-empted by other priorities and keeps the main JIC line reserved for media. Recorded messages may be appropriate to inform residents about rapidly-changing conditions such as road closures, potentially harmful exposure to pollution, and progress about incident response. Recorded messages should be updated frequently to provide information to callers who might otherwise swamp incoming telephone lines. If a hotline is established, the Community Relations Unit needs to be adequately staffed to handle the volume of calls.

Door-to-Door Canvassing

Door-to-door canvassing can be used when it is important to warn, instruct, or reassure residents. This method can help inform residents about what they are hearing, seeing, or smelling, and can correct rumors, or misperceptions. If evacuation is recommended and/or required, notification is generally the responsibilities of the local sheriff’s office and should not be initiated by the JIC.

Elevating Information

Elevating information that may have value to the Unified command or Incident Commander is a rare, but important, function of the Community Relations Specialists/Unit. For example, if a local citizen or group raises an issue or has knowledge that may aid or hamper the response, that information should be elevated through the proper chain-of-command.

Interpretation and Translation

Interpreting or translating incident information into other languages may be needed in communities with a large non-English speaking population. For further information about non-English speaking populations, go to http://www.census.gov/.

Some agencies maintain a list of employees with language skills who might be recruited for incident response. Some communities have readily-available resources for overcoming language barriers.

Other resources that may have language services include community groups, community centers, and local churches. While community members may have credibility and trust within the community, they may lack the translation skills for technical information. It is good to keep in mind that many languages have different dialects which can hamper interpretation.

Using Volunteers

Using credible community volunteers to disseminate information door-to-door or staff an information center can be useful in building trust. Volunteers also can be a critical resource when many residents need to be individually contacted in a short amount of time. The Unified Command must always approve using volunteers. They must be properly trained to understand the scope and limitations of their role. For more information regarding the use of Volunteers during a response please refer to the NOACP Appendix L, Volunteer Policy.

School Districts

Local school districts should be notified immediately. In addition to providing necessary safety precautions for students, schools have excellent systems for providing information to families. Schools are also good places for public meetings and other response assistance.

Local Churches, Non-Profit, and Service Organizations

To provide Unified Command with the best possible communications guidance, a JIC must have accurate, ongoing analyses of public perception and media content. Given the quick pace of an incident response, this analysis may not be formal. The Community Relations Specialist and Media Monitoring and Analysis Specialist will play a big role in determining public perception and working with JIC personnel to:

- Monitor primary newspaper, radio, television, and Websites;
- Attend town meetings;
- Conduct phone or door-to-door surveys;

- Coordinate and facilitate focus groups, depending on the magnitude of the incident;
- Track calls and requests from reporters and the public;
- Identify potential problems or rumors- and report them immediately to the IP and appropriate agency or office; and
- Identify significant minority communities and determine the most effective ways to communicate with them.

Content Analysis

Content analysis is the review of both media reports and community comments to help determine the effectiveness of JIC communication efforts. Areas for evaluation include visual images, information sources, factual statements, and key messages. In conducting an evaluation, consider:

- Overall themes or key messages in media reports and quotes by local citizens;
- Statements about confusion, fear, or anger;
- Visual images used by media or described by citizens, including metaphors, analogies, or stories;
- Information sources quoted by media reports or community members; and
- Accuracy of “factual” statements.

Media Content Analysis

Media content analysis includes:

- Length of a news report, either as broadcast minutes, newspaper column-inches, and number and tome of media blog entries;
- Placement of news articles- lead stories, front page, or placed elsewhere;
- Sources quoted in news reports;
- Accuracy of “factual” statements;

- Key messages stated by sources, quoted in the report, or implied as the overall theme of the report or interview;
- Visuals such as pictures, word analogies, or anecdotal stories that help explain environmental, health, or safety issues; and
- Negative words or phrases that might influence public perception or understanding of the issue.

Community Feedback

Community feedback helps a JIC shape, modify, and target communication products and strategies- especially when there is a high degree of public outrage. Community feedback tools include questionnaires at public meetings or posted on Website and blog sites, surveys conducted door-to-door or by phone, and focus groups. Use of these methods is dependent on the magnitude of the incident.

Telephone Surveys

Telephone surveys can be conducted randomly or targets to elected officials, organizations, directors, church pastors, school principles or counselors, neighborhood association officers, police or fire department personnel, and others in the affected community.

Focus Groups

Focus groups involve a moderator who interviews and facilitates a discussion among multiple people at the same time. Focus groups yield a great deal of qualitative information. The moderator should be skilled in interview techniques and facilitation, with good listening abilities.

Sometimes, specific concerns point to the need to target a distinct group, such as Indian Tribes, or workers or residents directly affected by the incident. In other cases, a broad assessment is desired, with people representing different organizations, points of view, ethnic backgrounds, neighborhoods, incomes, professions, or other variables. The goal is to get as complete a picture as possible of the different perceptions regarding incident response.

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Daily Briefing Checklist (for IO or designee)

Date/time:

Name of Lead IO:

Name of JIC Manager:

Date/Time of press conference:

Inquiries:

Name of Field escorts:

Media analysis:

Speaker prep:

Editorial board prep:

Community outreach:

Inquiries:

Public meetings:

Community feedback:

Volunteer inquiries/organizations:

Protocol:

Tour support:

Escorting:

News releases:

Fact Sheets:

Photo/video:

Audio/visual support:

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JIC Supplies Checklist

Necessities

- ☐ Cell phones:
  - ☐ Information Officer
  - ☐ Assistant Information Officer
  - ☐ Joint Information Center Manager
  - ☐ Internal Affairs Manager
  - ☐ External Affairs Manager
  - ☐ Community Relations Manager
- ☐ Computers- at least 3 needed with external drive and software
- ☐ Computer memory stick (at least 8 GB memory each; virus scanned)
- ☐ Computer software (Windows, Word, Adobe Acrobat Reader, Internet Explorer, Outlook)
- ☐ Computer Wi-Fi card
- ☐ Internet connectivity
- ☐ Landlines (DSL and/or normal cords)
- ☐ Phone/e-mail lists with internal state/federal contacts
- ☐ Phone/e-mail lists with external state/federal contacts
- ☐ Phone/e-mail lists with JIC participants and ICS contacts
- ☐] Media phone/e-mail list
- ☐ Printer

Supplies:

- ☐ Batteries, replacement for all equipment (AAA, AA, 9-volt, C, D, camera, lithium, etc.)
- ☐] Binder clips, various sizes
- ☐] Binders (3-ring) with dividers, several

☐ Clipboards

☐ Copier

☐ Digital Cameras (still and video)

☐ Digital recorders

☐ Dry erase markers and eraser

☐ Easels

☐ Extension cords with 3 prongs- 4 20’ cords

☐ File folders

☐ Flip charts, 4 pads

☐ 3-hole punch

☐ Name tags

☐ Power surge protectors

☐ Printer cartridges- at least 4

☐ Printer paper- 6 reams (4 white, 2 colored)

☐ Push pins

☐ Radio, AM/FM

☐ Staplers (with extra staples)

☐ Scissors

☐ Tablets (writing)

☐ Tape (clear, masking, blue, duct)

☐ TV and DVD player/recorder

☐ White sheet (if A/V screen is unavailable)

☐ Whiteboard

New Orleans Area Media Contacts by Media Market

Media	Address	City	State	Zip	COTP ZONE	Day Phone	Night Phone	FAX
Rayne Independent	P.O. Box 428	Rayne	LA	70648	MC	318-334-2128		318-334-2120
Kinder Courier	P.O. Drawer AK	Kinder	LA	70648	PA	318-738-5642		318-738-5777
Donaldsonville Chief	402 Railroad Avenue	Donaldsonville	LA	70346	NO	504-473-3101		504-473-4060
Assumption Pioneer	P.O. Drawer 428	Napoleonville	LA	70390	MC	504-369-7153	504-369-7153	504-369-7153
Cajun Gazette	3929 Highway 70	Pierre Part	LA	70339	MC	504-252-6835	504-252-6835	504-252-7100
Bunkie Record	P.O. Box 179	Bunkie	LA	71322	NO	318-346-7642		
Weekly News	P.O. Box 523	Marksville	LA	71351	NO	318-253-9247		318-253-7223
Beauregard Daily News	P.O. Box 1999	Sulpher	LA	70663	PA	318-463-6204		318-463-5347
Bienville Democrat-Ring	P.O. Box 29	Arcadia	LA	71001	NO	318-263-2922		318-263-8897
Bossier Press-Tribune	P.O. Box 6267	Bossier City	LA	71111	NO	318-747-7900		318-747-5298

Caddo Citizen	P.O. Box 312	Vivian	LA	71082	NO	318-375-3294	318-375-3294	318-375-4578
KSLA-TV-Ch.12 CBS-	P.O. Box 41812	Shreveport	LA	71134	NO	318-222-1212		318-677-6705
KTAL-TV-Ch.6 NBC-	P.O. Box 7428	Shreveport	LA	71134	NO	318-425-2422		318-425-2488
KTBS-TV-Ch.3 ABC-	P.O. Box 44227	Shreveport	LA	71134	NO	318-868-3644		318-862-9431
KLPC-TV-Ch.7 NBC-	P.O. Box 1488	Lake Charles	LA	70602	PA	318-439-9071		318-437-7600
KVHP-TV-Ch.29	129 W. Prien Lake Rd.	Lake Charles	LA	70601	PA	318-474-1316		318-474-9028
Lake Charles American	P.O. Box 2893	Lake Charles	LA	70602	PA	318-433-3000	318-494-4081	318-494-4008
S.W. Daily News	P.O. Box 1999	Sulphur	LA	70664	PA	318-527-7075		318-528-3044
W.L. Moss Bluff News	P.O. Box 127	Westlake	LA	70669	PA	318-436-0583		318-528-3044
Caldwell Watchman-Progress	P.O. Box 68	Columbia	LA	71418	NO	318-649-6411		318-649-9368
Cameron Par. Pilot	P.O. Box J	Cameron	LA	70631	PA	318-786-8131		800-256-7323

Cameron Parish Pilot	P.O. Box 995	DeQuincy	LA	70633	PA	318-786-8131		318-786-8131
Catahoula News Booster	P.O. Box 188	Jonesville	LA	71343	NO	318-757-3646		318-757-3001
Guardian Journal	P.O. Box 119	Homer	LA	71040	NO	318-927-3541	318-927-3541	318-927-3542
Concordia Sentinel	P.O. Box 312	Ferriday	LA	71334	NO	318-757-3646		318-757-3001
The Enterprise	P.O. Box 840	Mansfield	LA	71052	PA	318-872-4120		318-872-6038
The Advocate	P.O. Box 588	Baton Rouge	LA	70821	NO	504-388-0128	504-383-1111	504-388-0164
Business Report	P.O. Box 1949	Baton Rouge	LA	70821	NO	504-928-1700		504-923-3448
Morning Advocate	P.O. Box 588	Baton Rouge	LA	70821	NO	504-388-1111		504-388-0371
WAFB-TV-Ch.9 CBS-	P.O. Box 2671	Baton Rouge	LA	70821	NO	504-383-9999	504-379-7876	504-379-7891

WBRZ-TV-Ch.2 ABC-	P.O. Box 2906	Baton Rouge	LA	70821	NO	504-336-2338	504-336-2338	504-336-2246
WGMB-TV-Ch.44 FOX-	5800 Florida Boulevard	Baton Rouge	LA	70806	NO	504-926-4444		504-926-9462
WLPB-TV-Ch.27 PBS-	7860 Anselmo Lane	Baton Rouge	LA	70810	NO	504-767-5660		504-767-4299
WVLA-TV-Ch.33 NBC-	P.O. Box 14685	Baton Rouge	LA	70898	NO	504-766-3233		504-766-4112
Banner Democrat	313 Lake St.	Lake Providence	LA	71254	NO	318-559-2750		318-559-2750
Watchman	P.O. Box 368	Clinton	LA	70722	NO	504-683-5195		
Ville Platte Gazette	P.O. Box 220	Ville Platte	LA	70586	NO	318-363-3939		318-363-2841
The Franklin Sun	P.O. Box 550	Winnsboro	LA	71295	NO	318-435-4521		318-435-9220
The Chronicle	505 2nd St.	Colfax	LA	71417	NO	318-627-3737		318-627-3019
The Daily Iberian	P.O. Box 9290	New Iberia	LA	70562	MC	318-365-6773		318-367-9640

Post/South	P.O. Box 589	Plaquemine	LA	70764	NO	504-687-3288	504-687-1814
The Jackson Independent	P.O. Box 520	Jonesboro	LA	71251	NO	318-259-2551	318-259-1148
Jennings Daily News	P.O. Box 910	Jennings	LA	70546	PA	318-824-3011	318-824-3019
St. Bernard News	3010 Lausat Street	Metairie	LA	70001	NO	504-832-1481	504-837-5923
The Times Picayune	3800 Howard Avenue	New Orleans	LA	70140	NO	504-826-3279	504-826-3007
Daily Advertiser	P.O. Box 3268	Lafayette	LA	70502	MC	318-235-8511	318-237-8940
KADN-TV-Ch.14 FOX-	1500 Eraste Landry Rd	Lafayette	LA	70506	MC	318-237-1500	318-237-2237
KATC-TV-Ch.3 ABC-	P.O. Box 93133	Lafayette	LA	70509	MC	318-235-3333	318-234-3580
KLFY-TV-Ch.10 CBS-	P.O. Box 90665	Lafayette	LA	70509	MC	318-981-4823	318-984-8323
The Times of Acadiana	P.O. Drawer 3528	Lafayette	LA	70502	MC	318-237-3560	318-233-7484
Lafourche Gazette	P.O. Drawer 1450	Larose	LA	70373	MC	504-693-7229	504-693-8282
The Daily Comet	P.O. Box 5328	Thibodaux	LA	70301	MC	504-447-4055	504-448-7606
Jena Times	P.O. Box 1384	Jena	LA	71342	NO	318-992-4121	318-992-2287

The Ruston Daily Leader	P.O. Box 520	Ruston	LA	71273	NO	318-255-4353		318-255-4006
Denham Springs News	P.O. Box 1529	Denham Springs	LA	70727	NO	504-665-5176	504-665-5176	504-667-0167
Livingston Leader	P.O. Box 300	Livingston	LA	70754	NO	504-665-5176		504-667-0167
Madison Journal	300 S. Chesnutt Street	Tallulah	LA	71282	NO	318-574-1404		318-574-4219
Bastrop Daily Enterprise	P.O. Box 311	Bastrop	LA	71221	NO	318-281-2691		318-283-1699
Natchitoches Times	P.O. Box 448	Natchitoches	LA	71458	NO	318-352-3618		318-352-7842
City Business	111 Vet.Blvd,Ste. 1810	Metairie	LA	70005	NO	504-834-9292		504-837-2258
Gambit	4141 Bienville Street	New Orleans	LA	70119	NO	504-486-5900		504-488-7263
Louisiana Weekly	P.O. Box 53008	New Orleans	LA	70153	NO	504-524-5563		504-527-5826
N.O. Tribune	2335 Esplanade Ave.	New Orleans	LA	70119	NO	504-945-0772		504-949-4129
St. Bernard	P.O. Box 88	Arabi	LA	70032	NO	504-279-7488		504-277-2231
The Times Picayune	3800 Howard Avenue	New Orleans	LA	70140	NO	504-826-3300		504-826-3800
The Times Picayune Pub.Corp.	3800 Howard Avenue	New Orleans	LA	70140	NO	504-826-3279	504-826-3279	504-826-3007

WDSU-TV-Ch.6 NBC-	520 Royal Street	New Orleans	LA	70130	NO	504-527-0606		504-527-0145
WGNO-TV-Ch.26 IND.-	2 Canal St., Ste. 2800	New Orleans	LA	70130	NO	504-581-2600		504-522-1885
WVUE-TV-Ch.8 ABC-	1025 S. Jefferson Davis	New Orleans	LA	70125	NO	504-486-6161		504-483-1212
WWL-TV-Ch.4 CBS-	1024 N. Rampart Street	New Orleans	LA	70116	NO	504-529-4444		504-592-1949
WYES-TV-Ch.12 PBS-	916 Navarre	New Orleans	LA	70124	NO	504-486-5511		504-483-8408
KNOE-TV-Ch.8 CBS-	P.O. Box 4067	Monroe	LA	71211	NO	318-388-8888	318-325-4448	318-325-3405
KTVE-TV-Ch.10 NBC-	2909 Kilpatrick Blvd.	Monroe	LA	71201	NO	318-323-1300	318-323-1300	318-322-8844
News Star	P.O. Box 1502	Monroe	LA	71210	NO	318-322-5161		318-362-0278
Ouachita Citizen	810 Natchitoches St.	West Monroe	LA	71291	NO	318-322-3161		318-325-2285
Plaquemines Gazette	P.O. Box 700	Belle Chasse	LA	70037	NO	504-392-1619		504-393-9327
Plaquemines Gazette	7952 Highway 23	Belle Chasse	LA	70037	NO	504-392-1619		504-393-9327
Plaquemines Watchman	P.O. Box 700	Belle Chasse	LA	70037	NO	504-392-1619		504-393-9327
Pointe Coupee Banner	P.O. Box 400	New Roads	LA	70760	NO	504-638-7155		504-638-8442

Alexandria Daily Town Talk	P.O. Box 7558	Alexandria	LA	71306	NO	318-487-6397	318-487-6397	318-487-6315
KALB-TV-Ch.5 NBC-	P.O. Box 951	Alexandria	LA	71309	NO	318-445-2456	318-445-6937	318-442-7427
KLAX-TV-Ch.31 ABC-	P.O. Box 8818	Alexandria	LA	71306	NO	318-473-0031	318-473-0412	318-442-4646
Coushatta Citizen	P.O. Drawer F	Coushatta	LA	71019	NO	318-932-4201		318-932-4285
Richland Beacon News	P.O.Box. 209	Rayville	LA	71269	NO	318-728-6467		318-728-5991
Sabine Index	P.O. Box 871	Many	LA	71449	PA	318-256-3496		318-256-9151
St. Bernard Voice	234 Mehle Avenue	Arabi	LA	70032	NO	504-279-7488		504-277-2231
St. Charles Herald	P.O. Box 159	Norco	LA	70079	NO	504-764-6141		504-764-6454
St. Charles Herald-Guide	P.O. Box 1199	Boutte	LA	70039	NO	504-758-2795	504-758-2795	504-758-7000
River Par. Guide	P.O. Box 1199	Boutte	LA	70039	NO	504-758-2795		504-758-7000
The St. Helena Echo	P.O. Box 190	Greensburg	LA	70441	NO	504-222-4541		504-748-7104
The Enterprise	P.O. Drawer 9	Vacherie	LA	70090	NO	504-265-2120		504-265-2120
News Exam.	P.O. Drawer 460	Lutcher	LA	70071	NO	504-869-5784		504-869-4386

News Examiner	P.O. Drawer 460	Lutcher	LA	70071	NO	504-869-5784		504-869-4386
L'Observateur	P.O. Box 1010	LaPlace	LA	70069	NO	504-652-9545		504-652-3885
The Daily World	P.O. Box 1179	Opelousas	LA	70570	NO	318-942-4971		318-948-6572
The Eunice News	P.O. Box 989	Eunice	LA	70535	NO	318-457-3061		318-457-3122
Banner Tribune	115 Wilson Street	Franklin	LA	70538	MC	318-828-3706		318-395-7036
The Daily Review	P.O. Box 948	Morgan City	LA	70381	MC	318-384-8370		318-384-4255
Franklin Banner Tribune	P.O. Box 566	Franklin	LA	70538	MC	318-828-3706		318-828-2874
Jean. Enter.	P.O. Box 327	Jeanerette	LA	70544	MC	318-276-5171		318-367-9640
St. Mary Journal	1014 Front Street	Morgan City	LA	70381	MC	318-384-1350		318-384-4255
Teche News	P.O. Box 69	St. Martinville	LA	70582	MC	318-394-6232		318-394-7511
The Teche News	P.O. Box 69	St. Martinville	LA	70582	MC	318-394-6232		318-394-7511
Slidell Sentry News	P.O. Box 910	Slidell	LA	70459	NO	504-643-4918		504-643-4966
St. Tamm. News Ban	P.O. Drawer 90	Covington	LA	70434	NO	504-892-7980		504-892-8242
St. Tammany Farmer	321 N. New Hampshire	Covington	LA	70433	NO	504-892-2323	504-892-2323	504-892-2325

St. Tammany Farm.	P.O. Box 269	Covington	LA	70434	NO	504-892-2323		504-892-2325
The Amite Tangi Digest	P.O. Box 698	Amite	LA	70422	NO	504-748-7156		504-748-7104
Daily Star	P.O. Box 1149	Hammond	LA	70404	NO	504-345-2333		504-542-0242
The Enterprise	P.O. Box 218	Ponchatoula	LA	70454	NO	504-386-6537		504-386-6537
Hammond Vindicator	P.O. Box 2848	Hammond	LA	70404	NO	504-748-7156		504-748-7104
Ponchatoula Times	P.O. Box 743	Ponchatoula	LA	70454	NO	504-386-3877		504-386-0458
Tangi Talk	110 S.W. Central Ave.	Amite	LA	70422	NO	504-748-6343		504-748-7104
Tensas Gazette	P.O. Box 25	St. Joseph	LA	71366	NO	318-766-3258		318-766-4273
The Courier	P.O. Box 2717	Houma	LA	70361	MC	504-879-1557		504-857-2229
Houma Daily Courier.	3030 Barrow Street	Houma	LA	70360	MC	504-879-1557	504-879-1557	504-857-2229
Gazette	P.O. Drawer 722	Farmerville	LA	71241	NO	318-368-9732		318-368-7331
Abbeville Meridional	P.O. Box 400	Abbeville	LA	70511	MC	318-893-4223		318-898-9022
Gueydan Journal	P.O. Box 536	Gueydan	LA	70542	PA	318-536-6016		318-536-6016
Kaplan Herald	P.O. Box 236	Kaplan	LA	70548	MC	318-643-8002		318-643-1382

The Meridional	P.O. Box 400	Abbeville	LA	70511	MC	318-893-4223	318-898-9022
Leesville Daily Leader	P.O. Box 619	Leesville	LA	71446	PA	318-239-3444	318-238-1152
The Era-Leader	1044 Main Street	Franklinton	LA	70438	NO	504-839-9077	504-839-2439
Minden Press Herald	P.O. Drawer J	Minden	LA	71055	NO	318-377-1866	318-377-1895
West Side Journal, Inc.	P.O. Box 260	Port Allen	LA	70767	NO	504-343-2540	504-344-0923
West Carroll Gazette	P.O. Box 1007	Oak Grove	LA	71263	NO	318-428-3207	318-428-2747
St. Francisville Democrat	P.O. Box 1876	St. Francisville	LA	70775	NO	504-635-3366	
Winn Parish Enterprise	P.O. Box 750	Winnfield	LA	71483	NO	318-628-2712	318-628-6196

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News Conference/Public Meeting Worksheet

Event:

Date:

Time:

Location:

Methods for notifying public:

Translation/Interpretation Needs:

Length of conference or meeting:

Audio/Visual materials:

Moderator:

1. Presenter/Handout:
2. Presenter/Handout:
3. Presenter/Handout:
4. Presenter/Handout:
5. Presenter/Handout:

Refreshments:

Special needs arrangements:

Notes:

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Audience Sign In

Please Sign In

NAME	ORGANIZATION	E-MAIL

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Moderator Script Outline

Welcome to today's (this morning's/ tonight's) news conference. My name is:

We will be presenting information on:

With us today are:

We will begin with brief statements by representatives of the Unified Command, and then we will open the floor to your questions. Because of the on-going response need, we will be available for ____ minutes today. Please allow time for everyone here to ask questions.

Following the news conference, staff of the Joint Information Center and I will try to help you with any further needs.

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Field Escort Equipment and Communications Checklist

Personal Protective Equipment (to be determined by the Safety Officer) which may include:

- Hard Hat
- Goggles
- Gloves
- Rubber Boots
- PFD
- Respirator

Communications

- VHF radio
- Cell Phone

Information

- Assignment List: ICS Form 204
- Incident Status Summary: ICS Form 209

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Sample Questions for Focus Group or Interviews

The following are sample questions that can be used for obtaining feedback through focus groups or in interviews.

1. What was your reaction when you first learned of the incident? How and when did you first learn about it?

2. Have you discussed the incident/response with friends, family, neighbors, or colleagues? What are they saying?

3. How are you getting information about the response?

4. What are your preferred means of getting information?

5. In your mind. What questions remain unanswered?

6. In general, how would you rate the effectiveness of the response, on a scale of one to ten, ten being the highest?

7. What do or would you tell others about how the response is being carried out?

8. If you could change one thing about the response, what would you change? What is the main reason that one thing needs changing?

9. What would it take for the response agencies to get an “A” for their efforts to respond to this type of incident?

10. What two positive things can you tell me about the response? What are two negative things about the response?

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Focus Group Preparation

Ideally, two or three sessions are held, with a different group in each. About two hours should be schedules for each group session. The location should be a comfortable, “neutral” meeting room. The host should provide coffee, tea, and snacks. Check to make sure your meeting location complies with ADA requirement.

Optimum group size is 8 to 12 people. The more people you have in each group, the more time you will need for discussion, but the broader perspective you’ll have. Be realistic. In a group of 10, for instance, each person would have about ten minutes of dialogue in a two-hour meeting. In other words, each person would have about one minute to respond to each of ten questions.

Be clear about your goals as you craft your interview questions. They need to yield answers that help you understand how to better respond to community needs.

Develop and print an agenda for distribution among group members. You might also include a packet of materials already generated to seek feedback on their effectiveness. Focus group sessions should be taped (audio or video), along with note taking by the moderator and another appointed JIC staff in attendance. You may want to record comments on a flip chart.

Be on hand early to greet all participants as they arrive. Have them print name tags and table placards.

SAMPLE AGENDA

Moderator	Welcome and brief introduction	2 minutes
Members	Round robin introductions	3 minutes
All	Q&A discussion	About 10 minutes per question
Moderator	Wrap-up, closing remarks	3 minutes

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Joint Information Center Communication Plan Outline

Operational period:

Communication goal(s):

Summary of issues, problems, opportunities:

Key message(s):

Target audience:

Need for Translation/Interpretation:

Tools, tactics, and methods (how to notify or inform target audiences):

Deliverables- who will do what by when:

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Media Content Analysis Worksheet

Date of News:

Media outlet name:

Broadcast times:

Coverage synopses:

Issues:

Inaccuracies:

View point:

Fixes:

Who replied to:

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New Orleans Area Contingency Plan

Chapter 9000
Appendix N
Liaison Manual

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Liaison Manual

Introduction

Incidents that are multi-jurisdiction, or have several agencies involves, may require the establishment of the Liaison Officer (LNO) position on the Command Staff. This manual is designed to establish a common framework and policy for agency and responsible party communicators during responses to environmental emergencies that occur within the New Orleans Area Committee (NOAC) boundaries. This Liaison Manual serves as Chapter 9000, Appendix N of the New Orleans Area Contingency Plan.

The Liaison Unit is responsible for proactively fostering good communication and cooperation within and outside of the Unified Command. This position and unit is essential for facilitating a close working relationship between people and organizations, and is necessary to assist the Command in establishing and maintaining unity of purpose, command, and message. The Liaison Unit is also responsible for being the external ears of the Unified Command that is listening to, capturing, responding to, and forwarding external concerns to the Command, Planning and the Joint Information Center (JIC).

The Liaison Unit supports the Unified Command's strategic goal of implementing a rapid, aggressive, and well coordinated response action. The LNO and their team are specifically responsible for working with Command and the JIC to ensure the Unified Command is the primary source of timely and credible information for the public, their elected officials and others.

Liaison Group

Liaison Officer

One of the primary incident objectives is to keep government officials, agencies, the public and other interested parties informed during a spill incident. The Liaison staff is responsible for meeting this objective by ensuring that elected officials and other key stakeholders are well informed of the status of the incident, the decisions made, and actions taken by the Unified Command.

LNO Staffing

The NOAC recognizes there is a shared responsibility among the Unified Command representatives to ensure accurate and credible information is made available. It is also the shared role of the Unified Command representatives to ensure appropriate staffing in all positions within the Incident Command System. However, given the importance of the LNO duties, and to ensure public confidence and trust, it is the policy of the NOAC for the LNO position to be filled by a qualified representative of a federal, state, tribal, or local agency, if available. If no such agency representative is initially available, qualified, or willing to be the LNO, a responsible party representative will, upon the Unified Commands concurrence, fill that role. Furthermore, a transition to a responsible party designated LNO may occur with the concurrence of the Unified Command. The NOAC also encourages responsible parties to designated an Assistant LNO, who will participate in all the meetings attended by and briefings made by the LNO.

LNO Responsibilities

The LNO has the following responsibilities:

- Be a contact point for Elected Officials, and assisting and cooperating Agency Responsibilities;
- Maintain a list of assisting and cooperating agencies and Agency Representatives, including name and contact information. Monitor check-in sheets daily to ensure that all Agency Representatives are identified;
- Assist in establishing and coordinating interagency contacts.
- Keep elected officials, tribes, and agencies supporting the incident, aware of incident status;
- Monitor incident operations to identify current or potential inter-organizational problems;
- Participate in planning meetings, providing limitation and capabilities of assisting agency resources;
- Coordinate response resource needs for Natural Resource Damage Assessment and Restoration (NRDAR) activities with the OSC during oil and hazardous substance responses;
- Coordinate response resource needs for incident investigation activities the OSC;
- Coordinate activities of visiting dignitaries;
- Ensure that all required agency forms, reports, and documents are completed prior to demobilization;

- Brief Command on official’s and agency issues and concerns;
- Have debriefing session with the IC prior to demobilization; and
- Maintain Unit Log.

Liaison and Natural Resource Damage Assessment

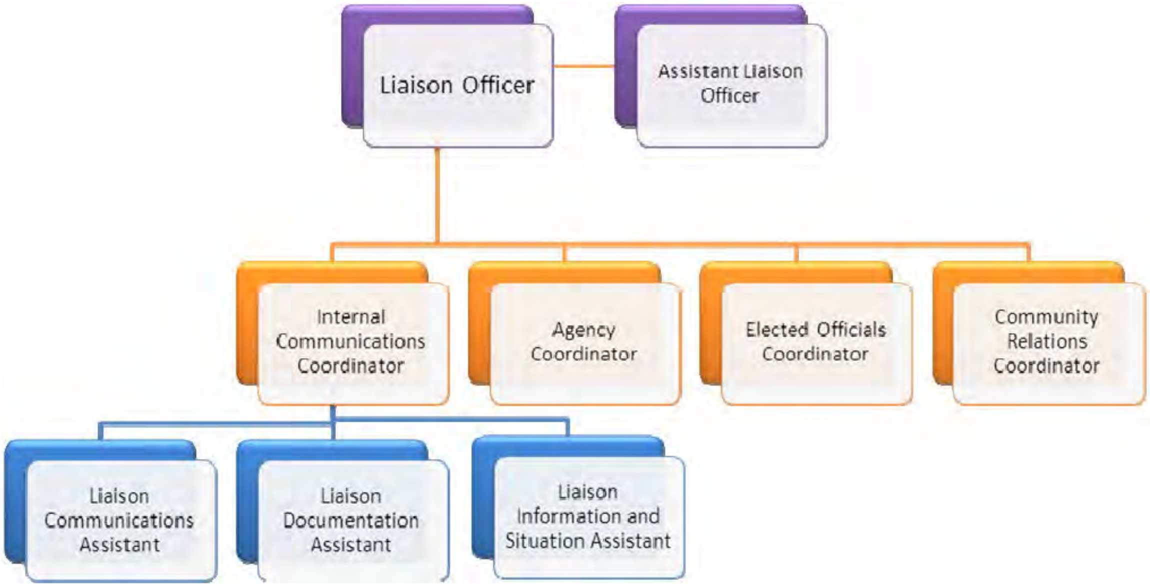
Natural Resource Damage Assessment (NRDA) involves identifying the type and degree of impacts to public biological and cultural resources in order to assist in restoring those resources. NRDA may involve a range of field surveys and studies used to develop a monetary damage claim, or may involve immediately developing a restoration plan with the responsible party. NRDA activities overlap with environmental assessment performed for the sake of spill response. Because NRDA is carried out by natural resource trustee agencies and/or their contractors, personnel limitations may require staff to perform NRDA and response activities simultaneously. Therefore, NRDA staff should remain coordinated with the spill response organization, and need to work with the LNO to coordinate with the UC, Environmental Unit, Wildlife Rescue/Rehabilitation Branch and the NOAA Scientific Support Coordinator to resolve any problems or address areas of overlap. While NRDA resource requirements and cost may fall outside the responsibility of the Logistics and Finance sections, coordination is again important.

Liaison and Incident Investigations

Civil and criminal investigators from federal and state agencies will not normally be a part of the UC, except to the extent that such expertise may help identify the cause(s) of the accident that resulted in the spill and determine immediate mitigating actions in coordination with salvage group to deal with such issues. While investigations personnel may report to individuals that are part of the UC, the investigators are separate and should be clearly delineated as such so as not to introduce potentially polarizing forces into the UC where collaboration and cooperation are essential to a rapid and well coordinated response. Coordination with, and access to UC is done through the Liaison Officer.

Liaison Coordination and the Joint Information Center

The LNO and the JIC require close coordination. This coordination is essential because lines of jurisdiction may be blurred and the external message must be accurate and consistent. It is recommended the Liaison function be located adjacent to the JIC if possible. If not, a runner must be assigned to ensure good coordination and that information is shared in a timely manner.



Assistant Liaison Officer

- Assist the LNO and provides overall direction and oversight of the Liaison group while the LNO is in meetings, etc;

- Coordinate communications between Liaison group and the LNO. Holds regular meetings with the Liaison Unity staff to keep the whole group informed of incident status and overall Liaison tasking;

- Handles routine team management, assigns task and keeps staff and work moving; tracks the status of all Open Action Items.

Agency Coordinator

- Contacts and communicates with Assisting and Cooperating Agencies at the ICP or other off-site locations (EOC, others);

- Established communications links and determines Agency concerns and addresses the appropriately;

- Maintain a list and contact information of assisting and cooperating agencies;

- Identify and track developing and potential issues of concern. Report these issues to the LNO. Coordinates with Logistics for accessing local resources, including volunteer opportunities;

- Develop an action plan to ensure regular communication and coordination with appropriate stakeholders and submit draft of plan to LNO for review and approval.

- Keeps the LNO up-to-date and informed of who is listed and what their roles and interests are;

- Contacts and coordinates the above activities with any affected Native American Tribes, unless a dedicated coordinator is assigned to liaise with Tribes assisting and/or potentially affected by the incident.

Elected Official Coordinator

- Notifies and maintains close communication with elected and other officials. Coordinates closely with JIC and Agency Coordinator(s) to get consistent early messages out before media release;

- Develops an action plan to ensure regular communication and coordination with appropriate elected officials and submit draft of plan to LNO for review and approval;

- Leads the development of Community and VIP meetings;

- Manages VIP visits and tours at the ICP. Identifies and tracks developing and potential issues of concern, Reports these issues to the LNO who will pass them on to the UC/JIC.

- Coordinates with the LNO when arranging logistics for tours for elected officials;

- Identifies and maintain lists and contact information of elected officials and other key stakeholders; and

- Keeps LNO informed if any elected official adverse feeling/relationship challenges develop.

Community Relations Coordinator

- Establishes Community and public meetings,

- Determines need for the following community outreach methods:

    - Community bulletin boards

    - Community websites

  - Walk-in or walk-up information centers
  - Recorded message information

- Door-to-door canvassing. Provides information to the IO and the JIC Manager about affected communities including local economic and cultural concerns, past impacts from spills or other disasters/emergencies, organizations that can provided community and individual support, and opinion leaders;
- Identified and maintains lists and contact information of communities
- Includes schools, churches, community centers, non-profit service organizations;
- Ensure contact with affected tribes and tribal concerns are integrated*
- Establish contact with key business community leaders and local chambers of commerce to ensure information is shared and economic concerns are integrated*; and
- Keeps the LNO up-to-date and informed of who is listed and what their roles and interests are.

*May want to assign a Tribal Communication Coordinator and Business Community Relations Coordinator, depending on the complexity of the incident.

Internal Communications Coordinator

- Supervises the following staff if needed:
  - Liaison Documentation Assistant;
  - Liaison Information and Situation Assistant; and
  - Liaison Communications Assistant.
- Ensures staff complete tasks; and
- Update LNO on progress on a regular schedule.

Liaison Documentation Coordinator

- Responsible for maintaining Liaison paper and electronic communication records and security;
- Maintains the Unit Log (ICS 214);
- Assists with the tracking documentation;
- Works closely with the Documentation Unit; and
- Assists with documentation needs of the Liaison Information and Situation Assistant.

Liaison Information and Situation Assistant

- Develops and maintains the Liaison situation board;
    - Work with the situation unit to get started;
    - Updates, phone numbers; meeting schedule;
    - Websites, District maps;
    - Order maps and other tools from the Logistics Section;
- Communicates directly with the JIC and others at the ICP as directed by the internal communication coordinator;
    - Helps to develop documents that may be needed for local officials briefings, VIP tours or community meetings;
    - Ensures coordination on meetings;
- Identifies and establish communication link with NRDA and Incident Investigators.

Liaison Communications Assistant

- Receives calls and messages coming into the ICP. Deals with them directly or routes them appropriately;
- Works closely with Agency Coordinator, and the Elected Official Coordinator; and

- Keeps the Internal Communications Coordinator up-to-date on important communications.

Liaison IT Assistant

- Immediately provide IT support to allow for immediate external communications;
- Establish communications between lap tops, printers, etc;
- Create email accounts for liaison staff and external stakeholders to exchange information;
- Set up web and phone conferences for official meetings and communication sharing; and
- Create email account to share information between JIC and Liaison Section.

Liaison Strategies and Tactics

Daily Phone Briefs

- Communicate with large number of people;
- May require on for elected officials and one for agencies and one for business interests; and
- Set for same time each day.

Community Meeting

- Provide information on spill details;
- Public Health issues and evacuation plans;
- Claims and compensations process; and
- Volunteer opportunities.

Elected Official Briefing

- May be given at the local government Emergency Operations Center;
- Provides first hand information on the spill;
- ICS process updates; and

- Constituent issues aired.

VIP Tour

- Invitation List;
- Command Post;
- Spill Site; and
- Aerial tour.

Liaison Tools

VIP/Visitors Tools

- VIP Tour Checklist;
- VIP Tour Agenda;
- VIP Tour ground rules;
- Elected Officials Briefing Agenda; and
- Calling elected officials script

Command Post Tools

- Organizational Charts (laminated for multiple use)
- Position assignment list
- Supplies checklist
- Projector
- Printer
- Maps of legislative districts

Information for Handouts

- Factsheets: Overview of Area Planning;

- Factsheets: Oil Spill Prevention, Planning and Response Measures;
- Factsheets: Geographical Response Plans;
- Factsheets: Containment and Recovery of Spilled Oil;
- Pamphlets: Oil Spill Shoreline Assessment and Cleanup;
- Pamphlets: In-Situ Burning in Oil Spill Response;
- Pamphlets: Dispersants in Oil Spill Response;
- Pamphlets: Incident Command System in Incident Response;
- Pamphlets: Non-Floating Oils and the Environment;
- Pamphlets: Bioremediation in Oil Spill Response;
- Pamphlets: Oil Spills and Seafood;
- Pamphlets: Oil Spill Notification Requirements;
- Pamphlets: Tar Balls in the Coastal Environment
- Pamphlets: Volunteers at Oil Spill Clean-ups;
- Pamphlets: Effects of Oil on the Environment;
- Pamphlets: Effects of Oil on Mangroves;
- Pamphlets: Effects of Oil on Marine Mammals;
- Pamphlets: Effects of Oil on Marine Shellfish;
- Pamphlets: Effects of Oil on Seagrass; and
- Pamphlets: Effects of Oil on Wildlife.

Useful ICS Forms for the Liaison Group

The following is a list of the most commonly used ICS forms for the Liaison Group.

ICS-214 Unit Log- Maintained by the Liaison Documentation Assistant or as directed by Liaison Officer. This form is used to capture activities the unit has taken and staffing. It can be used as documentation for inclusion in any after-action reports.

ICS-214a Individual Log- Maintained by each member of the Liaison Group. A 214a is a personal log of activities and major events.

ICS-213 General Message May be used by any member if the Liaison Group. This form is used to capture information or requested and actions taken in response to requested. It's also used to announce significant event to other members of the ICS organization. Each is reviewed by the Liaison Officer or Assistant.

Stakeholder Contact List (adapted from the ICS 205a) Used by the Agency Coordinator, Elected Official Coordinator and the Liaison Communications Assistant. This form has been adapted to be used as a list of contacts you have made with stakeholders. This form should be regularly reviewed to ensure that new additions are added to the master-list contact/communications sheets.

ICS-230 Daily Meeting Schedule The Liaison Information, Situation Assistant and Community Relations Coordinator are responsible for ensuring that significant liaison related meetings are included on this form. The completed form will be available from the Situation Unit and will track all Command Post meetings.

ICS-231 Meeting Summary This form is used to capture notes from external meetings and Liaison Group meetings. Use the ICS form 233 Open Action Tracker to make assignments and track action items from meetings.

ICS Form 233 Open Action Tracker This form is used to make assignments and track action items.

ICS-211p Check in List Personnel made available by a Check-in/Status Recorder of the Resources Unit in the Planning Section. Entries are to be made by each Liaison Group member at the beginning and end of each work period.

ICS-202 Incident Objectives This form describes the basic incident strategy, control objectives, command emphasis/priorities and safety considerations for the respective Operational Period. This form includes general direction to the Liaison Group from the Command and may be useful as a presentation tool for stakeholders.

Useful Tips

The following tips may be useful in establishing and maintaining an effective Liaison Group.

- Develop an immediate message to be broadcast to key elected and tribal officials and agency representatives. Coordinate closely with JIC to ensure messaging is consistent and timely provided. It is important to inform them early even if information is very incomplete.
  - As soon as practicable, follow-up with more detailed messages as incident situation is clarified/verified. Ensure you highlight corrections to any prior information passed that may have been inaccurate.
  - Set a regular daily meeting/briefing schedule for elected officials and key government agencies and tribes.
- Maintain your individual logs (ICS 214a) as a rolling journal of your activities and communications.
- When scheduling a meeting, make sure it does not conflict with the commonly held meetings already listed, especially if you need to have members of the UC present at your meetings.
  - Ensure you account for travel time for external meetings that will involve the Unified Command to ensure their availability at those regularly schedules UC meetings.
- Develop templates for messages, meeting agenda announcements, etc… to facilitate timely and complete communications.
- Develop email distribution lists for key officials and agencies (update regularly) for major geographic regions.
- Develop a “To-Do” List using an Open Action Tracker (ICS-233). If feasible, project image or create Poster-size form and place in prominent location for entire group to maintain visibility of Open Action Items.
- Ensure key Agency Representatives are included whenever possible.
  - For incidents involving international trans-boundary issues and separate ICPs are established, ensure liaisons are integrated into the respective ICPs to optimize coordination between international regimes.

  - Ensure U.S. Department of State is contacted for any international trans-boundary incident.

- Staffing permitting, assign two Assistant Liaison Officers to facilitate group functionality. One Assistant would accompany the Liaison Officer at all meetings and maintain information loop for Liaison group while the second Assistant Liaison coordinates work of the Liaison Group as a whole.

- If feasible, establish wireless router for multiple computer users to facilitate communication/networking ability.

- Use “To-Go” or WebEx online meetings to maximize direct participation and interaction with key officials and stakeholders.

- Collaborate between Liaison and Joint Information Center if possible.
  - Work closely with IO/JIC to develop incident website content and messaging appropriate for officials’ briefings.

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New Orleans Area Contingency Plan

Chapter 9000
Appendix O
Communications Plan

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Under Development

To be included 2015.

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New Orleans Area Contingency Plan

Chapter 9000

Appendix P Disposal Guidelines

New Orleans Area Contingency Plan

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Disposal Guidelines

Purpose

The purpose of this appendix is to provide guidance for making a waste determination for proper disposal of materials (i.e. sorbents, solidifiers, etc) and debris (i.e. Personal Protective Equipment (PPE), rags, soil, etc.) impacted with hydrocarbons. This appendix describes the chronology of activities necessary for decision making for coordinating proper disposal of materials impacted with hydrocarbons in accordance with all local, state and federal regulations, and provides exemptions for Exploration and Production (E&P) Waste in accordance with US EPA guidance.

It should be noted *that waste determinations are made by the generator of the waste* such that the generator may: 1) manage the waste appropriately and legally (in accordance with all local, state and federal regulations); and 2) *provide valid proof* (i.e. analytical and/or MSDS) *to the disposal facility* regarding the matrix/constituents of the waste generated such that the disposal facility may make an acceptance determination as to whether they may accept the waste in compliance with their own operating permit(s).

The Louisiana Oil Spill Coordinators Office defers to the Louisiana Department of Environmental Quality concerning waste disposal.

Definitions

Discharge or Hazardous Waste Discharge: The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal: The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

Disposal Facility: A facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure. The term disposal facility does not include a corrective action management unit into which remediation wastes are placed.

Exploration and Production Waste (E&P Waste) – drilling wastes, salt water, and other wastes associated with the exploration, development, or production of crude oil or natural gas wells and which is not regulated by the provision of, and, therefore, exempt from the Louisiana Hazardous Waste Regulations and the Federal Resource Conservation and Recovery Act, as amended. (LAC 43:XIX.501).

Hazardous Waste: See 40 CFR 261.3

Incinerator: Any enclosed device that:

- Uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit.
- Meets the definition of infrared incinerator or plasma arc incinerator.

Industrial Solid Waste – solid waste generated by a manufacturing, industrial, or mining process, or that is contaminated by solid waste generated by such a process. This term does not include hazardous waste regulated under the Louisiana hazardous waste regulations or under federal law, or waste that is subject to regulation under the LDNR Office of Conservation’s Statewide Order No. 29-B or by other agencies (LAC 33:VII.115).

Landfill: A disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit.

Oil: Oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

Petroleum oil: Petroleum in any form, including but not limited to crude oil, fuel oil, mineral oil, sludge, oil refuse, and refined products.

Solid Waste: See 40 CFR 261.2

Solidifier: Product composed of dry high molecular weight polymers that have a porous matrix and large oleophilic surface area which form a physical bond with oil.

Sorbent: An insoluble material or mixture of materials used to recover liquids through the mechanisms of absorption or adsorption, or both including:

Organic Compounds: Include, but are not limited to: peat moss; straw; cellulose fibers; cork; corn cobs; chicken, duck or other bird feathers, etc.

Mineral Compounds: Include, but are not limited to: volcanic ash, perlite, vermiculite, zeolite, etc.

Synthetics Products: Include, but are not limited to: polypropylene, polyethylene, polyurethane, polyester, etc.

Type I Facility – a facility used for disposing of industrial solid wastes (e.g., a landfill, surface impoundment, or landfarm). (LAC 33:VII.115)

Waste Determination for Disposal Coordination

The Generator and/or Responsible Party (RP) are responsible for the characterization and classification of the waste stream. In addition, it is up to the discretion and acceptance criteria (i.e. state issued permit & operating procedures) of the disposal facility with respect to waste disposal.

In determining a waste stream's classification, a generator may use *process knowledge* and/or *analytical testing* by approved EPA methods (i.e. SW-846).

Process knowledge is applying knowledge of the hazardous characteristics of the waste in light of the materials or processes used. For example, a material safety data sheet (MSDS) may indicate that a material used in a process contains no hazardous constituents or exhibits no hazardous characteristic. The waste may be determined non-hazardous if the process itself contributes no hazardous constituents and does not result in the waste exhibiting a hazardous characteristic.

Analytical testing is information about a waste provided from laboratory analysis. Waste classification must be properly documented in a written and/or electronically stored format that is reasonably accessible and easily reproducible. The first step in classifying your waste is referred to as "making a *hazardous waste determination*."

The waste determination will determine how and where (i.e. landfill, incinerator, etc.) the waste will be properly disposed. A hazardous waste determination is made based on the following questions:

- Is the waste a “solid waste?” Does it meet the regulatory definition of a “solid waste” in accordance with 40 CFR §261?

- Is the waste a listed hazardous waste in accordance with 40 CFR §261?

- Does the waste exhibit any of four (4) characteristics: ignitability, corrosiveness, reactivity, or toxicity?

- Is the waste toxic?

- Is it a mixture?

If a hazardous waste and a non-hazardous waste are mixes, the resulting mixture may inherit the hazardous classification. Mixing in any amount of a listed waste will cause the mixture to be considered hazardous. Mixing in a characteristic waste will cause the mixture to become hazardous only if the mixture itself exhibits the characteristic.

Listed Hazardous Waste Determination

The EPA lists some 400 hazardous wastes. Descriptions of listed waste are found in 40 CFR Part 261, Subpart D, Sections 261.31–33. These wastes are often referred to as follows:

- “F” listed waste (waste from nonspecific sources, Section 261.31)
  - The first five F listed categories, F001-F005, cover a range of solvents used in a variety of applications.

- “K” listed waste (wastes from specific sources, Section 261.32)

- “P” listed waste (unused acutely hazardous off-specification materials as well as container residues and spill residues of these materials, Section 261.33)
  - There are about 239 different “acutely toxic” substances listed under about 135 different waste codes.

- “U” listed waste (unused toxic hazardous off-specification materials as well as container residues and spill residues of these materials, Section 261.33).
  - There are about 472 distinct materials listed under about 247 different waste codes.

Characteristic Hazardous Waste Determination Wastes may be hazardous if they display any of four characteristics: ignitability, corrosiveness, reactivity, or toxicity.

Ignitability (D001) Wastes that are hazardous because they may ignite include the following:

- Liquid wastes (other than those aqueous wastes that have a flash point less than 60°C (140°F). (The test method is the Pensky-Martens closed cup tester, using the test method specified in ASTM Standard D-93-79 or D-93-80, or a Setaflash closed cup tester, using the test method specified in ASTM Standard D-3278-78.)

- Non-liquid wastes that, under standard temperature and pressure, are capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burn so vigorously and persistently that they create a hazard.

- Wastes that meet the definition of an ignitable compressed gas (see 49 CFR Section 173.300).

- Wastes that meet the definition of an oxidizer (see 49 CFR Section 173.151).

Corrosiveness (D002) Wastes that are hazardous because they are corrosive include the following:

- Aqueous wastes with a pH of 2 units or below or of 12.5 units or above;

- A liquid wastes that corrode steel at a rate greater than 6.35 mm (0.250 inches) per year.

Reactivity (D003) a waste is considered reactive if it meets any of the following conditions:

- It is capable of detonation or explosive decomposition or reaction at standard temperature and pressure,

- If subjected to a strong ignition source, or if heated under confinement.

- When mixed with water, it is potentially explosive, reacts violently, or generates toxic gases or vapors.

- If a cyanide or sulfide-bearing waste is exposed to pH conditions between 2 and 12.5, it can generate enough toxic gases, vapors, or fumes to present a danger to human health or the environment. Generally,

- If a waste generates 250 ppm or more of reactive cyanides or 500 ppm or more of reactive sulfides, it is considered a reactive waste. (It should be noted that these levels of reactive compounds are just guidance. Each waste must be evaluated for reactivity on a case-by-case basis).

- It is normally unstable and readily undergoes violent change without detonating.

- It is a forbidden explosive (as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53).

- It is a Class B explosive (see 49 CFR Section 173.88).

Toxicity (D004-D043)A waste is toxic if the toxicity characteristic leaching procedure (TCLP) shows that a representative sample from the waste contains one or more constituents at or above the levels listed in Table 3-1. The TCLP is described in EPA Method 1311 (SW-846).

For certain wastes, you can test waste for Total constituent content and apply the "Rule of Twenty" (apply the 20-fold dilution factor inherent in the TCLP method) to determine whether a sample has to be tested using the TCLP method. The TCLP test method is generally more expensive than the test required to determine Total constituent concentrations. A TCLP test is not required if total analysis demonstrates that contaminants are not present or are present in such low concentrations they could not possibly exceed the toxicity regulatory limits. The assumption in the "Rule of Twenty" is that all of the contaminant of concern is dissolved in the extraction fluid, which is then analyzed. Since this calculation assumes a 100% extraction efficiency of the TCLP, it represents a conservative assumption that the waste is not TC hazardous. Therefore, if the analytical total concentration of a constituent in a solid is "x," and "x" divided by 20 is still less than the regulatory TCLP concentration, then the solid can be assumed not to fail the TCLP test and not to exhibit the hazardous characteristic of toxicity. ***Note: that this "rule" will not work for any waste that has greater than or equal to 0.5% liquids.*** This calculation can only be used for materials that are in a solid form since liquids themselves (i.e., wastes containing less than 0.5% dry solid material) are defined as the TCLP extract; hence, the 20-fold dilution factor calculation is not relevant. Therefore, this procedure is acceptable for soils and other wastes in a dry, solid form.

For the purpose of this guidance document, analytical testing should be utilized for disposal coordination with respect to spent materials impacted with hydrocarbons. Please note that it is up to the discretion of the disposal facility to accept the waste based on information provided regarding the waste. Once waste materials have been properly recovered, a representative sample of the waste should be obtained for analytical testing by an accredited environmental laboratory. Material Safety Data Sheets (MSDS) for the material released may be utilized for waste disposal profiling if the disposal facility allows, however, sampling provides a better representation of the waste stream.

Analytical testing should be as follows:

Diesel fuel impacted:

- Total Petroleum Hydrocarbons (TPH)
- Total Lead (Pb)
    - *Note that TCLP Pb may be required for acceptance by the landfill. See "Rule of twenty" reference above.*
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

Unleaded fuel impacted:

- Total Petroleum Hydrocarbons (TPH)
- Total Lead (Pb)
    - *Note that TCLP Pb may be required for acceptance by the landfill. See "Rule of twenty" reference above.*
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

Used Oil impacted:

- Total Petroleum Hydrocarbons (TPH)
- Total RCRA Metals
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)
- TOX

Virgin Oil impacted:

- Total Petroleum Hydrocarbons (TPH)

- Total Lead (Pb)
    - *Note that TCLP Pb may be required for acceptance by the landfill. See "Rule of twenty" reference above.*

- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

Crude Oil impacted:

- Total Petroleum Hydrocarbons (TPH)

- Total Lead (Pb)
    - *Note that TCLP Pb may be required for acceptance by the landfill. See "Rule of twenty" reference above.*

- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

Once analytical results have been reported and the waste determination made, a waste profile will be required to be completed and submitted to the designated disposal facility. The waste profile is specific to each disposal facility. Therefore, contact the disposal facility to obtain a copy of their waste profile form. Analytical documentation and/or MSDSs will be required to be submitted with the waste profile before review and approval by the disposal facility. Please note that independent waste disposal facilities (i.e. landfills, incinerators, etc) have different acceptance criteria for wastes as prescribed in their permits.

For the sake of reference, the below is a list of Maximum Allowable Levels which differentiate between hazardous constituent and non hazardous constituents. If analytical methods determine that the analyzed levels are at or above these listed levels, then the waste is considered hazardous and will maintain the waste code associated with the waste.

PARAMETER	WASTE CODE	MAX. ALLOWABLE LEVELS		ANALYTICAL METHODS
		TCLP (mg/L)	TOTAL (mg/kg)	
TCLP METALS				
Arsenic	D004	<5.0	100	SW-846-1311/SW-846-6010
Barium	D005	<100.00	2000	SW-846-1311/SW-846-6010
Cadmium	D006	<1.0	20	SW-846-1311/SW-846-6010
Chromium	D007	<5.0	100	SW-846-1311/SW-846-6010
Lead	D008	<5.0	100	SW-846-1311/SW-846-6010
Mercury	D009	<0.2	4	SW-846-1311/SW-846-7470
Selenium	D010	<1.0	20	SW-846-1311/SW-846-7740
Silver	D011	<5.0	100	SW-846-1311/SW-846-6010
TCLP VOLATILES				
Benzene	D018	<0.5	10	SW-846-1311/SW-846-8260
Carbon Tetrachloride	D019	<0.5	10	SW-846-1311/SW-846-8260
Chlorobenzene	D021	<100.0	2000	SW-846-1311/SW-846-8260
Chloroform	D022	<6.0	120	SW-846-1311/SW-846-8260
1,2-Dichloroethane	D028	<0.5	10	SW-846-1311/SW-846-8260
1,1-Dichloroethylene	D029	<0.7	14	SW-846-1311/SW-846-8260
Methyl Ethyl Ketone	D035	<200.0	4000	SW-846-1311/SW-846-8260
Tetrachloroethylene	D039	<0.7	14	SW-846-1311/SW-846-8260
Trichloroethylene	D040	<0.5	10	SW-846-1311/SW-846-8260

Vinyl Chloride	D043	<0.2	4	SW-846-1311/SW-846-8260
TCLP SEMI-VOLATILES (Base Neutrals)				
1,4 Dichlorobenzene	D027	<7.5	150	SW-846-1311/SW-846-8270
Hexachlorobenzene	D032	<0.13	2.6	SW-846-1311/SW-846-8270
Hexachlorobutadiene	D033	<0.5	10	SW-846-1311/SW-846-8270
Hexachloroethane	D034	<3.0	60	SW-846-1311/SW-846-8270
Nitrobenzene	D036	<2.0	40	SW-846-1311/SW-846-8270
Pyridine	D038	<5.0	100	SW-846-1311/SW-846-8270
2,4-Dinitrotoluene	D030	<0.13	2.6	SW-846-1311/SW-846-8270
TCLP SEMI-VOLATILES (Acid Compounds)				
o-Cresol	D023	<200.0	4000	SW-846-1311/SW-846-8270
m-Cresol	D024	<200.0	4000	SW-846-1311/SW-846-8270
p-Cresol	D025	<200.0	4000	SW-846-1311/SW-846-8270
Cresol, Total	D026	<200.0	4000	SW-846-1311/SW-846-8270
Pentachlorophenol	D037	<100.0	2000	SW-846-1311/SW-846-8270
2,4,5-Trichlorophenol	D041	<400.0	8000	SW-846-1311/SW-846-8270
2,4,6-Trichlorophenol	D042	<2.0	40	SW-846-1311/SW-846-8270
TCLP HERBICIDES				
2,4-D	D016	<10.0	200	SW-846-1311/SW-846-8080
2,4,5-TP (Silvex)	D017	<1.0	20	SW-846-1311/SW-846-8080
TCLP PESTICIDES				
Chlorodane	D020	<0.03	0.6	SW-846-1311/SW-846-8080
Endrin	D012	<0.02	0.4	SW-846-1311/SW-846-8080

Heptachlor	D031	<0.008	0.16	SW-846-1311/SW-846-8080
Lindane	D013	<0.4	8	SW-846-1311/SW-846-8080
Methyoxychlor	D014	<10.0	200	SW-846-1311/SW-846-8080
Toxaphene	D015	<0.5	10	SW-846-1311/SW-846/8080
GENERAL				
pH	D002	≤ 2.0 ≥ 12.5		SW-846-9045
Ignitability (Liquids Only)	D001	>140o F (60o C)		SW-846-C7
Free Liquids		NO FREE LIQUIDS allowed at Landfills (must pass Paint Filter)		SW-846-9095
PCB's		<50 mg/kg or ppm		SW-846-8080
TPH		Varies by Disposal facility and/or disposal application		SW-846-8015, EPA 418.1 API-(GC/FID), ASTM-D3987-85/SW-846-9070

REFERENCE AGENCIES AND/OR REFERENCES

- USEPA (40 Code of Federal Regulations (CFR))
- Railroad Commission of Texas (RRC) (Statewide Rule 98)
- http://www.epa.gov/osw/inforesources/pubs/orientat/

US EPA E&P Waste Exemption

In 1988, the EPA issued a regulatory determination stating that control of E&P wastes under RCRA Subtitle C regulations is not warranted. E&P wastes have hence remained exempt from Subtitle C regulations. The RCRA Subtitle C exemption, however, did not preclude these wastes from control under state regulations, under the less stringent RCRA Subtitle D solid waste regulations, or under other federal regulations. In addition, although they are relieved from regulation as hazardous wastes, the exemption does not mean these wastes could not present a hazard to human health and the environment if improperly managed.

With respect to crude oil, primary field operations include activities occurring at or near the wellhead and before the point where the oil is transferred from an individual field facility or a centrally located facility to a carrier for transport to a refinery or a refiner.

With respect to natural gas, primary field operations are those activities occurring at or near the wellhead or at the gas plant, but before the point where the gas is transferred from an individual field facility, a centrally located facility, or a gas plant to a carrier for transport to market. Examples of carriers include trucks, interstate pipelines, and some intrastate pipelines.

Primary field operations include exploration, development, and the primary, secondary, and tertiary production of oil or gas. Crude oil processing, such as water separation, de-emulsifying, degassing, and storage at tank batteries associated with a specific well or wells, are examples of primary field operations. Furthermore, because natural gas often requires processing to remove water and other impurities prior to entering the sales line, gas plants are considered to be part of production operations regardless of their location with respect to the wellhead.

The exempt status of an E&P waste depends on how the material was used or generated as waste, not necessarily whether the material is hazardous or toxic. It is important to remember that *all* E&P wastes require proper management to ensure protection of human health and the environment.

Mixing exempt and non-exempt wastes creates additional considerations. Determining whether a mixture is an exempt or non-exempt waste requires an understanding of the nature of the wastes prior to mixing and, in some instances, might require a chemical analysis of the mixture. Whenever possible, avoid mixing non-exempt wastes with exempt wastes. If the non-exempt waste is a listed or characteristic hazardous waste, the resulting mixture might become a non-exempt waste and require management under RCRA Subtitle C regulation. Furthermore, mixing a characteristic hazardous waste with a non-hazardous or exempt waste for the purpose of rendering the hazardous waste non-hazardous or less hazardous might be considered a treatment process subject to appropriate RCRA Subtitle C hazardous waste regulation and permitting requirements.

In a policy letter dated September 25, 1997, EPA clarified that a mixture is exempt if it contains exempt oil and gas exploration and production (E&P) waste mixed with non-hazardous, non-exempt waste. Mixing exempt E&P waste with non-exempt characteristic hazardous waste, however, for the purpose of rendering the mixture non-hazardous or less hazardous, could be considered hazardous waste treatment or impermissible dilution.

Exempt and non-exempt E&P Waste is listed herein. Please consult with state regulations for state-specific waste exemptions.

Exempt E&P Waste:

- Produced water
- Drilling fluids
- Drill cuttings
- Rigwash
- Drilling fluids and cuttings from offshore operations disposed of onshore
- Geothermal production fluids
- Hydrogen sulfide abatement wastes from geothermal energy production
- Well completion, treatment, and stimulation fluids
- Basic sediment, water, and other tank bottoms from storage facilities that hold product and exempt waste
- Accumulated materials such as hydrocarbons, solids, sands, and emulsion from production separators, fluid treating vessels, and production impoundments

- Pit sludges and contaminated bottoms from storage or disposal of exempt wastes
- Gas plant dehydration wastes, including glycol-based compounds, glycol filters, and filter media, backwash, and molecular sieves
- Work over wastes
- Cooling tower blowdown
- Gas plant sweetening wastes for sulfur removal, including amines, amine filters, amine filter media, backwash, precipitated amine sludge, iron sponge, and hydrogen sulfide scrubber liquid and sludge
- Spent filters, filter media, and backwash (assuming the filter itself is not hazardous and the residue in it is from an exempt waste stream)
- Pipe scale, hydrocarbon solids, hydrates, and other deposits removed from piping and equipment prior to transportation
- Produced sand
- Packing fluids
- Hydrocarbon-bearing soil
- Pigging wastes from gathering lines
- Wastes from subsurface gas storage and retrieval, except for the non-exempt wastes listed herein
- Constituents removed from produced water before it is injected or otherwise disposed of
- Liquid hydrocarbons removed from the production stream but not from oil refining

Non-Exempt E&P Waste:

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes

- Waste solvents
- Oil and gas service company wastes such as empty drums, drum rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums transporting or containing non-exempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers
- Used equipment lubricating oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste in transportation pipeline related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Boiler scrubber fluids, sludges, and ash
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation, and miscellaneous solids

Although non-E&P wastes generated from crude oil and tank bottom reclamation operations (e.g., waste equipment cleaning solvent) are non-exempt, residuals derived from exempt wastes (e.g., produced water separated from tank bottoms) are exempt. For a further discussion, see the Federal Register notice, Clarification of the Regulatory Determination for Waste from the Exploration, Development, and Production of Crude Oil, Natural Gas and Geothermal Energy, March 22, 1993, Federal Register Volume 58, Pages 15284 to 15287.

Reference: Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations, EPA530-K-01-004, October 2002
Oil Spill Waste Management –In Louisiana, the regulatory responsibilities of waste/materials generated during an oil spill(s) are shared by the Louisiana Department of Environmental Quality (LDEQ) and Louisiana Department of Natural Resources, Office of Conservation (LDNR). LDEQ has authority over any industrial, municipal, or medical waste(s) as defined in LAC 33:VII generated during an oil spill. While LDNR has authority over any E&P waste(s) generated as defined in LAC 43:XIX.

LDEQ E&P Waste Exemptions

The following solid wastes are not subject to the provisions of the LDEQ's solid waste regulations (LAC 33:VII, Parts 1 and 2): produced-waste fluids and mud resulting from the exploration for or production of petroleum and geothermal energy, and all surface and storage waste facilities, incidental to oil and gas exploration and production, within the jurisdiction of the Department of Natural Resources, Office of Conservation. LAC 33:VII.301.A.1.c. This exemption applies specifically to E&P Wastes Type 1 (Salt Water (produced brine or produced water), Type 2 (Oil-based drilling wastes (mud, fluids, and cuttings), and Type 16 (Crude oil spill cleanup waste).

The following solid waste are not subject to the provisions of the LDEQ's hazardous waste regulations (LAC 33:V.Subpart 1): drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy (LAC 33:V.105.D.2.e.)

Solid Waste Management

Debris from the Oil Spill shall be managed in accordance with the LDEQ Comprehensive Plan for Disaster Clean-up and Debris Management ("the DMP") (revised September 29, 2010 or current version). Specifically, portions of Section 9, "Final Disposal Options," address oil contaminated debris and hazardous waste.

Additional Solid Waste Management requirements may be required by any Emergency Declaration and Administrative Orders issued by the State of Louisiana and/or the LDEQ.

Waste(s) under the jurisdiction of the LDNR will be managed in accordance with their rules, regulations, and/or emergency orders.

Waste Categories

Louisiana has identified the following categories of waste/materials to be managed during a crude oil spill. Tables C-1 and C-2 include guidance from the LDEQ and LDNR regarding the classification(s) and disposal options for identified E&P waste.

Waste Stream	Waste Classification	State	Disposal/Treatment Option
Disposable Oil Booms – Oil has been removed to the extent practical **Containment booms – Final Disposal – Oil has been removed to extent practical** **Oil Contaminated Rags, Gloves, Disposal Personal Protective Equipment, etc.** **Oil Contaminated Debris – Cups, Styrofoam Containers, etc.** **Tar balls / tar**	Solid Waste/Industrial Waste	Solid	Disposed of at a LDEQ-permitted Type I landfill

patties			
Oil Contaminated Soils and Vegetative Debris	E&P waste, waste type 16, Crude oil spill clean-up waste	Solid	Disposed of at LDNR permitted transfer station or commercial facility site or at LDEQ-permitted Type 1 landfill.
Containment Booms – Wash-off waste fluids and solids not contaminated with hazardous waste. **Oily Wastewater not contaminated with hazardous waste**	E&P waste, waste type 16, Crude oil spill clean-up waste	Liquid	Dispose of at approved LDNR permitted site
Dead or Injured Wildlife	LA Department of Wildlife and Fisheries	Solid	This will be managed by LDWF and will only be managed as a waste, if and when directed by the agency.
Oil Removed from Booms	E&P waste, waste type 16, crude oil spill cleanup waste or waste type 50, salvageable hydrocarbons bound for permitted salvage oil operators	Liquid	Disposed of at approved LDNR permitted site.

Other materials/waste that can be expected:

	Material Type/Waste Stream	State	Disposal/Reclaim/ Recycle Option
Crude oil skimmed from the water and spill source or Oil removed from booms	Reclaimable/Recyclable oil/E&P Waste	Liquid	Recovered Oil
Potential hazardous waste collected as part of oil spill cleanup operations	Potential hazardous waste	Liquid/Solid/ Mixed	Approved RCRA Permitted TSD facility
Uncontaminated Trash (Food waste, wrappings, paper, cardboard, soda can, etc.)	Municipal Trash	Liquid/Solid/ Mixed	Disposed of at LDEQ Permitted Type II facility
Plastic bottles and aluminum cans	Recyclables	Solid	Recycling Facility

The Responsible Party (RP) shall develop oil spill specific plans necessary to characterize and manage the wastes generated pursuant to applicable Federal, State, and local requirements. These plans may include waste sampling and analysis plans, waste management plans, site safety plans, SPCC, etc.
Waste Recovery and Recycling
The RP will develop a strategy to facilitate the reclamation or recycling of as much materials/oil as practical prior to sending the material for disposal. These strategies may include but not be limited to the following:

- Recovery of oil prior to disposal;

- Reuse/recycling of containment boom;
- Recycling of municipal solid waste such as paper, aluminum, plastics, etc.

The RP will also develop Best Management Plan(s) (BMP) and/or Standard Operation Procedures (SOP) which will include waste/material management procedures for the collection, staging, transportation, and final disposal/recycling of the waste/materials.

Louisiana Type 1 and 2 Solid Waste Landfills (Source LDEQ Webpage)

Parish	Master AI #	Name	Company Phone	Type 1	Type 2	Facility's physical address
Acadia	20036	Acadia Parish Police Jury- Acadia Parish Sanitary Landfill	(337)783-4834		X	611 Petal Rd. Egan, LA 70531
Allen	52277	IESI Corp- Timerlane Landfill	(337) 753-2296	X		1158 Landfill Rd. Oakdale, LA 71463
Ascension	4803	BFI- Colonial Landfill	(225) 675-8021	X	X	5328 Hwy 70 Sorrento, LA 70778
Ascension	51910	Belle Co LLC- Landfill	(225) 473-7251	X	X	4 Mi N of HWYs 70 & 1 Donaldsonville LA 70346
Calcasieu	324	BFI- Woodland Hill Landfill	(337) 882-1477	X	X	2500 HWY 108 S Sulphur LA 70663
Jefferson	6961	Jefferson Parish Sanitary Landfill	(504) 436-0152	X	X	5800 HWY 90 W Avondale, LA 70094
Jefferson	32219	River Birch Inc- River Birch Landfill	(504) 436-1288	X	X	2000 S Kenner Ave Avondale, LA 70094
Jefferson Davis	12389	Jefferson Davis Parish Sanitary Landfill Commission	(337) 734-4135	X	X	16157 Landfill Rd Welsh, LA 70591
St. Mary	9340	St Mary Parish Government- Harold J "Babe" Landry Landfill	(985) 385-4531	X	X	752 Thorguson Dr. Berwick, LA 70342
Plaquemines	20061	Tidewater Landfill LLC- Coast Guard Road Sanitary Landfill	(504) 361-0094	X	X	266 Coast Guard Rd. Venice, LA 70091

Vermilion	148	Vermilion Parish Police Jury-Municipal Landfill	(337) 898-4228		X	HWY 696 Meaux, LA 70555

A complete list of LDEQ permitted solid waste landfills can be found at the link below:
http://www.deq.louisiana.gov/portal/DIVISIONS/WastePermits/SolidWastePermits.aspx

Louisiana E&P Commercial Facilities (Source DNR SONRIS/2000 Database)

Parish	Site Id	Name	Company Phone	Type	Facility's Physical Address
Acadia	101	Guillory Tank Truck Service	(337) 684-6741	B	200 Saltwater Lane Eunice, La 70535
Acadia	102	Saline Injection Systems Co	(337) 783-5028	B	219 Sisco Road Egan, LA 70531
Acadia	104	Habetz Oilfield Saltwater Services	(337) 783-4677	B	P.O. Box 1552 Crowley, LA 70527
Ascension	301	Colonial Solid Waste Landfill	(225) 252-9038	DE	5328 Hwy 70 Sorrento, LA 70778
Calcasieu	1003	Louisiana Tank, Inc	(337) 436-1000	B	Old Town Road Lake Charles, LA 70615
Calcasieu	1005	Chemical Waste Management	(337) 583-3613	A	7170 John Brannon Road Sulphur, LA 70665
Cameron	1205	Newpark Environmental Services – Cameron	(888) 984-4445	T	434 Davis Road Cameron, LA 70631
Cameron	1207	US Liquids of LA - Cameron	(337) 824-3194	T	Wakefield Road Cameron, LA 70631

Jefferson	2602	River Birch - Avondale	(504) 436-1288	DE	2000 South Kenner Road Avondale, LA 70094
Jefferson Davis	2701	US Liquids of LA - Mermentau	(337) 824-3194	A	Hwy 90 East Jennings, LA 70546
Jefferson Davis	2704	SWD, Inc	(337) 433-5929	B	18342 Miller Oilfield Road Iowa, LA 70647
Jefferson Davis	2705	MBO, Inc Lacassine	(337) 588-4558	A	19141 GRO Racca Road Iowa, LA 70647
Jefferson Davis	2707	CHI - Jennings	(337) 824-8184	B	4050 Hwy 1126 Jennings, LA 70546
Lafourche	2901	US Liquids of LA - Bourg	(337) 824-3194	A	771 Bourg-Larose Hwy Bourg, LA 70343
Lafourche	2910	Newpark Environmental Services - Fourchon I	(888) 984-4445	T	17th Street Pass Fourchon, LA 70357
Lafourche	2911	US Liquids of LA - Port Fourchon	(337) 824-3194	T	17th Street at E-Slip Pass Fourchon, LA 70357

Lafourche	2913	Newpark Environmental Services - Fourchon II	(888) 984-4445	T	16th StreetGolden Meadow, LA 70357
Lafourche	2919	US Liquids of LA - Port Fourchon 2	(337) 824-3194	T	153 17th Street Port Fourchon, LA 70357
Plaquemines	3809	Newpark Environmental Services - Venice	(888) 984-4445	T	213 Coast Guard Rd Venice, LA 70091
Plaquemines	3813	US Liquids of LA - Venice	(337) 824-3194	T	367 Tidewater Road Venice, LA
Plaquemines	3815	Premier Environmental SFI	(985) 626-8758	A	20487 Hwy 15 Bohemia, LA
St. Martin	5001	FAS Environmental Services	(985) 252-8825	B	1081 "B" Hwy Pierre Part, LA 70339
St. Martin	5002	FAS Environmental Services	(985) 252-8825	T	Atchafalaya River Basin Belle River, LA 70339
St. Mary	5101	US Liquids of LA - Bateman Island	(337) 824-3194	A	On Intracoastal Waterway Bateman Island, LA 70381

St. Mary	5102	Newpark Environmental Services - Morgan City	(888) 984-4445	T	Hwy 90 East Morgan City, LA 70381
St. Mary	5108	PSC Industrial Outsourcing, Inc.	(337) 233-4889	A	LA Hwy 87 Jeanerette, LA 70544
St. Mary	5109	US Liquids of LA - Berwick	(337) 824-3194	T	Berry Bros Dock Berwick, LA 70342
St. Mary	5111	US Liquids of LA - MCY	(337) 824-3194	T	1200 Youngs Road Morgan City, LA 70380
Terrebonne	5501	Houma SaltWater Disposal Corp	(985) 868-2477	B	1034 Coteau Road Houma, LA 70364
Terrebonne	5503	Houma SaltWater Disposal	(985) 868-2477	T	1035 Coteau Road Houma, LA 70364
Vermilion	5703	Newpark Environmental Services - Intracoastal City Yard	(888) 868-2477	T	Broussard Bros Doc Intracoastal City, LA 70510
Vermilion	5710	US Liquids of LA - Intracoastal City Yard	(337) 824-3194	T	24915 Highway 333 Intracoastal City, LA 70519

A complete list of LDNR E&P Waste Facilities can be found at the links below:

List: http://reports.dnr.state.la.us/reports/rwservlet?SRCN4683O_p
Map:
http://dnr.louisiana.gov/assets/OC/env_div/ep_waste_sec/LA_Commercial_Facilities_102610.pdf

Louisiana Commercial Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF)

Parish	Master #	Name	Company Phone	Facility's Physical Address	HW ID No.
East Baton Rouge	1516	Clean Harbors Baton Rouge, LLC	(225) 778-3511	13351 Scenic Highway, Baton Rouge, LA 70807	LAD010395127
Rapides	32096	Clean Harbors Colfax, LLC	(318) 627-3443	3763 Highway 471 Colfax, LA 71417	LAD981055791
Tangipahoa	24512	Lamp Environmental	(985) 345-4775	46257 Morris Road, Hammond, LA 707401	LAO000365668
Calcasieu	742	Chemical Waste Management	(337) 583-2169	7170 John Brannon Road, Sulphur, LA 70665	LAD000777201
East Baton Rouge	1314	Rhodia, Inc	(225) 359-3722	1275 Airline Highway, Baton Rouge, LA 70805	LAD008161234

New Orleans Area Contingency Plan

Chapter 9000
Appendix Q
New Orleans Area Permit and Consultation Guide

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix Q New Orleans Area Permit and Consultation Guide

Under Development

To be included 2015.

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New Orleans Area Contingency Plan

Chapter 9000
Appendix R
Area Response Resource Inventory

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix R Area Response Resource Inventory

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Chapter 9000 Appendices, Appendix R Area Response Resource Inventory

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Area Response Resource Inventory

Introduction

This Appendix contains the response resource information specific to the New Orleans Area Committee's Area of Responsibility from the National Strike Force Coordination Center's (NSFCC) Response Resource Inventory database. Oil Spill Response Organizations (OSROs) and Non-OSRO entities are encouraged to input and maintain owned spill response equipment in this database for inclusion to this appendix. Equipment can be registered at: https://cgrri.uscg.mil.

Proprietary information is intended to provide notice of the need to protect information not owned by the U.S Government and marked with a contractor or third party imposed restrictive legend asserting intellectual property rights. Government and non-OSRO equipment owners can also register equipment in the NSFCC's Response Resource Inventory. Government Agencies and Non-OSROS can register by calling (252) 331-6000.

Resources

Booms

Booms are devices for controlling the spread of oil to reduce the chance of polluting shorelines and other natural resources.

Boom Types

The different types of booms are listed and explained below:

Curtain- flexible skirt which is free to move independently of the floats.

Fence- a rigid or semi-rigid materials as a vertical screen against oil floating on the water.

Fire- includes both fence and curtain types, which is designed to withstand the heat and stress of in-situ burning.

Intertidal- uses air or foam for buoyancy and water for ballast. It floats free at high tide and seals to the mud or sand at low tide. When grounded, the heavy water ballast seals the boom to the shoreline and prevents oil from moving along the intertidal zone.

Other- any type of boom that is not curtain, fence, fire, or intertidal boom.

Connector Types

Boom connector- a boom end-connector device permanently attached to a boom and used for joining boom section to one another or to other devices associated with it. The following list contains the type of connectors:

ANSI Connector- built to the standard defined by the American National Standards Institute.

ASTM Connector- built to the specifications of the American Society of Testing and Materials. The ASTM specifications define it as a quick Z-connector which is secured with a self-locking cross pin attached to each end of the boom by a lanyard, ling enough to reach the cross pin hole.

Bolt Connector- used by inserting through matching holes in the fabric on both ends of the boom and secured with a nut or wing nut.

Quick Connector- jointed and secured with a wing nut or pin. There is no male or female connector to worry about; this allows any two ends to be joined.

Slide Connector- the Slide Connector has a male and female attachment on opposite ends of the boom.

Slotted Tube Connector- the Slotted Tube Connector has a plastic slotted tube which slides over a seated rope in each end of the boom. There is no male or female connector.

Universal Slide Connector- two ends that slide together from top or bottom. There is no male or female connector, so any two can be joined, as long as one is up and one is down.

Other Connector- a Connector that is not ANSI, ASTM, Bolt, Quick, Slide, Slotted Tube, or Universal Slide Connector.

Boom Height

The height of the boom is the total height above and below the waterline of a boom and is measured in inches (in). The height is calculated by using the following formula: Boom Height = Freeboard + Draft. The boom freeboard is the vertical height measurements of the boom above the water line. This measurement includes the inflated float and is measured in inches. The boom draft is the length of the boom directly under the floatation.

Boom Length

The total length if the boom from one end to the other. The measurement should be in feet.

Boom Weight

The total weight of the boom is the weight of all lengths of boom at a site. The measurement is made in pounds (lbs.)

Boom Storage Volume

The total cubic storage area required for all boom at a site. The measurement is calculated by using the following formula: **Height x Width X Length= Cubic Feet** (cu.ft.).

Boom Status

The status of the boom is one or more of the following:

Available- an indicator of the availability of a particular resource item outside the local area (COTP Zone).

Dedicated- determines if the boom is ONLY able to operate with oil spills and not hazardous substances.

Packaged- an indicator that the resource is packaged for transportation. The number of packages of a resource is the number of individual packages of the resource that are contained in the total length of the resource at a site.

Skimmers

A device used to remove spilled oil from the surface of the water through means of mechanical suction, adhesion, absorption, 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.

Skimmer Types

The following is a description of the types of skimmers.

Air- an Air Skimmer is a Vacuum system or an air conveyer attached to a hose which may be fitted with specially designed skimmer heads.

Belt Adhesion- a Belt Adhesion Skimmer provides either (a) upward rotating belts which carry the oil squeezes off into a storage tank, or (b) downward rotating belts which first submerge the oil; which then surfaces behind the belt into a defined area within the vessel.

Disc Adhesion- a Disk Type of Skimmer provides disks which rotate through the oil. Oil adheres to the disk surface and is then removed by a scraper to a central point and is pumped to storage.

Oleophilic- an Oleophilic Rope Adhesion Skimmer has a central tension core rope, forming a long continuous mop. The floating mop is pulled by powered rollers around a return pulley. The oleophilic surface of the rope causes the oil to adherer and rollers squeeze the oil into a tank.

Vortex Suction- a Vortex Suction type Skimmer is induced by an impeller and causes the oil to concentrate at the center of the vortex due to centrifugal effects. The collected oil is pumped from the top and the free water released from the bottom.

Weir Suction- a Weir Suction Skimmer uses the force of gravity to cause the oil floating on the surface of the water to flow over a self-leveling weir into the well of the skimmer. It is then pumped to storage.

Other- a skimmer type that is not Air, Belt Adhesion, Disc Adhesion, Oleophilic, Vortex Suction, or Weir Suction type skimmer.

Skimmer Measurements

The following is a list of measurements for a skimmer resource.

Skimmer Pump Capacity- the flow rate for a pump associated with a skimmer. Measurements are made in gallons per minute (Gpm).

Skimmer Quantity- the quantity of a skimmer resource that is owned and located at an organization site of a particular skimmer type. Quantity measurement is a number.

Skimmer Weight- Weight is the total weight of a single skimmer. This is important information for logistics. Measurement is made in pounds (lb).

Skimmer Status

The status of the skimmer is one or more of the following:

Available- an indicator of the availability of a particular resource item outside of the COTP Zone.

Dedicated- determines if the skimmer is ONLY available to operate with oil spills.

Transportable- an indicator that the resource can be transported.

Temporary Storage

Resources that provide a capacity to contain and hold material recovered during an oil spill incident. Temporary Storage may also provide the facility to transport these materials from the spill site.

Temporary Storage Types

Temporary Storage Equipment consists of the following types:

Inflatable- an inflatable device such as a rigid dracone or bladder that can be used as a portable site for recovered oil.

Modular Storage Container- modular Storage containers are a type of portable storage.

Oil Storage Bag- Oil Storage Bags are a type of portable storage.

Tank Truck- a Tank Truck is considered a portable storage device.

Temporary Storage Draft

The draft is the depth of the temporary storage beneath the water. The measurement is made in feet (ft).

Temporary Storage Capacity

The capacity is the amount of oil storage capacity a temporary storage unit has. The measurement is made in gallons (gal).

Temporary Storage Quantity

The quantity of a temporary storage resource that is owned and located at an organization site. Quantity measurement is a number.

Temporary Storage Weight

The total weight of the Temporary Storage is the weight in pounds (lb). This is an important measurement for logistic information.

Vacuum Systems

A resource that has a vacuum system for removing oil. It usually provides the capability for storage and the transport of the oil away from the spill site.

Vacuum System Measurements

The following list describes the measurements necessary for vacuum systems:

Vacuum Rate- the Vacuum Rate is the maximum number of gallons per minute the pump on the vacuum system is able to vacuum.

Vacuum Holding Capacity- the Holding Capacity is the maximum number of gallons a vacuum system is able to hold.

Vacuum Quantity- the quantity of a vacuum system resource that is owned and located at an organization site.

Vacuum System Status

The status of the vacuum system resource is one of more of the following:

Skimming Capable- determines if the vacuum system has skimming capabilities.

Available- an indicator of the availability of a particular resource item outside the COTP Zone.

Dedicated- determines is the system is ONLY capable to cleanup oil spills.

Solid Capable- determines is the vacuum system us able to operate for solid substances.

Liquid Capable- determines is the vacuum system is able to operate in liquid substances.

Vessels

Boasts or other water forms of transportation that are able to aid during an oil spill incident.

Vessel Type

The following are the vessel description types of the RRI, *Crane Barge, Deck Barge, Hotel Barge, Jon Boat, Trawler, Utility Work Boat, and Other*.

Vessel Name

The name given and registered for the vessel.

Vessel Length

The Vessel Length is the total length of the vessel from bow to stern, measures in feet (ft).

Vessel Beam

Vessel Beam is the width of the vessel at the widest point or at the mid-point of the length. The beam is measured in feet (ft).

Vessel Draft
The vertical distance between the waterline and the bottom of the vessel hull.

Vessel Weight
The Vessel Weight is the total weight of the vessel. This is important information of logistics. Measurement is made in pounds (lb).

Vessel Storage Capacity
The maximum number of gallons a Vessel is able to hold.

Vessel Quantity
The quantity of a vessel resource that is owned and located at an organization site. Quantity measurement is a number.

Vessel Status
The status of a vessel is one or more of the following:

Skimming Capable- determines is the vessel has skimming capabilities.

Available- an indicator of the availability of a particular resource item outside the Captain of the Port Zone.

Dedicated- determines if the equipment is used ONLY for oil spills.

Night Capabilities- determines if the vessel is operable in the night/dark.

Shallow Water- determines if the vessel is able to operate properly in shallow water.

Packaged- an indicator that the resource is packaged transportation.

Number of Packages- the number of individual packages of the resource that are contained in the total length of the resource at a site.

Equipment on Board
Additional equipment on board the vessel should be entered in the text box provided.

Beach Cleaners
Resources used to clean spilled oil from a beach area.

Beach Cleaner Types
Beach cleaners consist of the following types:

Manual Cleaners- Manual Beach Cleaning involves the use of shovels, rakes, sorbents, and hand pickup to clean areas of a beach. Used in areas where mechanical cleaning is impractical or would damage a sensitive environment. Most manual cleaning involves the use of ordinary construction equipment.

Mechanical Cleaners- Mechanical Beach Cleaners include most commercially manufactured beach cleaning equipment. Mechanical Cleaners are designed for use on flat sandy or mud beaches. In their simplest form, mechanical cleaners include specialized equipment either self propelled or attached to tractors or road equipment.

Mechanical/Hydraulic- Mechanical/Hydraulic Beach Cleaner is specializes mechanical cleaner attached to tractors or road equipment and uses hydraulic propulsion.

Paddle Belt- a Paddle Belt Beach Cleaner operates like a paddle belt skimmer except it picks up the oiled beach surface.

Screening Belt- a Screening Belt type of Beach Cleaner transports surface beach materials up a conveyor belt, deposits them in a truck or processes them and returns the cleaned sand to the beach.

Vacuum Washer- Vacuum/Washing Beach Cleaners are mobile vacuum equipment. In many cases, the units also provide for water washing. Oil adhering to various surfaces is first washed off, and then recovered with the vacuum. Vacuum beach cleaning is usually done where there is good road access. Vacuum trucks and portable units are frequently used in such areas.

Sorbent- *i.e., Pads, booms, pillows, particulates, granules, etc.*

Other- any type of beach cleaner that is not a manual cleaner, mechanical cleaner, mechanical/hydraulic, paddle or screening belt, vacuum washer, or sorbent beach cleaner.

Beach Cleaner Weight

The total weight of the beach cleaner.

Beach Cleaner Quantity

The quantity of a Beach Cleaner resource that is owned and located at an organization site.

Beach Cleaner Status

The status of the beach cleaner is one or more of the following:

Available- an indicator of the availability of a particular resource item outside the COTP Zone.

Transportable- an indicator the resource can be transported. Any details about whether the resource is packaged or not and how it can be transported.

Packaged- an indicator that the resource is packaged for transportation.

Self Supported- an indicator whether a Beach Cleaner can operate under its own power.

Dispersants

Chemicals that are used to react with oil in water. The active ingredient in dispersants is surface active agents or surfactants. Surfactants have varying actions toward water and oil.

Dispersant Quantity

Quantity is the only measurements for a dispersant resource. Quantity measurement is a number.

Dispersant Status

The status of the dispersant is one or more of the following.

Available- an indicator of the availability of a particular resource item outside the COTP Zone.

Transportable- an indicator that the resource can be transported.

Packaged- an indicator that the resource is packaged for transportation.

Dispersant Delivery

Systems used in spill cleanup to apply dispersant rapidly, particularly over slicks which cover a large area.

Dispersant Delivery Types

Systems used in spill cleanup to apply dispersants rapidly, particularly over slicks which cover a large area. The types of Dispersant Delivery Types in the RRI are plane and vessel.

Dispersant Delivery Status

The status of the dispersant delivery resource is one or more of the following:

Available- an indicator of the availability of a particular resource item outside the COPT Zone.

Transportable- an indicator that the resource can be transported.

Packaged- an indicator that the resource is packaged for transportation.

Firefighting Equipment

A broad range of equipment used in fighting marine fires.

Firefighting Equipment Types

Firefighting equipment types in the RRI are broken into three type. Foam stockpile, vessel, and other.

Weight

The weight is the total weight of the selected type of firefighting equipment. The weight measurement if made in pounds (lb).

Quantity

The Quantity of the selected type of firefighting equipment resource that is owned and located at an organization site. Quantity measurement is a number.

Firefighting Equipment Status

The status of the firefighting equipment is one or more of the following:

Available- an indicator of the availability of a particular resource item outside the COTP Zone.

Transportable- an indicator that the resource can be transported.

Package- an indicator that the resource is packaged for transportation.

Oily Water Separators

Oily Water Separators (OWS) physically separate oil from oily water. The OWS are used as a secondary cleanup method, and have oil water input and non-harmful discharge water output.

OWS Types

The following is a list of OWS types:

Centrifuge- A Centrifuge type OWS uses centrifugal forces to separate the oil and water.

Coalescing- A Coalescing type OWS uses oleophilic material to cause the oil in the water to adhere for easier separation.

Filter- A Filter type OWS uses a filtering mechanism to separate the oil from water.

Gravity- A Gravity type OWS uses natural gravity forces to separate oil from water.

Other- A type of OWS that is not Centrifuge, Coalescing, Filter, or Gravity.

OWS Measurements

The following is a list of measurements for OWS resources.

OWS Capacity- The capacity is the flow rate for an OWS. The measurement is made in gallons per minute (gpm).

OWS Discharge Capacity- The discharge capacity of an OWS is the value of the amount of oil in the water being discharges by an OWS. The measurement for discharge capacity is parts per million (ppm).

OWS Weight- The total weight of the OWS. This is important information for logistics. The measurement is made in pounds (lb).

OWS Quantity- The quantity of an OWS resource that is owned and located at an organization site

OWS Status

The status of an OWS resource is one or more of the following:

Available- an indicator of the availability of a particular resource item outside the COTP zone.

Transportable- An indicator that the resource can be transported.

Packaged- An indicator that the resource is packaged for transportation.

Product Transfer Pumps

Product Transfer Pump Types

Archimedean Screw- Developed especially for moving highly viscous oil mixed with debris. It is referred to variously as screw pump, positive displacement pump, and Archimedean Screw Pump. It employs a progressive Archimedean screw, generally with sharp blades, to move the viscous oil to almost any elevation. It has almost no suction and simply drives the oil up and out of the tank or hopper.

Bladeless- A series of parallel flat or concave discs attach to a powered shaft. When a fluid is introduced at the center of these rotating discs, boundary layer drag on both sides of the discs imparts energy to it. The fluid moves in an outward helical path, discharging into a diffuser outside the pump case.

Centrifugal- Uses spinning impeller vanes to increase velocity of the fluid as it moves from the center of the pump to the outer edge.

Diaphragm- Uses a pumping action which results from alternative compression and relation of a specially designed resilient hose. The hose is compresses between the inner wall of the housing and the compression shoes on the rotor. A liquid lubricant is the housing minimizes sliding friction. The fluid being pumped is in contact only with the inner wall of the hose. During compression, abrasive particles in the fluid are cushioned in the thick inner hose wall- returning to the fluid stream after compression. The pump has no seats, seals, or valves. It is self priming and is designed for industrial use.

Peristaltic- Uses a pumping action which results from alternate compression and relation of a specially designed resilient hose. The hose is compressed between the inner wall of the housing and the compression shoes on the rotor. The liquid lubricant in the housing minimizes sliding friction. The fluid being pumped is in contact only with the inner wall of the hose. During compression, abrasive particles in the fluid are cushioned in the thick inner hose wall- returning to the fluid stream after compression. The pump has no seats, seals, or valves. It is self priming and is designed for industrial use.

Progressive Cavity- A positive displacement type of pump that reciprocated with rubber pistons. The pumping action results from rotation of three or more eccentric discs fitting into three plastic displacement chambers (shoes) lines with synthetic. Each disc reciprocates horizontally in its shoe, like a piston in cylinder. At the same time it makes toe shoe reciprocate vertically, so that ports in the base of the shoe alternatively open and close discharge ports. Delivery from each shoe id intermittent.

Other- A transfer pump type that is not Archimedean Screw, Bladeless, Centrifugal, Diaphragm, Peristaltic, Progressive Cavity, and Sliding Shoe.

Product Transfer Pump Measurements

Transfer Pump Transfer Rate

Transfer Pump Weight- This is the total weight of the resource.

Transfer Pump Quantity- The quantity of the resource that is owned and located at an organization site.

Product Transfer Pump Status

Available- A indicator of the availability of a particular resource item outside the COPT zone.

Transportable- An indicator that the resource can be transported.

Dedicated- An indicator that the piece of equipment is used ONLY for oil cleanup.

Support Equipment

Miscellaneous logistical support equipment that is used to supplement other oil spill removal resources.

New Orleans Response Resource Inventory

Jefferson Parish

Bertucci Industrial Services

#7 RIVER ROAD,
JEFFERSON, LA 70181

COTP Zone:	EPA Region:
New Orleans - DISTRICT 8	Region - 6

Point of Contact:	Contact Email:	OSRO Number:
RANDY PARISH,	placeholder@placeholder.com	5
Phone:	**FAX:**	**Status:**
(504)733-8899	(504)733-0720	Owned

River Ridge

100 Florida Street,
River Ridge, LA 70123

COTP Zone:	EPA Region:
New Orleans - DISTRICT 8	Region - 6

Point of Contact:	Contact Email:	OSRO Number:
Tony Cunningham , Michelle Matoka	tony@midgulfrecovery.com	393
Phone:	**FAX:**	**Status:**
(504)737-1600	(504)737-1660	Owned

USES - Harvey

3540 River Road,
Harvey, LA 70058

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Dennis Schenck, Jose Delgado

Contact Email:
dschenck@usesgroup.com

OSRO Number:
38

Phone:
(888)279-9930

FAX:
(504)279-7756

Status:
Owned

Premier Industries Harvey

3450 Peters Rd.,
Harvey, LA 70058

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Bill Darby, Sam Poole

Contact Email:
bdarby@prem-ind.com

OSRO Number:
374

Phone:
(985)774-3446

FAX:
(504)394-3773

Status:
Owned

Marine Pollution Control (New Orleans, LA)

1136 5th ST.,
Gretna, LA 70053

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Mike Popa, Jeff Stamper	**Contact Email:** placeholder@placeholder.com	**OSRO Number:** 3
Phone: (313)849-2333	**FAX:** (313)849-1623	**Status:** Owned

Poydras

2505 Buccaneer Dr.,
Marrero, LA 70072

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Adam Evans,	**Contact Email:** aevans70072@gmail.com	**OSRO Number:** 407
Phone: (757)831-1093	**FAX:** ~	**Status:** Owned

Bertucci Industrial Services

19 Veterans Memorial Blvd,
Kenner, LA 70062

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Jeff Hall,

Contact Email:
bis@bisnola.com

OSRO Number:
5

Phone:
(504)628-1165

FAX:
(504)733-0720

Status:
Owned

Industrial Cleanup, Inc. (ICI)

Associated Gulf Coast Responders, 1213 River Road
Westwego, LA 70094

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Rustin D. Johnson, President, Ron A. Kirsch, Vice President

Contact Email:
placeholder@placeholder.com

OSRO Number:
23

Phone:
(800)436-0883

FAX:
(504)436-3140

Status:
Owned

OMI-NES (Gretna, LA)

1125 Fourth Street,
Gretna, LA 70053

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Donald J. Nalty Jr., Joseph J. Smith

Contact Email:
placeholder@placeholder.com

OSRO Number:
12

Phone:
(504)362-8850

FAX:
(504)361-5372

Status:
Owned

National Response Corporation (New Iberia, LA)

5619 Port Road, c/o AMPOL
New Iberia, LA 70562

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Mike Noel,

Contact Email:
iocdo@nrcc.com

OSRO Number:
16

Phone:
(281)899-4848

FAX:
(281)899-4849

Status:
Owned

USES Box - Marrero

5000 River Rd,
Marrero, LA 70072

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Dennis Schenck, Jose Delgado

Contact Email:
dschenck@usesgroup.com

OSRO Number:
38

Phone:
(888)279-9930

FAX:
(504)279-7756

Status:
Owned

St. James Parish

OMES

6410 St. James Terminal Rd,
St James , LA 70086

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Robert George,

Contact Email:
robertgeorge@omies.com

OSRO Number:
12

Phone:
(800)645-6671

FAX:
~

Status:
Owned

OMES

1601 4th Street,
Harvey, LA 70058

COTP Zone:	**EPA Region:**
New Orleans - DISTRICT 8	Region - 6

Point of Contact:	**Contact Email:**	**OSRO Number:**
Robert George,	robertgeorge@omies.com	12
Phone:	**FAX:**	**Status:**
(800)645-6671	(504)367-7567	Owned

Plaquemines Parish

USES Venice LA

42156 Highway 23 S, P. O. Box 830
Venice, LA 70091

COTP Zone:	**EPA Region:**
New Orleans - DISTRICT 8	Region - 6

Point of Contact:	**Contact Email:**	**OSRO Number:**
Dennis Schenck, Buddy Boudreaux	dschenck@usesgroup.com	38
Phone:	**FAX:**	**Status:**
(888)279-9930	(504)534-2013	Owned

Phillips PSC /VENICE

40360 HIGHWAY 23 SOUTH,
BOOTHVILLE, LA 70038

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: MIKE STEVENS, DAN SHARLOU	**Contact Email:** placeholder@placeholder.com	**OSRO Number:** 25
Phone: (800)797-9992	**FAX:** (504)534-2876	**Status:** Owned

Clean Harbors Environmental (Belle Chasse, LA)

251 Walker Road,
Belle Chasse, LA 70037

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Don Caldera,	**Contact Email:** caldera.don@cleanharbors.com	**OSRO Number:** 13
Phone: (504)656-8288	**FAX:** (504)656-0709	**Status:** Owned

Belle Chasse Office

101 Herman Dr,
Belle Chasse, LA 70037

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Scott Butaud, Gordan Rice

Contact Email:
sbutaud@triadresponsegroup.com

OSRO Number:
385

Phone:
(504)392-4099

FAX:
(504)394-7220

Status:
Owned

National Response Corporation (Belle Chasse, LA)

145 Keating Drive, Oil Mop
Belle Chase, LA 70037

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Mike Noel,

Contact Email:
iocdo@nrcc.com

OSRO Number:
16

Phone:
(281)899-4848

FAX:
(281)899-4849

Status:
Owned

PREPO - Fort Jackson/Venice Site

c/o Louisiana Responder, 100 Herbert Harvey Lane
Buras, LA 70041

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Tony Palmisano, Tony Palmisano

Contact Email:
palmisanot@msrc.org

OSRO Number:
22

Phone:
(800)259-6772

FAX:
(504)433-4146

Status:
Owned

Calcasieu Parish

Clean Harbors Environmental (Sulphur, LA)

3201 Petro Drive,
Sulphur, LA 70663

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Peri Bryan, Brad Dickes

Contact Email:
bryan.peri@cleanharbors.com

OSRO Number:
13

Phone:
(337)882-1025

FAX:
(337)882-1029

Status:
Owned

National Response Corporation (Sulphur, LA)

2208 Industrial Drive, c/o Miller Environmental Services
Sulphur, LA 70663

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Mike Noel,	**Contact Email:** iocdo@nrcc.com	**OSRO Number:** 16
Phone: (281)899-4848	**FAX:** (281)899-4849	**Status:** Owned

East Baton Rouge Parish

PREPO - Baton Rouge

EXXON MOBIL CORP, 4045 SCENIC HIGHWAY
Baton Rouge, LA 70805

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: John Buller, Theo Camlin	**Contact Email:** buller@msrc.org	**OSRO Number:** 22
Phone: (800)259-6772	**FAX:** (337)475-6401	**Status:** Owned

Clean Harbors Environmental (Baton Rouge, LA)

13351 Scenic Hwy,
Baton Rouge, LA 70807

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Jeff McGraw,	**Contact Email:** mcgraw.jeffery@cleanharbora.com	**OSRO Number:** 13
Phone: (225)778-3612	**FAX:** (225)778-3510	**Status:** Owned

I.C.I.,(Baton Rouge W/H; 1-D)

11245 Airline Highway, Warehouse 440 Front
Baton Rouge, LA 70816

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Rustin D. Johnson, President,	**Contact Email:** placeholder@placeholder.com	**OSRO Number:** 23
Phone: (800)436-0883	**FAX:** (504)291-4456	**Status:** Owned

St. John the Baptist Parish

ES&H - LaPlace

1085 Bert Street,
aPlace, LA 70068

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:	**Contact Email:**	**OSRO Number:**
Trey Boucvalt, Kevin Lormand	kevinl@esandh.com	50
Phone:	**FAX:**	**Status:**
(985)652-4885	(985)652-4854	Owned

I.C.I., (Garyville W/H; 1-A)

West End of West Azalea, Highway 54
Garyville, LA 70051

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:	**Contact Email:**	**OSRO Number:**
Rustin D. Johnson,	placeholder@placeholder.com	23
Phone:	**FAX:**	**Status:**
(800)436-0883	(504)436-3140	Owned

I.C.I., (Garyville, LA)

Highway 54,
Garyville, LA 70051

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Rustin D. Johnson, President,	**Contact Email:** placeholder@placeholder.com	**OSRO Number:** 23
Phone: (800)436-0883	**FAX:** (504)436-3140	**Status:** Owned

Phillips PSC

P.O. Drawer 550, 268 Power Blvd
Reserve, LA 70084

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: John Belloni, Robert George	**Contact Email:** placeholder@placeholder.com	**OSRO Number:** 25
Phone: (504)536-7612	**FAX:** (504)536-4656	**Status:** Owned

Lafourche Parish

ES&H - Golden Meadow

21148 Hwy 1,
Golden Meadow, LA 70357

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Trey Boucvalt, Kevin Lormand

Contact Email:
kevinl@esandh.com

OSRO Number:
50

Phone:
(985)475-3030

FAX:
(985)475-3031

Status:
Owned

Phillips PSC /GOLDEN MEADOW

21148 HIGHWAY 1,
GOLDEN MEADOW, LA 70357

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
ANDY DUFRENE, LEROY CHERAMIE

Contact Email:
placeholder@placeholder.com

OSRO Number:
25

Phone:
(504)475-7770

FAX:
(504)475-5916

Status:
Owned

St. Bernard Parish

U. S. Environmental Services

P.O. Box 949, 2809 E. Judge Perez Drive
Meraux, LA 70075

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Dennis Schenck, Jose Delgado	**Contact Email:** dschenck@usesgroup.com	**OSRO Number:** 38
Phone: (888)279-9930	**FAX:** (504)279-7756	**Status:** Owned

Ascension Parish

SWS Environmental Services Gonzales

10049 Industriplex, P.O. Box 1800
Gonzales, LA 70707

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Don Caldera, Michael Guichard	**Contact Email:** placeholder@placeholder.com	**OSRO Number:** 247
Phone: (800)336-0909	**FAX:** (225)677-5163	**Status:** Owned

USES Geismar LA

6338 Highway 73,
Geismar, LA 70734

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Dennis Schenck, Jose Delgado	**Contact Email:** dschenck@usesgroup.com	**OSRO Number:** 38
Phone: (888)279-9930	**FAX:** (225)677-9549	**Status:** Owned

Orleans Parish

USES - Alabo

702 Alabo Street,
New Orleans, LA 70117

COTP Zone: New Orleans - DISTRICT 8	**EPA Region:** Region - 6

Point of Contact: Dennis Schenck, Jose Delgado	**Contact Email:** dschenck@usesgroup.com	**OSRO Number:** 38
Phone: (888)279-9930	**FAX:** (504)279-7756	**Status:** Owned

CGA Gulf Coast totals

650 Poydras ST,
New Orleans, LA 70130

COTP Zone:	**EPA Region:**
New Orleans - DISTRICT 8	Region - 6

Point of Contact:	**Contact Email:**	**OSRO Number:**
Frank Paskaawitch,	paskewich@msrc.org	369
Phone:	**FAX:**	**Status:**
(504)799-3035	~	Owned

USES Box - Algiers

434 Powder St.,
New Orleans, LA 70114

COTP Zone:	**EPA Region:**
New Orleans - DISTRICT 8	Region - 6

Point of Contact:	**Contact Email:**	**OSRO Number:**
Dennis Schenck, Jose Delgado	dschenck@usesgroup.com	38
Phone:	**FAX:**	**Status:**
(888)279-9930	(504)279-7756	Owned

St. Charles Parish

Mid-Gulf Recovery Services, LLC

10567 Airline Drive,
Saint Rose, LA 70087

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Tony Cunningham, Michelle Matoka

Contact Email:
tony@midgulfrecovery.com

OSRO Number:
393

Phone:
(504)737-1600

FAX:
(504)737-1660

Status:
Owned

USES Box - Hahnville

15370 River Road,
Hahnville, LA 70057

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Dennis Schenck, Jose Delgado

Contact Email:
dschenck@usesgroup.com

OSRO Number:
38

Phone:
(888)279-9930

FAX:
(504)279-7756

Status:
Owned

OMES

11966 River Road,
St Rose, LA 70087

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Robert George,

Contact Email:
robertgeorge@omies.com

OSRO Number:
12

Phone:
(800)645-6671

FAX:
(504)712-6949

Status:
Owned

USES - Valero St. Charles

14902 River Road,
Norco, LA 70079

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Dennis Schenck,

Contact Email:
dschenck@usesgroup.com

OSRO Number:
38

Phone:
(888)279-9930

FAX:
(504)279-7756

Status:
Owned

Vermilion Parish

GulfRim Navigation

1401 South State Street,
Abbeville, LA 70510

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Larry Campisi, Dominic Campisi

Contact Email:
larry@gulfrim.com

OSRO Number:
270

Phone:
(337)893-0789

FAX:
(337)893-6256

Status:
Owned

Clean Harbors Environmental (New Iberia, LA)

1205 Tool Drive,
New Iberia, LA 70562

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Virgil Blanchard,

Contact Email:
blanchard.virgil@cleanharbors.com

OSRO Number:
13

Phone:
(337)365-9811

FAX:
~

Status:
Owned

Bossier Parish

ES&H Bossier City

101 Crown Court Place,
Bossier City, LA 71112

COTP Zone:
New Orleans - DISTRICT 8

EPA Region:
Region - 6

Point of Contact:
Trey Boucvalt, Kevin Lormand

Contact Email:
klormand@esandh.com

OSRO Number:
50

Phone:
(318)746-5620

FAX:
~

Status:
Owned

Lower Mississippi River Deepwater Port Asset Inventory

LMR Public Port	Equipment	Contact
Port of New Orleans	Mobile Command Center	504 891-7585
	45ftx34ft 2007 Freightliner	
	56,00 lbs,	
	300 H.P. turbo-charged diesel	
	50x16 ft Dauntless Class	504 891-7585
	Twin 5016-V 875 Caterpillar Diesels	
	Multi-Purpose Public Safety Vessel	897-6844
	95x26 ft, 7 foot Draft	
	3600 HP total	
	4 main engines	
Port of South Louisiana	M/V John James Charles	866-536-3678
	80' x 16.5'	985-536-3678
	PSL Accardo	866-536-3678
	49' Dauntless-class patrol boat	985-536-3678
	PSL Responder	866-536-3678
	57' x 16' (4.5' draft)	985-536-3678
	Zodiac RHIB	985-536-3678
	Ford Expedition 4x4	985-536-3678
	Chevrolet 3500 Pickup	985-536-3678
Plaquemines Parish Port	17' Diamondback Airboat	
	18' Alumaweld Flatboat	
	50' fireboat (Authority I)	504-912-3991
	50' fireboat (Authority II)	504-912-3981
	90' fireboat (Authority III)	504-715-6913
	tilt-bed truck	
	tilt-bed truck	
	Sunstrom 480B helicopter	
	with cargo hook, Spectra	
	Lab SX-5 searchlight;	
	Gyrocam DS Infrared	
	camera system	
	Mobile Communications	
	and Surveilance Unit	
	4 Pickup trucks	

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New Orleans Area Contingency Plan

Chapter 9000
Appendix S
Geographic Response Plans

Jefferson Parish Geographic Response Plan Signature Page

Peter W Gautier

Peter W. Gautier
Captain, US Coast Guard
Commander, Sector New Orleans
Federal On-Scene Coordinator, New Orleans

Brian Wynne

Brian Wynne
Acting, Louisiana Oil Spill Coordinator

John F. Young, Jr.
President, Jefferson Parish

Plaquemines Parish Geographic Response Plan
Signature Page

Peter W. Gautier
Captain, US Coast Guard
Commander, Sector New Orleans
Federal On-Scene Coordinator, New Orleans

Brian Wynne

Brain Wynne
Acting, Louisiana Oil Spill Coordinator

Billy Nungesser
President, Plaquemines Parish

St. Tammany Parish Geographic Response Plan Signature Page

Peter W Gautier

Peter W. Gautier
Captain, US Coast Guard
Commander, Sector New Orleans
Federal On-Scene Coordinator, New Orleans

Brian Wynne

Brian Wynne
Acting, Louisiana Oil Spill Coordinator

Patricia P. Brister

Patricia Brister
President, St. Tammany Parish

St. Bernard Parish Geographic Response Plan Signature Page

Peter W. Gautier
Captain, US Coast Guard
Commander, Sector New Orleans
Federal On-Scene Coordinator, New Orleans

Brian Wynne

Brian Wynne
Acting, Louisiana Oil Spill Coordinator

David Peralta
President, St. Bernard Parish

Orleans Parish Geographic Response Plan Signature Page

Peter W. Gautier
Captain, US Coast Guard
Commander, Sector New Orleans
Federal On-Scene Coordinator, New Orleans

Brian Wynne

Brian Wynne
Acting, Louisiana Oil Spill Coordinator

Mitchell J. Landrieu
Mayor, City of New Orleans

Under Development

To be included 2015.

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New Orleans Area Contingency Plan

Chapter 9000
Appendix T
MOUs/MOAs

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix T MOU/MOA

Table of Contents

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MOU/MOA Policy

Introduction

A MOU is a document that describes very broad concepts of mutual understanding, goals and plans shared by the parties. In contrast, a MOA is a document describing in detail the specific responsibilities of, and actions to be taken by, each of the parties so that their goals may be accomplished. A MOA may also indicate the goals of the parties, to help explain their actions and responsibilities.

Every MOU/MOA that the Coast Guard is a party to must be consistent with the Coast Guard mission and be authorized by federal law, regulations and funding constraints. Additionally, the existence of a MOU or MOA does not eliminate or diminish the need for additional contracts, documents, or agreements to execute the activities contemplated by the parties. An MOU/MOA cannot be used as the sole authority or means to acquire or procure goods or services, exchange funds or property, or transfer or assign personnel. The originating offices shall ensure that all interested program offices and the servicing legal office have reviewed the MOU/MOA.

MOU's/MOA's that involve the Coast Guard must have an appropriately designated approving official that has the authority to commit the Coast Guard to the agreement.

For additional information regarding Coast Guard MOU/MOA guidance please review COMDTINST 5216.18.

MOU/MOA Contents

Every MOU/MOA should include the following basic information:

Parties

The parties to be bound by the agreement must be identified.

Authority

The legal authority for the agreement must be cited. Federal law, applicable DOT Orders, Commandant Instructions or other directives are referenced.

Purpose

The purpose or reason for entering the agreement must be stated.

Responsibilities

A description of the duties and responsibilities of the parties must be provided. The description should be as specific and detailed as necessary. Extreme details may be provided in an appendix rather than the body of the MOU/MOA.

Reporting and Documentation

The MOU/MOA must specify whether follow-up reports or documentation of actions taken are required and state how often and to whom they are to be submitted.

Points of Contact

Points of Contact for all parties are provided, including names, office symbols, addresses and phone numbers. Fax numbers, e-mail and Internet addresses should also be provided if available.

Modification

A provision stating how to modify or amend the agreement is included. Modifications can be formal (written) or informal (oral). They can be approved by the Points of Contact, by the signatories, or other appropriate individuals. While it is often appropriate for those at the working level to make modifications, either orally or in writing, modifications that change central provisions of the agreement should normally be made in writing and agreed to by the individuals who originally approved the MOU/MOA or their successors.

Effective Date

The date the MOU/MOA becomes effective must be stated. This may be a specified date after the MOU/MOA is signed by all parties or it may be the date the last party signs the agreement.

Termination

The MOU/MOA must contain several provisions regarding termination. The document will indicate that it will terminate on a certain date, upon the accomplishment of its purpose, or upon agreement of the parties. The MOU/MOA will also contain a provision indicating whether the duration of the agreement may be extended and, if so, the extension mechanism (e.g. by written agreement of the parties). Finally, the agreement will indicate whether a party may terminate the agreement early (usually by written notice to the other parties).

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix T MOU/MOA

Current MOU’s/MOA’s

This appendix contains the following Memorandum of Understanding/ Agreement:

- U.S. Coast Guard and EPA Region VI Memorandum of Agreement
- U.S. Coast Guard and the Bureau of Safety and Environmental Enforcement Memorandum of Agreement
- Endangered Species Act Memorandum of Agreement

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New Orleans Area Contingency Plan

Chapter 9000
Appendix U
Spills of Nonfloating Oils

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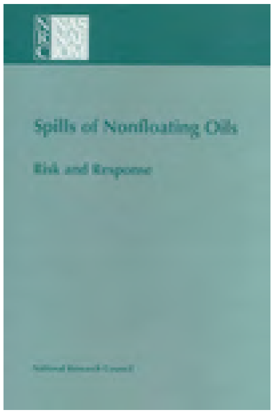

Spills of Nonfloating Oils: Risk and Response

Committee on Marine Transportation of Heavy Oils, National Research Council

ISBN: 0-309-52015-0, 88 pages, 6 x 9, (1999)

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THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

Spills of Nonfloating Oils

Risk and Response

Committee on Marine Transportation of Heavy Oils
Marine Board
Commission on Engineering and Technical Systems
National Research Council

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Washington, D.C.

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The National Academy of Sciences is a private, nonprofit, selfperpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

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Preface

BACKGROUND

Maritime accidents that result in oil spills are high on the list of public environmental concerns. These spills are difficult to control and can contaminate the marine environment. When oil is spilled on the sea, it undergoes physical, chemical, and biological changes as it weathers and is degraded by bacteria. Most oil spill cleanup technologies, which have been developed for floating oils and the ensuing emulsions, are not very effective. For most spills, only about 10 to15 percent of the oil is recovered, and the best recovery rates are probably about 30 percent (OTA, 1990).

Some oils with a specific gravity greater than 1.0 (and some other oils in certain circumstances) may be neutrally buoyant or sink when spilled on water, depending on the salinity of the water. Federal rules governing oil spill contingency plans categorize petroleum cargoes according to their physical properties. Oils with a specific gravity of > 1.0, referred to as Group V oils, include some heavy fuel oils, asphalt products, and very heavy crude oils. Vessels and terminals that handle Group V oils are required to include responses to spills of Group V oils in their facility response plans.

The electric power generation industry often uses Group V oils because some Group V oil products are cheaper and have higher BTU content than other fuel oil products. Among these products are manufactured oils consisting of bitumen, water, and emulsifying agents. The presence of an emulsifying agent in the oil complicates the physical behavior of the oil if it is spilled into the water. Emulsified oils have been shown to sink initially to the level of their specific gravity and to surface later as the result of chemical changes caused by weathering.

Oils that sink to the bottom or remain suspended in the water column pose risks to certain resources that are not normally affected by floating oils. These resources include fish, shellfish, seagrasses, and other benthic (seabed) and water-column biota. Submerged oil may also cause episodic re-oiling of shorelines.

Although spills of Group V oils have been infrequent, there is some experience in responding to them and in cleaning them up. In most incidents in open water, oil in the water column is unrecoverable, and response operations are largely limited to locating and monitoring its movement. Where there is little or no current flow, suspended oil can sink and pool. In these cases, an effective response can be mounted, and most of the oil on the bottom can be recovered. Effective response (i.e., protecting the nearshore benthic communities) also means removing oil from the shoreline when and if it becomes stranded to keep it from being eroded and sinking in the nearshore tidal areas. Techniques that have been developed and demonstrated for recovering Group V oils following a spill include recovery of accumulations of oil on the seabed and vacuuming oily water for recovery in an oil-water separator. Other mechanical measures have also been investigated.

ORIGIN AND SCOPE OF THE STUDY

In the Coast Guard Authorization Act of 1996, the United States Coast Guard (USCG) was directed to assess the risk of spills for oils that may sink or be negatively buoyant, to examine and evaluate existing cleanup technologies, and to identify and appraise technological and financial barriers that could impede a prompt response to such spills. The USCG requested that the National Research Council (NRC) perform these tasks. In response to this request, the NRC established the Committee on the Marine Transportation of Heavy Oils under the auspices of the Marine Board.

The objectives of the study were: (1) to assess threats posed by the marine transportation of Group V oils by characterizing the trade of such oils and, in general terms, the resources at risk; (2) to assess the adequacy of cleanup technologies for spills of Group V oils and recommend research to develop new technologies and techniques, as appropriate; and (3) to identify barriers to effective responses to spills and recommend technological, financial, or management measures that would promote prompt and effective responses to spills of Group V oils. In discussions with the USCG and congressional staff, the committee clarified that the scope of study included the risk of oil spills and the capability of responding to them, although the environmental and health risks of spilled oil are not areas of the focus.

Committee members were selected with expertise in the following areas: the fate and effects of petroleum in water, habitats, and ecosystems; oil-spill response and cleanup technologies and operations; engineering systems analysis; tank vessel operations and port operations; environmental and regulatory issues; and relevant management and economic issues. Biographies of the committee members are provided in Appendix A.

Early in the committee's deliberations, it became clear that Group V oils, as defined by the USCG (oils with a specific gravity greater than 1.0), did not encompass all of the oils of concern. The drawbacks of using this narrow classification are that some Group V oils remain on the sea surface throughout the early response phase, while some lower density (e.g., Group IV) oils can be dispersed in the water column and sink to the seabed after weathering and interaction with sediments in the water column or after stranding onshore. The committee, therefore, decided to focus on the *behavior* of oil and use the term "nonfloating oils" as its operational definition. "Nonfloating oils" refers to oils that either initially or after weathering can be found in the water column or on the seabed; this definition includes oils that are suspended in the water column, sink to the seabed, or interact with sediments and are then deposited on the seabed or shoreline. The terms "sunken oils" or "submerged oils" are also used to describe oils that behave in this way.

The committee met four times during 1998 to gather information and discuss the issues of concern. At three of the meetings, presentations were made by a wide variety of individuals representing organizations in the transportation, spill response, environmental, scientific, and regulatory communities. A workshop was held in conjunction with the committee's second meeting to obtain information and to facilitate discussions of the issues. Leading experts in the marine transportation and spill response communities with expertise in the transport and response to spills of heavy or nonfloating oils participated in the workshop and panel discussions. Participants in the meetings and workshop are listed in Appendix B.

The committee's report is divided into five chapters. Chapter 1 focuses on the risk of spills of nonfloating oils and describes the traffic and trading patterns and recent history of heavy-oil spills, based on an analysis of available databases.

Chapter 2 describes the behavioral models for spills of nonfloating oils that can further an understanding of the fate and impact of these oils and be used to identify the resources at risk. This chapter also includes a comparative assessment of the environmental risks from spills of floating and nonfloating oils. Chapter 3 summarizes the technologies and techniques available for responding to spills of nonfloating oils. Subsections focus on modeling and information systems, spill tracking and mapping techniques, and containment and removal systems. Chapter 4 presents a discussion of the managerial, technological, and financial barriers to effective spill response. Chapter 5 presents the committee's findings, conclusions, and recommendations.

ACKNOWLEDGMENTS

The committee wishes to thank the many individuals who contributed their time and effort to this project by presenting material at committee meetings and workshops. Representatives of federal and state agencies, as well as private companies, provided invaluable assistance to the committee and the Marine Board staff.

This report has been reviewed by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the authors and the NRC in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The content of the review comments and draft manuscript remains confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their participation in the review of this report:

John W. Farrington, Woods Hole Oceanographic Institution
Mervin F. Fingas, Environment Canada
Michael Herz, Marine Environmental Consultant
Donald S. Jensen, Jensen & Associates
Jerome H. Milgram, Massachusetts Institute of Technology
David Page, Bowdoin College
John Roberts, Coastal Towing

While the individuals listed above have provided many constructive comments and suggestions, responsibility for the final content of this report rests solely with the authoring committee and the NRC.

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Executive Summary

In the Coast Guard Authorization Act of 1996, the United States Coast Guard (USCG) was directed to assess the risk of spills for oils that may sink or be negatively buoyant, to examine and evaluate existing cleanup technologies, and to identify and appraise technological and financial barriers that could impede a prompt response to such spills. The USCG requested that the National Research Council (NRC) perform these tasks. In response to this request, the NRC established the Committee on the Marine Transportation of Heavy Oils.

Early in the committee's deliberations, it became clear that the statutory definition of Group V oils (oils with a specific gravity greater than 1.0) did not include all of the oils of concern. The first problem with using this definition is that specific gravity is defined as the ratio of the density of oil to the density of freshwater at a fixed temperature. The density of seawater, however, is slightly higher than that of freshwater and increases as salt content increases. Therefore, Group V oils could have lower densities than those of the receiving seawater and float. The second problem is that an oil with a specific gravity of slightly less than 1.0 (e.g., a Group IV oil) might mix into the water column and sink to the seabed after weathering and interaction with sediments. The committee, therefore, decided to use the term "nonfloating oils" to include all of the oils of concern based on their behavior. Nonfloating oils move below the sea surface either because of their initial densities or because of changes in their densities as a result of weathering or interaction with sediments. These oils may be just below the water surface, suspended in the water column, or deposited on the seabed.

In order to carry out the assessment, the committee gathered the available data on the transportation and spills of Group V oils, as well as data on other oils that are known to sink or become suspended in the water column when weathered or mixed with sediment. The data were available for asphalt, coal tar, carbon black, bunker C, and No. 5 and No. 6 fuel oils, (i.e., so-called “heavy oils”). The committee used the USCG’s (USCG) database on oil spills, refined with collaborative data from the Minerals Management Service (MMS), to develop estimates of the probability and mean size of oil spills. The U.S. Army Corps of Engineers (USACE) database on waterborne transportation of petroleum products and other cargoes over U.S. waters was used to assess the volumes of oil transported. The committee combined the spill statistics with the data on cargo tonnage to estimate historical rates on a barrel-per-ton-mile basis.

Historical spill rates must be modified for predictions of future spill rates because future rates will be influenced by fluctuations in traffic and trading patterns, as well as by changes in the ways vessels are designed and operated. The committee used the best available data, combined with its own collective judgment, to estimate the effects of these changes on the number and size of spills of nonfloating oils in the future.

Since 1991, the volume of oil spilled from vessels in U.S. waters has been reduced dramatically. Losses from tankers since 1990 have been less than one-tenth of the pre-1990 volume, and losses from barges have been less than one-third of the pre-1990 volume. From 1973 to 1990, there were 18 incidents involving spills of more than 25,000 barrels. Since 1991, there has not been a single spill of this magnitude for any category of oil. Nevertheless, very large spills will almost certainly occur some time in the future, although they are likely to be spills of crude oil rather than heavy oils, which tend to be transported in smaller volumes on barges and smaller tankers.

The USCG database includes descriptions of the substance spilled in each event. To estimate the frequency of spills of products with the potential to sink or become suspended in the water column after weathering or mixing with sediment, the committee summarized data for spills of more than 20 barrels for asphalt, coal tar, carbon black, bunker C, and No. 5 and No. 6 fuel oils. From 1991 to 1996, there was an average of 16 spills of these heavy oils per year, with an average volume of 785 barrels per spill. Tank barges were responsible for 28 percent of incidents and 80 percent of the volume of these spills of heavy oils. Most heavy-oil spills between 1991 and 1996 involved oils that were less dense than seawater, which only sink under unfavorable environmental conditions. The committee reviewed these heavy-oil spills with spill responders, who estimated that about 20 percent of these spills exhibited nonfloating behavior.

Most of the larger oil spills from land-based facilities were generally spills of crude oil or gasoline. The largest reported spill of heavy oil from a land-based facility between 1991 and 1996 was a spill of 929 barrels of No. 6 fuel oil into Pearl Harbor, Hawaii. By contrast, there were six tank-barge spills of more than 4,000 barrels involving heavy oil (either No. 6 fuel oil or slurry oil). The average volume of spills of heavy oil from barges was 2,254 barrels, and the largest was about 18,000 barrels. These spills were widely distributed geographically, with the highest frequency in the Gulf of Mexico.

Behavioral models have been developed for spills of nonfloating oils based on their physical and chemical properties. These descriptive, qualitative models predict how oils with densities near or above the density of the receiving water might behave. The models are based primarily on observations of oil spills. The committee described and assessed these models in terms of their effectiveness in predicting the behavior of nonfloating oils.

The environmental concerns associated with responses to spills of nonfloating oils are primarily related to water column and benthic (seabed) habitats. In most spills in open water, oil in the water column is unrecoverable, and response operations are limited to locating and monitoring its movement. However, if the suspended oil approaches shoreline habitats or nearshore benthic habitats in areas where current flow is minimal, the oil will sink and pool on the seabed. In these cases, an effective, but limited, response can be mounted, whereby a significant amount of oil can be removed from the seafloor. An effective response also includes removing oil from the shoreline, if and when it becomes stranded, to prevent its being eroded and sinking in nearshore tidal areas.

The behavior patterns of nonfloating oils can be complex, depending on the density of the oil, the density of the receiving water, and the physical characteristics of the spill site. Current technologies and techniques for locating, tracking, containing, and recovering spills of submerged oils include spill modeling and information systems, tracking and mapping techniques, and oil containment and recovery techniques. Chapter 3 focuses on the current state of practice and identifies systems that have been used or proposed for use in response to spills of nonfloating oils.

The containment and recovery of oil dispersed in the water column or deposited on the seabed is constrained by many factors, beginning with the difficulty of locating the oil and determining its condition. The success of current methods varies greatly but is usually limited because of the wide distribution of the oil and the fact that it is mixed with sediments and water. In general, available methods are most successful when the current speeds and wave conditions at the spill site are low (currents less than 10 cm/sec, wave heights less than 0.25 m), the oil is pumpable, the water is relatively shallow (water depths less than 10 m), and the sunken oil is concentrated in natural collection areas. The selection of methods for containment or recovery depends on the location and environmental conditions at the spill site, the characteristics of the oil and its state of weathering and interaction with sediments, and the equipment and logistical support available for the cleanup operation.

The committee identified a variety of barriers to responses to spills of nonfloating oils, including inadequate planning and training drills; lack of experience; lack of knowledge about transport, fate, and impact on the environment; the difficulty of locating and tracking oil suspended in the water column or deposited on the seabed; the limited technology options available for containment and recovery; and insufficient investment in research, development, testing, and evaluation of tracking, containment, and recovery systems.

FINDINGS

Finding 1. From 1991 to 1996, approximately 17 percent of the petroleum products transported over U.S. waters were heavy oils and heavy-oil products, such as residual fuel oils, coke, and asphalt. Approximately 44 percent was moved by barge and 56 percent by tanker.

Finding 2. From 1991 to 1996, approximately 23 percent of the petroleum products spilled in U.S. waters were heavy oils. In only 20 percent of these spills did a significant portion of the spilled products sink or become suspended in the water column. Most of the time, spills of heavy oil remained on the surface. The average number of spills of more than 20 barrels of heavy oil and asphalt was 16 per year, with an average volume of 785 barrels per spill. The committee projects that a 30 percent reduction in the number and volume of heavy-oil spills would have been realized if tankers and barges had all been double-hulled vessels.

Finding 3. In recent years, barges have had significantly higher spill rates than tankers. From 1991 to 1996, barges accounted for approximately 80 percent of the volume of heavy-oil spills, and the spill rate, expressed in terms of barrels-spilled-per-ton-mile, was more than 10 times higher for barges than for tankers. Although the reduction in spill volume from tank barges since 1990 has been significant (about one-third of pre-1990 volume), the reduction for tankers has been even more dramatic (about one-tenth of pre-1990 volume).

Finding 4. Specific gravity, as used in the regulatory definition of Group V oils, does not adequately characterize all oil types and weathering conditions that produce nonfloating oils. The committee was asked to address the issue of responses to Group V oil spills, defined by current regulations as oils with a specific gravity of greater than 1.0. However, the committee determined that the issue of concern is planning for and responding to oil spills in which most, or a significant quantity, of the spilled oil does not float. The committee, therefore, decided to use the term “nonfloating oils” to describe the oils of concern.

Finding 5. Nonfloating oils behave differently and have different environmental fates and effects than floating oils. The resources at greatest risk from spills of floating oils are those that use the water surface and the shoreline. Floating-oil spills seldom have significant impacts on water-column and benthic resources. In contrast, nonfloating-oil spills pose a substantial threat to water-column and benthic resources, particularly where significant amounts of oil have accumulated on the seafloor. Nonfloating oils tend to weather slowly and thus can affect resources for long periods of time and at great distances from the release site. However, the effects and behavior of nonfloating oil are poorly understood.

Finding 6. Although spill modeling and supporting information systems are well developed, they are not commonly used in response to nonfloating-oil spills because of limited environmental data and observations of oil suspended in the water or deposited on the seabed. Oil-spill models and supporting information systems are routinely used in contingency planning and spill responses. Sophisticated, user-friendly interfaces have been developed to take advantage of the latest advances in computer hardware and software. The current generation of models can rapidly incorporate environmental data from a variety of sources and include integrated geographic information systems. The models can also assimilate data on the most recently observed location of spilled oil and have improved forecasts of oil movements. They are not routinely used, however, in response to nonfloating-oil spills because of the lack of supporting data on the three-dimensional currents and concentrations of suspended sediments. Field data, such as oil concentrations in the water column and on the seabed, are also not generally available to validate or update models.

Finding 7. A substantial number of techniques and tools for tracking subsurface oil have been developed. Most of them, however, have not been used in response to actual oil spills. Many techniques are available for determining the location of oil both in the water column and on the seabed. These include visual observations, geophysical and acoustic methods, remote sensing, water-column and seabed sampling, *in situ* detectors, and nets and trawl sampling. The most direct and simplest methods, such as diver observations and direct sampling, are widely used, but they are labor intensive and slow. More sophisticated approaches, such as remote sensing, are limited to zones very near the sea surface because of technical constraints. Other advanced technologies, such as acoustic techniques, cannot differentiate between oil and water or between oiled sediments and underlying sediments. Many of the more sophisticated systems are prone to misuse and produce ambiguous data that are subject to misinterpretation. The performance of all but the simplest methods is undocumented either by field experiments or by use in spill responses.

Finding 8. Although many technologies are available for containing and recovering subsurface oil, few are effective, and most work only in very limited environmental conditions. Containment of oil suspended in the water column using silt curtains, pneumatic barriers, and nets and trawls is only effective in areas with very low currents and minimal wave activity. These conditions rarely exist at spill sites, particularly at sites in estuarine or coastal waters. The recovery of oil in the water column by trawls and nets is limited by the viscosity of the oil and net tow speeds.

The containment of oil on the seabed is typically ineffective, except at natural collection points (e.g., depressions and areas of convergence). The collection of oil on the seabed by manual methods, in natural collection areas and along the shoreline after beaching, is effective but labor intensive and slow. Manual methods are also limited by the depths at which diver-based operations can be carried out safely. Dredging techniques have rarely been used because of limited recovery rates, the large volumes of water and sediment generated, and the problems of storing, treating, and discharging co-produced materials.

Finding 9. The lack of knowledge and lack of experience, especially at the local level, in responding to spills of nonfloating oils is a significant barrier to effective response. The knowledge base and response capabilities for tracking, containing, and recovering nonfloating oils have not been adequately developed. Even at the national level, no system has been developed for sharing experiences or documenting the effectiveness and limitations of various options. With limited experience and a lack of proven, specialized systems, responders have found it difficult to adapt available equipment for responses to spills of nonfloating oils.

Finding 10. Planning for spills of nonfloating oils is inadequate at the local level. Existing area contingency plans do not include comprehensive sections on the risk of spills of nonfloating oils or how to respond to them. To date, planning has focused primarily on spills of floating oils. Inventories of equipment, lists of specialized services, assessments of the resources at risk, and protection priorities have not been developed by area committees for nonfloating oils. Nor have they identified the risks (e.g., transportation patterns, volumes, oil types), developed appropriate scenarios and response plans, or reviewed acceptable cleanup methods and end points. Existing plans have not been tested during drills or exercises to address deficiencies.

Finding 11. Funding levels for research, development, testing, and evaluation of spills of nonfloating oils are very low. The only active research programs currently under way either by government or industry groups are focused on emulsified fuel oils. Because the risk of spills of nonfloating oils is perceived as low relative to spills of floating oils, few research and development funds have been committed.

CONCLUSIONS

Conclusion 1. The tracking, containment, and recovery of spills of nonfloating oils pose challenging problems, principally because nonfloating oils suspended in the water column become mixed with large volumes of seawater and may interact with sediments in the water column or on the seabed. The ability to track, contain, and recover nonfloating oils is critically dependent on the physical and chemical properties of the oils and the water or the oils and the other materials dispersed in the water column or on the seabed. The differences in these characteristics are often quite small, and little technology is available for determining them.

Conclusion 2. Although many methods are available for tracking nonfloating oils, the simplest and most reliable are labor intensive and cover only limited areas. More sophisticated methods have severe technical limitations, require specialized equipment and highly skilled operators, or cannot distinguish oil from water or other materials dispersed in the water column. Engineered systems for containing oil in the water column or on the seabed are few and only work in environments with low currents and minimal waves. Natural containment in seabed depressions or in the lee of topographical or man-made structures on the seabed is effective for containing oils, but these are not always available in the vicinity of the spill.

Conclusion 3. The recovery of oil from the water column is very difficult because of the low concentration of dispersed oil; hence, recovery is rarely attempted. If oil collects on the seabed in natural containment areas, many options for effective recovery are available, although most of them are labor intensive and access to response equipment is a problem.

Conclusion 4. The volume and frequency of spills of nonfloating oils is significant (although smaller than for floating oils) and, therefore, should be an integral part of planning for spill responses, particularly in areas where nonfloating oils are regularly transported. Transport by tank barges raises particular concerns, given the relatively high spill rates from these vessels. The risks of potential harm to water-column and benthic resources from nonfloating oils have not been adequately addressed in the contingency plans for individual facilities or geographic areas.

Conclusion 5. Inland barges are subject to greater risks of spills than tankers and coastal barges; consequently, spill rates for barges are likely to be higher than for tankers. However, the large difference between the overall spill rates, as well as the decreasing number of spills from tankers in recent years (post-OPA 90), raises concerns regarding the performance of barges.

RECOMMENDATIONS

The recommendations below are intended to improve the capability of the spill response community to respond to spills of nonfloating oils.

Recommendation 1. The U.S. Coast Guard should direct area planning committees to assess the risk of spills of nonfloating oils (i.e., oils that may be dispersed in the water column or ultimately sink to the seabed) to determine the resources at risk. In areas with significant environmental resources risk, area planning committees should develop response plans that include consultation and coordination protocols and should obtain pre-approvals and authorizations to facilitate responses to spills. Stakeholder groups should be educated about the impact and methods available for tracking, containing, and recovering oil suspended in the water column or on the seabed. Area committees in locations where there is a high risk of spills of nonfloating oils should include at least one scenario for responding to a nonfloating-oil spill in their training or drill programs.

Recommendation 2. The U.S. Coast Guard should improve its knowledge base, education, and training for responding to spills of nonfloating oils by including a scenario involving a spill of nonfloating oils in oil-spill response drills, by establishing a knowledge base and scientific support teams to respond to these types of spills, and by disseminating this knowledge to the federal spill-response coordinators and area planning committees as part of ongoing training programs. The information would help area planners assess the requirements for responding to nonfloating-oil spills.

Recommendation 3. The U.S. Coast Guard should support the development and implementation of an evaluation program for tracking oil in the water column and on the seabed, as well as containment and recovery techniques for use on the seabed. The findings of these evaluations should be documented and distributed to the environmental response community to improve response plans for spills of nonfloating oils.

Recommendation 4. Tests of area contingency plans and industry response plans for responses to spills of nonfloating oils should be required parts of training and drill programs.

Recommendation 5. The U.S. Coast Guard should monitor spill rates from tank barges to ascertain whether current regulatory requirements and voluntary programs will reduce the frequency and volume of spill incidents. If not, the Coast Guard should consider initiating regulatory changes.

1

Transportation of Heavy Oils and the Risk of Spills

An assessment of the risk of spills involves evaluating the frequency and consequences of accidents. A formal assessment of consequences should be based on a wide range of factors, including loss of life, financial loss, and short-term and long-term environmental impacts. In this chapter, the quantity of oil spilled is considered. Between 1991 and 1996, domestic tanker operations were responsible for nearly 75 percent of the ton-miles of petroleum movements. The major component is the coastal movement of Alaskan North Slope oil to U.S. ports on the West Coast.

DEFINITION OF TERMS

Group V oils are defined as persistent oils with a specific gravity of greater than 1.0 (Federal Register, 1996). *Heavy oil* is the term used by the response community to describe dense, viscous oils with the following general characteristics: low volatility (flash point higher than 65°C), very little loss by evaporation, and a viscous to semisolid consistency (NOAA and API, 1995). Examples of heavy oils include Venezuela crude, San Joaquin Valley crude, Bunker crude, and No. 6 fuel oil. The term heavy oil, in this chapter, also refers to residual oils (No. 5 and No. 6 fuel oil, Bunker C, and slurry oil), asphalt, coal tar, coke, carbon black, and pitch.

The term *nonfloating oil* is used to describe all oils that do not float on water, including oils that are denser than the receiving waters and either sink immediately or mix into the water column and move with the water as suspended oil; as well as the portion of oil that is initially buoyant but sinks after interacting with sand. The committee chose not to use the term *sinking oil*, which implies that the oil sinks directly to the bottom, because it would not include all of the types of oil and spill conditions of concern in this report. *Emulsified fuels* (anthropogenic fuels manufactured by mixing water with liquid oils or solid hydrocarbon products), for example, often contain a surfactant to stabilize the emulsion and can be dispersed in the water column.

OVERVIEW OF QUANTITATIVE EVALUATION

The historical frequency of oil spills in general and heavy-oil spills in particular can be estimated from spill statistics. The committee used the U.S. Coast Guard (USCG) database on oil spills, refined with collaborative data from the Mineral Management Service (MMS), to estimate the probability and mean size of oil spills. The U.S. Army Corps of Engineers (USACE) database on the waterborne transportation of petroleum products and other cargoes in U.S. waters was used to assess the volume of oil transported. By combining the statistics on spills with the data on cargo tonnage, the committee was able to estimate historical spill rates on a barrel-per-ton-mile. Because future spill rates may be influenced by fluctuations in traffic and trading patterns, as well as changes in vessel design and operation, these estimates should be reevaluated to predict future rates. The committee has combined the best available data with its own collective judgment in these estimates. It should be noted that in only 20 percent of spills of heavy oil does a significant portion of the spilled oil sink or become suspended in the water column.

TRAFFIC AND TRADING PATTERNS

The USACE (1998a, 1998b) compiles detailed statistics on U.S. waterborne commerce, both foreign (imports and exports) and domestic (trade between U.S. ports). Domestic movements are further subdivided into coastal trade (involving carriage over the ocean) and internal trade (solely on inland waterways).

Figure 1-1 summarizes the data for all movements of crude oils and petroleum products during 1996 (the most recent data available). The USACE data are separated into 19 commodity codes, but for the sake of simplicity, the committee combined some categories (e.g., gasoline and kerosene) into seven categories (*crude oil*; *residual fuel oil*; *coke, tar, pitch, asphalt*; *gasoline, kerosene*; *distillate fuel oil*; *naptha, solvents*; and *lubrication, grease, wax*). The substances in the *residual fuel oil* and *coke, tar, pitch, and asphalt* categories are heavy oils (i.e., they are either heavier than water or have the potential of sinking or becoming suspended in the water column upon weathering).

Crude oil accounted for 56 percent of the total tonnage of the petroleum commodities shipped in 1996; international trade accounted for 76 percent. The largest component of the domestic trade in crude oil was the coastal movement of

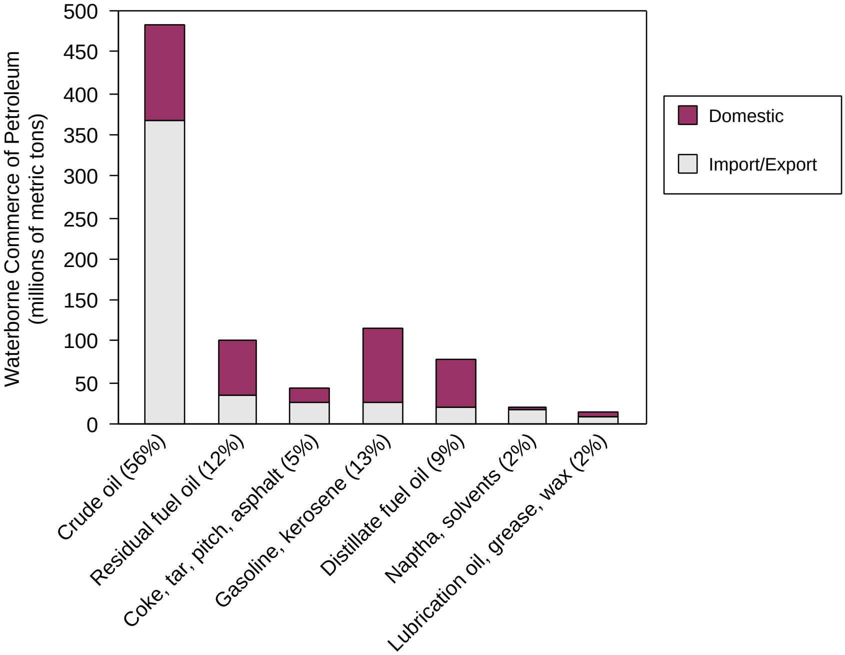

FIGURE 1-1 Import/export and domestic movements of all crude oil and petroleum products in metric tons during calendar year 1996. Source: USACE, 1998a.

Alaskan North Slope oil to U.S. ports on the West Coast. Internal trade (solely on inland waterways) accounted for less than 5 percent of the total. Nearly all of the international tonnage and 70 percent of the domestic tonnage was shipped in tankers. The very heavy crude oils produced in the United States (e.g., California crudes, such as San Joaquin and Santa Maria) were transported primarily through overland pipelines. Some very heavy crude oils were also imported (e.g., from Venezuela and Mexico), but these are believed to comprise only a small fraction of the total volume of imported crude oil.

Residual fuel oils are represented by a single code in the USACE database, which includes Nos. 5 and 6 fuel oils and slurry oils. Residual fuel oils accounted for 12 percent of the total tonnage of petroleum products shipped in 1996; coke, tar, pitch, and asphalt accounted for another 5 percent of the total. The combined total for heavy oils was, therefore, 17 percent of the total movement of all oil and petroleum products. Approximately 90 percent of the domestic waterborne trade of these heavy oils was transported by barge (whereas more than 90 percent of the international trade was transported by tanker). Overall, therefore, about 44 percent of heavy oils was transported by barge and 56 percent by tanker.

Group V oils are transported along the Gulf Coast from Corpus Christi to

New Orleans, from the Gulf Coast upriver to the St. Louis area, and along the Ohio River to ports further inland. Some Group V oils are also produced in St. Paul, Minnesota, and transported down the upper Mississippi River and up the Ohio River. Heavy residual oils are transported to power generating facilities through the inland waterways and along the East Coast and Gulf Coast and are exported from California to the Far East. Asphalt is moved in tankers and tank barges along the coasts (primarily along the Gulf and East coasts) as both imports and domestic cargoes, and in barges along the inland waterways. Some very heavy crude oils (e.g., Venezuela Boscan crude) are imported to East and Gulf coast refineries. Carbon black feedstock moved among refineries on the Gulf Coast and was exported from California. Bunkering fuels for ships (typically No. 6 fuel oil) are moved intra-harbor on barges. Most large commercial ships (including containerships, dry bulk carriers, tankers, cruise ships, as well as some tugboats) use these heavy oils as fuel, although these oils are not included in the statistics on the waterborne commerce of petroleum.

In Figure 1-2, the movement of crude oils and petroleum products for calendar year 1996 are shown in *metric ton-miles*. The *domestic ton-miles* are calculated by multiplying the metric tons of cargo being transported by the number of miles actually moved on the water. The average length of a domestic voyage was about 900 miles. For imports and exports, a constant of 100 miles per voyage was

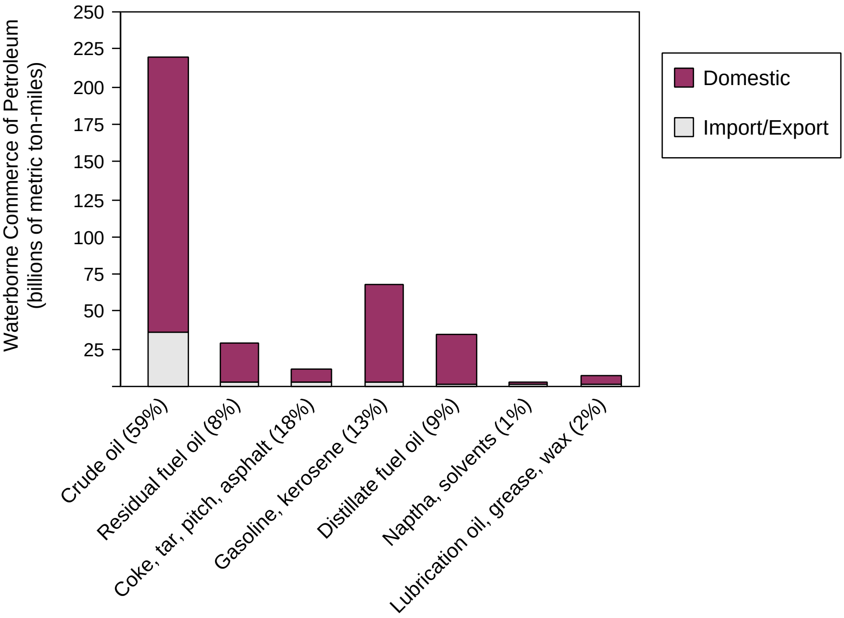

FIGURE 1-2 Import/export and domestic movements of crude oil and petroleum products in metric ton-miles during calendar year 1996. Source: USACE, 1998b.

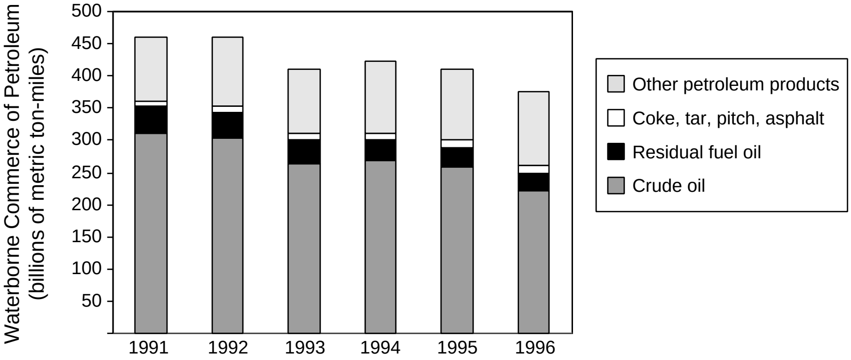

FIGURE 1-3 Movements of petroleum by commodity in metric-ton miles during calendar years 1991 to 1996. Source: USACE, 1998b.

assumed to account for the exposure of the vessel when transiting coastal waters and navigating U.S. waterways and channels. Movements of residual fuels comprised only 8 percent of the total.

The U.S. waterborne commerce of petroleum gradually decreased from 1991 to 1996 (Figure 1-3), primarily as a result of cutbacks in the coastal tanker trade of crude oil. During this period, the movement of residual fuel oils declined by 45 percent, due partly to improvements in the refining process, which produces less residual oil per barrel of crude oil refined. The movement of coke, tar, pitch, and asphalt, however, increased by 47 percent. Preliminary USACE figures for 1997 indicate that the domestic trade for coke, tar, pitch, and asphalt was up nearly 70 percent compared to 1996.

Movements of petroleum by tanker and tank barge are summarized for calendar years 1991 through 1996 in Figure 1-4 and Table 1-1. Figure 1-4 shows that domestic barge traffic remained relatively constant during the period. Tanker import and export traffic increased by about 5 percent per year, reflecting increases in imports of crude oil; the tanker domestic traffic declined by about 7 percent per year.

The U.S. Department of Energy (DOE, 1998) estimates that the percentage of petroleum consumption met by imports will increase from 49 percent in 1997 to 65 percent in 2020. This increase is partially a reflection of anticipated reductions in domestic production as oil reserves are depleted and a projected 1.1 percent per year increase in domestic energy consumption. The higher demand will probably be met through increased imports of long-haul crude oil (NRC, 1998). Future trends in the movements of heavy residual oils and asphalt are more difficult to quantify. The committee heard several presentations on the interest of some utility companies in using emulsified fuels (e.g., Orimulsion™) to generate power. Emulsified fuels do not float on water and are included in the

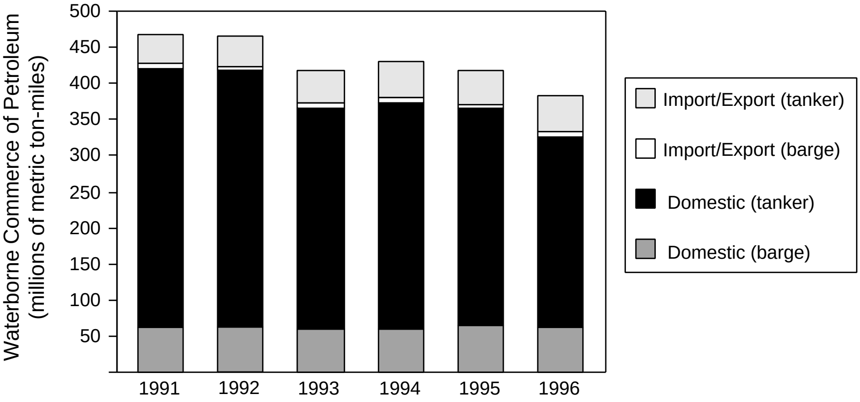

FIGURE 1-4 Movements of petroleum by tanker and tank barge in metric ton-miles during calendar years 1991 through 1996. Source: USACE, 1998b.

definition of nonfloating oils. Environmental groups responding to a proposal to burn a Venezuelan emulsified fuel for power generation in Manatee County, Florida, expressed concerns about cleaning up emulsified fuel spills once the oil had dispersed into the water column (Rains, 1998). Another concern was air quality because these fuels tend to be high in sulfur and other contaminants. At this point, it is difficult to project the consumption of emulsified fuels in the United States.

HISTORY OF SPILLS

The historical data on oil spills in U.S. navigable waters was derived from both the USCG and MMS databases. The USCG database includes reported oil spills of all sizes in U.S. navigable waters. Although these data are

TABLE 1-1 Movements of Petroleum by Tanker and Tank Barge during Calendar Years 1991 through 1996

	U.S. Waterborne Traffic in Metric Ton-Miles (× 1 billion)			
	1991-1996 Mean		1996 Totals	
	Barge	Tanker	Barge	Tanker
Crude Oil	4.9	266.8	4.9	215.4
Residual Fuel Oil	12.1	23.5	12.7	16.8
Coke, Tar, Pitch, Asphalt	7.4	2.5	8.7	3.6
Other Petroleum Products	37.8	60.5	27.8	76.1
Totals	62.2	361.3	64.1	311.9

comprehensive, they have not been uniformly maintained over the years. The MMS database has been consistently maintained but only covers spills of more than 1,000 barrels from tankers and tank barges. By comparing the USCG data with the MMS data, the committee has modified the USCG data, as necessary.

Since 1991, there has been a dramatic reduction in the volume of oil spilled from vessels in U.S. waters (Figure 1-5). Losses from tankers since 1990 are less than one-tenth the volume of pre-1990 losses, and losses from barges are less than one-third the volume of pre-1990 losses. From 1973 to 1990, there were 18 spills of more than 25,000 barrels each. Since 1991, there has not been a single spill of this magnitude. This statistic may be fortuitous, however, and a very large spill is likely to occur in the future. Large future spills are likely to involve crude oil rather than heavy oil, however, because most heavy oils and asphalt are carried on barges and smaller tankers.

In light of the huge decrease in the number of oil spills since 1990, the committee based its projections on the 1991 to 1996 data. Because of inconsistencies in the data for small spills, the committee limited its analysis to spills of more than 20 barrels, which account for more than 98 percent of the spills in this period.

Spills in the USCG database are divided into two general categories based on their origin: vessels and facilities. Facilities include pipelines, ground

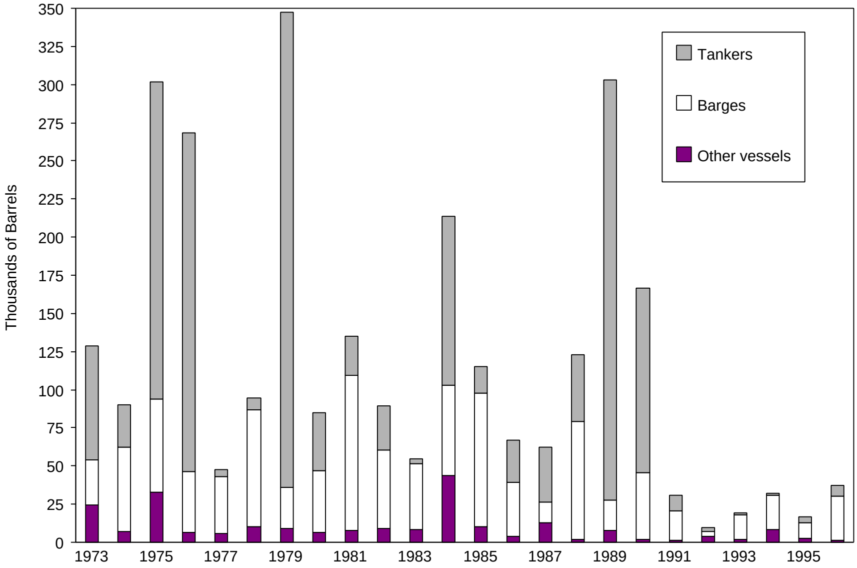

FIGURE 1-5 Volume of oil spilled from vessels in U.S. waters (1973 to 1996). Sources: USCG, 1998; MMS, 1998.

transportation onshore facilities (e.g., shoreside structures, such as terminals, refineries, and storage tanks), and offshore facilities (e.g., drilling rigs and production platforms). Vessels are subdivided into tankers, tank barges, and other vessels (ships not engaged in the transport of petroleum). The number and volumes of spills are summarized in Table 1-2. Although tankers were the primary source of marine oil spills prior to 1990, facilities have been responsible for a majority of the incidents and most of the total spill volume since then. Pipelines have been the source of more than 50 percent of the spill volume from facilities, and tank barges for more than 75 percent of the spill volume from vessels.

The USCG database provides a description of the substance spilled in each event. Table 1-3 summarizes data for all spills of more than 20 barrels of nonfloating oils (i.e., products with the potential to sink or become suspended in the water column when weathered or mixed with sediment). These products include asphalt, coal tar, carbon black, bunker C, and Nos. 5 and 6 fuel oils. Spills of nonfloating oils constitute about 23 percent of the total volume of oil spilled. From 1991 to 1996, the average number of spills of nonfloating oils was 16 per year, with an average volume of 785 barrels per spill. Tank barges were responsible for 28 percent of incidents and 80 percent of the total spill volume.

Releases of 20 barrels or more from facilities were generally spills of floating oils (either crude oil or gasoline). The largest reported spills of heavy oils from a facility was a spill of 929 barrels of No. 6 fuel oil in Pearl Harbor, Hawaii. In contrast, there were six spills from tank barges of more than 4,000 barrels each, all of them of heavy oils (either No. 6 fuel oil or slurry oil). The average volume of heavy-oil spills from barges was 2,254 barrels, and the largest spill during this period was about 18,000 barrels. Spills were widely distributed geographically (Figure 1-6), with the highest frequency from vessels in the Gulf of Mexico. Some of the oils categorized as heavy oils in the USCG and MMS databases are less dense than seawater and will remain afloat under certain environmental conditions. To determine the frequency of nonfloating-oil spills, the committee examined heavy-oil spills of more than 20 barrels (a total of 93 spills)

TABLE 1-2 Oil Spills of 20 Barrels or More in U.S. Waters by Origin (1991 to 1996)

	No. of Incidents		Total Spill Volume (barrels)		Average Spill Volume (barrels)
Tankers	47	(8%)	26,508	(8%)	564
Tank barges	100	(17%)	100,785	(32%)	1,008
Other vessels	44	(7%)	11,474	(4%)	261
Facilities	415	(68%)	173,945	(56%)	419
1991 to 1996 totals	606		312,713		
Average per year	101		52,119		

TABLE 1-3 Heavy-Oil Spills of 20 Barrels or More in U.S. Waters by Origin (1991 to 1996)

	No. of Incidents		Total Spill Volume (barrels)		Average Spill Volume (barrels)
Tankers	17	(18%)	6,442	(9%)	379
Tank barges	26	(28%)	58,591	(80%)	2,254
Other vessels	22	(24%)	3,877	(5%)	176
Facilities	28	(30%)	4,083	(6%)	146
1991 to 1996 totals	93		729,913		
Average per year	16		12,166		

to identify the spills in which a significant fraction of the oil did not float. These spills accounted for about 20 percent of the heavy-oil spills and about 50 percent of the volume of heavy oil spilled during this period. The relatively high volume of nonfloating-oil spills, as compared to the relatively low number of nonfloating-oil spills (20 percent), is attributable to a few large heavy-oil spills during the period. One spill in particular, the *Morris J. Berman* spill of nearly 18,000 barrels of heavy oil in 1994, strongly influenced the statistics.

The committee could not explain why the average volume of nonfloating-oil spills should differ from the average volume of heavy-oil spills and considers the high volume of nonfloating-oil spills to be an anomaly caused by the limited statistics. Assuming that nonfloating-oil spills comprise 20 percent of the heavy-

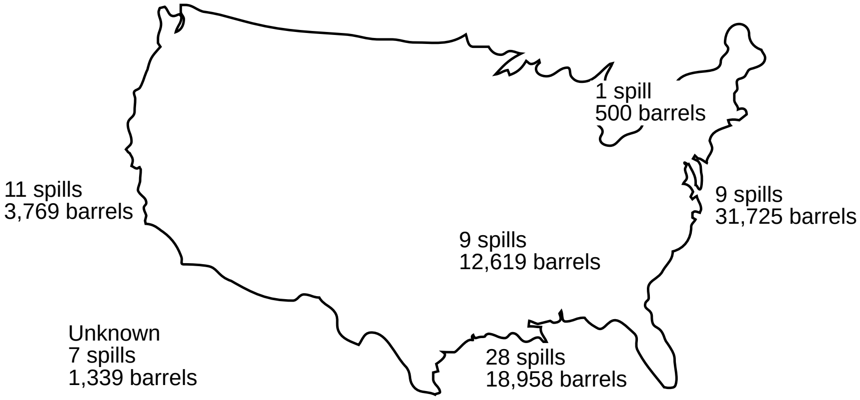

FIGURE 1-6 Geographical distribution of heavy-oil spills of 20 barrels or more from vessels in U.S. waters (1991 to 1996).

oil spills by number, the committee estimates that the average per year (20 percent of 16) will be three or four nonfloating-oil spills. Assuming that the average volume of nonfloating-oil spills is the same as for heavy-oil spills (i.e., 785 barrels per spill), the projected volume will be about 2,500 barrels per year.

PROJECTIONS OF SPILLS

To assess the risk of heavy-oil spills from vessels, the committee used ton-miles as a measure of exposure and the quantity of oil spilled as a measure of the consequences of accidents. Based on this approach, the spill rate is defined as the ratio of the historic volume of oil spilled to the historic movements in ton-miles and is expressed as barrels spilled per billion ton-miles. Tankers and tank barges were responsible for 89 percent of the heavy-oil spills from 1991 to 1996. The spill rates for all petroleum cargoes and for heavy-oil cargoes are presented in Tables 1-4 and 1-5, respectively. Barges had higher spill rates for all petroleum cargo than tankers during this period. The spill rates for heavy oil carried by barges were higher by a factor of two than the spill rates for all petroleum cargoes. The spill rates in Table 1-5 are for heavy oils, some of which remain afloat under certain environmental conditions. Only about 20 percent of the heavy oil spilled is expected to exhibit nonfloating behavior.

The volume of future spills will be affected by changes in the design and operation of tankers and barges. Decreases in both the number and volume of oil spills are expected as the fleet completes the transition to double-hull construction (NRC, 1998).

The spill statistics suggest that the barge industry has lagged behind the tanker industry in improving operations since the Oil Pollution Act of 1990 (OPA 90) was enacted. Major barge accidents from 1991 to 1996 had a variety of causes, including structural failure, capsizing, allisions, collisions, and groundings. The barge industry has instituted a number of voluntary programs to improve its environmental performance and safety record. These include the American Waterways Operators Responsible Carrier Program and partnerships with the USCG.

TABLE 1-4 Spill Rates for All Petroleum Cargoes in U.S. Waters (1991 to 1996)

	Movement of Petroleum (billions of metric ton-miles per year)	Oil Spill Volume (barrels per year)	Spill Rate (barrels spilled per billion metric ton-miles)
Tanker	361.3	4,418	12
Barge	62.2	16,798	270

TABLE 1-5 Spill Rates for Heavy Oil in U.S. Waters (1991 to 1996)

	Movement of Heavy Oil (billions of metric ton-miles per year)	Oil Spill Volume (barrels per year)	Spill Rate (barrels spilled per billion metric ton-miles)
Tanker	26.1	1,074	41
Barge	19.6	9,765	499

From 1991 to 1996, the percentage of tonnage carried in double-hull vessels was approximately 13 percent for tankers and 60 percent for barges. Theoretical comparisons with single-hull vessels (NRC, 1998) indicate that double-hulled tankers and tank barges will be involved in four to six times fewer spills. If all vessels trading from 1991 to 1996 had been double-hull, the number and volume of heavy oil spills could have been reduced by about 30 percent. In accordance with the provisions of OPA 90, the transition to double-hull vessels will be completed by January 1, 2015.

Total cargo movements in U.S. waters have increased at an average rate of 2 percent per year for the past 10 years. Further growth will tend to increase the number of spills from bunkers on freighters and other commercial vessels, and a move is under way to protectively locate bunker tanks on larger tankers and a few large container ships, which should lead to a reduction in the spillage of fuel oil.

2

Behavioral Models and the Resources at Risk

BEHAVIORAL MODELS FOR SPILLS OF NONFLOATING OILS

Based on an understanding of the physical and chemical properties of nonfloating oils (mostly from observations of past spills), Behavioral models have been developed (Michel et al., 1995). These models are descriptive, qualitative predictions of how oils with a density near or higher than the density of the receiving water might behave. The key factors that determine the behavior of spilled nonfloating oils are: water density, current speed, and the potential for interaction with sand.

Water Density

If the ratio of the density of oil to the density of the receiving water is greater than 1.0, the oil will not float. If it less than 1.0, the oil will float. If it is within a few percent of 1.0, then the oil is much more likely to become submerged by wave action. Figure 2-1 shows the relationship between the density and salinity of the water for a fixed temperature. The density is also shown in terms of the API (American Petroleum Institute) gravity. Oils with higher densities than the receiving water (above the line) will sink; oils with lower densities that the receiving water (below the line) will initially float.

Current Speed

If current speeds are greater than 0.1 m/s, nonfloating oils will be suspended in the water column. If the currents are very slow, oils heavier than the receiving water will sink to the bottom (Nielsen, 1992).

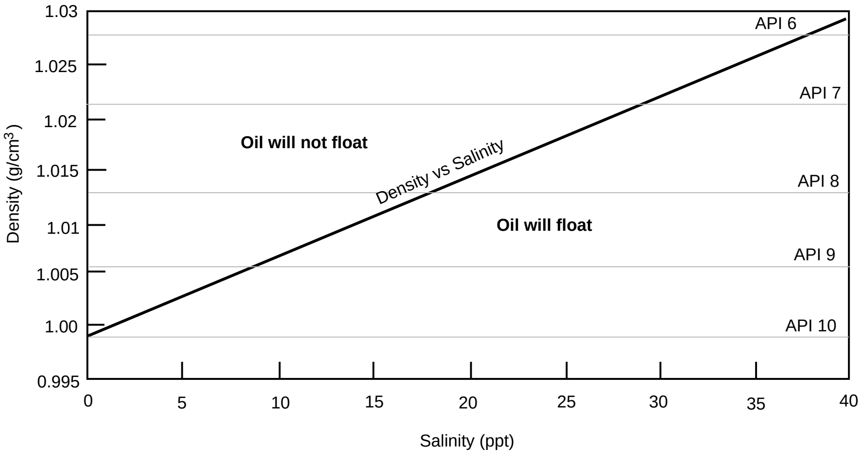

FIGURE 2-1 The relationship between water density and salinity at a temperature of 15°C. The density is also shown in API gravity units (right vertical axis).

Potential for Interaction with Sand

When floating oil is mixed with 2 to 3 percent sand, it becomes heavier than water and sinks (Michel and Galt, 1995). The density of sand grains is much higher than the density of silt or clay particles. Figure 2-2 is a schematic illustration showing the relationships among these factors and how they affect the short-term behavior of nonfloating oils. The density of oil relative to the receiving water is important only in determining whether the oil will initially float. Significant currents can keep heavier-than-water oil suspended in the water column. Any oil still on the surface or suspended in the water column will still sink if it mixes with sand also suspended in the water column. The models in Figures 2-3 and 2-4 illustrate combinations of factors that influence the behavior of nonfloating oils.

Oil Lighter than Water, Low Sand Interaction

If the oil-to-water density ratio is less than 1.0, the oil will initially float. At 15°C, oils with an API gravity above 6.5 (Figure 2-1) will still be lighter than seawater with a salinity of 35 parts per thousand. These oils will float, at first in contiguous slicks that may quickly (often within a few kilometers) break up into widely scattered fields of large mats and tar balls that can spread over large distances and become reconcentrated again in convergence zones (Figure 2-3a).

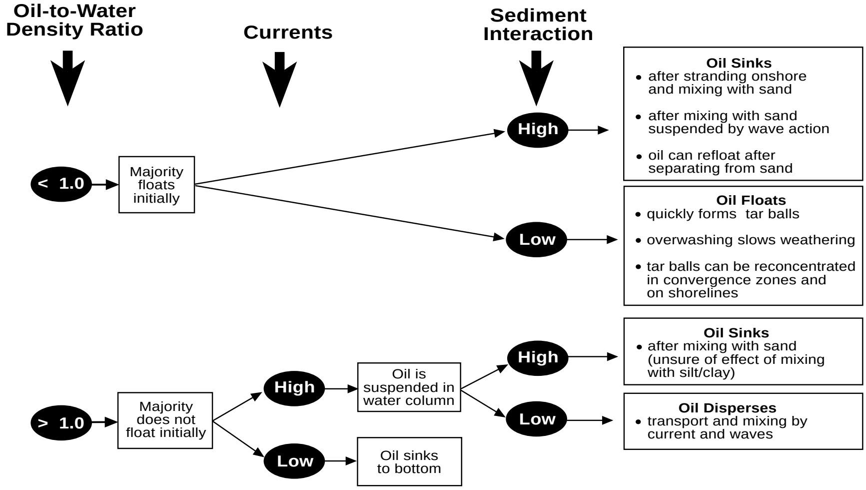

FIGURE 2-2 Behavior of spilled nonfloating oils.

Because of the higher viscosities of heavy oils, the tar balls are more persistent than for spills of light and medium oils. More important, however, as the density of the oil approaches that of the water, these tar balls tend to become "overwashed" by wave action making them very difficult to track and slowing most weathering processes (e.g., evaporation or formation of a "skin") (Lee et al., 1989). Furthermore, if oil emulsifies, the emulsion can contain 50 to 80 percent water making the density of the oil even closer to the density of the water. Evaporation of emulsified oils is slow, and, unless they interact with sediment, they will remain floating. When tar balls are eventually stranded, sometimes hundreds of kilometers away from the original spill site, the oil can still be relatively fresh and have a significant impact on the water surface and shoreline resources (see Box 2-1). Because the oil still floats, this type of spill is not considered further in this report. After the evaporative loss of the lighter fraction, particularly of the cutter stock in bunker fuels, the remainder might sink, but this has been observed at only one spill (Lee et al., 1992; Michel and Galt, 1995).

Oil Lighter than Water, High Sand Interaction

Spilled oil that is lighter than the receiving water can still sink, either by becoming stranded on sand beaches or by mixing with sand in the surf zone. In several spills, such as the IXTOC I (Gundlach et al., 1981), *Alvenus* (Alejandro and Buri, 1987), and *Haven* (Martinelli et al., 1995), heavy oils floated initially

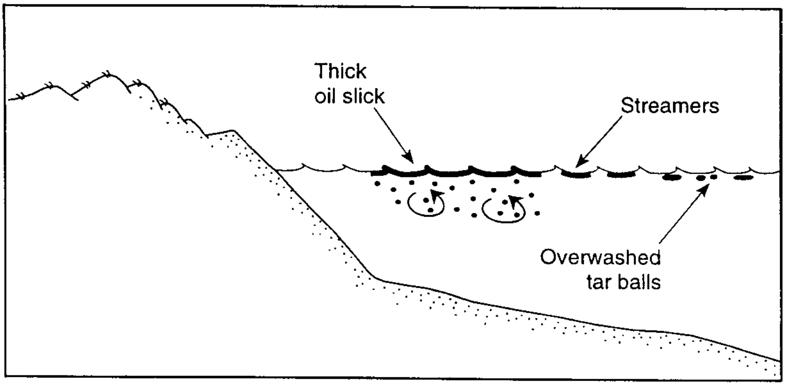

FIGURE 2-3a Oil-to-water density < 1.0; low sand interaction; majority of oil floats.

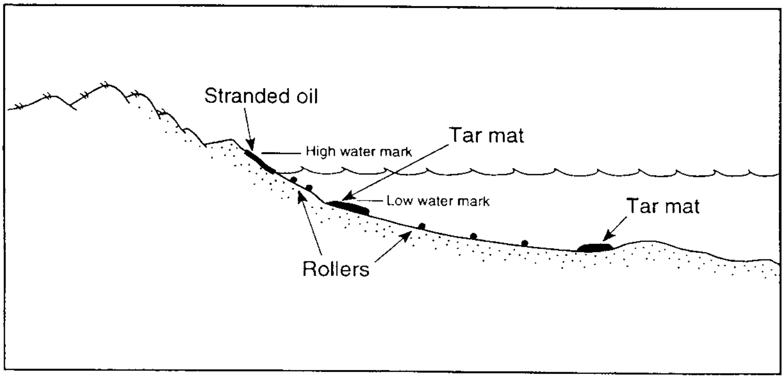

FIGURE 2-3b Oil-to-water density < 1.0; oil initially floats but sinks after stranding.

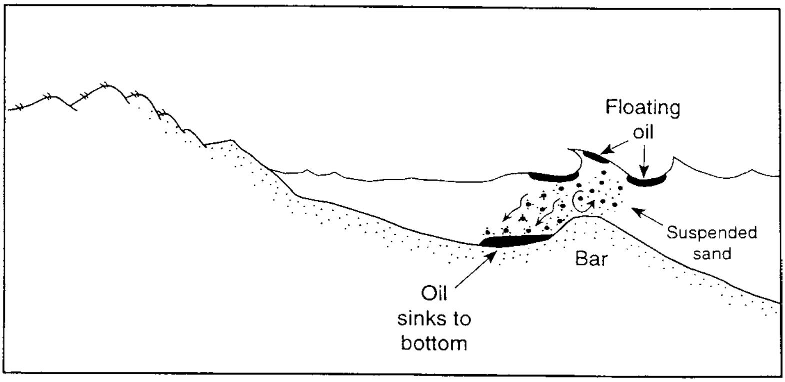

FIGURE 2-3c Oil-to-water density < 1.0; oil initially floats but sinks after mixing with sand in water.

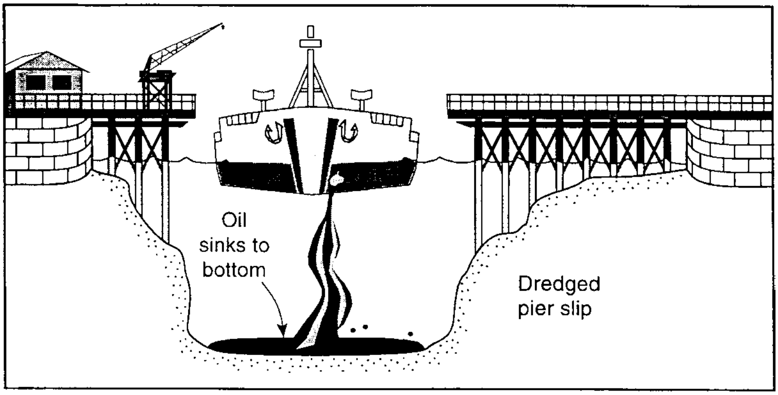

FIGURE 2-3d Oil-to-water density > 1.0; low currents; majority of oil sinks.

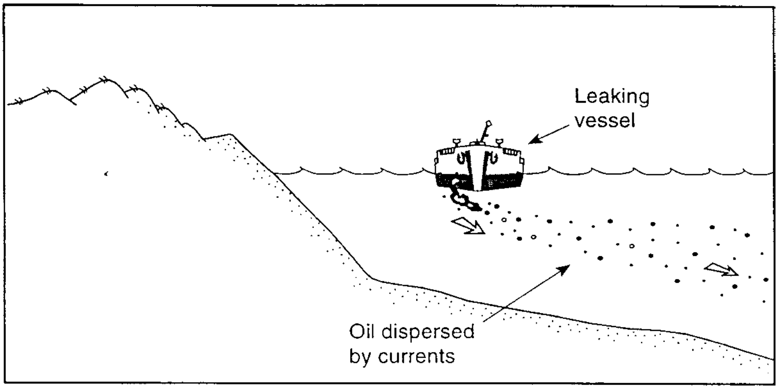

FIGURE 2-3e Oil-to-water density > 1.0; high currents; oil disperses in water column.

and became stranded on sand beaches but then were eroded from the beaches and sank, forming tar mats between nearshore bars. In these cases, the oil was too viscous to penetrate the sand; instead, the sand coated the oil layers and/or mixed with the viscous oil as it was eroded from the beaches by wave action. The oil/sand mixture contained only a few percent sand and was deposited at the toe of the beach just offshore (Figure 2-3b). The distribution of sunken oil/sand tar mats was highly variable, ranging from thick, continuous deposits tens of meters long to small widely scattered tar balls. If there was current activity, especially generated by waves breaking on the shore, the oil/sand mixture formed cigar-shaped "rollers" that were scattered on the bottom or accumulated into mats in the

BOX 2-1
The *Nestucca* Spill

The *Nestucca* spill in December 1988 released 5,500 barrels of heavy marine fuel oil with an API gravity of 12.1 three kilometers off Grays Harbor, Washington. The spilled oil quickly formed tar balls that moved below the water surface (i.e., were overwashed by waves) and could not be tracked visually. Two weeks later, oil unexpectedly came ashore along the coast of Vancouver Island, Canada, 175 kilometers north of the release site, contaminating 150 kilometers of shoreline (NOAA, 1992). The oil had a significant effect on the large number of marine birds wintering in the area. Of the 10,300 birds collected, about 9,300 were either already dead or died in treatment centers. Many more were believed to have died but were never collected.

troughs of offshore bars. These rollers picked up more sand and shell fragments as they moved, making them heavier.

Experts have long been concerned that oil spilled in turbulent waters with heavy loads of suspended silt and clay (i.e., glacial meltwater, such as upper Cook Inlet and the Yukon River) would mix with the sediments and sink (Kirstein et al., 1985). Laboratory studies have shown that oil mixed with water with heavy suspended sediment loads does adhere to the sediments, with concentrations up to 0.1 gram of oil per gram of solid (McCourt and Shier, 1998). However, this process is likely to result in the deposition of oiled sediments rather than the transport of bulk oil to the bottom.

During the Tampa Bay and *Morris J. Berman* spills (Box 2-2), response teams observed that floating oil sank by mixing with sand in nearshore waters, without coming into contact with intertidal sediments on the shoreline (Figure 2-3c). If a floating slick of heavy oil drifts into shallow water along an exposed shoreline, it is more likely to be mixed into the water column by wave turbulence. If the bottom is sandy, the sand may be suspended in the water column by waves and could mix with the oil. The suspended sand concentrations in breaking waves is commonly 300 to 500 mg/L and can easily reach 5,000 mg/L (Kana, 1979), compared to typical concentrations of fine-grained suspended sediment of 20 mg/L in estuaries and nearshore waters. Because the specific gravity of quartz is 2.65, it only takes 2 to 3 percent sand by weight mixed into oil to make it heavier than seawater. Again, high viscosity is an important factor, because viscous oils tend to form large tar balls (rather than small droplets) that pick up sand. The oil/sand mixture can be carried by long shore currents and deposited in relatively sheltered areas where it can form extensive, thick layers of oil/sand on the bottom.

BOX 2-2
The *Morris J. Berman* Spill

On January 7, 1994, the *Morris J. Berman* barge ran aground just offshore San Juan, Puerto Rico, releasing about 18,000 barrels of heavy fuel oil (API gravity of 9.5). Although much of the oil floated, response teams reported finding oil on the bottom within the first 24 hours, and eventually mats of submerged oil were found in both offshore areas and on the landward side of nearshore reefs. Most of the sunken mats were within 1 or 2 kilometers of the vessel, although one site was 110 kilometers from the release site. The oil adhered to rocky surfaces and coated seagrass beds (Burns et al., 1995). It was later determined that most of the oil on the bottom had sunk without coming into contact with the shore (Michel et al., 1995). The oil contained a few percent sand and could readily refloat in seawater and recontaminate the adjacent shoreline once it was separated from the sand. Three different methods were used to remove the oil: diver-directed vacuuming of the more liquid oil; manual pickup by divers of the more viscous patches; and dredging of large deposits in a small bay (Burns et al., 1995; Ploen, 1995).

Oil Heavier than Water, Low Currents

If the density of the oil is higher than the density of the receiving water, some of the oil can form a sheen, but the majority does not float. As the oil mixes into the water column, it forms small droplets, ranging in size from approximately 0.5 microns to several millimeters. If the water column is strongly stratified, some of the oil droplets may accumulate on the pycnocline, provided that they are less than the underlying water. If current speeds are low, oil that is more dense than the water sinks and accumulates on the bottom (Figure 2-3d). Direct sinking in low-flow areas was observed after the *Sansinena* oil spill (see Box 2-3) while it was docked at a pier (Hutchison and Simonsen, 1979), and the *Mobiloil* spill (in the lee of the grounded vessel) (Kennedy and Baca, 1984).

Suspended oil can sink when the oil is transported into low-flow areas similar to the way fine-grained sediments are deposited in estuaries during slack periods of the tide. However, oil droplets can be readily remobilized by tidal currents, so long-term accumulation is likely only in areas where wave-generated, tidal, or riverine currents have little effect. Examples of such areas include abandoned channels, dredged channels or pits, depressions adjacent to piers caused by "propeller wash" of anchoring vessels, dead-end canals, and the lee side of natural and man-made structures. If the oil does accumulate on the bottom, the oil droplets recoalesce into pools of liquid oil that can be tens of centimeters thick. Evaporation and photo-oxidation of sunken oil are much slower than for floating oil slicks, and the oil tends to remain as a liquid on the bottom. Dissolution from thick mats is slow (Lee et al., 1989). Observations of spills have shown that this

BOX 2-3
The *Sansinena* Spill

On December 17, 1976, the tanker SS *Sansinena* exploded while loading fuel in Los Angeles harbor, releasing more than 33,000 barrels of bunker fuel oil (API gravity 7.9 to 8.8). Approximately 200 barrels floated, but the majority of the oil sank. Divers reported large pools of oil up to three meters deep on the harbor bottom, where the oil had settled into depressions (Hutchison and Simonsen, 1979). Initial recovery was by diver-directed vacuum removal and separation in tanks mounted on a barge, but this method was abandoned because of the great difficulty of moving the suction head along the uneven bottom. Next, diver-guided hydraulic pumps were used on thick accumulations close to the pier. Specially designed pumping units consisting of a prime mover and hydraulic pumps on a barge were then used to collect oil from outer depressions. Nearly 16,000 barrels were recovered during the initial recovery operations. Eventually, a suction head and pump device was designed on site for recovery of the large quantities of oil still remaining on the bottom. This device had to be operated according to directions from a diver because some of the oil pools had become silted over and even had marine life living in the silt, making the oil difficult to locate. During the next 90 days, 10,300 barrels were recovered from the harbor bottom. Over a 16-month period, 33,000 barrels, nearly all of the spilled volume, were recovered.

type of oil does not initially adhere to or mix with large amounts of fine-grained sediments under water.

Oil Heavier than Water, High Currents

If currents are greater than about 0.1 m/s, oil droplets stay suspended in the water column and disperse (Figure 2-3e). In rivers and most nearshore coastal settings, the oil is not likely to accumulate on the bottom because the currents are strong enough to keep it suspended in the water column. For example, little or no oil accumulation on the bottom was observed after heavy-oil spills in the Columbia River (Kennedy and Baca, 1984), the Mississippi River near Vicksburg (Weems et al., 1997) and in Puget Sound (Yaroch and Reiter, 1989). However, even in strong currents, heavy oils can accumulate in sheltered areas. For example, after about 4,760 barrels of slurry oil were spilled into the Mississippi River, nearly 50 percent of the oil was recovered from the bottom, but only from the lee created when the leaking barges were pushed at a 45-degree angle against the river bank (Weems et al., 1997). No other significant amounts of oil were found in extensive surveys. The oil was not expected to adhere initially to debris or vegetation as it mixed into the water column because fresh oil generally does not stick to water-wet surfaces.

Spills of Emulsified Fuels

Emulsified fuels (anthropogenic fuels manufactured by mixing water and surfactants with liquid oils or solid hydrocarbon products) behave very differently. Because only one small accidental spill of emulsified fuel has been reported (Sommerville et al., 1997), our understanding of the behavior of these oils is based mostly on research conducted specifically with Orimulsion^{TM}, an emulsified fuel manufactured from bitumen produced in Venezuela. Laboratory and field experiments on emulsified oils have been conducted in Canada (Jokuty et al., 1995), the United States (Deis et al., 1997; Ostazeski et al., 1997), Venezuela, and Europe (Sommerville et al., 1997). In freshwater, the surfactant in emulsified fuels will maintain its effectiveness over longer periods of time, preventing recoalescence of the bitumen particles. In low-flow conditions (Figure 2-4a), the spilled oil will settle to the bottom of the water column. In these quiescent conditions, the oil has little potential for mixing with sediment, except in the long term by bioturbation.

In freshwater with currents, the predispersed bitumen particles will slowly descend to the bottom down current (Figure 2-4b), and the surfactant will remain effective for a limited period of time, preventing recoalescence of the particles. The eventual fate of the bitumen particles is uncertain, particularly in terms of interaction with fine-grained sediments. Because the bitumen particles are highly adhesive, it is likely that they will adhere to suspended sediments and eventually be deposited in low-flow zones.

In saltwater, the emulsified oils will initially form clouds of dispersed particles in the upper 1 or 2 meters of the water column (Figure 2-4c). Laboratory and field tests have shown that surfactants quickly lose their effectiveness in saltwater. In areas with high bitumen concentrations, the particles can recoalesce and rise to the surface, forming tarry slicks. In wave-tank experiments, the tar coated the glass sides of the wave tank (Jokuty et al., 1995). However, in open water, the particles would disperse. Therefore, options for containing and recovering spilled emulsified oils quickly decrease over time.

Refloating Mechanisms

Sunken oil can refloat, creating significant problems for spill-response teams and a chronic source of exposure. In the *Morris J. Berman* spill, months after the spill large quantities of liquid oil refloated, recontaminating beaches and exposing resources in the water-column and on the surface to oil after the bulk of the floating oil had been recovered. There are three mechanisms for refloating oil: (1) still-buoyant oil can separate from the sand; (2) wave-generated currents can

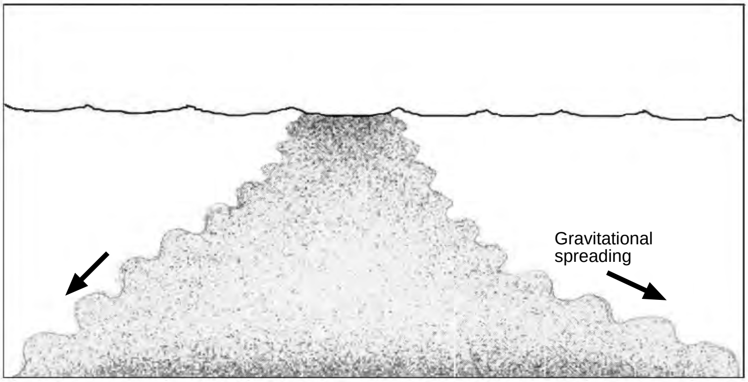

FIGURE 2-4a Emulsified oil in freshwater; low currents; oil sinks.

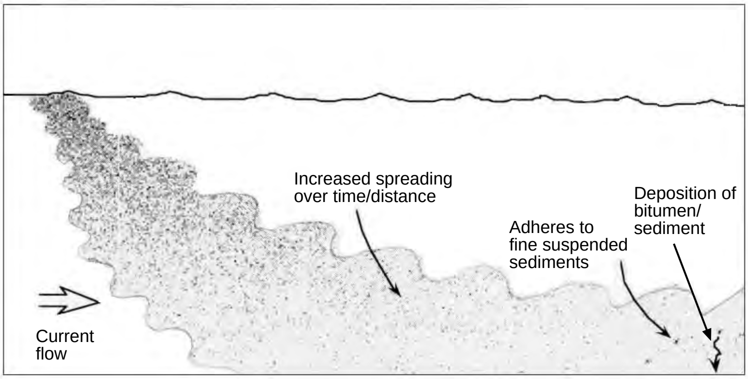

FIGURE 2-4b Emulsified oil in freshwater; high currents; oil disperses and eventually sinks.

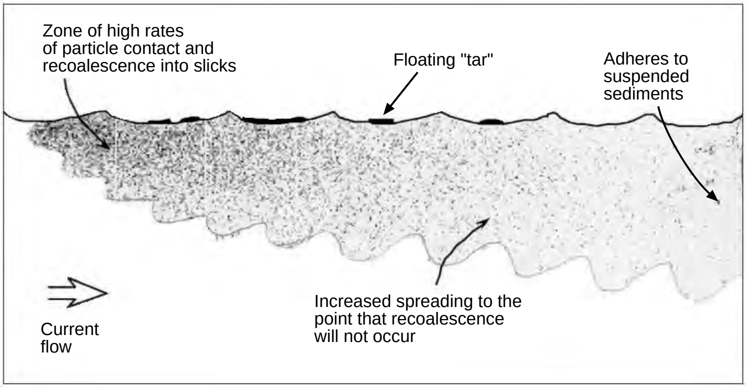

FIGURE 2-4c Emulsified oil in saltwater; high currents; oil initially disperses then coalesces into tarry slicks.

loosen and resuspend pieces of buoyant oil from the bottom; and (3) increases in water and/or oil temperature can make the oil less viscous and/or more buoyant.

Spill-response teams often assume that oil refloats because of a short-term change in temperature (e.g., in the afternoon when the water warms up). However, it is unlikely that short-term changes in temperature can cause oil-sand mixtures to sink in one situation and float in another because differential oil and water expansion coefficients are very small. Hence, oil on the bottom and the overlying water expand at about the same rate, and relative changes in density are small.

A more likely mechanism for refloating sunken oil is the physical separation of the sediment from oil (Michel and Galt, 1995). If one dumps sand into a can of motor oil, the sand falls through the oil by gravity and forms a layer of sand on the bottom. Settling rates through more viscous oils would be longer but could be increased in the field by wave motion and other physical processes. In the *Morris J. Berman* spill, buoyant oil droplets were observed breaking off layers of oil on the bottom, somewhat like droplets being released from the heated mass in lava lamps. These droplets are believed to have been formed as the still-buoyant oil became less viscous during the daytime heating of the water, allowing the oil to separate from the sand and droplets to break away from the submerged oil by wave action generated by the land-sea breezes.

POTENTIAL EFFECTS OF NONFLOATING-OIL SPILLS

When a floating oil is spilled, response teams typically have to recover oil slicks, clean up oil stranded on the shoreline, and recover and treat animals along the shoreline and in the water. Their focus is on the water surface and shoreline, the so-called “bath-tub ring.” Life forms in the water column and benthic habitats are usually considered to be at less risk of exposure and injury from floating oil slicks than from nonfloating oils. Table 2-1 compares the predicted impacts of nonfloating-oil spills and floating-oil spills on shoreline and benthic habitats, major assemblages of fish and wildlife, and human-use resources. Spills of nonfloating oils are expected to have less impact on shoreline habitats because smaller amounts of oil are likely to be stranded and cleanup activities are likely to be less disruptive (Scholz et al., 1994). Any oil that is stranded, however, is likely to be very persistent because of the slow natural removal rates for heavy, adhesive oils. Nonfloating oils are less likely to penetrate porous sediments or wetland vegetation because of their high viscosities and adhesiveness (Harper et al., 1995).

Impacts on water-surface resources are also expected to be lower from spills of nonfloating oils because of the significant reduction in the amount of oil on the water surface. If the oil refloats, it could be a chronic source of exposure to both water-surface and shoreline resources, but the risk is likely to be limited to areas adjacent to sunken oil deposits (NOAA, 1995).

All water-column and benthic habitats are at increased risks from spills of

TABLE 2-1 Relative Changes in the Resources at Risk from Spills of Nonfloating Oils Compared to Floating Oils

Resource at Risk	Risks from Spills of Nonfloating Oils Compared to Spills of Floating Oils
Rocky Shores (–)	Less oil is likely to be stranded, but oil that is stranded is usually stickier and thicker.
Beaches (–)	Viscous oils are less likely to penetrate porous sediments. Oil is often stranded as tar balls, which are easy to clean up on sand beaches. Chronic recontamination is possible for months.
Wetlands and Tidal Flats (–)	Less oil coats vegetation. Because the oil does not refloat with the rising tide, any oil stranded on the lower intertidal zone will remain, thus increasing risk to biota. Cleanup of oil from these environments is very difficult, and natural recovery takes longer.
Water Surface (–)	Less oil remains on the water surface. Oil tends to form fields of tar balls. Potential for chronic impacts from refloated oil over time is high.
Water Column (+)	Oil can increase exposure as it mixes in the water column. Risks increase if oil refloats after separation from sediments. When submerged, slow weathering of the more toxic components can be a chronic source of risk.
Benthic Habitats (++)	Risks are significantly increased for areas where heavy oils accumulate on the bottom. Slow weathering rates further increase the risk of chronic exposures. Smothering and coating can be heavy. Bioavailability varies with oil and spill conditions.
Birds (–)	Less oil remains on the water surface, so direct and acute impacts are lower. There is a high probability of chronic impacts from exposure to refloated oil and restranded tar balls on shores after storms.
Fish (+)	Risks are increased to all fish, especially benthic or territorial fish, in areas where oil has accumulated on the bottom.
Shellfish (++)	Risks are increased to all shellfish, especially species that spend most of their time on the sediment surface (e.g., mussels, lobsters, crabs). Risk of chronic exposure from bulk oil, as well as the slow release of water-soluble PAHs (polynuclear aromatic hydrocarbons), is high.
Marine Mammals (–)	Less oil remains on the water surface, and the potential for contamination of marine mammals on shore is lower. Oil in the water column is not likely to have an impact on highly mobile species. Benthic feeders (such as manatees) could be exposed from accumulations on the bottom, which would weather slowly.
Sea Turtles (–)	Less oil remains on the water surface, and less oil is stranded on nesting beaches.
Water Intakes (++)	Oil mixed into the water column would pose serious risks to water treatment facilities. Closures are likely to be longer.

Note: (–) indicates a reduction in risk. (+) indicates an increase in risk. Actual risks for a specific spill will be a function of the composition and properties of the spilled oil and environmental conditions at the spill site.

nonfloating oils (Scholz et al., 1994). Oils that quickly sink or are suspended in the water column have greater impacts on organisms in the water column because more of the water-soluble fraction of the oil dissolves rather than evaporates. Oil on the surface is primarily weathered by evaporation to the atmosphere and, to a lesser degree, to the water column by dissolution. Oils suspended in the water column or deposited on the bottom are less likely to evaporate but more likely to dissolve, although the water-soluble fraction of heavy oils is usually very low. Consequently, the water column can have higher concentrations of toxic fractions from nonfloating oils than from floating oils. Dissolution tends to be a slower process than evaporation (Lee et al., 1989, p.37), thus increasing potential exposure times. In the *Morris J. Berman* spill in Puerto Rico, divers observed dead fish, living fish with lesions and tumors, and many lethargic territorial fish in nearshore waters adjacent to the spill site (Vincente, 1994). Mobile species may be able to move to uncontaminated areas, thus reducing their exposure.

Nonfloating oils are often high in polynuclear aromatic hydrocarbons (PAHs), which are the primary source of both acute and chronic toxicity to aquatic organisms. Naphthalene compounds (two-ringed aromatics) have been shown to be more toxic than lightweight aromatics, such as benzene and toluene (Anderson et al., 1987). In terms of the water-soluble fraction, bunker C is as toxic as diesel oil (Markarian et al., 1993). Thus, even though heavy residual oils are not usually considered to be acutely toxic to fish (NOAA and API, 1995), oils that are mixed into the water column without weathering by evaporation on the water surface first may have a higher fraction that dissolves and, therefore, may be more acutely toxic to organisms in the water column.

3

Technologies and Techniques

In this section, the current technologies and techniques for locating, tracking, containing, and recovering spills of nonfloating oils are summarized. The presentation is divided into subsections on spill modeling and information systems, spill tracking and mapping, and oil containment and recovery. The summary focuses on the current state of practice and identifies systems that have been applied or proposed for application to submerged oil. Summaries of the use of these techniques in selected spills in which substantial quantities of oil were submerged or deposited on the seabed can be found in Michel and Galt (1995) and Michel et al. (1995). An annotated bibliography of the literature can be found in NOAA (1997).

MODELING AND INFORMATION SYSTEMS

The following discussion begins with a brief overview of the state of the art in spill modeling and information systems (Box 3-1). This is followed by the extension of spill models to include the subsurface transport and deposition of dispersed oil and a history of the use of these models to "hindcast" (analyze a past event) several large accidental spills in which subsurface transport was important. The use of models to forecast and hindcast spills involving substantial amounts of submerged oil is then summarized.

Recent comprehensive reviews of the state of the art in spill modeling (Spaulding, 1995; ASCE, 1996) show that the models have evolved quite rapidly taking advantage of the availability of low-cost, high-powered workstations and personal computers with full color graphics, extensive storage, and communications systems. A simultaneous evolution in the software has enabled a clear

BOX 3-1
Oil-Spill Model

The core of an oil-spill model is a series of algorithms that represent the processes controlling the transport and fate of oil released into the environment. The transport portion of the models describes the physical movement of oil by winds, currents, waves, and associated turbulence. The fate of the oil is normally represented in terms of spreading, evaporation, dispersion or entrainment, dissolution, emulsification, biodegradation, sinking or sedimentation, photo-oxidation, and oil-shoreline and oil-ice interactions. These processes are typically formulated individually with links to other processes or environmental data as necessary to describe the oil's fate. The algorithms may be altered or changed entirely depending on the environment in which the oil is spilled or transported.

Input to oil-spill models normally includes a description of the study area, the oil-spill scenario (spill location, release rate and schedule, and oil type), and environmental conditions. The study area is normally described using a map of the region of principal interest. The environmental forcing data typically consist of estimates of the temporally and spatially varying wind and current fields for the forecast period (typically a few days for spill-response support) and an estimate of the mean water temperature. These environmental data fields may be provided by supporting hydrodynamic and meteorological models for the study area or from observations. The model output typically includes animations of the movement of the surface oil and the oil mass balance by major environmental compartments (surface, water column, onshore, evaporated, seabed, biodegraded), the oil thickness and areal extent, and the oil properties (viscosity, water content) versus time.

separation to be made between the model software and supporting environmental data (Spaulding and Chen, 1994). With model/data separation, the models can be rapidly applied to new locations (Anderson et al., 1993). Many models have been linked with geographic information systems (GISs) or have limited GIS functions embedded in the model systems (Galagan et al., 1992). With the incorporation of the GIS and other data management tools, users can input, organize, manipulate, archive, and display georeferenced information relevant to spill modeling. With the extension of spill models to include supporting data management tools, spill information systems have been developed that can provide valuable data to support spill responses and planning.

In most cases, models have been tested and validated by application to selected, usually large, accidental spills or experimental field trials. These events are selected based on the availability and quality of data. Hindcasts of the largest, most recent spills (*Exxon Valdez*, the Gulf War spill, *Braer*, *North Cape*) have been used by several researchers to demonstrate the predictive performance of their models.

Basic spill models have been extended to include biological and, in some cases, economic models for estimating the impact and damages of spills (e.g., French et al., 1994). These models are now being incorporated into comprehensive, on-scene, command-and-control systems (Anderson et al., 1998). Strategies for using models to prepare a trajectory analysis have been developed by Galt (1994, 1995). The National Oceanic and Atmospheric Administration (NOAA) has also developed digital distribution standards for data on trajectories (Galt et al., 1996).

Most of the spill models developed to date focus on the transport and fate of surface oil slicks. These models typically predict the mass of oil removed from the sea surface by evaporation, by dispersion or entrainment into the water column, and by sinking and sedimentation but do not explicitly track the dispersed oil. This approach has been taken because most spills involve oils that float throughout most of the short-term spill response. Selected models have the capability of predicting the three-dimensional evolution of oil, including entrainment, subsurface transport, sedimentation, and refloating of spilled oil (e.g., Spaulding et al., 1994; Elliot, 1991; Johansen, 1985; French et al., 1994). The majority of these models employ a particle-based, random-walk technique to predict the evolution of subsurface oil (Kolluru et al., 1994) although other alternatives have also been investigated (Spaulding et al., 1992). In these models, the influence of oil sediment interaction (Kirstein et al., 1985) and the buoyancy of dispersed oil droplets are explicitly accounted for.

The use of the three-dimensional models to forecast and hindcast spills has been limited. Most simulations have been restricted to buoyant oils that have been dispersed in the water column by strong winds or wave forcing. Although these oils are not a direct analog for nonfloating oils, they are instructive in illustrating the ability to predict the transport and fate of oil dispersed in the water column. For example, both Proctor et al. (1994) and Spaulding et al. (1994) performed hindcasts of the *Braer* spill. Both models correctly predicted the general subsurface transport of the highly dispersible, Gulfaks crude oil that was spilled. The predicted location of the subsurface oil was consistent with the pattern of sedimented oil found on the seabed. Neither hindcast included oil-sediment interaction, however, and no predictions were made of the deposition of sedimented oil.

A review of the literature on oil beneath the water surface and Group V oils by NOAA (1997) shows that spill models have generally not been used to forecast or hindcast spills of heavy oils. This is consistent with the summaries of spills of heavy oils presented in Michel and Galt (1995) and Michel et al. (1995). The absence of model applications to forecast or hindcast these events can be attributed to several factors. First, spills of heavy oils are generally less frequent, and the volume of oil spilled tends to be less than in spills of floating oils. Second, requirements for current data (either from observations or hydrodynamic model predictions), which are difficult to obtain for surface spills, are increased substantially when the subsurface transport of oil is involved. The subsurface current structure is of limited importance when the flows are principally tidal and water depths are shallow, but they become particularly important when stratification and multilayer flows are present. Finally, Michel and Galt (1995) have shown that substantial subsurface transport and deposition often occur as the result of the interaction of buoyant oil with sand. The sinking and subsequent deposition of oil caused by changes in the oil's density due to weathering (evaporative losses) or burning are rare (Lee et al., 1989, 1992).

Most spill models are focused on predicting the transport and fate of oil at sea and do not include oil-sediment interactions or oil-shoreline interactions. Given the lack of data and the lack of a clear understanding of the controlling processes, those that do are necessarily rudimentary (ASA, 1997; Reed et al., 1989). Incorporating oil-sediment interactions into spill models will require estimates of the suspended sediment concentrations as input (Kirstein et al., 1985). These estimates are normally based on observations or model predictions, and the data are rarely available during spill events. Incorporating oil-shoreline interactions will require extensive data on the nearshore environment, including geomorphology and wave and current fields. Once again these data are generally not available for most spills, particularly during the emergency response phase.

Given this situation, two strategies might be tried to use existing spill models to assist in the response to spills where subsurface transport processes and sinking and sedimentation might be important. First, the spill model could be used to explore the impact of various assumptions about the subsurface transport of the oil and the interaction of oil and sediment. For example, it could be assumed that a portion of the oil will be removed or leave the surface as it becomes neutrally bouyant or sinks at a specified rate due to oil-sediment interaction. Model predictions could then be made to estimate the path and a general sense of the area and volume that would be impacted by the subsurface oil. The information could be used to establish field sampling programs. Data collected from the field on the current structure and sediment concentrations could then be used to refine the predictions and narrow the scope of the uncertainty.

A second approach would be to place the spill model in real-time operation for the principal areas of concern. Supporting three-dimensional hydrodynamic and sediment-transport models for nearshore and offshore areas would provide currents and suspended-sediment fields for inputs to the spill model. The models, which would have been validated with field observations, would be able to assimilate real-time data from monitoring systems to maximize their predictive performance. This approach would only be viable for areas where the probability of spills is high enough to warrant the investment in the development, application, and maintenance of such a system.

TRACKING AND MAPPING TECHNIQUES

Techniques for tracking and mapping the location of oil throughout a spill and subsequent cleanup are critical to the effective containment and recovery of oil in the water column or deposited on the seabed. A brief summary of current methods for tracking and mapping subsurface oil follows. The review is based primarily on summaries in Castle et al. (1995) and Michel et al. (1995). Additional information is available in Smedley and Belore (1991) and Brown et al. (1997). As a practical guide to determining which tracking and mapping options are most appropriate, Figure 3-1 provides a typical decision tree based on oil density and water depth. The first branching is based on assessing the density of oil relative to the density of the receiving water and includes two branches, one if the oil is neutrally buoyant and one if the oil is negatively buoyant in receiving water. The second branching depends on the water depth. Final selection of the tracking method is dependent on local conditions, the availability of equipment and personnel, and weather conditions.

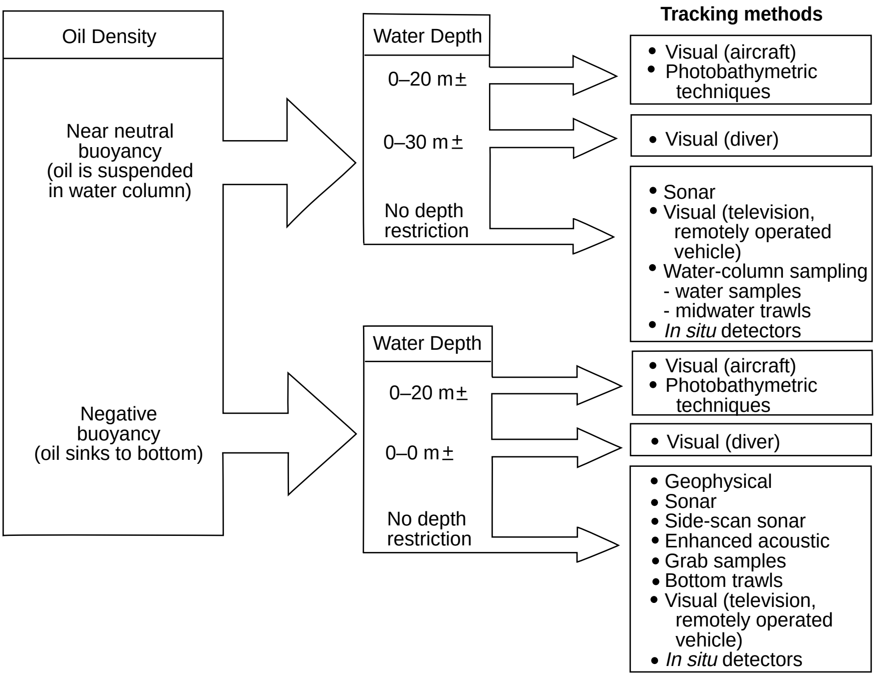

FIGURE 3-1 Decision tree based on oil density and water depth. Source: Castle et al., 1995.

Visual Observations

Visual observations (by aircraft, ship, diver, or camera/television) have been the principal methods of locating and tracking submerged oil. Airborne photography and visual-based systems, which are widely available and can rapidly survey large areas, are widely used to locate submerged oil. The performance of these systems is limited by water clarity and depth, the quantity of oil, and the characteristics of bottom sediment. Given the possibility of misidentifying natural materials (seaweed, seagrass beds) as oil, *in situ* observations are always required to validate airborne assessments. Direct observations can also be performed by divers within safe depth restrictions and visibility limits. Observations by underwater cameras, either operated by divers or deployed from ships, can also be used to locate submerged oil. These visual methods must generally be confirmed by sampling and have relatively limited coverage. As an extension of visual methods, photobathymetric techniques, such as multispectral photography, may be useful for mapping oil on the seabed in shallow water (Benggio, 1994b). Once again, field confirmation and calibration are required.

Remote Sensing Techniques

Standard, side-looking, airborne radar, synthetic-aperture radars, and infared/ultraviolet line scanners are generally unable to map subsurface oil because they cannot penetrate the water surface (Fingas and Brown, 1996). The methods are also hindered by the weather and visibility. Laser fluorosensor techniques have been developed and shown to be able to detect oil in the water column for the purposes of oil exploration (Dick and Fingas, 1992; Dick et al., 1992). Little evidence exists that this technique has been used in responding to spills of nonfloating oils, however (Brown et al., 1997). Recent laboratory experiments by Brown (1998) have demonstrated a laser airborne fluorosensor that can detect the presence of dispersed bitumen in the water. No field tests or practical uses of the system have been made to date.

Geophysical/Acoustic Techniques

These technologies include of a variety of acoustic-based techniques for locating and mapping submerged oil (Chivers et al., 1990). These techniques rely on acoustic sounding principles, specifically the differential density and sound speeds of water compared to those of oil or oil-sediment mixtures and the scattering of sound waves from particulate material in the water column. Oil in the water column can be qualitatively mapped by commercial fish-finding and echo sounders or by precision survey equipment. Oil on the seabed and associated bottom features can be mapped by side-scan sonar systems. The output of these systems can be enhanced for mapping the texture and composition of the bottom.

One such system was reportedly used to map the submerged oil from the *Morris J. Berman* and *Haven* spills (Marine Microsystems, 1992).

Side-scan sonar mapping systems are normally interfaced with the global positioning system (GPS) and hydrographic mapping software to generate maps of seafloor features. These systems can provide relatively rapid coverage but are most useful when they are used to direct the surveys for areas of natural collection that have already been identified. These specialized systems may be unable to distinguish between oiled sediments and underlying sediments because of their acoustic similarity. Therefore, sampling or *in situ* observations are necessary to confirm the maps.

Water-Column and Bottom Sampling

Direct sampling of the water column or seabed may be used to locate and map the movement of oil. Sampling can be done by a vessel, a remote vehicle, or a diver (in shallow water). Sampling generally becomes more difficult and time consuming as the water depth, current speed, and wave height increase. A variety of sampling techniques are available, including grab sampling of water or sediments with subsequent visual or chemical analysis, sorbent materials deployed on weighted lines or in traps (Benggio, 1994a), and core sampling of the seabed sediments. Sampling is typically limited in scope and may not provide representative observations of the impact area. Water-column and bottom trawls may be useful for selected spills because they can cover larger areas. The effectiveness of sampling methods is strongly dependent on the composition of the oil and oiled sediment and environmental factors, such as current speed, water depth, and substrate type.

In Situ *Detectors*

In situ and towed fluorometric detection are widely available and routinely used to detect and map petroleum leaks and spills (Turner Designs, 1999). These systems may be mounted on buoys, boats, or remotely operated vehicles. When mounted on boats and coordinated with GPS, they can provide maps of the subsurface oil concentration field. They are restricted to making oil concentration measurements in the water column (Brown et al., 1997) and have a detection range from parts per billion to parts per million, depending on environmental conditions and oil type. Given the three-dimensional nature of submerged oil plumes, mapping of subsurface oil requires an extensive effort. Towed systems might also be used to monitor conditions at one location, such as in a river, to determine whether oil has reached that location and is being transported downstream. These systems have historically been used to assess the effectiveness of dispersants in field trials and planned spill events. They have not been routinely used for actual spills in the United States but are used in Canada and the United Kingdom to assess the potential for tainting fish from subsurface oils.

Summary

The appropriate method for tracking and mapping a particular spill depends on whether the oil is suspended in the water column or deposited on the seabed and on the water depth and clarity. In general, visual and photobathymetric techniques are restricted to water depths of 20 meters or less and are suitable for both suspended and deposited oil. Diver-based visual observations can only be used in low-current and small wave areas. Acoustic techniques, television observations, water-column and bottom sampling, *in situ* detectors, and nets and trawls typically have no depth restrictions except that the water must be deep enough for the instrument to be deployed and operated safely. They become more difficult to operate, however, as the current speed and wave height increase. Measurements near the seabed become more challenging as the topographic relief of the bottom increases and the bottom surface becomes rougher. Tables 3-1 and 3-2 provide a summary of the uses and limitations of various tracking and mapping methods.

CONTAINMENT AND RECOVERY METHODS

The following descriptions summarize the current state of practice for containing and recovering heavy oils. The summary is based principally on work by Michel et al. (1995), Castle et al. (1995), and Benggio (1994c). Additional information is available in Bonham (1989), and Moller (1992). A useful summary of the containment and recovery of sinking hazardous chemicals is presented in Boyer et al. (1987). Brown et al. (1997) provide a useful summary of the practical aspects of containing and recovering spills of “sunken and submerged oils” and also summarize the methods used in successful responses to spills. Supporting data on these successful responses can be found in NOAA (1997).

Protocols for determining which methods to use for a given spill situation have been proposed by Castle et al. (1995). The approach is based on a decision tree structure, with the principal branching being determined by the buoyancy of the oil, the depth of the water column, and whether the oil is pumpable or not. Figures 3-2 and 3-3 show decision trees for the containment and recovery of sunken oil, respectively. Criteria for each branch are also provided. The form of the decision tree is similar to the one for tracking and mapping (see Figure 3-1).

Containment

Oil that is spilled and transported subsurface either remains suspended in the water column or is deposited on the seabed, usually after interaction with suspended sediments or sand. Different strategies for containing these oils can be used depending on the location of the oil. Typical response strategies are described below. Few of these techniques have been used and their performance has not been documented during spill events.

Oil in the Water Column

*Silt Curtains***.** The containment of oil suspended in the water column is generally possible only in areas with weak currents (less than 10 cm/sec) and small waves (less than 0.25 m). Silt curtains, which are normally used to control the transport of suspended sediment during dredging operations, are typically restricted to water depths of 3 to 6 meters and are deployed so that the bottom of the curtain does not extend to the seabed. They have not been used in actual spill events.

*Nets and Trawls***.** Midwater trawls and nets may be used for containing selected oil types in certain conditions. The performance of these systems depends on the viscosity of the oil and being able to locate and concentrate the oil. Delvigne (1987) has suggested that nets can successfully contain oil if the currents are low (less than 10 cm/sec) and the viscosity of the oil is high. Nets can be towed, moored, or mounted on moving floats. This method is sometimes used to protect fixed structures (water intake systems) or resources at risk. The effectiveness of trawls and nets declines rapidly as current speeds increase or as nets become clogged. During the *Presidente Rivera* spill in the Delaware River, fish nets were able to recover eight tons of oil before they became fouled (NOAA, 1992).

*Pneumatic Barriers and Booms***.** Pneumatic barriers involve injecting air at the seabed and forming a bubble plume that rises to the surface. Pneumatic barriers have been considered for protecting seawater intakes against oil dispersed in the water column, but little data are available for assessing their performance. Standard oil booms (deep draft) have been considered for containing subsurface oil. In fact, booms have been suggested as the preferred option for responding to spills of bitumen-surfactant-water mixtures and have undergone limited testing at sea (Deis et al., 1997; Sommerville et al., 1997). Booms can be used only when the oil remains in the upper water column, the currents are low (less than 0.20 m/sec), and the waves are small (less than 0.25 m).

Oil on the Seabed

*Seabed Depressions***.** Oil deposited on the seabed can be moved by ambient currents and waves. Sedimented oil tends to collect in natural or man-made depressions on the bottom, including natural and dredged channels, wave-generated troughs offshore of sandy beaches, and natural depressions. Dredging to create depressions for oil collection is not practical as part of a spill response except for very large spills or spills that have very substantial benthic impacts.

TABLE 3-1 Options for Tracking Oil Suspended in the Water Column

	Visual Observations	Water Sampling
Description	Trained observers in aircraft or on vessels look for visual evidence of suspended oil; includes use of cameras.	Visual inspection or chemical analysis of grab water samples or a flow-through system with a fluorometer.
Availability of Equipment	Uses readily available equipment.	Uses readily available equipment and supplies.
Logistical Requirements	Low/aircraft and vessels are readily available during spill response.	May require boat, sampling equipment, pumps, GPS for station location, portable oil analyzer.
Coverage Rate	High for aircraft; moderate for vessels.	Very low coverage rate; collecting discrete water samples at multiple depths for testing is very slow.
Data Turnaround	Quick turnaround.	Quick turnaround for visual analysis; chemical results would have to be available in minutes to be effective.
Probability of False Positives	High probability, due to poor water visibility, cloud shadows, seagrass beds, irregular bathymetry, mixing of different waterbodies.	Low probability; field personnel would have to know how to operate all equipment.
Operational Limitations	Requires good water visibility and light conditions; poor weather may restrict flights; limited to daylight hours.	Realistic only for water depths <30 ft; sea conditions may restrict vessel operations.
Pros	Can cover large areas quickly using standard resources available at spills.	Can be used at points of concern, such as water intakes.
Cons	Only effective in areas with very low water turbidity.	Too slow to be effective in dynamic settings or over large areas.

Fish Net Trawls	Sorbent Fences	Airborne Imaging LIDAR
Fish nets or trawling gear are towed for set distances then inspected for presence of oil; or nets can be set at fixed points and regularly inspected.	Sorbents are attached to something like a chain link fence which is submerged into the water then pulled for inspection; or it could be set at a fixed point for regular inspection	Pulsed laser and video recording system compares back-reflectance from below the water surface for areas of suspended oil versus clean water. Detection depth varies (nominally 45 ft). Operable 24 hours/day
Readily available in commercial fishing areas.	Uses readily available equipment and supplies	Uses very specialized equipment of limited availability
Moderate; requires boat and operators to tow the nets; may require multiple vessels to cover large areas; may require many replacement nets as they become oiled.	Low; can be deployed from small boats or carried to small streams for deployment	Moderate; equipment must be modified for mounting on local aircraft; requires skilled operators
Low coverage; nets have a small sweep area and must be pulled frequently for inspection.	Low; they have a small sweep area and they have to be pulled frequently for inspection	High; flown on aircraft with 200 ft swath
Quick turnaround.	Quick	Moderate; data recorded on video
Low probability; oil staining should be readily differentiated from other fouling materials.	Low; sorbents are designed to pick up oil, so they would be less likely to be stained by other materials	High; system images all submerged features, have to learn to identify patterns for different features, thus requires extensive ground truthing
Obstructions in the water can hang up nets; restricted to relatively shallow depths; sea conditions may restrict vessel operations.	Difficult to deploy and retrieve in strong currents; sea conditions may restrict vessel operations	Weather may restrict flights; minimum detectable size of oil particle is not known, but other individual features detected are usually feet in size or schools of small fish
Can sweep various depths or very close to the bottom.	Uses material available anywhere	Can cover large areas quickly using standard resources available at spills; permanent record of image that is geo-referenced
Very slow; nets can fail from excess accumulation of debris.	Very slow; very limited sampling area	Not proven for detecting suspended oil droplets; very limited availability

TABLE 3-2 Options for Mapping Oil Deposited on the Seabed

	Visual Observations	**Bottom Sampling from the Surface**	**Underwater Surveys by Divers**
Description	Trained observers in aircraft or on vessels look for visual evidence of oil on the bottom; includes underwater cameras.	A sampling device (corer, grab sampler, sorbents attached to weights) is deployed to collect samples from the bottom for visual inspection.	Divers (trained in diving in contaminated water) survey the sea floor either visually or with video cameras.
Availability of Equipment	Uses readily available equipment.	Uses readily available equipment and supplies	Underwater video cameras are readily available, but divers and diving gear for contaminated water operations may not be available locally.
Logistical Needs	Aircraft and vessels are readily available during spill response.	Requires boat, sampling equipment, GPS for station location.	Depend on the level of diver protection required.
Coverage Rate	High for aircraft; low for vessels.	Very low coverage; collecting discrete bottom samples is very slow; devices sample only a very small area.	Low coverage, because of slow swimming rates, limited diving time, poor water quality.
Data Turnaround	Quick turnaround.	Quick turnaround because visual analysis is used.	Quick turnaround.
Probability of False Positives	High, due to poor water clarity, cloud shadows, seagrass beds, irregular bathymetry.	Low probability, except in areas with high background oil contamination.	Low probability because divers can verify potential oil deposits.
Operational Limitations	Requires good water clarity and light conditions; weather may restrict flights; can be used only during daylight hours.	Sea conditions may restrict vessel operations.	Water depths of 20 m (for divers); minimum visibility of 0.5–1m; requires low water currents.
Pros	Can cover large areas quickly using standard resources available at spills.	Can be effective in small areas for rapidly definition of a known patch of oil on the bottom; low tech option; has been proven effective for certain spills.	Accurate determination of oil on bottom; verbal and visual description of extent and thickness of oil and spatial variations.
Cons	Only effective in areas with high water clarity; sediment cover will prevent detection over time; ground truthing required.	Samples a very small area, which may not be representative; too slow to be effective over large area; does not indicate quantity of oil on bottom.	Slow; difficult to locate deposits without GPS; decontamination of diving gear can be costly/time consuming.

Bottom Trawls	Photobathymetry	Geophysical/Acoustic Techniques
Fish nets or trawling gear are towed on the bottom for set distance then inspected for presence of oil.	Aerial stereo photography mapping technique used to identify and map underwater features (a realistic scale is 1:10000).	Sonar system that uses the differential density and sound speeds in oil and sediment to detect oil layers on the bottom; a fathometer records a single line under the sounder; side-scan sonor records a swath; output can be enhanced to increase detection.
Readily available in commercial fishing areas.	Available from most private aerial mapping companies, with specifications.	Requirements vary; often not available locally; need trained personnel.
Requires boat and operators to tow the nets; may require multiple vessels to cover large areas; may require many replacement nets as they become oiled.	Aircraft specially equipped to obtain vertical aerial photography with GPS interface.	Requires boat on which equipment can be mounted; requires updated charts so that search area can be defined.
Low coverage; nets have a small sweep area and they have to be pulled up frequently for inspection.	High coverage.	Moderate coverage; data collected at speeds up to m/s.
Quick turnaround.	Slow turnaround.; aerial photographs can be produced in a few days in most places; data interpretation takes one or two additional days.	Medium turnaround; data processing takes hours; preliminary data usually available next day; requires ground truthing.
Low probability; oil staining should be readily differentiated from other fouling materials.	High probability; photography can be used to identify potential sites, which require ground truthing.	High probability; identifies potential sites but all need ground truthing.
Obstructions on the bottom can hang up nets; restricted to relatively shallow depths; sea conditions may restrict vessel operations.	Specifications call for low sun angles and calm sea state; water penetration is limited by water clarity; maximum penetration is 10m for very clear water,1m for turbid water; best if baseline “before” photography is available for comparison.	Sea conditions must be relatively calm to minimize noise in the record.
Can provide data on relative concentrations on the bottom per unit trawl area/time; can survey in grids for more representative areal coverage.	Rapid assessment of large areas; high spatial resolution; good documentation and mapping.	Can be used to identify potential accumulation areas; complete systems can generate high-quality data with track lines, good locational accuracy.
Very slow; nets can fail from excess accumulation of debris.	Limited by water clarity, sun angle, and availability of historic photography for comparisons.	Data processing can be slow; requires extensive ground truthing; requires skilled operators.

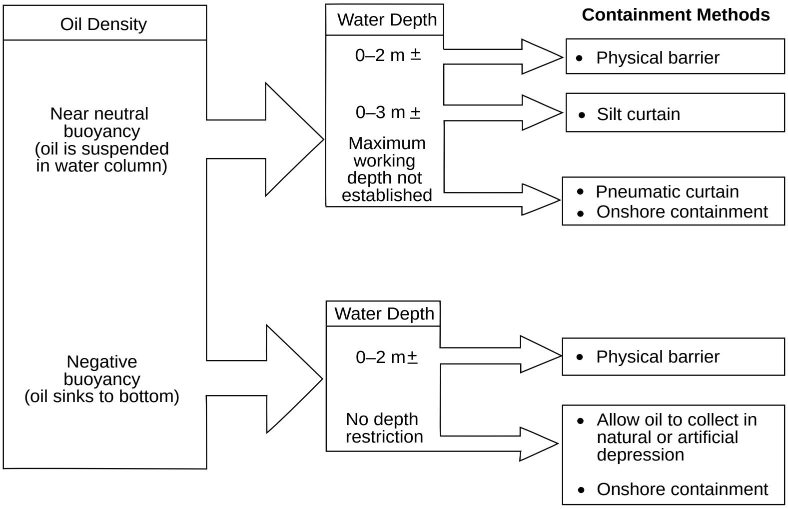

FIGURE 3-2 Decision tree for containment options for sunken oil. Source: Castle et al., 1995.

Identification of natural depressions and collection points, however, may be very useful for locating sedimented oil and planning for its recovery.

Bottom Booms. Bottom-mounted boom systems could be used to contain oil on the seabed. The booms could be moored to the seabed and flotation used to maintain the vertical structure of the boom. These systems are only suitable for locations with low currents and little wave activity. No practical applications of these systems have been reported.

Recovery

The recovery of sunken oil has proven to be very difficult and expensive because the oil is usually widely dispersed. Several of the most widely used recovery methods are reviewed below.

Manual Removal

The manual removal of oil, one of the most widely used recovery methods, involves divers or boat-based personnel using dip nets or seines to collect oil, which is temporarily stored in bags or containers. The purpose of manual recovery is to remove the oil and minimize the collection, handling, treatment, storage, and disposal of other material (oiled sediment, sediment, and water). This approach can be useful for widely dispersed oil, and its effectiveness can be assessed by

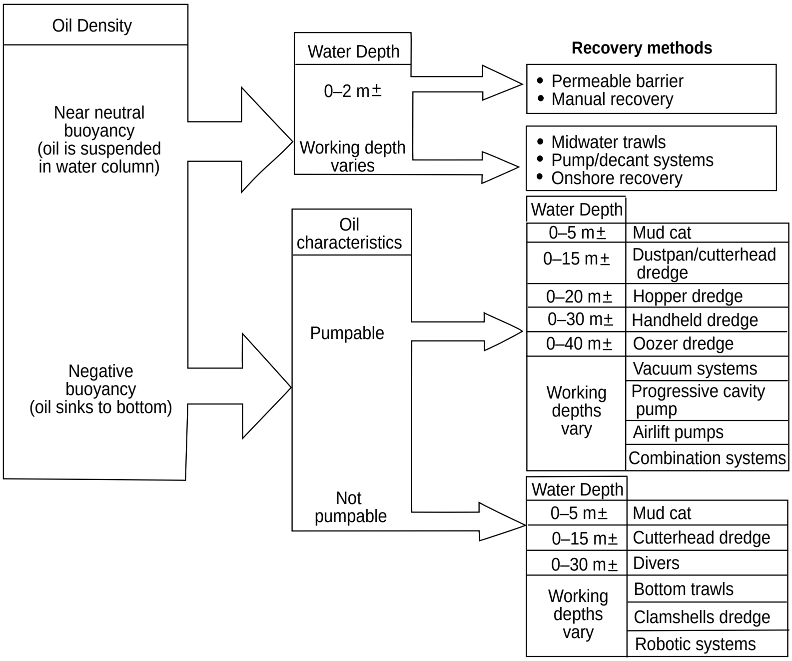

FIGURE 3-3 Decision tree for recovery options for sunken oil. Source: Castle et al., 1995.

cleanup standards or criteria. The biggest disadvantages of manual removal are the large manpower and logistical requirements, slow rates of recovery, strong dependency on weather conditions, and the potential for the oil to be transported while it is being recovered.

Pump and Vacuum Systems

These systems have historically been most successful for removing large volumes of sunken oil. They typically consist of a submersible pump/vacuum system, an oil-water separator, and a storage container. The systems can be mounted on trucks, on land, or on barges or ships. The suction head of the system is normally directed and controlled by divers and may have an air or water injection system to assist in fluidizing and transporting the slurry. The pumped material is usually a mixture of water, oil, and oiled sediment. Highly viscous or solid oils are usually not pumpable and, hence, are not recoverable with this method.

High-energy pumping systems cannot be used because of their potential for breaking up oil droplets or globules and emulsifying the oil. The pumped mixture is typically routed to an oil-water separator from which the oil and oiled sediment are removed and stored. The water may be stored for treatment or released into the sea. Oil-water separation may be difficult if the recovered oil is denser than the recovered water. Pumps and vacuum systems are effective if the oil is localized but are not practical for large areas. They also require extensive equipment and the capacity to handle and treat large volumes of water and sediments.

Nets and Trawls

In addition to containing dispersed oil, nets and trawls can also be used as collection devices (Brown and Goodman, 1987; Delvigne, 1987). This approach is most successful when the relative velocity of the water and the oil collected in the net or trawl is low and the viscosity of the oil is high. The effectiveness decreases as the permeability of the net is reduced and flows are diverted around the net (Delvigne, 1987).

Dredging

Dredging is an efficient, well developed method for removing large volumes of sediment (and oil) from the seabed at high recovery rates. Castle et al. (1995) provide a summary of the operating characteristics of a wide variety of dredging systems routinely considered for the removal of sunken oil. Additional information on the feasibility of dredging for the cleanup of sunken oil is given in Bonham (1989). Large volumes of water, oil, and sediment are typically generated in the dredging process and must be handled, stored, and disposed of as the recovery operation proceeds. Accurate vertical control of the dredge depths is critical to minimizing the amount of dredged material and the amount of clean sediment contaminated with oil as the result of the dredging operation. Operational costs and logistics requirements are lower for land-based than for barge-based methods of handling and storing dredged materials. Given the potential for storms that increase freshwater flows and shipping traffic, both of which can resuspend or remobilize sunken oil, the timeliness of dredging is crucial.

Onshore Recovery

In some cases, oil that has been submerged and mixed with sediment enters the surf zone and is eventually moved onshore and deposited on the shoreline. In these cases, conventional shoreline cleanup methods can be used to remove the oil.

Summary

The containment and recovery of oil dispersed in the water column or deposited on the seabed are very difficult. The problem begins with locating the oil and determining its status. The success of current methods varies greatly but is usually

TABLE 3-3 Options for Containing Oil Suspended in the Water Column

	Pneumatic Barriers	**Net Booms**	**Silt Curtains**
Description	Piping with holes is placed on the bottom, and compressed air is pumped through it, creating an air bubble barrier.	Floating booms with weighted skirts (1-2 m long) composed of mesh designed to allow water to pass while containing suspended oil.	During dredging operations, silt curtains are deployed as a physical barrier to the spread of suspended oil; weighted ballast chains keep the curtain in place.
Availability of Equipment	Uses readily available equipment, although in unique configuration.	There are commercially available net booms have been developed and tested for containing spills of Orimulsion; little availability in the United States.	Not readily available; limited expertise in deployment and maintenance.
Logistical Requirements	Moderate; requires a system to deploy and maintain bubbler; piping has tendency to clog; high installation costs.	Moderate; similar to deployment of standard booms, but with added difficulty because of longer skirt; can become heavy and unmanageable.	Moderate; deployment and maintainance.
Operational Limitations	Only effective in low currents (< 0.2 m/sec), small waves, and shallow water >2 m.	In field tests, the booms failed in currents <0.75 knots; very limited few conditions.	Only effective in very low currents(<10cm/sec); practical limits on curtain depth are 3–6m, which normally doesn't extend to the bottom.
Optimal Conditions	To contain oil spilled in dead-end canals and piers; to protect water intakes.	Will contain oil only in very low-flow areas, such as dead-end canals and piers.	Still water bodies such as lakes; dead-end canals.
Pros	Does not interfere with vessel traffic.	Can be deployed similar to traditional booms.	Can be deployed throughout the entire water column.
Cons	Only effective under very limited conditions; takes time to fabricate and deploy, thus only effective where pre-deployed; little data available to assess performance.	Only contains oil suspended in the upper water column, to the depth of the mesh skirt; unknown whether the mesh will clog and fail at lower currents.	Effective under very limited conditions, not likely to coincide with location where oil needs containment; oil droplets are larger than silt and could clog curtain.

TABLE 3-4 Options for Recovering Oil Deposited on the Seabed

	Manual Removal by Divers	Nets/Trawls
Description	Divers pick up solid and semi-solid oil by hand or with nets on the bottom, placing it in bags or other containers	Fish nets and trawls are dragged on the bottom to collect solidified oil
Equipment Availability	Contaminated-water dive gear may not be locally available	Nets and vessels readily available in areas with commercial fishing industry
Logistical Needs	Moderate; diving in contaminated water requires special gear and decon procedures; handling of oily wastes on water can be difficult	Low; uses standard equipment, though nets will have to be replaced often because of fouling
Operational Limitations	Water depths up to 60-80 ft for routine dive operations; water visibility of 1-2 ft so divers can see the oil; bad weather can shut down operations	Water depths normally reached by bottom trawlers; obstructions on the bottom which will hang up nets; rough sea conditions; too shallow for boat operations
Optimal Conditions	Shallow, protected areas where dive operations can be conducted safely; small amount of oil; scattered oil deposits	Areas where bottom trawlers normally work; solidified oil
Pros	Divers can be very selective, removing only oil, minimizing the volume of recovered materials; most effective method for widely scattered oil deposits	Uses available resources; low tech
Cons	Large manpower and logistics requirements; problems with contaminated water diving and equipment decon; slow recovery rates; weather dependent operations	Not effective for liquid or semi-solid oil; nets can quickly become clogged and fail; can become heavy and unmanageable if loaded with oil; could require many nets which are expensive

limited because the oil, which is mixed with sediments and water, is usually widely dispensed. In general, the success is greatest when the current speeds and wave conditions at the spill site are low, the oil is pumpable, the water depths are relatively shallow, and the sunken oil has concentrated in depressions or collection areas. The selection of containment and recovery methods is highly dependent on the specific location and environmental conditions during the spill, the

Pump and Vacuum Systems (Diver-directed)	**Dredging**
Divers direct a suction hose connected to a pump and vacuum system, connected to oil-water separator, and solids containers. Viscous oils require special pumps and suction heads. Even in low water visibility, divers can identify oil by feel or get feedback from top-side monitors of changes in oil recovery rates in effluents	Special purpose dredges, usually small and mobile, with ability for accurate vertical control. Uses land or barge-based systems for storage and separation of the large volumes of oil-water-solids.
Readily available equipment but needs modification to spill conditions, particularly pumping systems, and capacity for handling large volumes of materials during oil-water-solids separation	Varies; readily available in active port areas; takes days/week to mobilize complete systems
High, especially if recovery operations are not very close to shore. On-water systems will be very complicated and subject to weather, vessel traffic, and other safety issues.	High, especially if recovery operations are not very close to shore, because of large volumes of materials handled. On-water systems will be very complicated and subject to weather, vessel traffic, and other safety issues.
Water depths up to 60-80 ft for routine dive operations; water visibility of 1-2 ft so divers can see the oil; bad weather can shut down operations; solid oil which is not pumpable	Min/max water depths are a function of dredge type, usually 2-100 ft; not in rocky substrates; bad weather can shut down operations
Sites adjacent to shore, requiring minimal on-water systems; liquid or semi-solid oil; thick oil deposits, good visibility; low currents	Large volume of thick oil on the bottom; need for rapid removal before conditions change and oil is remobilized, buried by clean sediment, or will have larger environmental effects
Most experience is with this type of recovery; diver can be selective in recovering only oil and effective with scattered deposits;	Rapid removal rates; can recover non-pumpable oil
Very large manpower and logistics requirements, including large volumes of water-oil-solids handling, separation, storage, and disposal; problems with contaminated water diving and equipment decon; slow recovery rates; weather dependent operations	Generates large volumes of water/solids for handling, treatment, disposal; large logistics requirements; could re-suspend oil/turbidity and affect other resources

characteristics of the oil and its state of weathering and interaction with sediments, the availability of equipment, and logistical support for the cleanup operation. In addition, the potential environmental impacts of implementing these methods, particularly in sensitive benthic habitats, must be considered. Tables 3-3 and 3-4 summarize the uses and limitations of various containment and recovery methods.

4

Barriers to Effective Response

In presentations at the four committee meetings and at the workshop, leading experts from the spill-response, regulatory, environmental, and oil-transportation communities consistently identified a number of barriers to effective responses to spills of nonfloating oils. The major managerial, technological, and financial barriers identified by these experts and supported by the experience of committee members are summarized below.

MANAGERIAL BARRIERS

A major managerial barrier in responding to spills of nonfloating oils is the lack of experience at the local level. The knowledge base for planning and responding to oil spills is primarily derived from responses to actual oil spills. Significant oil spills are infrequent by their very nature, and spills of nonfloating oils are only a small fraction of all oil spills. Thus, it is difficult to acquire and maintain a sufficient knowledge base at the local level to respond to nonfloating-oil spills, particularly because few organizations have full-time, dedicated response teams. Furthermore, planning for nonfloating-oil spills generally has a low priority because of their infrequency. Responding to a spill of nonfloating oils is, therefore, often a new or very rare experience for local response teams who are likely to have trouble anticipating problems and formulating effective response strategies.

Planning for spills of nonfloating oils at the regional level has often been inadequate. There are 44 area committees in the USCG's jurisdiction. None of the area plans, however, has a well developed strategy for responding to spills of nonfloating oils. As a result, planners have limited experience in identifying the likelihood and potential sources of spills of nonfloating oils, determining resources at risk, establishing protection priorities and strategies, or evaluating response capabilities in federal, state, and industry plans.

Area committees and other constituencies have not adequately resolved emergency regulatory issues associated with responses to nonfloating-oil spills, such as obtaining permits for emergency dredging and the discharge of co-collected water. As a result, even though every spill of nonfloating oils is a true emergency, difficult regulatory issues must be faced without the benefit of prior discussions of response options. Consequently, regulatory agencies cannot usually provide timely approvals.

The resources and information necessary to respond effectively to nonfloating-oil spills have not been identified, including divers capable of operating in contaminated waters, the capability of updating bathymetric maps to determine potential accumulation zones, and the selection and implementation of systems to track the movement and distribution of subsurface oil. Furthermore, few, if any, drills or exercises have been carried out with scenarios focused on spills of nonfloating oils. In the absence of a real spill, exercises are an excellent mechanism for verifying response plans and improving response capabilities. The lack of drills, combined with limited experience with actual spills, has seriously impeded the development of a practical knowledge base for responders.

Misconceptions about the behavior, fate, and effects of nonfloating-oil spills are widespread. Descriptions of the transport and fate of spills of nonfloating oils have been confused and inconsistent. Consequently, the documentation of actual spills is poor and difficult to interpret, and no formal system for sharing lessons learned from previous spills has been developed. Without field experience or adequate literature on which to base predictions of behavior and effects, resource managers and responders have been forced to develop their own conceptual models of how nonfloating oils might behave and their environmental impacts. These conceptual models are often inadequate or incorrect, leading to erroneous assumptions about the viability or effectiveness of response options.

TECHNOLOGICAL BARRIERS

Existing methods for tracking spills are not effective for tracking nonfloating oils. One of the first questions asked after an oil spill is where the oil is going. The answer to this question often determines subsequent decisions. Most conventional methods for predicting the trajectory and tracking oil spills rely on two-dimensional (e.g., surface) transport and fate models and visual observations, none of which is effective for tracking nonfloating oils.

Methods used to track nonfloating oils in past spills have been largely ineffective. Most existing methods have low encounter rates and limited areal coverage for tracking oil suspended in the water column. Thus, it is impossible to generate a synoptic map of the dispersed oil plume over time. The problems are similar for tracking oil deposited on the seabed, but generally the movement of deposited oil is less dynamic. Bottom sampling methods for large areal searches (e.g., video and sonar searches) are limited by site constraints, difficult logistics, and the need for extensive ground truthing (i.e., *in situ* verification). The most commonly used techniques (e.g., sorbent drops and drags, diver observations, bottom trawls) can only sample limited areas and are slow, labor intensive, and logistics intensive.

The options for effectively containing and recovering nonfloating oils are limited. Even the most promising methods have not been effective for containing and recovering oils mixed in the water column, except under ideal conditions (e.g., small spills of emulsified oils in areas with very low currents and little wave activity). Generally, oil in the water column disperses quickly over large areas and volumes, becoming unavailable for effective recovery. Containment of oil deposited on the seabed is only feasible where the oil accumulates naturally. In these cases, recovery rates can be very high with the use of manual, pumping, or dredging techniques. However, each of these methods requires handling large volumes of water and solids.

Because of a general lack of knowledge about benthic habitats and resources, assessing resources at risk from nonfloating oils is extremely difficult. Area plans include annexes, in which sensitive areas are identified and prioritized for protection. One of the tasks of area committees is to discuss cleanup methods and end points appropriate for different habitats. Although nonfloating-oil spills threaten both the water-column and bottom (benthic) habitats, data on benthic habitats and resources at risk are either very sparse or not available. Benthic habitats are often described in very general terms, and few areas have been mapped in detail. Areas with high concentrations of plant or animal species or sites important to the sensitive, early life stages of organisms are usually poorly known, even for species with high commercial value. Without this information, it is difficult for resource managers to evaluate the potential effects of unrecovered oil or to decide on how aggressive their containment and recovery efforts should be.

FINANCIAL BARRIERS

Funding levels for testing and evaluating potential response options for all oil spills are low, but they are especially low for spills of nonfloating oils (NRC, 1998). Even after the watershed *Exxon Valdez* oil spill, federal, state, and industry funding for research and development have remained low. Funding for research and development on the containment, recovery, and effects of nonfloating oils has also been low and is generally targeted toward emulsified fuels for which funding is provided by the producers of these fuels. The lack of research, development, testing, and evaluation has left responders with a very limited number of unproven options for responding to nonfloating-oil spills. Information about how these options might be used under specific spill conditions is also limited.

5

Findings, Conclusions, and Recommendations

FINDINGS

Finding 1. From 1991 to 1996, approximately 17 percent of the petroleum products transported over U.S. waters were heavy oils and heavy-oil products, such as residual fuel oils, coke, and asphalt. Approximately 44 percent was moved by barge and 56 percent by tanker.

Finding 2. From 1991 to 1996, approximately 23 percent of the petroleum products spilled in U.S. waters were heavy oils. In only 20 percent of these spills did a significant portion of the spilled products sink or become suspended in the water column. Most of the time, spills of heavy oil remained on the surface. The average number of spills of more than 20 barrels of heavy oil and asphalt was 16 per year, with an average volume of 785 barrels per spill. The committee projects that a 30 percent reduction in the number and volume of heavy-oil spills would have been realized if tankers and barges had all been double-hulled vessels.

Finding 3. In recent years, barges have had significantly higher spill rates than tankers. From 1991 to 1996, barges accounted for approximately 80 percent of the volume of heavy-oil spills, and the spill rate, expressed in terms of barrels-spilled-per-ton-mile, was more than 10 times higher for barges than for tankers. Although the reduction in spill volume from tank barges since 1990 has been significant (about one-third of pre-1990 volume), the reduction for tankers has been even more dramatic (about one-tenth of pre-1990 volume).

Finding 4. Specific gravity, as used in the regulatory definition of Group V oils, does not adequately characterize all oil types and weathering conditions that produce nonfloating oils. The committee was asked to address the issue of responses to Group V oil spills, defined by current regulations as oils with a specific gravity of greater than 1.0. However, the committee determined that the issue of concern is planning for and responding to oil spills in which most, or a significant quantity, of the spilled oil does not float. The committee, therefore, decided to use the term “nonfloating oils” to describe the oils of concern.

Finding 5. Nonfloating oils behave differently and have different environmental fates and effects than floating oils. The resources at greatest risk from spills of floating oils are those that use the water surface and the shoreline. Floating-oil spills seldom have significant impacts on water-column and benthic resources. In contrast, nonfloating-oil spills pose a substantial threat to water-column and benthic resources, particularly where significant amounts of oil have accumulated on the seafloor. Nonfloating oils tend to weather slowly and thus can affect resources for long periods of time and at great distances from the release site. However, the effects and behavior of nonfloating oil are poorly understood.

Finding 6. Although spill modeling and supporting information systems are well developed, they are not commonly used in response to nonfloating-oil spills because of limited environmental data and observations of oil suspended in the water or deposited on the seabed. Oil-spill models and supporting information systems are routinely used in contingency planning and spill responses. Sophisticated, user-friendly interfaces have been developed to take advantage of the latest advances in computer hardware and software. The current generation of models can rapidly incorporate environmental data from a variety of sources and include integrated geographic information systems. The models can also assimilate data on the most recently observed location of spilled oil and have improved forecasts of oil movements. They are not routinely used, however, in response to nonfloating-oil spills because of the lack of supporting data on the three-dimensional currents and concentrations of suspended sediments. Field data, such as oil concentrations in the water column and on the seabed, are also not generally available to validate or update models.

Finding 7. A substantial number of techniques and tools for tracking subsurface oil have been developed. Most of them, however, have not been used in response to actual oil spills. Many techniques are available for determining the location of oil both in the water column and on the seabed. These include visual observations, geophysical and acoustic methods, remote sensing, water-column and seabed sampling, *in situ* detectors, and nets and trawl sampling. The most direct and simplest methods, such as diver observations and direct sampling, are widely used, but they are labor intensive and slow. More sophisticated approaches, such as remote sensing, are limited to zones very near the sea surface because of technical constraints. Other advanced technologies, such as acoustic techniques, cannot differentiate between oil and water or between oiled sediments and underlying sediments. Many of the more sophisticated systems are prone to misuse and produce ambiguous data that are subject to misinterpretation. The performance of all but the simplest methods is undocumented either by field experiments or by use in spill responses.

Finding 8. Although many technologies are available for containing and recovering subsurface oil, few are effective, and most work only in very limited environmental conditions. Containment of oil suspended in the water column using silt curtains, pneumatic barriers, and nets and trawls is only effective in areas with very low currents and minimal wave activity. These conditions rarely exist at spill sites, particularly at sites in estuarine or coastal waters. The recovery of oil in the water column by trawls and nets is limited by the viscosity of the oil and net tow speeds.

The containment of oil on the seabed is typically ineffective, except at natural collection points (e.g., depressions and areas of convergence). The collection of oil on the seabed by manual methods, in natural collection areas and along the shoreline after beaching, is effective but labor intensive and slow. Manual methods are also limited by the depths at which diver-based operations can be carried out safely. Dredging techniques have rarely been used because of limited recovery rates, the large volumes of water and sediment generated, and the problems of storing, treating, and discharging co-produced materials.

Finding 9. The lack of knowledge and lack of experience, especially at the local level, in responding to spills of nonfloating oils is a significant barrier to effective response. The knowledge base and response capabilities for tracking, containing, and recovering nonfloating oils have not been adequately developed. Even at the national level, no system has been developed for sharing experiences or documenting the effectiveness and limitations of various options. With limited experience and a lack of proven, specialized systems, responders have found it difficult to adapt available equipment for responses to spills of nonfloating oils.

Finding 10. Planning for spills of nonfloating oils is inadequate at the local level. Existing area contingency plans do not include comprehensive sections on the risk of spills of nonfloating oils or how to respond to them. To date, planning has focused primarily on spills of floating oils. Inventories of equipment, lists of specialized services, assessments of the resources at risk, and protection priorities have not been developed by area committees for nonfloating oils. Nor have they identified the risks (e.g., transportation patterns, volumes, oil types), developed appropriate scenarios and response plans, or reviewed acceptable cleanup methods and end points. Existing plans have not been tested during drills or exercises to address deficiencies.

Finding 11. Funding levels for research, development, testing, and evaluation of spills of nonfloating oils are very low. The only active research programs currently under way either by government or industry groups are focused on emulsified fuel oils. Because the risk of spills of nonfloating oils is perceived as low relative to spills of floating oils, few research and development funds have been committed.

CONCLUSIONS

Conclusion 1. The tracking, containment, and recovery of spills of nonfloating oils pose challenging problems, principally because nonfloating oils suspended in the water column become mixed with large volumes of seawater and may interact with sediments in the water column or on the seabed. The ability to track, contain, and recover nonfloating oils is critically dependent on the physical and chemical properties of the oils and the water or the oils and the other materials dispersed in the water column or on the seabed. The differences in these characteristics are often quite small, and little technology is available for determining them.

Conclusion 2. Although many methods are available for tracking nonfloating oils, the simplest and most reliable are labor intensive and cover only limited areas. More sophisticated methods have severe technical limitations, require specialized equipment and highly skilled operators, or cannot distinguish oil from water or other materials dispersed in the water column. Engineered systems for containing oil in the water column or on the seabed are few and only work in environments with low currents and minimal waves. Natural containment in seabed depressions or in the lee of topographical or man-made structures on the seabed is effective for containing oils, but these are not always available in the vicinity of the spill.

Conclusion 3. The recovery of oil from the water column is very difficult because of the low concentration of dispersed oil; hence, recovery is rarely attempted. If oil collects on the seabed in natural containment areas, many options for effective recovery are available, although most of them are labor intensive and access to response equipment is a problem.

Conclusion 4. The volume and frequency of spills of nonfloating oils is significant (although smaller than for floating oils) and, therefore, should be an integral part of planning for spill responses, particularly in areas where nonfloating oils are regularly transported. Transport by tank barges raises particular concerns, given the relatively high spill rates from these vessels. The risks of potential harm to water-column and benthic resources from nonfloating oils have not been adequately addressed in the contingency plans for individual facilities or geographic areas.

Conclusion 5. Inland barges are subject to greater risks of spills than tankers and coastal barges; consequently, spill rates for barges are likely to be higher than for tankers. However, the large difference between the overall spill rates, as well as the decreasing number of spills from tankers in recent years (post-OPA 90), raises concerns regarding the performance of barges.

RECOMMENDATIONS

The recommendations below are intended to improve the capability of the spill response community to respond to spills of nonfloating oils.

Recommendation 1. The U.S. Coast Guard should direct area planning committees to assess the risk of spills of nonfloating oils (i.e., oils that may be dispersed in the water column or ultimately sink to the seabed) to determine the resources at risk. In areas with significant environmental resources risk, area planning committees should develop response plans that include consultation and coordination protocols and should obtain pre-approvals and authorizations to facilitate responses to spills. Stakeholder groups should be educated about the impact and methods available for tracking, containing, and recovering oil suspended in the water column or on the seabed. Area committees in locations where there is a high risk of spills of nonfloating oils should include at least one scenario for responding to a nonfloating-oil spill in their training or drill programs.

Recommendation 2. The U.S. Coast Guard should improve its knowledge base, education, and training for responding to spills of nonfloating oils by including a scenario involving a spill of nonfloating oils in oil-spill response drills, by establishing a knowledge base and scientific support teams to respond to these types of spills, and by disseminating this knowledge to the federal spill-response coordinators and area planning committees as part of ongoing training programs. The information would help area planners assess the requirements for responding to nonfloating-oil spills.

Recommendation 3. The U.S. Coast Guard should support the development and implementation of an evaluation program for tracking oil in the water column and on the seabed, as well as containment and recovery techniques for use on the seabed. The findings of these evaluations should be documented and distributed to the environmental response community to improve response plans for spills of nonfloating oils.

Recommendation 4. Tests of area contingency plans and industry response plans for responses to spills of nonfloating oils should be required parts of training and drill programs.

Recommendation 5. The U.S. Coast Guard should monitor spill rates from tank barges to ascertain whether current regulatory requirements and voluntary programs will reduce the frequency and volume of spill incidents. If not, the Coast Guard should consider initiating regulatory changes.

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Appendices

APPENDIX A

Biographical Sketches of Committee Members

Malcolm L. Spaulding (chair) is professor and chair of the Department of Ocean Engineering at the University of Rhode Island, where he has been a member of the faculty since 1973. He is an expert in numerical modeling of nearshore and coastal processes, including hydrodynamics, oil and pollutant transport and fate, waves, and sediment transport. Dr. Spaulding received his Ph.D. in mechanical engineering and applied mechanics from the University of Rhode Island. He serves on a number of national and international research and advisory organizations related to coastal and ocean processes. He has served on National Research Council committees for the Marine Board and the Ocean Studies Board and is currently a member of the Marine Board.

Malcolm MacKinnon III (NAE) retired in 1990 from the U.S. Navy, where he was the chief engineer of the Navy and the vice commander, Naval Sea Systems Command. RADM MacKinnon is the president and chief executive officer of MSCL, Inc., a consulting firm that provides technical services to the maritime industry (military and commercial) worldwide. He is a graduate of the U.S. Naval Academy and holds advanced degrees in naval architecture and marine engineering from the Massachusetts Institute of Technology. He is a Distinguished Graduate of the Naval War College. RADM MacKinnon has extensive experience in the design, construction, engineering, and maintenance of ships and submarines, as well as in search and recovery operations at sea. He served on the Marine Board committee that assessed the National Oceanic and Atmospheric Administration's fleet replacement and modernization plan and is a member of the National Academy of Engineering.

Jacqueline Michel is a vice-president of Research Planning, Inc. She is a geochemist with extensive scientific and practical experience in the fate and effects of spilled oil on marine, aquatic, and terrestrial resources. Much of her experience is derived from work under contract to the National Oceanic and Atmospheric Administration as a member of the Scientific Support Team, which provides 24-hour emergency response support for oil and chemical incidents. Dr. Michel's areas of expertise include risk assessment and determination, technological recoveries, shoreline assessment, chemical countermeasures, and damage assessment to natural resources. She has authored several reports and scientific papers on the behavior, fate, and effects of Group V oils and has developed response options for tracking, containing, and recovering nonfloating oil spills. Dr. Michel is an adjunct professor of environmental sciences in the School of Environment, University of South Carolina. She received her B.S., M.S., and Ph.D. degrees in geology from the University of South Carolina.

R. Keith Michel, president of Herbert Engineering Corporation, has been with the company since 1973, working on design, specification development, and contract negotiations of container ships, bulk carriers, and tankers. Mr. Michel has served on industry advisory groups to the International Maritime Organization and the U.S. Coast Guard, developing guidelines for alternative tanker designs. He was a project engineer for the U.S. Coast Guard's report on oil outflow analysis for double-hull and hybrid tanker arrangements that were part of the U.S. Department of Transportation's technical report to Congress on the Oil Pollution Act of 1990. Mr. Michel served on the National Research Council Committee on the Oil Pollution Act of 1990: Implementation Review and is a member of the Marine Board. He holds a B.S. degree in naval architecture and marine engineering from Webb Institute of Naval Architecture.

James L. O'Brien has been the president and chief executive officer of O'Brien's Oil Pollution Service, Inc., since 1983. He is a former officer in the U.S. Coast Guard, where he was involved with pollution response, including an assignment as the leader of the Pacific Strike Team, a group responsible for responding to spills of oil and hazardous substances. He has been involved in responses to more than 150 significant oil spills, including well blowouts, vessel collision and strandings, facility releases, and pipeline ruptures, and he participated in spill-removal efforts during Desert Storm operations in Saudi Arabia. Mr. O'Brien's company provides services for companies and is the contract spill-management organization for a number of clients. He has published several articles in professional journals and has made presentations at national and international technical conferences.

Steven L. Palmer is a project manager in the Siting Coordination Office of the Department of Environmental Protection for the state of Florida. His professional experience includes aquatic ecosystem protection and watershed management assessments, air quality protection, and solid and hazardous waste management for both freshwater and marine environments. Mr. Palmer has testified as an expert witness in administrative hearings before legislative committees and at public hearings. He has served as a member of the U.S. Coast Guard Group V Oil Work Group Team, which examines issues surrounding the transport and cleanup of spills of heavy oils. He holds a B.A. in mathematics and marine science from the University of South Florida and an M.S. in civil engineering from Florida State University.

APPENDIX B

Participants in the Workshop and Meetings

COMMITTEE MEETINGS

First Committee Meeting, May 7–8, 1998
National Academy of Sciences, Washington, D.C.

Steven A. Anderson, Air Products, Inc.
Ken Bitting, U.S. Coast Guard
Louis "Coke" Coakley, Florida Power and Light Company
Deborah French, Applied Science Associates
Nelson Garcia-Tavel, Bitor America Corporation
Donna Leinwand, Knight-Ridder, Inc.
John Meehan, U.S. Coast Guard
Carolyn Raepple, Hopping Green Sams & Smith
Gloria Rains, Manasota–88
Jennifer Rains, law student, American University

Second Committee Meeting, August 20–21, 1998
National Academy of Sciences, Washington, D.C.

Charles A. (Andy) Miller, Environmental Protection Agency

Third Committee Meeting, October 15–16, 1999
Oakland, California

David Adams, Port of Oakland
José Dueñas, Greater Oakland International Trade Center
Peter Grautier, U.S. Coast Guard, Marine Safety Office
Jim Hardwick, Office of Spill Prevention and Response, California Department of Fish and Game
Harlan Henderson, U.S. Coast Guard, Marine Safety Office
Carl Jochums, Office of Spill Prevention and Response, California Department of Fish and Game
John W. Koster, U.S. Coast Guard, Chief Response Branch
Michael Latorre, Marine Spill Response Corporation
Douglas O’Donovan, Marine Spill Response Corporation
Steve Ricks, Clean Bay, Inc.
Scott Stolz, Hazardous Materials Response and Assessment Division, National Oceanic and Atmospheric Administration
Gail Thomas, Environmental Protection Agency
Edward Ueber, Gulf of the Farallones, Cordell Banks, and Monterey Bay (north) National Marine Sanctuaries

Workshop, August 20, 1998
National Academy of Sciences, Washington, D.C.

Ken Bitting
U.S. Coast Guard
Groton, Connecticut

Peter Bontadelli
California Office of Oil Spill Prevention and Response
California Department of Fish and Game
Sacramento, California

Kellyn Betts
Associate Editor
Environmental Science & Technology
Washington, D.C.

Duncan Brown
Marine Board Consultant
Arlington, Virginia

Barbara Davis
Oil Program Center
Environmental Protection Agency
Washington, D.C

Bryan Emond
Chief, Domestic Tank Vessel Branch
Washington, D.C.

Mervin F. Fingas
Environment Canada
Ottawa, Ontario

Nelson Garcia-Tavel
Bitor America Corporation
Boca Raton, Florida

Pamela Gibson
American Petroleum Institute
Washington, D.C.

Thomas Harrison
U.S. Coast Guard
Washington, D.C.

William Healy
Naval Sea Systems Command
Arlington, Virginia

Larry Hereth
U.S. Coast Guard
Washington, D.C.

Donald S. Jensen
Jensen & Associates
Elizabeth City, North Carolina

Eugene Johnson
Delaware Bay and River Cooperative, Inc.
Lewes, Delaware

James M. Kendell
U.S. Department of Energy
Washington, D.C.

Thomas Kniestedt
Apex Oil (retired)
Frohna, Missouri

Merritt Lane
Canal Barge Company, Inc.
New Orleans, Louisiana

John Latour
Canadian Coast Guard
Ottawa, Ontario

Steve Lehmann
National Oceanic and Atmospheric Administration
Boston, Massachusetts

Daniel Leubecker
Maritime Administration
Washington, D.C.

Malcolm MacKinnon, III, NAE
MSCL, Inc.
Alexandria, Virginia

Kathy Metcalf
Chamber of Shipping of America
Washington, D.C.

Mark Meza
U.S. Coast Guard
Washington, D.C.

Jacqueline Michel
Research Planning, Inc.
Columbia, South Carolina

R. Keith Michel
Herbert Engineering
San Francisco, California

Charles A. (Andy) Miller
Environmental Protection Agency
Research Triangle Park, North Carolina

Tosh Moller
International Tank Owners Pollution Fund
Houndsditch, London

James O'Brien
O'Brien's Oil Pollution Service, Inc.
Gretna, Louisiana

David Page
Bowdoin College
Brunswick, Maine

Steven Palmer
State of Florida, Department of Environmental Protection
Tallahassee, Florida

David Pascoe
Corbett & Holt
Washington, D.C.

Lita Proctor
Florida State University
Tallahassee, Florida

John Roberts
Coastal Towing
Houston, Texas

Gary Sergy
Environment Canada
Edmonton, Alberta

Gregory V. Sparkman
Division of Maritime Assistance Analysis
Washington, D.C.

Malcolm Spaulding
University of Rhode Island
Narragansett, Rhode Island

James Sweeney
Morania Oil Tanker Corporation
Stamford, Connecticut

John B. Torgen
Save the Bay
Providence, Rhode Island

Dave Usher
Spill Control Association of America
Detroit, Michigan

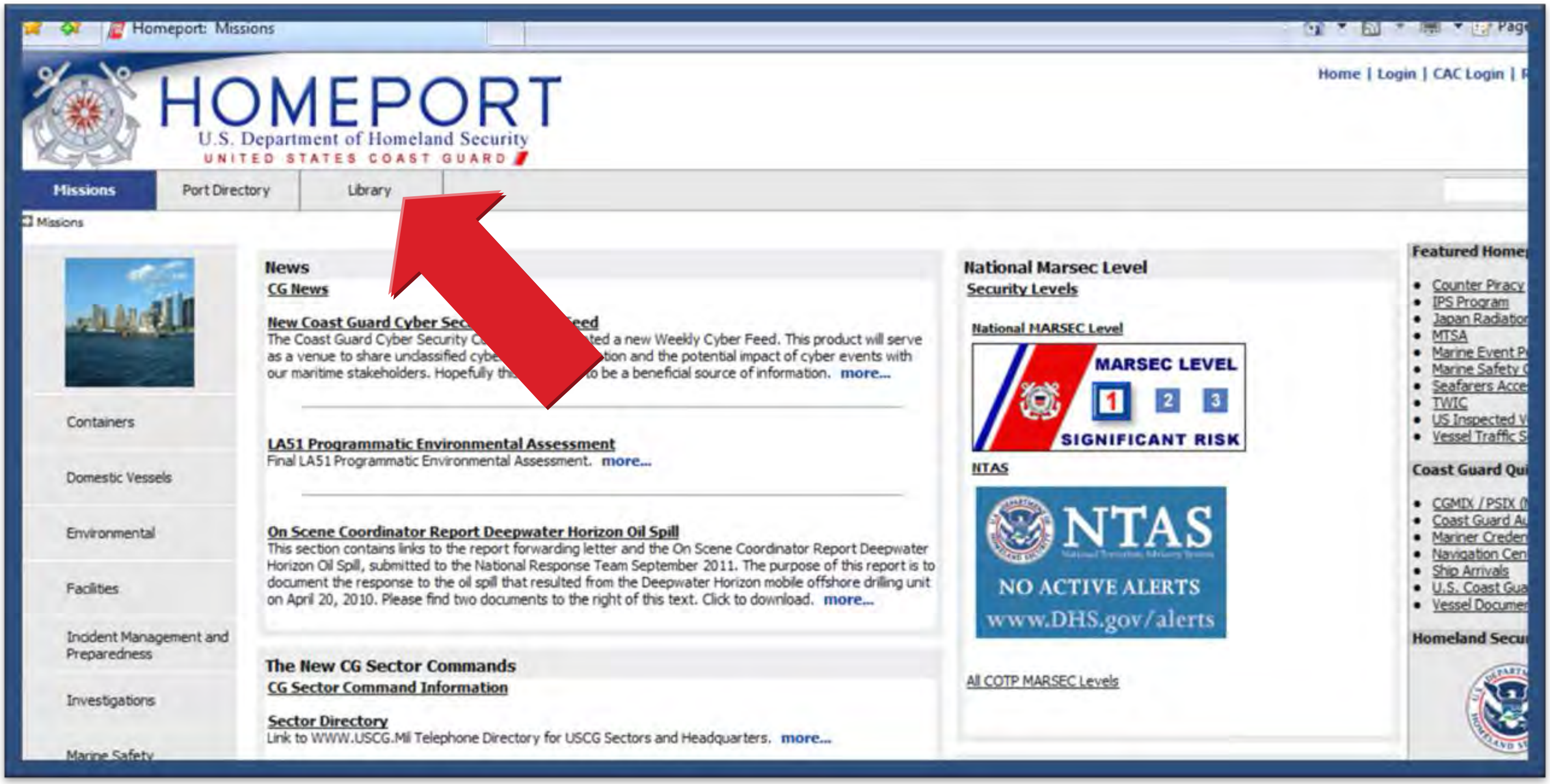
Glen Wiltshire
U.S. Coast Guard
Elizabeth City, North Carolina

New Orleans Area Contingency Plan

Chapter 9000
Appendix V
ICS Position Specific Job Aids

Chapter 9000 Appendices, Appendix V ICS Position Specific Job Aids

Incident Command System position specific job aids can be found at https://homeport.uscg.mil/. Follow the below instructions to access the U.S. Coast Guard ICS position specific job aids.



News
CG News

New Coast Guard Cyber Sec ... eed
The Coast Guard Cyber Security C... ted a new Weekly Cyber Feed. This product will serve as a venue to share unclassified cybe... tion and the potential impact of cyber events with our maritime stakeholders. Hopefully th... to be a beneficial source of information. more...

LA51 Programmatic Environmental Assessment
Final LA51 Programmatic Environmental Assessment. more...

On Scene Coordinator Report Deepwater Horizon Oil Spill
This section contains links to the report forwarding letter and the On Scene Coordinator Report Deepwater Horizon Oil Spill, submitted to the National Response Team September 2011. The purpose of this report is to document the response to the oil spill that resulted from the Deepwater Horizon mobile offshore drilling unit on April 20, 2010. Please find two documents to the right of this text. Click to download. more...

The New CG Sector Commands
CG Sector Command Information

Sector Directory
Link to WWW.USCG.Mil Telephone Directory for USCG Sectors and Headquarters. more...

National Marsec Level
Security Levels

National MARSEC Level

NTAS

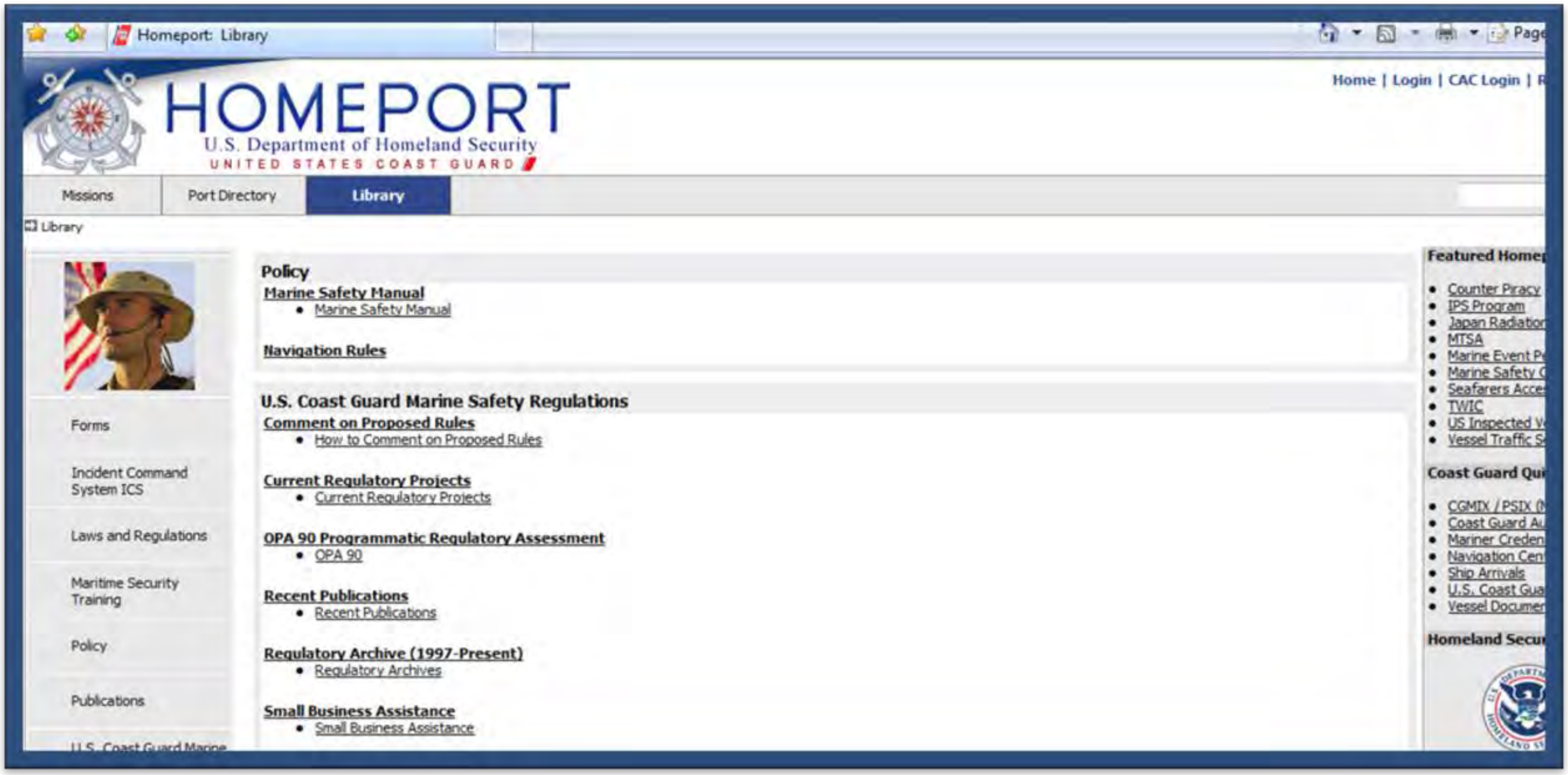
All COTP MARSEC Levels

Featured Home
- Counter Piracy
- IPS Program
- Japan Radiation
- MTSA
- Marine Event P
- Marine Safety
- Seafarers Acce
- TWIC
- US Inspected V
- Vessel Traffic S

Coast Guard Qui
- CGMIX / PSIX (
- Coast Guard A
- Mariner Creden
- Navigation Cen
- Ship Arrivals
- U.S. Coast Gua
- Vessel Docume

Homeland Secu

From the https://homeport.uscg.mil homepage, select Library on the top left hand corner of the page.



Policy

Marine Safety Manual
- Marine Safety Manual

Navigation Rules

U.S. Coast Guard Marine Safety Regulations

Comment on Proposed Rules
- How to Comment on Proposed Rules

Current Regulatory Projects
- Current Regulatory Projects

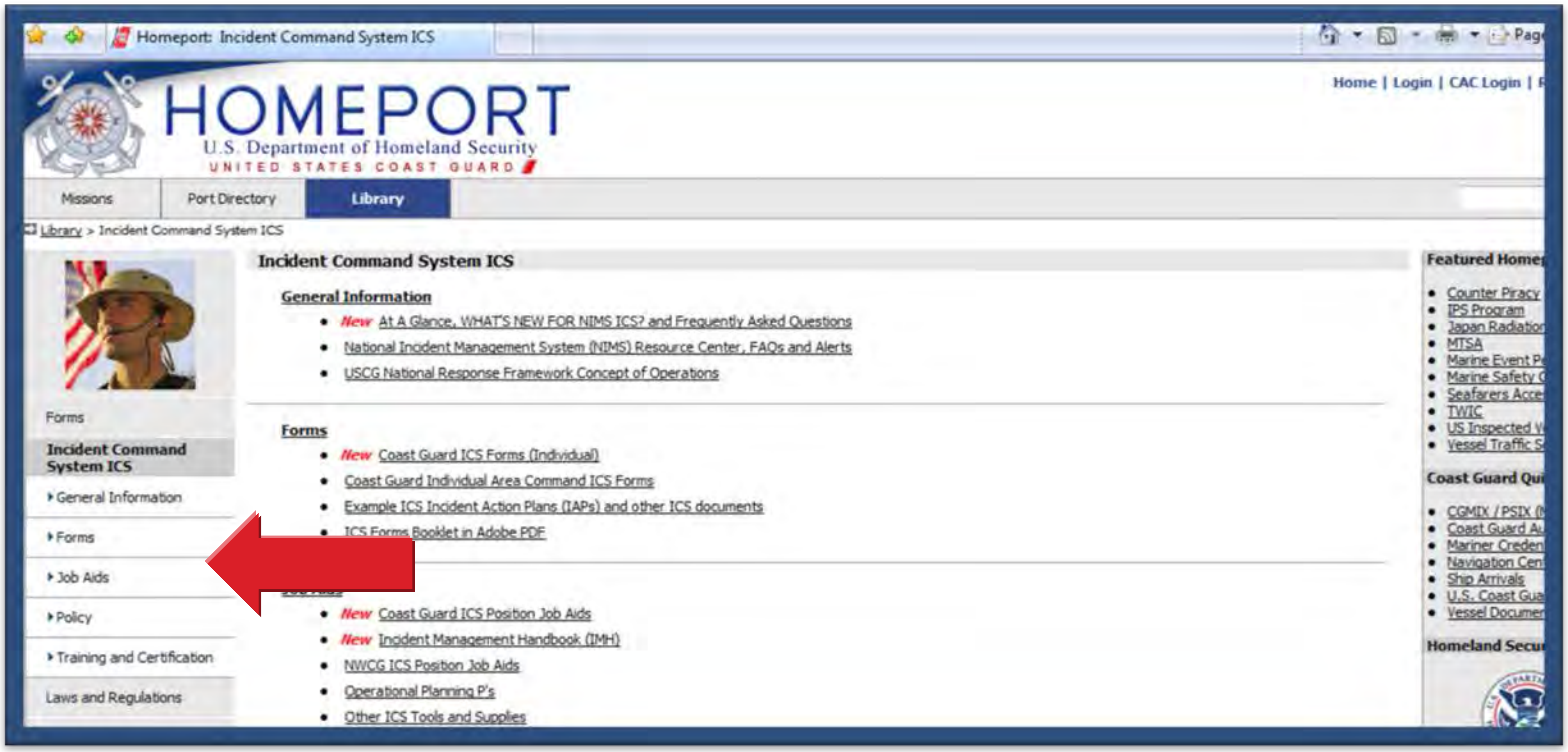
OPA 90 Programmatic Regulatory Assessment
- OPA 90

Recent Publications
- Recent Publications

Regulatory Archive (1997-Present)
- Regulatory Archives

Small Business Assistance
- Small Business Assistance

From the Library page select Incident Command System (ICS) on the left hand side of the page.



Incident Command System ICS

General Information

- New At A Glance, WHAT'S NEW FOR NIMS ICS? and Frequently Asked Questions
- National Incident Management System (NIMS) Resource Center, FAQs and Alerts
- USCG National Response Framework Concept of Operations

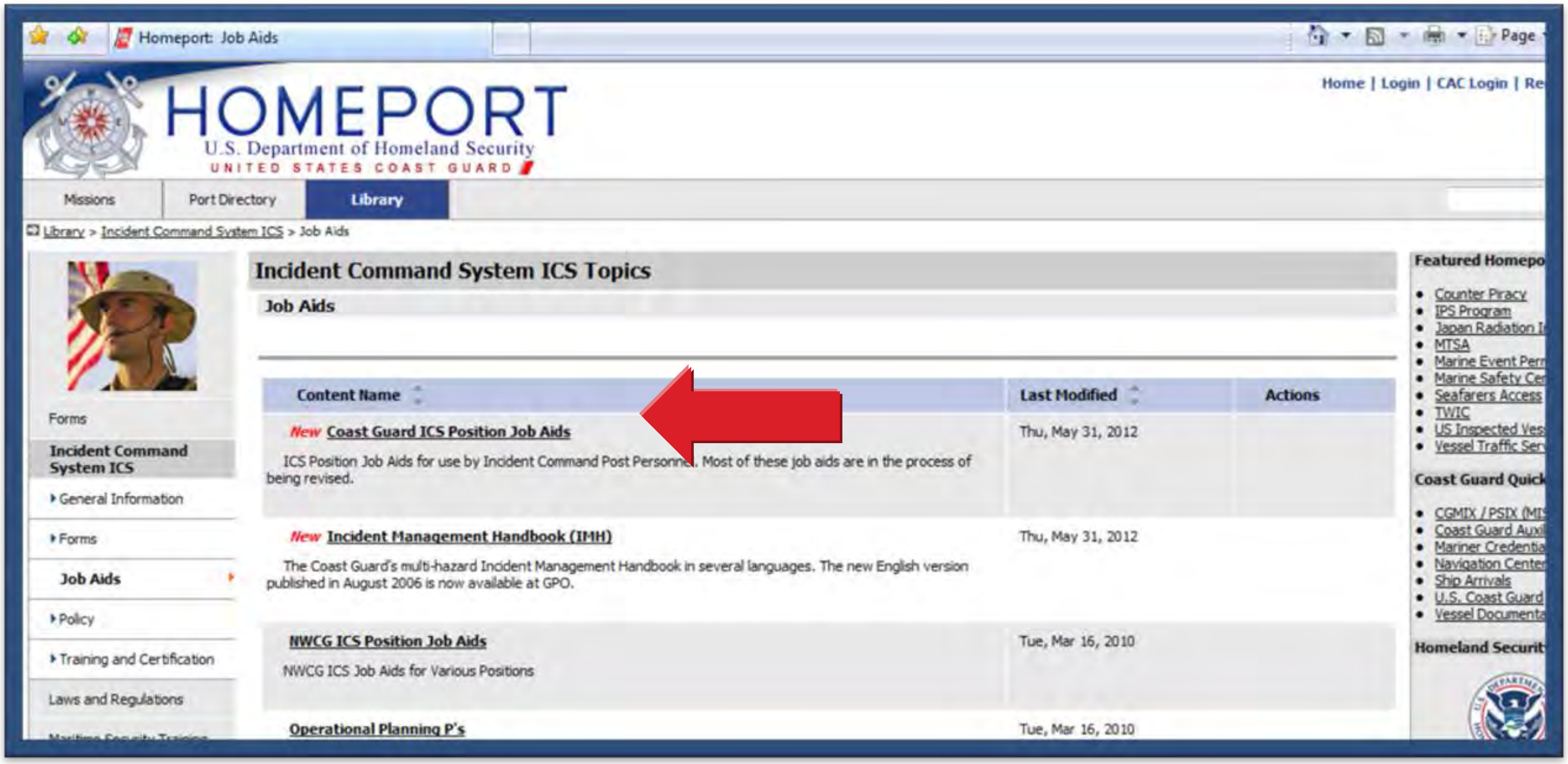
Forms

- New Coast Guard ICS Forms (Individual)
- Coast Guard Individual Area Command ICS Forms
- Example ICS Incident Action Plans (IAPs) and other ICS documents
- ICS Forms Booklet in Adobe PDF

Job Aids

- New Coast Guard ICS Position Job Aids
- New Incident Management Handbook (IMH)
- NWCG ICS Position Job Aids
- Operational Planning P's
- Other ICS Tools and Supplies

From the ICS Page select Job Aids from the left side of the screen.

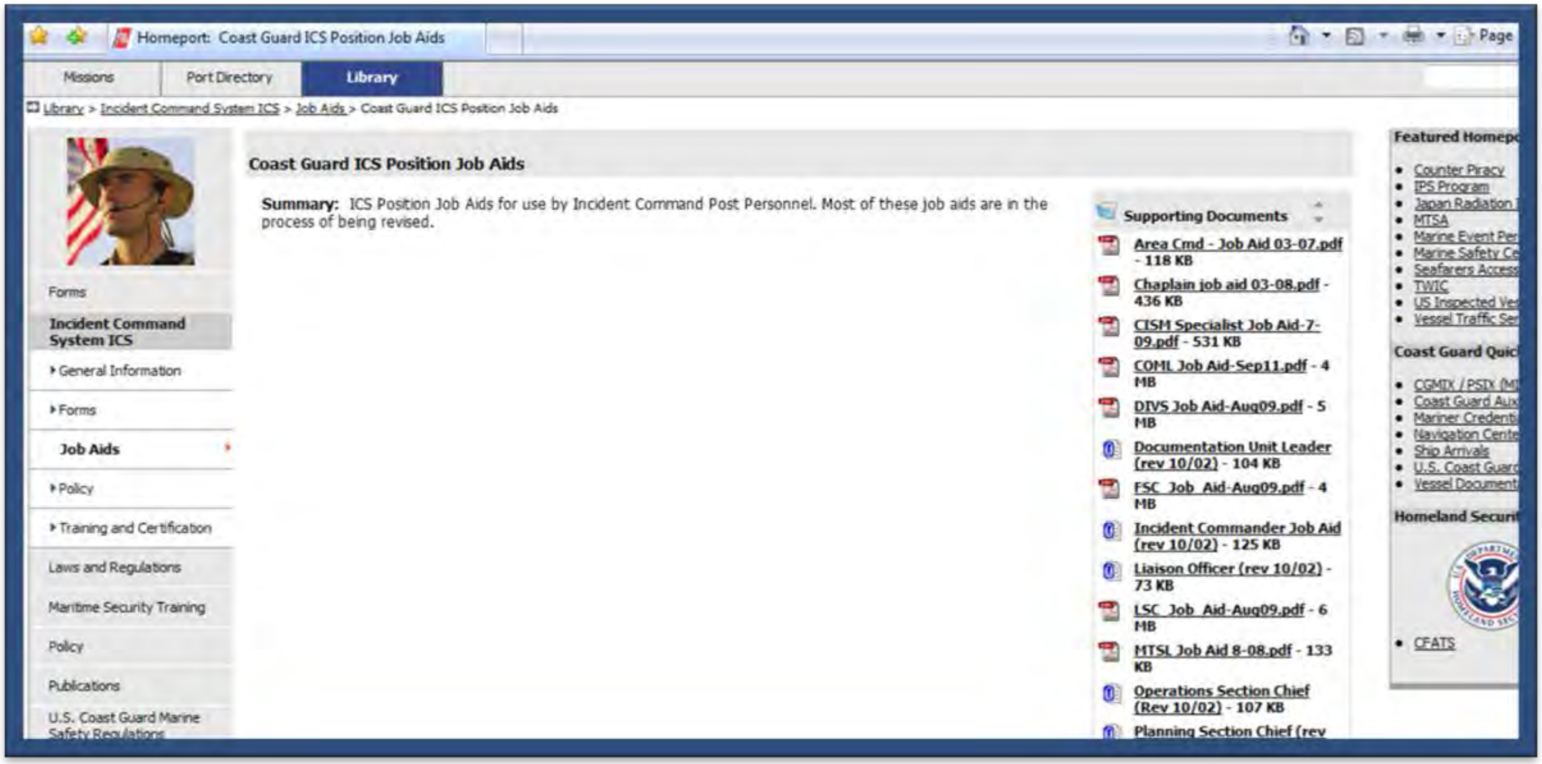


Incident Command System ICS Topics

Job Aids

Content Name	Last Modified	Actions
New **Coast Guard ICS Position Job Aids** ICS Position Job Aids for use by Incident Command Post Personnel. Most of these job aids are in the process of being revised.	Thu, May 31, 2012	
New **Incident Management Handbook (IMH)** The Coast Guard's multi-hazard Incident Management Handbook in several languages. The new English version published in August 2006 is now available at GPO.	Thu, May 31, 2012	
NWCG ICS Position Job Aids NWCG ICS Job Aids for Various Positions	Tue, Mar 16, 2010	
Operational Planning P's	Tue, Mar 16, 2010	

Select the Coast Guard ICS Position Job Aids.



Coast Guard ICS Position Job Aids

Summary: ICS Position Job Aids for use by Incident Command Post Personnel. Most of these job aids are in the process of being revised.

Supporting Documents

- Area Cmd - Job Aid 03-07.pdf - 118 KB
- Chaplain job aid 03-08.pdf - 436 KB
- CISM Specialist Job Aid-7-09.pdf - 531 KB
- COML Job Aid-Sep11.pdf - 4 MB
- DIVS Job Aid-Aug09.pdf - 5 MB
- Documentation Unit Leader (rev 10/02) - 104 KB
- FSC_Job_Aid-Aug09.pdf - 4 MB
- Incident Commander Job Aid (rev 10/02) - 125 KB
- Liaison Officer (rev 10/02) - 73 KB
- LSC_Job_Aid-Aug09.pdf - 6 MB
- MTSL Job Aid 8-08.pdf - 133 KB
- Operations Section Chief (Rev 10/02) - 107 KB
- Planning Section Chief (rev

The Coast Guard ICS Job Aids can be found on the right side of the page.

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New Orleans Area Contingency Plan

Chapter 9000
Appendix W
U.S. Coast Guard-Relevant, Instructions, Guidelines, Procedures, and Practices List

U.S. Coast Guard- Relevant Instructions, Guidelines, Procedures, and Practices List

The following U.S. Coast Guard Commandant Instructions (COMDTINST/CI), policies, and publications provide prevention, planning, and preparedness, response, and external cooperation/coordination guidelines and responsibilities for all Coast Guard units to follow. All of the publications below are located at the following website: http://www.uscg.mil/directives/listing_cim.asp?id=16000-16999.

Subject/Title	COMDTINST/CI/COMDTPUB
Alignment with the National Incident Management System and National Response Plan	COMDTINST 16000.27
Area Contingency Plan Organization, Revision, Cycle, and Distribution	COMDTINST 16471.3
CERCLA Non-Incident Funds	COMDTINST 16451.7

Chapter 9000 Appendices, Appendix W U.S. Coast Guard- Relevant Instructions, Guidelines, Procedures, and Practices List

Coast Guard Participation in the Marine Sanctuary Program	COMDTINST 16004.3A
Coastal Zone Management, Federal Consistency Procedures	COMDTINST 16451.1
District Response Advisory Team Assistance Procedures	COMDTINST 16465.41A
Emergency Contacts for Responding to Discharges which Pose a Substantial Threat to Public Health or Welfare	COMDTINST 16460.5
Environmental Compliance Evaluation (ECE) Program	COMDTINST 16478.5
Environmental Initial Assessment Survey (IAS) Program	COMDTINST 16475.5

Floodplain Management And Protection	COMDTINST 16475.3
Guidance for Coast Guard Coordination of Marine Transportation System (MTS) Improvement Efforts as the Regional and Local Level	COMDTINST 16010.9
Guidelines for Implementation and Enforcement of Vessel Response Plans, Facility Response Plans, and Shipboard Oil Pollution Emergency Plans	COMDTINST 16450.32A
Marine Safety Manual, Marine Environmental Preparedness and Response Procedures	COMDTINST M16000.14, Volume IX
Place of Refuge Policy	COMDTINST 16451.9
Preservation of the Nation's Wetlands	COMDTINST 16475.2B

Protection of Living Marine Resources Program	COMDTINST 16475.7
Use of Special Monitoring of Applied Response Technology (SMART) Protocols	COMDTINST 16470.1
U.S. Coast Guard Incident Management Handbook	COMDTPUB P3120.17A
Spill of National Significance (SONS) Response Management	COMDTINST 16465.6

Oil Spill Sampling Evidence

Oil Sampling for Evidence

One important method of identifying the source of spilled oil is to have that oil analyzed. Various chemical tests can be conducted on oil samples obtained during an oil pollution investigation to match spilled oil to a source.

The Marine Safety Laboratory (MSL) is the Coast Guard's forensic laboratory for oil pollution. Samples collected by field units are analyzed at MSL to determine the relationship, if any, between spilled oil samples and suspected source samples. In some cases, the ability to identify the responsible party and recover removal costs can rely on the samples you obtain during a pollution investigation.

Oil Identification System (OIS)

Oil is said to have a unique signature or "fingerprint," which can be used to match it to oil from a common source through chemical analysis. The MSL utilizes a process known as the Oil Identification System (OIS) to determine the unique, intrinsic properties that would allow the matching of spilled oil with its correct source.

The OIS consists of four analytical methods:

- ~~Fluorescence spectroscopy (FL).~~
- Infrared spectroscopy (IR).
- Gas chromatography (GC).
- Gas chromatography-mass spectrometry (GC/MS).

Each method measures different chemical properties of the sampled oil and produce independent results. The combination of methods provide comprehensive analysis results to characterize the unique "fingerprints" of petroleum oil and either indicate or discount any relationship between spill and source samples.

Factors Impacting Oil Sample Purity

There are many factors that can impact the purity of a sample and skew test results eliminating any chance for a match between the spilled oil and a suspected source. Something as harmless, as the oils from your fingers, can alter the fingerprint of an oil sample enough to yield a non-match.

Factors Impacting Oil Sample Purity (Continued)

These factors need to be identified in order to enable you to anticipate potential problems and formulate an effective sampling strategy. Other factors limiting oil identification are:

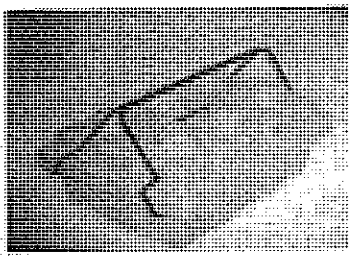
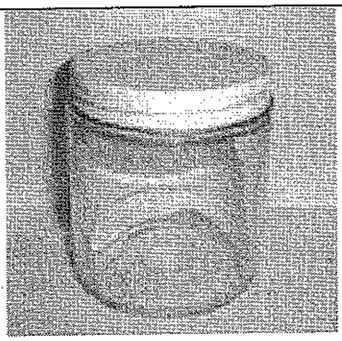
- Weathering is the most common problem encountered when analyzing spilled oil. As the forces in the natural environment act upon the oil, it changes its fingerprint. The four major factors that result in weathering are:
  - Evaporation.
  - Dissolution.
  - Oxidation.
  - Biodegradation.
    - The only sure method of reducing effect of weathering on spilled oil is to obtain spill samples as quickly as possible.
- Contamination from hazardous chemicals, sewage, and other compounds usually picked after it has entered the environment can alter or interfere with the fingerprint. When it is suspected such contamination may be present, it should be noted so the analyst can account for them during analysis. In addition to contamination from substances in the environment, natural oils from the body can also contaminate sampled oil.
- Because of their configuration, bilges will often have spaces where oil and contaminants can become trapped. These spaces do not allow the oil and contaminants to mix with the rest of the bilge. When a spill occurs from such a space, it is possible that although a bilge sample was taken, it may not match the spill. Every effort should be made to ensure that all possible spaces are sampled.
- Cases where there is a common fuel source (i.e., a fuel oil spill at a marina) can be very difficult for MSL analytical methods to distinguish significant differences between several different source samples from the same source of fuel oil.

The following portion of this section will provide you the essential skills to safely obtain and properly forward these samples to the MSL for analysis.

Oil Spill Sampling Evidence

Sampling Kit Composition

Your unit should maintain several sampling kits consisting of:

QUANTITY	COMPONENTS
1	Sampling Kit Carrier. 
12	4-ounce sample jars. 
12	Jar rings.
1	Sampling extension pole.
4	McGill Net Kits.
6	Cardboard mailing tubes. 
1	Box Nitrile gloves.
1	Roll adhesive labels.
1	Roll cotton twine.
6	Absorbent towels.

Oil Spill Sampling Evidence

Sampling Kit Composition (Continued)

QUANTITY	COMPONENTS
1	Hand cleaner.
6	Tongue depressors.
1	Roll of jar seal tape.
3	Waterproof felt markers.

Each complete kit should provide the minimum equipment necessary to facilitate the safe of minimally contaminated oil samples.

When to Take Oil Samples

The following information describes when a PI should conduct pollution sampling.

- Environmental Crimes: Sampling shall be conducted when there is credible evidence of an environmental crime. PIs must be familiar with the elements of the various environmental crimes as described in COMDTINST M16201.1; Criminal Enforcement of Environmental Laws and COMDTINST M16247.1 (series); Maritime Law Enforcement Manual, Chapter 9; and Chapter C8 of this Volume.
- Significant Spill Volume Cases: Sampling of the source (tanks, piping, etc.) as well as various locations where the spill may have traveled/impacted should be conducted on spills where extensive clean up operations are expected, even when the PI has strong direct evidence of the source of the discharge. This is important for determining if spill samples collected after the original spill samples are derived from the same source.
- Optimal Direct Evidence Cases: Sampling is not generally necessary when the PI has strong direct evidence of the source of the discharge.
- Minimal Direct Evidence Cases: Sampling is advisable when the PI has direct evidence of the discharge, but that evidence is minimal. Weak direct evidence includes a single witness statement reporting the source or two pieces of evidence that seem to contradict one another as to the source, such as a photograph and contradicting witness testimony.

Oil Spill Sampling Evidence

When to Take Oil Samples (Continued)

- **Circumstantial Evidence Cases:** Sampling shall be conducted when the PI has no direct evidence of the source of the discharge. In such cases, the RP is typically identified through the possible route of oil and oil sample analysis matches.

Where to Take Samples

- **Smaller Vessels:** Smaller vessels typically discharge through a simple bilge suction and overboard discharge system. Small vessels with compartmentation, however, may have multiple pumps and overboard discharges. When sampling a smaller vessel, it is important to sample each independently discharging bilge space where oil or oily water is found. Samples of fuel may also be taken. In all instances, PIs should consider the type of oil discharged when determining sampling locations.
- **Deep Draft Vessels:** Many oil spills from deep-draft vessels originate from marine casualties. This includes groundings where there is abundant direct evidence of the discharge. This evidence includes photographs of ruptured shell plating, cargo or bunker tank soundings, photographs of the emerging slick, videotape and the like. When sampling a deep draft vessel consider the following:
- **Bilge Systems:** When deep draft vessel oil spills are not the result of a casualty, Coast Guard investigations have generally implicated the oily water separator (OWS) / bilge discharge system. Accordingly, PIs should focus their attention on the engine room bilge system in deciding where to take samples. Typically, deep draft vessels draw suction from the bilge but store the oily water mixture in slop / sludge tanks. Using the OWS, separated oil is stored in slop / sludge / waste oil tanks where it is pumped ashore or burned aboard ship. This general set up will require a PI to consider sampling:
  - Clean water from outboard of the OWS (where available);
  - Oily water from inboard of the OWS;
  - Oily water from each segregated bilge area; and
  - Oily water or concentrated oils from each slop / sludge / waste oil.

Where to Take Samples (Continued)

- **Ballast Systems:** Although relatively rare, some vessels are fitted with ballast piping arrangements that could allow ballast in fuel or cargo oil tanks, or that could allow oily water in ballast tanks. PIs must consider the specific bilge / ballast segregation arrangements aboard the ship, copy and review ballast records, and determine whether water / oily water samples should be taken from the ballast tanks. Where segregation is not completely independent, the PI should consider sampling:
  - Clean water from outboard of the discharge monitor (where available);
  - Oily water from inboard of the discharge monitor;
  - Water/oily water from each ballast tank; and
  - Oily water / slop / sludge from each involved cargo tank.
- **Cargo Systems:** Cargo system spills usually occur during transfers, but can occur at other times (particularly following internal tank-to-tank cargo transfers). Such spills also have resulted from "over the top" transfers which are prohibited. Where cargo is suspected, each cargo tank should be independently sampled.

Oil Sampling Techniques

As in any other marine safety related operation, safety procedures must be adhered to at all times. In many cases where samples must be obtained, there is a high degree of unknown with regard to the spilled product. You must make sure that you take all precautions to protect yourself from any potential contaminants.

The primary types of protection when taking samples are nitrile gloves and appropriate eye protection that should be worn during sample collection. If non-petroleum hazardous chemicals are suspected or safety considerations are unknown, it is best to wait for further information before taking samples.

Ideally, at least three spill samples should be obtained. When this is not possible, the spill sample should be taken from the heaviest concentration of spilled oil.

Oil Sampling Techniques (Continued)

Twine or a sampling extension pole can be used to obtain spill samples from areas such as jetties or sea walls, where you height above the spilled oil makes it otherwise difficult to obtain samples.

You should obtain an absolute minimum of three samples:

- Spill.
- Suspected source.
- Clean water.
  - Clean water or background sample is taken to establish a baseline measurement of conditions that exist prior to the spill. This sample should be marked as a "Spill Sample" on the chain of custody document for comparison purposes.

Obtaining samples from a light spilled oil or an oil affected by the elements and has started to sheen is difficult. One tool available to enable sampling of the lighter ends of a spilled product is the McGill Sheen Net (figure 15-5).

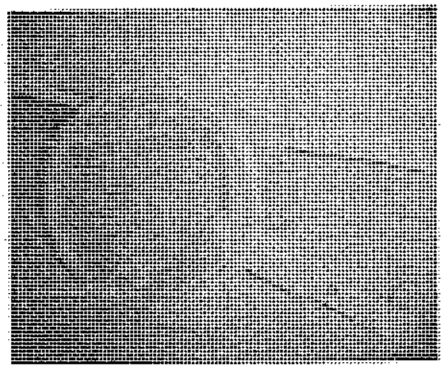


Figure 15-5. McGill Sheen Net.

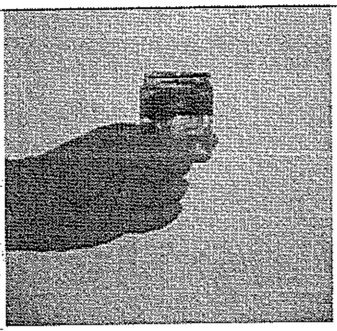
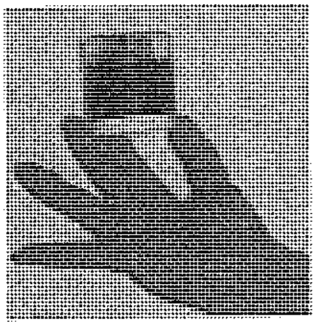
The McGill sheen net is a mesh netting made of an oleophilic ("oil loving") material is an excellent resource for sampling light sheens upon the surface of the water.

When taking sheen samples the use of the McGill sheen net is recommended but if one is not available, sampling the sheen by decanting is another alternative.

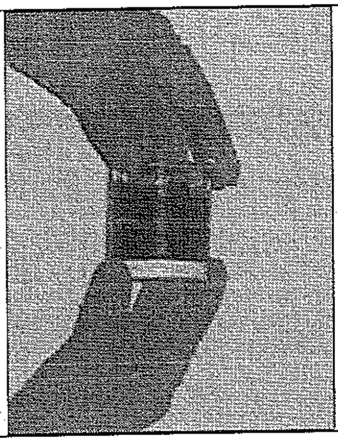
Oil Spill Sampling Evidence

Oil Sampling Techniques (Continued)

Use the following steps for decanting an oil sample:

Step	Action	
1	Collect a sample of spill and place in a sampling jar.	
2	Invert the sample jar. Allow the oil/water to separate.	
3	Unscrew cap to let water flow off slowly until close to the oil/water interface.	

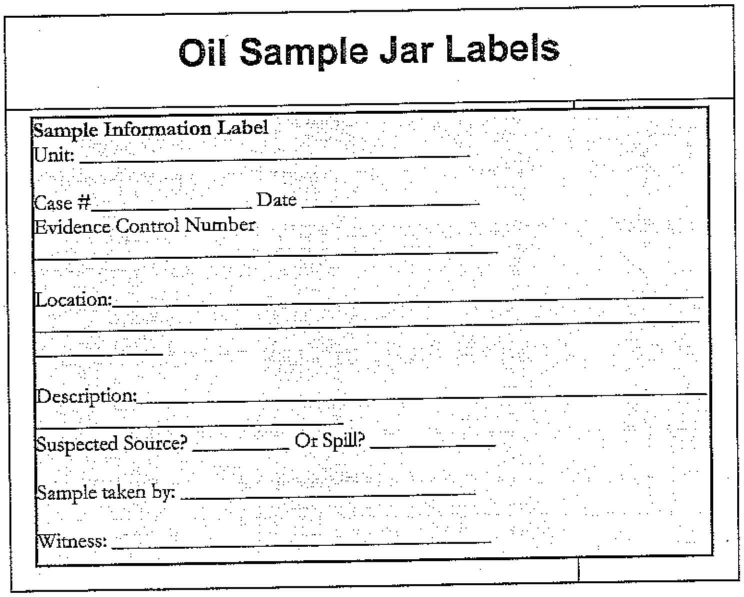
Oil Sampling Techniques (Continued)

Step	Action	
4	Tighten cap, invert sample jar to the cap upright position, unscrew cap and obtain more sample.	

Labeling Samples

Maintaining positive identification of samples is paramount to a successful analysis. Oil samples shall be identified using two pre-gummed oil and water resistant labels. One of these labels provides chain of custody information while the other provides information about the oil in the sample jar.

Both labels can be created at the unit using the Coast Guard standard workstation or by using a procured rubber stamp and the blank labels. The label applied to each sample jar is very important in tracking the sample throughout the case. It also provides very useful information pertaining to the sample. Do not seal your jars with the label. Instead, MSL recommends using vinyl electric tape. See the suggested sample information and chain of custody label formats that follow (figure 15-6):



Oil Sample Jar Labels

Sample Information Label

Unit: ____________________

Case #__________ Date __________

Evidence Control Number ____________________

Location: ____________________

Description: ____________________

Suspected Source? ________ Or Spill? ________

Sample taken by: ____________________

Witness: ____________________

Figure 15-6. Examples of Oil Sample Labels.

Chain of Custody Record

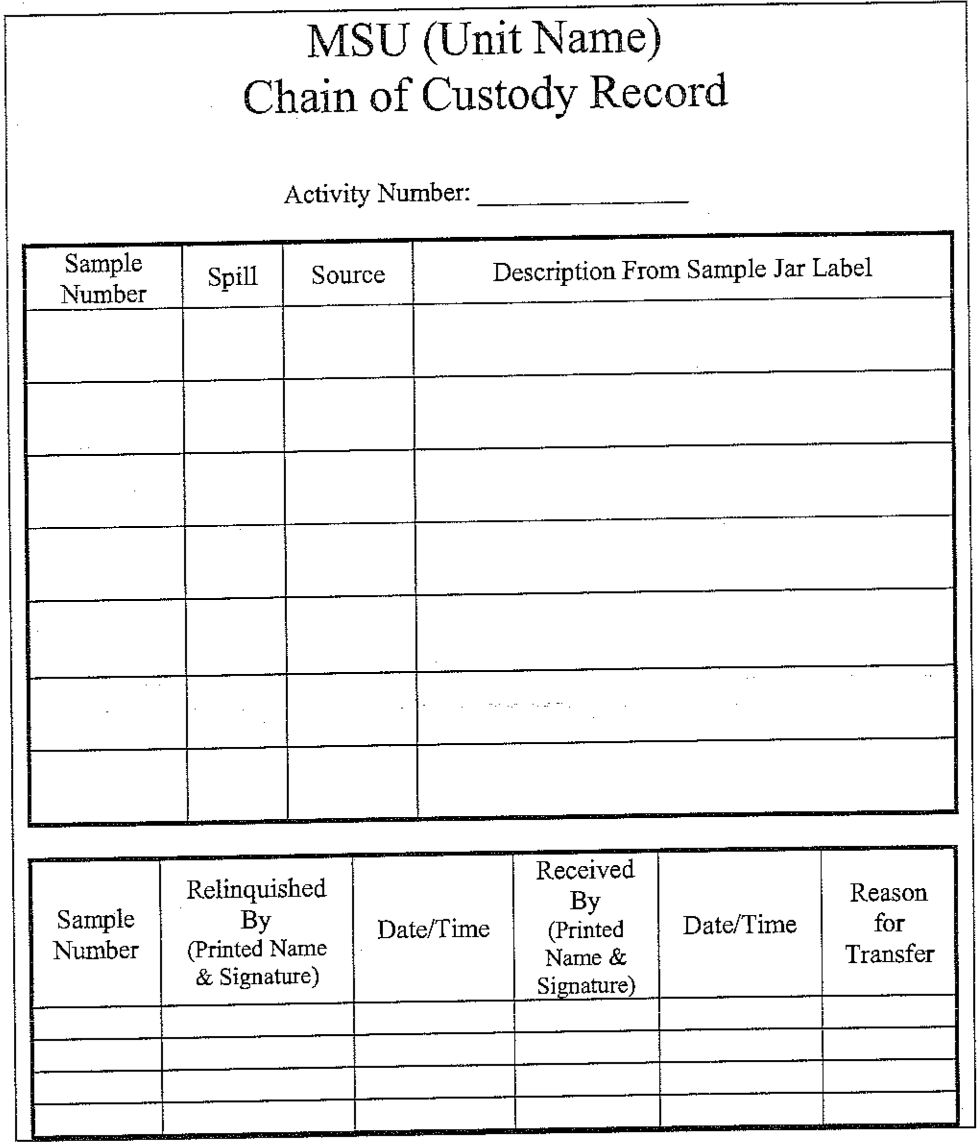
As discussed earlier, the collection of samples is part of the investigative process, and as part of the investigative process you must ensure that a proper chain of custody is maintained. The Chain of Custody Record is the most important piece of paperwork related to samples sent to MSL.

The Chain of Custody Record is used to document the custody of the samples associated with the investigation from the moment the samples are taken to the time of their disposal. This record is considered a legal document and requires great attention to detail. Errors in the Chain of Custody may cause delays at MSL and causes questions of admissibility of evidence should a case go to court.

The person taking the samples should prepare the Chain of Custody and be the first person listed on the document. The Chain of Custody should be formatted to include all relevant unit information. It is important that the activity number used on the sample jars be copied over to the Chain of Custody Record.

The description from the sample jars should be copied letter for letter to the Chain of Custody Record (figure 15-7). The information from the sample label must match the information on the chain of custody exactly.

Chain of Custody Record (Continued)



MSU (Unit Name)
Chain of Custody Record

Activity Number: _______________

Sample Number	Spill	Source	Description From Sample Jar Label

Sample Number	Relinquished By (Printed Name & Signature)	Date/Time	Received By (Printed Name & Signature)	Date/Time	Reason for Transfer

Figure 15-7. Chain of Custody Record.

A hand-written Chain of Custody Record is acceptable, but it is important that it is written legibly. Any deviation between the sample label information and the Chain of Custody Record information can cause confusion as to the identities of samples. This may cause problems with the admissibility of evidence. Cases may be placed on hold until discrepancies are corrected if errors in paperwork are found. Remember that if a case goes to court, these documents will most likely accompany it. In addition to the paper copy chain of custody, an electronic version is also available in Marine Information for Safety and Law Enforcement (MISLE) allowing for the entry and electronic transmittal of chain of custody data.

Chain of Custody Record (Continued)

When, as the sampler, you relinquish custody of the samples to another person, both individuals are required to sign the Chain of Custody and the original document should accompany the samples.

Sample Custodian

Your unit should designate a custodian to ensure the samples are properly stored, shipped, and/or disposed of. The samples may be relinquished to the refrigerator. It is good practice to keep the transfer of samples to a minimum. When the unit sample custodian is ready to send the samples to MSL, he or she must be sure to sign and date the Chain of Custody, relinquishing the samples to MSL.

Proper documentation shows how a sample has been treated. A case specific chain of custody log containing the names of every person that held or handled a sample from the person who took it through its final destruction, including the time and place each person handled the sample.

An explosive proof refrigerator is used as the evidence locker (figure 15-8).

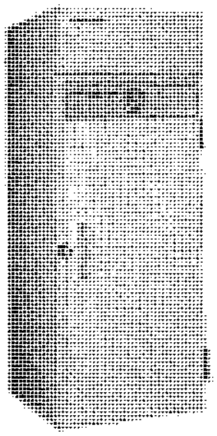


Figure 15-8. Explosive Proof Refrigerator Used as an Evidence Locker.

A means to secure the evidence locker such as a built-in lock, or a hasp and padlock is necessary to control access so only the sample custodian has access. The sample custodian, will also ensure the temperature and other conditions in the evidence locker do not chemically alter the samples.

Unit Sample Log

The unit sample custodians shall maintain a separate running log apart from the case specific chain of custody logs for samples indicating every receipt and transfer of physical evidence and every access to the evidence locker. The log will note who accessed the locker, when, for what purpose, and which evidence was handled.

This record shall describe the sample exactly as the information appears on the sample jar label including a unique identifying sample number, whether the sample is from a suspected source of from the spill itself, and the location where the sample was taken.

Each person who handles the sample shall sign both the chain of custody log and the chain of custody label on the sample jar. Multiple samples may be listed on a single chain of custody log, provided the samples are never separated, or that such separation is noted on the chain of custody log. The pollution investigator taking samples should keep the samples in personal custody and in plain view while on site. When this is impractical, the pollution investigator shall transfer the samples to a custodian who will transport them to an evidence locker at the unit.

Letter of Request for Analysis

The second important piece of paperwork to accompany samples to the lab will be the Letter of Request for Analysis. In most instances, the Letter of Request for Analysis serves as the first line of communication between the field units and MSL. The original letter should be generated on unit letterhead per the Coast Guard Correspondence Manual, COMDTINST M5216.4 (series), and forwarded to MSL with the samples.

The items of interest to MSL found in a Letter of Request for Analysis are:

- Activity number (or non-Coast Guard agency case number).
- Number of samples being sent to MSL.
- A unit point of contact, including phone and fax numbers as well as an email address when available.
- The enforcement type (civil or criminal).
- Additional case information that the unit feels would assist MSL in their analysis (i.e., contaminants, site descriptions, soil seepage, etc.).
- Signature of a unit representative with “By Direction” authority.

Any errors in paperwork may delay the analysis until corrections are made.

Shipment of Samples

Proper shipment of samples to the MSL is an important step in a pollution investigation. To maintain a proper Chain of Custody for your samples, MSL recommends that you ship by a method that assigns a unique, traceable number to the package of samples. Suggested methods of delivery include:

- Registered domestic mail.
- Federal Express.
- Other similar carriers that assign a specific airway bill and/or tracking number to a package.

These carriers all ship using aircraft, and because oil spill samples are considered Dangerous Goods, the packaging and shipment of samples is regulated by 49 CFR. Most carriers regulate Dangerous Goods per the International Air Transport Association Dangerous Goods Regulations (IATA DGR). These guidelines are generally more stringent than those found in 49 CFR, and are an acceptable alternative. Current hazardous materials transportation regulations should always be checked to ensure the package is in compliance with the current requirements.

Because of the unknown nature of most spills, it is best to ship samples as "Petroleum Products, Not Otherwise Specified (N.O.S), UN 1268, PGII."

- This covers the broadest spectrum of samples sent to the MSL, and is the preferred choice for a N.O.S. shipping name (IATA DGR 4.1.2(c)). Many exceptions apply to samples shipped under this United Nations (UN) identification number, and in this quantity.
- Samples should be shipped:

Step	Action
1	In four-ounce glass jars with sufficient space to allow for expansion of samples during shipment.
2	No more than eight jars should be packed in a single box.
3	Non-reactive cushioning must be used, as well as enough sorbent material to absorb the contents of one sample jar should it break.
4	Jars should be sealed with vinyl electric tape and oriented within the package to prevent leakage.

Shipment of Samples (Continued)

The following identifies requirements for outer packaging, marking, and labeling:

Step	Action
1	Samples should be packaged in a fiberboard box with a gross weight of no more than 30-kilograms (66 pounds).
2	The box should be marked with the To/From addresses, proper shipping name, and limited quantity marking (Ltd. Qty.).
3	A Hazard Class 3 label should be applied to the box, along with a properly completed Declaration of Dangerous Goods.
4	Mark the box with the UN Number (i.e., UN1268) and package orientation labels to two opposite sides of the package mark the top of the box "This End Up."

As with the packaging guidance, this guidance is meant solely to cover the Declaration of Dangerous Goods for samples meeting the above guidelines. Shipping any other type of sample will require consulting the IATA DGR for specific requirements.

The Shipper's Declaration of Dangerous Goods accompanies all shipments of Dangerous Goods. Some commercial carriers use a combination Shipper's Declaration of Dangerous Goods and Air Waybill, which is only legal for domestic shipments. This also provides additional tracking for chain of custody purposes. The most current Transmittal Guide can be found on MSL's website: http://www.rdc.uscg.gov/MSL/Downloads/MSL Transmittal Guide 6th Edition.pdf.

Response Science and Technology Subcommittee

Sampling Guidelines

Environmental assessment, monitoring, sample collection and data interpretation are necessary components of an effective response to spills and releases of oil and other HazMat materials. Samples typically consist of spilled product for fingerprint analysis and ambient air for assessment of response worker health and safety and community impacts related to the spilled/released product. This document is intended to provide some guidelines to standardize sample collection and analysis procedures and to formalize the minimum standard requirements applicable to this critical area during a response.

Water:

Water samples are an integral component to capture during a response effort. It is imperative to capture samples of the spilled product within the spill zone as quickly as possible after a release to ensure that the material can be compared to samples of the potential sources. This process is commonly referred to as “Fingerprint Analysis”. To correctly collect samples, properly preserve the samples, provide for secure Chain of Custody, perform shipping of the samples, conduct laboratory analysis, review analytical reports and effectively communicate the analytical results all require following established standard operating procedures.

Sampling:

“Fingerprint” sample should be collected in glass jars with Teflon lined caps.

The samples should be preserved with ?? while awaiting transport to the analytical laboratory.

Samples should be stored in a lockable refrigerator maintained at 40-42 degrees F until transport to the analytical Lab. Do not freeze the samples.

A Chain of Custody document shall be utilized to ensure that there is effective control over the sample at all times including delivery to its final destination.

Samples should be hand delivered to the laboratory or shipped in a manner consistent with established methods.

The samples should be analyzed at the laboratory using the appropriate Standard Method for the requested analysis.

Air:

Air monitoring, sampling and analysis are critical aspects of an effective response to environmental releases. Air monitoring can provide the response with data relative to concentrations of contaminants in the atmosphere which could be potentially harmful to response workers and the community at large. There are predetermined exposure guidelines established for each applicable chemical. The monitoring, sampling and analysis of air allow for comparison to these standards to determine risk.

Monitoring:

Real time air monitoring is the best and most effective method to determine concentrations of chemicals in the atmosphere. These concentrations are provided with the use of handheld, portable direct reading instruments that rapidly detect and display the airborne concentrations of specific chemicals. This method allows for nearly instantaneous readings and these results can be used by the response to develop safe working areas for response workers and determine potential effects for adjacent communities.

Sampling:

Analytical air sampling is an important tool to provide data to the response. Air sampling instruments collect air samples over a specified period of time followed by analytical analysis at a laboratory. The results represent the average concentrations of chemicals during the sampling period. Air sampling provides a delayed measurement of either specific or a comprehensive list of analytes that migrate through the area. Analysis times can be up to 48 hours. These tests enable the response to assess and respond to a release safely over the long term.

Analysis:

All air samples need to be analyzed by an accredited laboratory utilizing the appropriate Analytical Method.

Exposure Standards:

Occupational Exposure Standards and Guidelines:

The Occupational Safety and Heath Administration (OSHA) establishes workplace standards to protect the safety and health of workers. The American Conference of Governmental Industrial Hygienists (ACGIH) and the National Institute for Occupational Safety and Health (NIOSH) have also established exposure guidelines to protect workers from hazards on the job. Sampling data should be compared to health- and risk-based ambient air and exposure guidelines such as Minimal Risk Levels from the Agency for Toxic Substances and Disease Registry, Acute Exposure Guideline Levels (AEGL's) from the United States Environmental Protection Agency (USEPA) and Emergency Response Planning Guidelines (ERPG's) from the American Industrial Hygiene Association (AIHA).

Community Exposure Guidelines:

The AIHA establishes ERPG's to protect communities from the adverse effects of chemicals. The USEPA has developed AEGL's to protect communities in the event of emergency chemical releases. The Department of Energy's Subcommittee on Consequence Assessment and Protective Action (SCAPA) developed Temporary Emergency Exposure Limits (TEEL's) and Protective Action Criteria (PAC) for over 1,250 chemicals for which ERPG's have not been developed.

New Orleans Area Contingency Plan

Chapter 9000
Appendix X
Environmental Sampling Guidance

Chapter 9000 Appendices, Appendix X Environmental Sampling Guidance

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New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix X Environmental Sampling Guidance

Environmental Sampling Guidance

Summary

This document has been prepared by the Response Science and Technology subcommittee of the New Orleans Area Committee. It intends to describe the environmental sampling that may occur during an emergency response to an oil spill or hazardous materials release. The reader should refer to agency, or company, protocols and procedures for detailed information for executing sampling appropriately.

Sampling during an incident is a highly complex and variable activity that requires specific field and laboratory methods for each type of sample, and a rigorous chain-of-custody for all samples to be considered valid. The term sampling and samples includes collecting physical materials, photography, surveys, documentation, etc. All types of sampling should be done with a pre-specified plan that includes a workable data management plan for the scale of the incident or incident phase.

Sampling and ICS

The Unified Command may require the Environmental Unit to produce an Environmental Sampling Plan for the coordinated collection, documentation, storage, transportation and sample submittal to appropriate laboratories for analysis and/or storage. The SSC will coordinate the development of sampling plans with agency and industry technical specialists and the NRDA Trustees as appropriate. The plan is executed by Operations Section staff. Additionally, when an Environmental Sampling Plan is needed, standard operating procedures should be prepared so that sample collection activities, sample documentation, and sample nomenclature are defined and standardized across all parties performing the activities. Note that there may not be existing procedures for the types of sample collection being performed. Furthermore, a Quality Assurance Project Plan may also need to be prepared to tie in the data quality objectives from the sampling efforts with the analytical activities that are performed, inclusive of specifying the frequency and type of field and laboratory quality control samples that will be collected. In the initial stages of a response incident, decisions should be made with an eye towards what information will be needed by those personnel evaluating data and making decisions from the collected data.

Sampling Purpose

During the initial phase of an incident, sampling will focus primarily on: 1) determining the pollution source or product being released, 2) determining the spread of the product, 3) determining background data for comparison to current conditions.

Sampling may be conducted for human health and safety, response decision making, criminal investigations, natural resource damage assessment (NRDA), etc. Plans for those purposes will usually be developed by specialists in those fields.

Sampling Strategy

A source sample should be taken as close to the release point as safe and practical. This provides for the least weathered or diluted sample of the product being released into the environment. This sample will be used for many purposes, including product identification and chemical composition, and will act as the standard that other samples are compared against.

A spill sample should be taken within the affected area to determine how the released material is altering or impacting the environment. Motivations could include human health and safety, affects on biota or modeling ground-truthing. A background sample should be taken in an unaffected area to determine a baseline that existed prior to the release. This should include water, sediment/soil, air, and biota samples.

The agencies that could be involved with sampling for an incident that occurs within the scope of this Area Contingency Plan include: U. S. Coast Guard, the Environmental Protection Agency, National Oceanic and Atmospheric Administration, Department of Interior, U.S. Fish and Wildlife Service, Louisiana Oil Spill Coordinator’s Office, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, LA State Police and Parish Agents.

Analytical Laboratory Services

In the event that a spill or hazardous substance release occurs and non-routine analytical services are required, a laboratory and back-up laboratory will need to be identified that have capability, turn-around time, and capacity to perform the desired analyses; meet the defined data quality objectives; and have the capability to substantiate the reported analytical results by supplying the project-defined full data package deliverable and electronic data deliverable.

Data Reporting

During a large-scale incident, the preparation of a data management plan may be needed to define the data collection and reporting processes. Agencies involved in responding to an incident should identify the database platform that will be utilized to collect all sample and analytical data and define the primary keys for the electronic data deliverable that will be used. Sampling and analytical firms responding to the incident will be required to meet the data management plan to supply field-collected data and analytical data, respectively. Additionally, the location of where, when, and how the data was collected should be made available.

Data Evaluation

Prior to the release of data external to those responding to the incident, data should undergo an evaluation for completeness, correctness, compliance, and usability of the reported results. The level of scrutiny should be defined prior to sample collection and should be based upon the data quality objectives and data use.

Elements of a Sampling and Monitoring Plan

The following outline illustrates the most commonly used elements of a sampling and monitoring plan. It is not expected for an actual plan generated during an incident to copy the outline below:

- Introduction and Purpose

- Field Equipment

- Monitoring
    - Target Analytes and Detection Limits
    - Fixed Real-Time Monitoring Locations
    - Mobile Platforms for Monitoring

- Sampling
    - Sampling Procedures
    - Sample Preservation
    - Sample Labels
    - Shipping and Handling of Samples
    - Holding Times for Samples

- Documentation Methodology
- Calibration and Maintenance of Equipment
- Equipment Decontamination
- Chain of Custody
- Laboratory and Analytical Methods
- Laboratory Deliverables
- Data Quality and Management
- Data Analysis
- Project Organization and Management

Contributions

The Response Science and Technology subcommittee would like to thank the following organizations for their contributions to this document: US Coast Guard, National Oceanic and Atmospheric Administration, Louisiana Department of Environmental Quality, Environmental Standards Inc and Louisiana State University.

References

USCG Marine Safety Laboratory, New London, CT, http://www.uscg.mil/hq/cg5/msl/

NOAA Office of Response and Restoration, Seattle, WA, http://response.restoration.noaa.gov/

U. S. Coast Guard

Marine Safety Laboratory

Sample Handling & Transmittal Guide

Version 7.0

October 2010

MSL Contact Information:

U. S. Coast Guard Marine Safety Laboratory

1 Chelsea Street, New London, CT 06320-5500

Voice: 860-271-2704

FAX: 860-271-2641

About MSL

The Marine Safety Laboratory (MSL) is a Headquarters Unit under the Office of Investigations and Analysis (CG-5451) and is the Coast Guard's sole forensic laboratory for oil pollution investigations. Samples collected by field units are analyzed at MSL to determine if a relationship exists between the spilled oil sample(s) and suspected source samples. The ensuing report is then used in both helping to identify the responsible party and recovering costs.

MSL utilizes a process known as the Oil Identification System (OIS). The OIS was developed in the mid-1970's by the Coast Guard Research and Development Center (R&DC). Its purpose was, and still is, to determine the unique, intrinsic properties that would allow the matching of spilled oil with its correct source. The OIS draws upon three analytical chemical methods: gas chromatography (GC), gas chromatography-mass spectrometry (GC/MS), and infrared spectroscopy (IR). Each of these methods measures different chemical properties of an oil and has been shown to produce results independent of the others. The multi-method approach was chosen because no single technique gives unequivocal results in all cases. These methods have been formalized into ASTM-approved standard methods.

The laboratory uses these tests to characterize the unique "fingerprints" of petroleum oils. Thus, MSL provides chemical information that is used to affix oil pollution responsibility, assess penalties and help recover federal pollution cleanup funds expended during an incident.

All oil samples collected by Coast Guard Pollution Investigators are to be submitted to MSL, as per USCG Marine Safety Manual, Volume V, Part B, Chapter 8. The use of any other laboratory for the forensic analysis of oil samples is not authorized. Note: MSL does not analyze hazardous materials other than petroleum oil.

Sampling Guidelines

This guide, which augments the Marine Safety Manual, is designed to aid a Pollution Investigator in the field in the proper procedures involved in sampling of spilled oil and potential suspect sources. Numerous considerations should be taken into account prior to sampling. The sample strategy, equipment, safety, methodology, and procedures are detailed in subsequent sections.

Sampling Strategy

Samples can generally be placed into one of three categories: spill, source, or background.

Spilled oil is subject to weathering. For this reason, spill samples should be collected first. Ideally, at least three samples of the waterborne oil should be collected from various locations (center, leading edge, trailing edge) whenever possible to allow for slight differences in the oil and to allow determination if more than one spill may be present. Sample the oil where it appears to be the heaviest. A McGill sheen net is recommended for sampling a thin sheen. If a sheen net is not available, the sheen can be sampled by decanting.

The McGill sheen net is made of an oleophilic ("oil loving") material which, due to its high surface area, is an excellent resource for the Pollution Investigator when sampling light sheens. The net almost always collects sufficient oil for analyses at MSL, whereas direct sampling of light sheens frequently may not. However, sheen net samples are highly susceptible to degradation so it is important to ship them to MSL as soon as possible after collection. A suggested source of supply for these nets can be found in Attachment 1.

Suspected source samples include, but are not limited to, any facility or vessel that had opportunity to cause the spill. All possible sources should be investigated. All tanks and bilges from any suspected source should be sampled. In all cases, the Pollution Investigator should exercise discretion in formulating a sample taking strategy. If time permits, calling MSL for sampling advice may be appropriate.

A clean water sample, also known as a background sample, should be obtained for all cases. This sample acts as a baseline measurement for conditions that exist in the area prior to the spill. If there is no selection on the Chain of Custody document for "background" sample, the clean water sample should be marked as a "spill" sample for comparison purposes. (Note: Within the CG Marine Information for Safety and Law Enforcement (MISLE) system, these samples should be listed as a "Background Sample.")

Sampling Equipment

The following is MSL's suggestion for a basic field sampling kit:

- 1 Sampling Kit Carrier*
- 12 Jar Rings
- 4 McGill Net Kits
- 1 Box Nitrile Gloves
- 1 Roll Cotton Twine
- Hand Cleaner
- 1 Roll of Electrical Tape
- 12 4-oz Sample Jars
- 1 Sampling Extension Pole
- 6 Cardboard Mailing Tubes
- 1 Roll Adhesive Labels
- Absorbent Towels
- 6 Tongue Depressors
- Waterproof Markers

*Note: For sampling conducted during hot weather, samples may be placed in a small cooler until they can be transferred to the unit's sample refrigerator. This will help preserve samples during lengthy field investigations.

Suggested Sources of Supply for above listed items can be found in Attachment 1.

Sampling Safety

All standard safety procedures found in MSM Vol. 1, Chapter X, apply to oil spill sampling. Protective nitrile gloves and appropriate eye protection should be worn during sample collection. If non-petroleum hazardous chemicals are suspected, or safety considerations are unknown, it is best to wait for further information before taking samples.

Sampling Considerations

There are factors to consider during the investigation and sampling that are important to the overall effectiveness of the oil identification system. One critical factor is weathering. Evaporation, dissolution, oxidation, and biodegradation are some examples of the weathering processes that alter petroleum oil's fingerprint. A sample may not be useful for analysis if severe weathering has occurred. Rapid response to spills, proper sample storage, and prompt shipment of samples to MSL can greatly reduce the effects of weathering.

Contamination is another area of concern. Hazardous chemicals, sewage, and other substances in the environment can alter or interfere with the fingerprint. A note should be made on the Letter of Request (LOR) if the Pollution Investigator suspects such contamination may be present so the analyst can account for it during analysis.

Choice of sampling supplies is important to reduce the introduction of non-petroleum contamination to the samples by the investigator. Oil samples should not be in contact with plastic (e.g., the sample jar lid). A sheen net or tongue depressor should be used whenever feasible to collect swipe samples, as gloves and sorbent material contaminate the oil. A background sample of clean sorbent, or other sampling material, should be provided to the analyst when used in an investigation.

Because of their configuration, bilges will often have spaces where oil can become trapped. These spaces do not allow the oil to mix thoroughly with the rest of the bilge, and therefore, oil in one space may have a slightly different fingerprint than oil in another space. Every effort should be made to sample all such spaces and locations within a suspected source.

Sample Storage

Samples are subject to weathering even after they are collected so all samples should be sent to MSL as soon as possible for optimum results. Samples that cannot be sent to MSL just after collection should be stored in a cool, dark place to minimize any degradation of the samples due to sunlight, heat, or microbial activity. Coolers with cold packs may be used for temporary storage on-scene. Optimal conditions for storing oil samples at the unit are in an explosion-proof[1], lockable refrigerator maintained at 40–42 °F. Do <u>not</u> freeze the samples.

It is important to note that a flammable storage refrigerator may be used instead of an explosion-proof refrigerator if the conditions are appropriate. It is the unit's responsibility to consult applicable regulations[2] to determine whether the refrigerator in use for oil sample storage is compliant with safety standards.

> [1] *Excerpt from ASTM Standard D3325: Standard Practice for the Preservation of Waterborne Oil Samples:*
> *5. Apparatus*
> **5.3** Refrigerator, explosion proof at about 4 to 5 °C
>
> [2] **29 CFR 1910.307, NFPA 45,** and **NFPA70** address electrical safety requirements in hazardous (classified) locations and storage of flammable/combustible liquids.

Labeling

The labels applied to each sample jar are very important in tracking the sample throughout the case. They also provide very useful information pertaining to the sample. Labels can be created on the CG standard workstation or by using a locally procured rubber stamp and blank labels. A template for sample jar labels is available on the MSL website. The template is formatted for 1.3” x 4” label dimensions (Avery Style 5162) and can be printed directly on to pre-gummed, oil and water resistant sheets of blank labels.

To ensure the labels will stick, make sure the outside of the sample jar is clean and dry prior to application. Do not seal your jars using the label. Instead, MSL recommends using vinyl electrical tape.

Suggested sample information label format (not to scale):

<u>Sample Information Label</u>

Sample Number:________ Date/Time:______________/__________

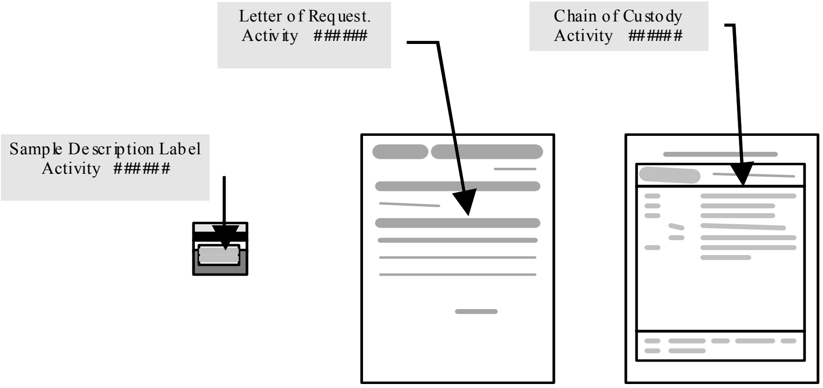
☐ **SPILL** ☐ **SOURCE** ☐ **BACKGROUND**

Description:____
____
Sampler:____________________________Witness:___________________________
Unit Name:____
MISLE Evidence Control Number (ECN):___________________________________

MSL does not require the use of “chain of custody” labels. However, MSL does suggest they are used whenever custody of a sample changes <u>prior</u> to generation of the Chain of Custody document, such as out in the field during an investigation. All information documented on the chain of custody label must be accurately transferred onto the Chain of Custody document.

Activity / Case Numbers

All cases sent to MSL shall have the MISLE Incident Investigation activity number for sample custody tracking purposes. This activity number must also be listed on the Letter of Request, Chain of Custody, and each sample jar label. The Incident Investigation activity number provides a link among the documents mailed with the samples. The **only exception** to this policy is for Coast Guard units assisting other Federal, state, or local agencies. In these cases, the agency’s case number may be used.



Notice of Violation (NOV) Activities

NOV activities do not typically require an analysis by MSL. However, circumstances associated with a specific case may lead to the need for analysis. Preservation of evidence can be critical in these situations.

If the NOV case contains especially sensitive samples, such as sheen nets or light sheens collected by decanting, the samples may be sent to MSL for PREP ONLY. Sample preparation preserves the samples and prevents further degradation. MSL will not analyze the oil samples unless directed to do so by the unit.

In the event the NOV activity is closed and/or paid, inform MSL of the status via letter (Attachment 2), and the samples will be disposed of. If analysis is necessary, inform MSL via letter (Attachment 2) and analysis will commence.

Chain of Custody (COC)

The COC record (Attachment 3) is the most important piece of paperwork related to samples sent to MSL. The COC is used to document the custody of the samples associated with the investigation from the moment the samples are taken to the time of their disposal. This record is considered a legal document and requires great attention to detail. **Errors in the COC may cause delays at MSL and questions of admissibility of evidence should a case go to court**.

The person taking the samples should prepare the COC and be the first person listed on the document. The COC should be formatted to include all relevant unit information. It is important that the Incident Investigation activity number used on the sample jars be copied over to the COC. The description from the sample jars should be copied letter

<u>for letter</u> to the COC. Annotations to these descriptions can be made within parentheses. Hand-written COC records are acceptable, but it is important that they are written legibly. If errors in paperwork are found, cases may be placed on hold until discrepancies are corrected. Please keep in mind that if a case goes to court, these documents will accompany it.

When the sampler relinquishes custody of the samples to another person, both individuals are required to sign the COC. It is important that the time and date of this transfer are noted and correct. The original document must accompany the samples. If unit policy states that the watch stander has custody of samples in storage in your unit evidence refrigerator, the COC does not need to be signed each time the watch changes. Instead, the samples may be relinquished to the refrigerator. It is good practice to keep the transfer of samples to a minimum. When the sample custodian is ready to send the samples to MSL, the unit sample custodian must be sure to sign and date the COC, relinquishing the samples to MSL, before it is placed in the package with the samples.

Any deviation between the sample label information and the COC record information can cause confusion as to the identities of samples. This may lead to concerns about the admissibility of evidence.

A COC template can be downloaded from the MSL website.

Letter of Request (LOR)

The second important piece of paperwork to accompany samples to the lab will be the Letter of Request (LOR) for Analysis (Attachment 4). In most instances, the LOR serves as the first line of communication between the field units and MSL. The original letter should be generated via a unit memorandum in accordance with the CG Correspondence Manual (COMDTINST M5216.4 series), and forwarded to MSL with the samples.

LOR items of interest important to MSL include:

- Incident Investigation Activity number (or Non-CG agency case number)
- Number of samples being sent to MSL

- A unit point of contact, including phone and fax numbers, and an email address
- The enforcement type (civil or criminal)
- Federal Project Number, if applicable
- Analysis response time required by the unit
- Additional case information that the unit feels would assist MSL in their analysis (i.e. contaminants, site descriptions, soil seepage, etc.)
- Signature of a unit representative with "By Direction" authority

Again, this is an important piece of paperwork that will accompany your evidence not only to MSL, but also to court should it be required. Any errors in paperwork may delay the analysis until corrections are made.

An LOR template can be downloaded from the MSL website.

Response Time

One goal at MSL is to complete each analysis as efficiently as possible while maintaining high quality standards. The analysis time for each case is directly related to the number of samples submitted and the nature of the case. MSL will strive to meet the response time you require and have specified in the Letter of Request. "**Regular**" sample analysis is completed within **3-5 business days** after receipt of the case.

Some circumstances may require expedited analysis. A "**Priority**" analysis is justified if a large expenditure from the Oil Spill Liability Trust fund has been made or if a potential responsible party questions the extent of the spill. "**Priority**" analyses are completed within **1-3 business days**.

A "**RUSH**" analysis is justified if a vessel is detained or if extreme public interest/media coverage has been generated due to the spill. Results will be made **available as soon as possible** for a "**RUSH**" analysis, even if they are available outside of normal working hours.

Because "**RUSH**" analyses require special staffing arrangements, MSL should be contacted by the unit with the number of samples, case details, and a tracking number, prior to receiving the samples. It is imperative that the point of contact for a "**RUSH**" analysis provide a phone number to receive the results outside of business hours.

These are not the only reasons to request a "**RUSH**" or "**Priority**" analysis, but units should use discretion when making these requests.

MSL's normal business hours are Monday-Friday 0730-1600 Eastern Time. The duty watchstander is available 24/7 at (860) 912-8022.

Sample Shipment

Proper shipment of samples to the MSL is an important step in all pollution investigations. To maintain a proper Chain of Custody for your samples, MSL recommends that you ship by a method that assigns a unique, traceable number to the package of samples. Suggested methods of delivery include Federal Express, registered domestic mail, or other similar carriers that assign a specific airway bill and/or tracking number to a package. These carriers all ship using aircraft, and because oil spill samples are Dangerous Goods, the packaging and shipment of samples is regulated by 49 CFR. Most carriers belong to the International Civil Air Organization (ICAO), and regulate Dangerous Goods following the International Air Transport Association Dangerous Goods Regulations (IATA DGR). These guidelines are more stringent than those found in 49 CFR, and are allowed under 49 CFR 171.22.

Because most carriers will reference the IATA DGR when discussing Dangerous Goods, MSL's guidance on the shipment of oil spill samples will be in accordance with these regulations.

Always check current hazardous materials transportation regulations to ensure the package is in compliance with the current requirements.

Packaging Samples

There are many possibilities to consider when packaging samples for shipment to the MSL. This guidance is intended to cover only the most commonly packaged samples, and does not supersede or replace the regulations established in the IATA DGR. When shipping samples that do not meet the following criteria please refer to the IATA DGR for the proper method of packaging and shipment. This guidance is intended for:

- Samples containing strictly petroleum products and water. Sheen net and sorbent samples are covered by this guidance. Any other chemical contaminants will make the sample subject to different regulations.
- Samples in a 4-oz. or smaller glass sample jar, up to 8 jars per box.

Because of the unknown nature of most spills, it is best to ship samples as Petroleum Products, N.O.S, UN 1268, PGII. This covers the broadest spectrum of samples sent to the MSL, and is the preferred choice for a

N.O.S. shipping name (See Attachment 5). Many exceptions apply to samples shipped under this UN number, and in this quantity. For a complete list of regulations regarding the shipment of samples, see Attachment 5.

Inner Packaging Requirements

Samples should be shipped in 4-oz glass jars with sufficient space allowed for expansion of samples during shipment. No more than eight jars should be packed in a single box. Non-reactive cushioning must be used, as well as enough sorbent to absorb the contents of one sample jar should it break.

Inner Packaging Recommendations

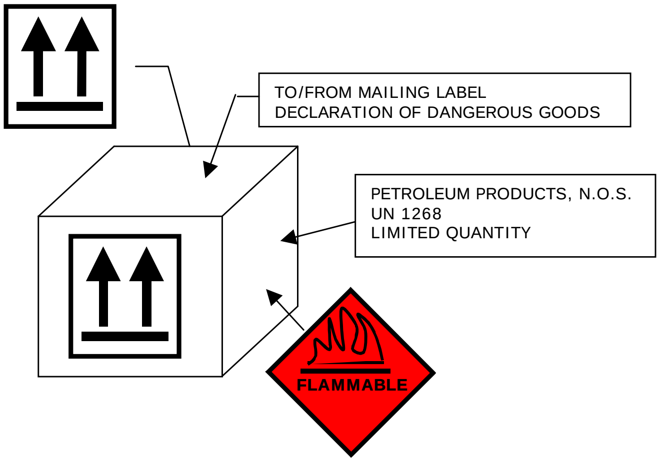
Jars should be sealed with vinyl electric tape and oriented within the package to prevent leakage.

Outer Packaging, Marking, and Labeling Requirements

Samples should be packaged in a fiberboard box with a gross weight of no more than 30 kg (66 lbs). The box should be marked with the To/From addresses, the proper shipping name, UN1268, and limited quantity marking (Ltd. Qty.). A Hazard Class 3 label should be applied to the box, along with a properly completed Declaration of Dangerous Goods.

Outer Packaging, Marking and Labeling Recommendations

Along with the required markings, apply Package Orientation labels to two opposite sides of the package and mark the top of the box “This End Up.”



Shipper's Declaration of Dangerous Goods (DODG)

As with the packaging guidance, this guidance is meant solely to cover the Declaration of Dangerous Goods for samples meeting the above guidelines. Shipping any other type of sample will require consulting the IATA DGR for proper regulations. In accordance with IATA 1.5, **unit personnel designated to sign the DODG must be properly trained and certified to ship the samples**.

Training and certification is available from several commercial sources. As an example, FEDEX offers a 3-day IATA course that provides training on the proper preparation and shipment of dangerous goods for air shipment. Once a member is properly trained, certification is provided by the training source. MSL recommends that the unit sample custodian be trained and certified to prepare shipments and sign the DODG.

The Shipper's DODG accompanies all shipments of Dangerous Goods. Some commercial carriers use a combination DODG and Air Waybill, which is only legal for domestic shipments.

A copy of the Shipper's Declaration of Dangerous Goods must be maintained at the originating unit for a period of 2 years (49 CFR 172.201(e)).

Attachment 6A is an example of a properly completed DODG.

Attachment 6B is an online interactive DODG from FEDEX that can be completed online and printed out in color.

Attachment 6C provides instructions for completing each block of the DODG.

The MSL Analysis Report

The report is composed of several sections. The sections are as follows:

- Title Page.
- Report Letter: A general introduction and overview of the Marine Safety Laboratory.
- Chemist's Report on the Data: This section is the actual analysis of the case, including a comparison of the relationship between samples.
- Cost Recovery Sheet: An itemized account of costs incurred during analysis. Please note that units do not "pay" to have samples analyzed. These costs are provided for informational purposes. At unit discretion, these costs can later be added to total violation charges against the responsible party of the spill.
- Sample Check-In Log: The document used by MSL to assign a unique number to each case and every sample involved with the case. Included are the original sample number assigned to each sample by the unit, the original description of each sample from the sample jar, and the original date and time from the sample jar.
- Additional Documentation: Any additional information or documentation pertaining to the case requested by the field units.

The MSL Analysis Report is made available to the unit as an attachment in MISLE. Marine Safety Lab Analysis Reports are located within Standard Evidence. Detailed directions for obtaining the report are available within the "Finding the Analysis Report in MISLE" Power Point on the "Documents" tab of the MSL website.

The original report is retained at the laboratory. Hardcopies of the full report with data are available upon request.

Understanding the Chemist's Report

Each petroleum oil has distinctive molecular characteristics that distinguish it from other oils. Known as a fingerprint, these characteristics are used by the chemist to determine the relationship between oil samples. When samples have similar fingerprints, they are described as being "derived from a common source" or match. Samples described as "not derived from a common source," or non-match, do not show similarities in their respective fingerprints.

Samples that have insufficient similarities to be classified as a match, or too many to be ruled out as a non-match, can be described as "inconclusive." An inconclusive report does not mean that the samples are not derived from a common source; it merely states that there is insufficient chemical evidence to support either a match or non-match.

Most samples received at MSL fall into one of the three categories listed above. Units are encouraged to contact MSL for explanations of samples not falling into one of the three listed categories.

The Marine Safety Lab Website

The MSL website offers many useful tools to Pollution Investigators and unit sample custodians. The site contains information on lab services and methodology. Within the "Documents" tab, unit personnel can find templates for sample case documentation, such as the COC, LOR, DODG, and sample labels. This tab also contains various PowerPoint presentations aimed at assisting units with sample preparation and shipment. The "Frequently Asked Questions" section offers answers to some of the most common unit questions, and also provides some examples of the most commonly noted discrepancies in case documentation.

Please visit our website at:

http://www.uscg.mil/hq/cg5/msl/default.asp

Suggested Sources of Supply

Attachment 1

Nitrile Gloves

New Pig
1-800-468-4647
Box (100)
Kimberly Clark
GLV107-(xs-xl sizes)

Government Scientific
1-800-248-8030
(references different sources of companies which sell gloves)

Government Services Administration (GSA)

Sample Jars

Lab Source
1-800-545-8823
Case (24)
Item#130-04C

EP Scientific Products
1-800-331-7425
Case (24)
Item#130-04C

Government Scientific Source
1-800-248-8030
Case (24)
Item#130-04C

General Oceanics
1-305-621-2882
Case (24)
Item#5080J1

Cardboard Mailing Tubes

General Oceanics
1-305-621-2882
Item#5080MT

Government Scientific
1-800-248-8030
Item#5080MT

Sampling Poles

General Oceanics
1-305-621-2882
Item#2030WN

Sampling Net Kit #1 (includes one 4” Teflon net with disposable ring/handle and two pairs of nitrile gloves)

General Oceanics
1-305-621-2882
Item# 5080-KIT

Sampling Net Kit II (includes above sampling net kit plus sample jar ring and one 4 oz. Sample jar)

General Oceanics
1-305-621-2882
Item#5080-KIT2

Jar rings for 4 oz. Sample Jar

General Oceanics
1-305-621-2882
Item#5080-JR

Sample Kit Carrier

Pelican Products
1-800-473-5422
Company Stock #1550 w/Padded
Divider

Miscellaneous

White Mailing Labels
(Self Adhesive) 1 1/3” x 4”

Cotton Twine
NSN 4020-00-233-5984

Sample Shipping Boxes/Kits

HazPlus provides boxes and kits needed to ship samples in Limited Quantities. The company’s website is: http://www.hazplus.com/

Click on “V-Packaging” to find these products:

2 x 250ml/8oz (or less) V-Pack
PART #30-1440

4 x 250ml/8oz (or less) V-Pack
PART #30-1441

6 x 250ml/8oz (or less) V-Pack
PART #30-1405

Sample Letter of Disposition for Notice of Violation Case

Attachment 2

U.S. Department of
Homeland Security

United States
Coast Guard

UNIT INFORMATION

ADDRESS
ADDRESS
PHONE #
FAX #

16482
DATE

MEMORANDUM

From: NAME
UNIT

Reply to
Attn of:

To: Marine Safety Laboratory

Subj: DISPOSITION OF OIL SAMPLES FOR ACTIVITY ########

1. On **(date)** this office forwarded **(number of samples)** oil samples for sample **(preparation/analysis)** and subsequent storage at your facility for the activity number listed above.

2. This activity has been closed and authorization is granted to dispose of the samples in your custody.

3. If you have any questions, please contact **(unit point of contact)** at **(phone number)**.

OR

2. This activity remains open and we now request analysis on the samples associated with this activity.

3. Please forward a copy of the MSL case report to this office upon completion of analysis.

4. If you have any questions, please contact **(unit point of contact)** at **(phone number)**.

#

Sample Chain of Custody Attachment 3

Please see Sample Chain of Custody from MSL webpage at this hyperlink:

COC (PDF Version)

COC (Word Document)

Sample Letter of Request Attachment 4

Please see Sample Letter of Request from MSL webpage at this hyperlink:

LOR (Word Document)

List of Regulations Regarding Shipment of Oil Spill Samples

Attachment 5

NOTE: Always check the current Hazardous Material regulations to ensure compliance with current carrier requirements.

Requirement	**IATA DGR Reference**	**49 CFR Cite** (ICAO Technical Instructions incorporate IATA, which can be used in accordance with **49 CFR 171.22**)
Training Requirement		
Shippers must be properly trained and certified to prepare/ship Dangerous Goods, and to sign the DODG.	1.5	172.704(a)(2)(ii)
Identification		
Hazard Class 3	3.3.1.1(a)	173.120
Proper Shipping Name (Petroleum Products, N.O.S.)	4.1.6.2/ 4.1.0.2(d)/ 7.1.5.1	172.101(c)(12)(ii)
No Technical Name Required	4.1.0.2(d)	172.301(a)(1)
UN Number (UN 1268)	7.1.5.1	172.101(e)
Packing Group II	3.3.2	173.121
Packaging		
Limited Quantity (Ltd. Qty.)	2.8.1(b)/ 5.0.3.1/ 2.8.2.1(b)	173.150(b)
IATA Packing Instruction (Y305)	5.3	N/A
Inner Packaging (Glass Jar)	5.3.Y305	173.150(b)(2)
Quantity Per Jar (<0.5L)	5.3.Y305	173.27(f)
Total Net Quantity (<1L)	4.1.6.8	173.150(b)(2)
Allow Ullage	5.0.2.8	173.24(h)
Use Non-Reactive Cushioning	5.0.2.12.1	173.24(a)(3)
Enough Sorbent to Absorb One Jar	5.0.2.12.2/ Table 5.0.B	172.312(c)(3)
Fiberboard Box (No UN Certification)	5.0.3.1 or Packing Instruction Y305	173.150(b)(2)
Addresses (To/From)	7.1.5.1(b)	172.301(d)

Proper Shipping Name Marking (Petroleum Products, N.O.S.	7.1.5.1(a)/ 4.1.6.2	172.301(a)(1)
UN Number Marking Required	4.1.6.1/ 7.1.5.1(a)	172.301(a)(1)
Ltd Qty Marking	7.1.5.3	N/A
Hazard Class 3 Label	4.1.6.5/ 3.3.1.1(a)/ 7.2.2	172.101(g)
Orientation Arrows NOT Required (but recommended)	7.2.4.4	172.312
Total Gross Weight (<30 kg, 66 lbs.)	5.1.Y305	173.150(b)
Documentation		
Shipper's Declaration of Dangerous Goods	8.1	N/A
Signature (certified under subsection 1.5 of IATA regulations)	8.1.4.1	N/A
Emergency Response Telephone Numbers	USG-12	172.604(c)(1)

Sample Shipper's Declaration of Dangerous Goods

Attachment 6A

Please see the example Shipper's Declaration of Dangerous Goods from the MSL website at this link:

http://www.uscg.mil/hq/cg5/msl/docs/Example%20DoDG.pdf

Online Interactive Declaration of Dangerous Goods

Attachment 6B

Please see FedEx "Live Form" link on the MSL website. This DODG can be completed online and printed in color.

Note: Use the space bar to enter into the different columns under the "Nature and Quantity of Dangerous Goods" section on this form:

Interactive DODG Form in Color

Directions for Completing the Shipper's Declaration of Dangerous Goods

Attachment 6C

Heading	Proper Entry
Shipper	Full Name & Address of Shipper
Air Waybill No.	The Number of the Air Waybill # the DODG will be attached to (Normally Assigned by Carrier)
Page of Pages	Page # / # of Pages
Consignee	Manager U.S. Coast Guard Marine Safety Laboratory 1 Chelsea Street New London, CT 06320
Cargo Aircraft Only	Cross this Block Out
Airport of Departure	Full Name of the Airport, or City of Departure (Carrier can Amend this Section)
Airport of Destination	Full Name of the Airport, or City of Destination (Carrier can Amend this Section)
Radioactive	Cross this Block Out
Proper Shipping Name	Petroleum Products, N.O.S.
Class or Division	3
UN or ID No.	UN 1268
Packing Group	II
Quantity and type of packing	1 Fiberboard Box X (Gross Quantity of Jars in L, no more than 1)
Packing Inst.	Y305
Authorization	Ltd. Qty.
Additional Handling Information	N/A
Emergency Contact phone number	Not required for USCG (USG-12)
Name/Title of Signatory	Full Name and Title of person packaging shipment
Place and Date	City and Date DODG Prepared
Signature	Signature of person named in Block 17

MSL Contact Information:

U. S. Coast Guard Marine Safety Laboratory

1 Chelsea Street, New London, CT 06320-5500

Voice: 860-271-2704

FAX: 860-271-2641

New Orleans Area Contingency Plan

Chapter 9000
Appendix Y
Natural Disaster Response Plan

Chapter 9000 Appendices, Appendix BB Natural Disaster Response Plan

Table of Contents

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix BB Natural Disaster Response Plan

Natural Disaster Response Plan

Background

Oil and chemical production and storage facilities in southeastern Louisiana are susceptible to dangerous hurricanes and severe weather. More than 30 hurricanes have passed close to the Louisiana coastal zone in the last century, causing severe damage from wind and storm surge. On average, a tropical storm or hurricane is expected to strike somewhere along Louisiana's coast about once a year. Louisiana's flat coastal zone makes tropical storms and hurricanes especially dangerous. Storm surge pushed by an approaching hurricane can reach heights of more than 20 feet and spread far inland, devastating anything in its path. After a hurricane, access to most of southeastern Louisiana is very difficult as the roads and supporting infrastructure are either flooded or destroyed by the storm. High water, waterways closures, and obstructions, in what were deemed as safe navigable waters prior to the hurricane, eliminate many conventional transportation methods.

Unlike most oil discharges and chemical releases, where there is a single point source at one location from which the spill spreads, the pollution associated with hurricanes and tropical storms are usually widespread throughout more than 2,500 square miles of southeastern Louisiana, due to wide distribution of oil and chemical production activities within the State. In addition to pollution from production facilities, oil storage tanks, and pipelines, there will typically be smaller discharges of refined oil products such as diesel fuel and gasoline from fishing vessels, small fuel storage tanks, as well as trucks and automobiles. In addition to the massive amounts of oil spilled, the total destruction caused by a storm can leave tens of thousands of containers of industrial hazardous materials and household hazardous waste dispersed throughout the area.

Pollution response, under the umbrella of the National Response Framework (NRF), will be successful because of the plans, capabilities, and partnerships forged in accordance with the National Contingency Plan (NCP), combined with the effective use of the Incident Command System (ICS). However, the NCP should not get lost in the shuffle of the massive federal , state and local response associated with the full implementation of the NRF.

One of the most essential keys to successfully responding to a natural disaster is effective management of large amounts of discrete pollution targets at one time. Incident management teams must ensure that the data management tools selected can be continuously changed or updated to suit the dynamic information needs of the response and be scalable

Funding Authorities

FEMA Mission Assignments

When a natural disaster is of such magnitude that a State government's resources are overwhelmed, the State may request Federal response assistance to supplement ongoing disaster relief activities. The reimbursement of Federal agency expended funds in support of Federal Emergency Management Agency (FEMA) disaster relief efforts is permitted when support is provided under a Mission Assignment (MA). An MA is a work order issued to a Federal agency by FEMA directing the completion of a specific task, and citing funding, management controls, and guidance. Although most agencies assigned an MA will be reimbursed for their efforts, the possibility exists under the Stafford Act that FEMA can task agencies without expectation of reimbursement. MAs are directives issued by FEMA; they are not contracts or Interagency Agreements (IAAs) but they are an agreement between FEMA and the responding agenices. In most cases, MAs are issued only for assistance under the Stafford Act, not for assistance provided that would normally fall under an agency's independent authorities or responsibilities. For example, the Coast Guard would not receive an MA for search and rescue activities conducted offshore after a hurricane because this would be a mission conducted under the Coast Guard's statutory authority.

MAs are typically assigned by FEMA to address actions required under one of the 15 different Emergency Support Functions (ESFs) described in the NRF. The NRF establishes a comprehensive all-hazards approach to enhance the ability of the Federal government to manage domestic incidents. Consequently, the ESFs are categorized around the major response and recovery functions associated with an incident, such as ESF 1 – Transportation, ESF 9 – Search and Rescue, and ESF 10 – Oil and Hazardous Materials. The Coast Guard has primary for ESF 9 and ESF 10. Therefore, the Coast Guard may receive tasking by FEMA under several MAs for different ESFs; e.g. an air station launches a helicopter to provide damage assessments for FEMA (ESF-5 Emergency Management) and launches a second helicopter to provide transportation (ESF-7 Logistics Management and Resource Support) for disaster personnel and supplies.

Oil Spill Liability Trust Fund (OSLTF)

The (OSLTF) pays for removal costs and damages resulting from oil spills or substantial threats of oil spills to navigable waters of the United States. The

OSLTF is used for costs not directly paid by the polluter, referred to as the responsible party (RP). The fund is also used to pay, costs to respond to "mystery spills," for which the source has not been identified. Since mystery spills are anticipated before a storm impacts southeast Louisiana, it’s likely the FOSC will have a relatively small OSLTF funding stream open to get contracted resources deployed as quickly possible after the storm passes. The ceiling limit on this OSLTF project will vary depending on the needs of the response and how soon a mission assignment can be issued to take over the costs. It’s likely that responsible parties, natural resource trustees and other third parties will submit claims against the OSLTF after the storm.

Comprehensive Environmental Response, Compensation, and Liability ACT (CERCLA)

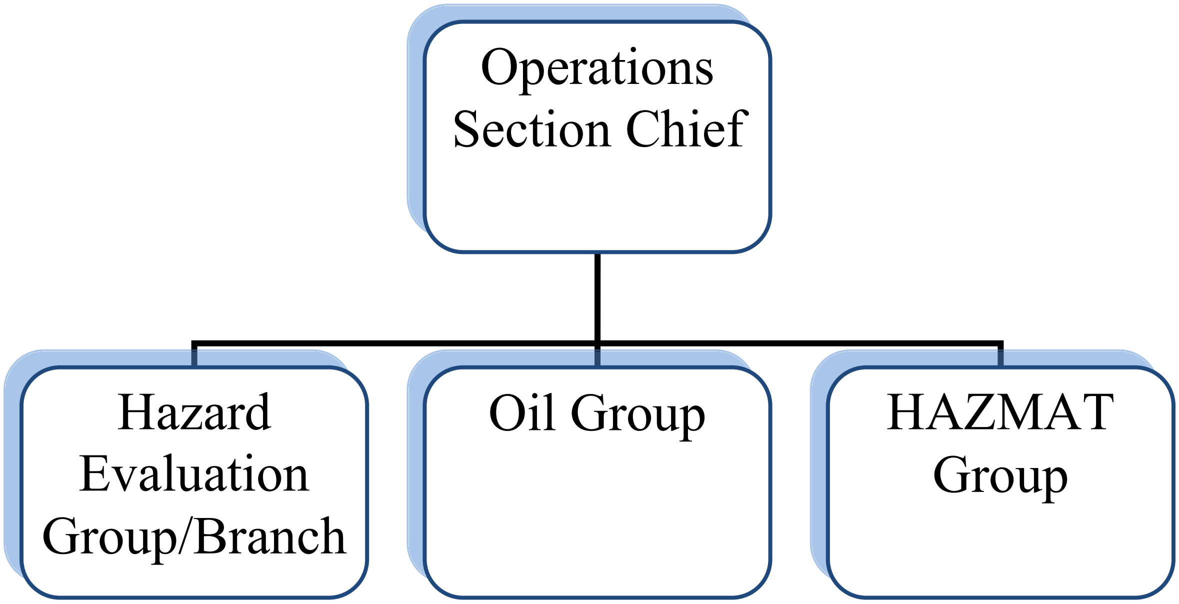
CERCLA enables Federal agencies to respond immediately to hazardous substance releases and contamination problems that pose a threat to public health and the environment. Removal costs are recovered from the RP(s) by EPA. Post-storm, the threat to public health will be prevalent as citizens return to their parishes after the flooded and impacted areas are accessible, and orphaned containers have been deposited in yards, schools and playgrounds, places of employment, and various other locations easily accessible to the general population. Threats to the environment exist when orphaned containers are deposited into the wetlands, wildlife refuges, and many other sensitive ecosystems. Additional threats include releases from chemical facilities, chemical transfer facilities, and various other facilities that use, produce, transport, or have a supply of hazardous substances. The Superfund was designed to address discrete incidents and not multiple chemical releases across a large region. Hence, the full impact of hazardous substances to the public and the environment cannot be ascertained in totality with limited CERCLA funding. For HAZMAT, an ESF-10 mission assignment is ***critical*** to completing a comprehensive needs assessment and mitigating all actual and potential releases of hazardous substances that are an imminent and substantial threat to the coastal zone.

The highest priority HAZMAT targets will be those that are actively leaking, an imminent threat to public health or welfare and/or have actual or potential impact to navigable waterway. Where the responsible parties are known, an effort initially shall be made, to the extent practicable, to determine whether they can and will perform the necessary removal action promptly and properly.

ICS Positions

Oil and hazardous material data needs to be collected into a central response database in order to track all targets for prioritization, management of resources and situational awareness. The following positions play a critical role in the collection and dissemination of target data for operational decision making.

Operations Section



Hazard Evaluation (HEG) Group/Branch **e**valuates the impacted areas to determine the magnitude of the event, map the geographical boundaries of the event, and identify immediate threats to public health and the environment during the initial phase of a response. The HEG Group will determine the most heavily impacted areas, assess critical infrastructure (e.g. public water supplies and wastewater treatment facilities) and facilities for damage. Any active releases and discharges will be reported back to command as quickly as practicable. A secondary function is to identify locations for Incident Command Post (ICP), Forward Operating Bases (FOB) and determine operational challenges (roadways destroyed and areas of flooding, etc). Once the initial assessments are complete, the HEG conducts detailed evaluation and documentation of oil and hazardous material targets to direct ground forces and determine operational requirements. As the response dictates, HEG members will merge with other Operation Section branches or

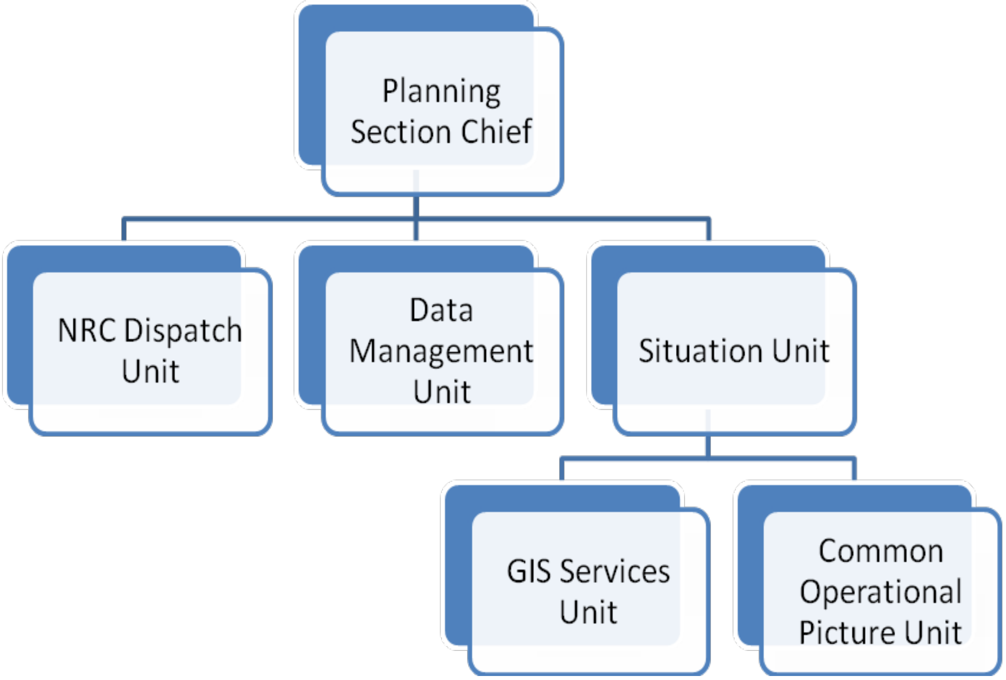
Hazard Evaluation Group
Leader: USCG/DEQ
Members: Federal & State Reps

transition to SCAT teams in the Environmental Unit to utilize their situational knowledge.

OIL/HAZMAT Groups are responsible for ensuring that oil discharges and hazmat releases are properly mitigated and/or recovered. Each group will have their own supervisor.

Group
Leader: USCG/DEQ
Members: Federal & State Reps

Planning Section



NRC Dispatch Unit (NRC Dispatch) is within the Planning Section and works in close coordination with the Data Management Unit (DMU). The NRC Dispatch is responsible for monitoring the NRC inbox and conducting initial investigations on all reported discharges/releases reported via the NRC. After investigation, the NRC will prioritize the targets and refer the information to the DMU for further clarification/prioritization. Sources of information outside Operations Section (Command Center, SCAT, entities outside official response, etc...), will debrief with the NRC Dispatch Unit and NRC Dispatch Unit will ensure all information is reported to the NRC via online reporting (www.nrc.uscg.mil) or telephone (1-800-424-8802). The NRC Dispatch may encourage secondary reporters to call/report to the NRC; however, the ultimate responsibility lies with the NRC Dispatch Unit. The NRC Dispatch Unit

NRC Dispatch Unit
Leader: USCG
NRC Dispatchers: USCG x 2

will debrief with all sources of information outside Operations Section and conduct data entry into the response database. The NRC Dispatch Unit will be staffed with Coast Guard members. These members must be proficient in data entry as well as competent in performing thorough initial investigations.

Data Management Unit
Leader: NOAA
Members: USCG/DEQ

Data Management Unit (DMU) is within the Planning Section and is responsible for compiling data submitted by field teams, disseminating information to end users, generating reports and overall management of the response database. **The Data Management Unit is not responsible for data entry or primary Quality Assurance and Quality Control (QA/QC)**.

The Operations Section and NRC Dispatch Unit must take ownership over data entry and work with the Data Management Unit to ensure their work is being captured correctly. When the DMU receives information of new oil and hazardous material targets/threats, the information will also be referred to the NRC Dispatch Unit for proper reporting. Operations Section will have several DMU members attached to them to ensure field personnel properly input data and QA/QC is conducted prior to submission to DMU.

Work Schedule: DMU will work hours similar to Operation Section to ensure cohesive flow of data from field to the SOD, some offsetting of hours may be necessary to avoid burnout and optimize usage of man hours. When down time exists, cooperation with NRC Dispatch Unit should occur.

GIS Services Unit
Leader: NOAA
Deputy: NOAA

Geographic Information Systems (GIS) Services Unit (GSU) is subordinate to Situation Unit (SIT) and provides mapping services, such as generating maps for field teams, supplying the Common Operational Picture (COP) and managing GPS/photographic data from field teams. GSU will be staffed by two NOAA GIS technicians and at least one USCG person with familiarity with GIS and/or COP. **Work Schedule:** GSU Leader and Deputy will work 1200 to 2400 to handle the data flow. The NOAA member of DMU can handle GIS demands during morning hours. The COP Manager will work similar hours to Situation Unit Leader and support the proper usage of the COP during briefings.

COP Unit
Leader: USCG

Common Operational Picture (COP) Unit manages the Common Operational Picture, which is a digital version of the Situation Board, and ensures that all information is up-to-date as practicable.

Other Units

Other Units that can contribute valuable field data to the response (i.e. SCAT, Wildlife, NGO’s) should work directly with the NRC Dispatch Unit to ensure proper inputting/updating of data. The NRC Dispatch Unit will ensure that submissions are incorporated into the response database by the Data Management Unit. These other contributors should not go directly to the DMU. to the size and scope

TAB A – Data Management Plan

Summary

The pollution response component of a natural disaster response presents a set of challenges unlike other pollution responses. The pollution threats are numerous and spread over a large geographic area. The multitude of pollution targets can be from a variety of sources, including wellheads, facilities, orphan containers or vessels. Effective data management is critical during a multi-target response in order to ensure appropriate use of resources. The follow document is to help ensure the success of data management during a natural disaster response.

Procedures for Field Data Documentation

Field documentation is critical for the success of any response, either for a single barrel of oil being discharged by a vessel or for a large scale Type 1 incident. The command cannot make sound decisions without sound data flowing from the field. To that end, the field personnel are responsible for ensuring quality data is being captured in the field.

Data Fields and Valid Values

Data fields are the pre-determined pieces of information that the response wants to capture and valid values are the acceptable inputs for those data fields. Agreement on the data fields and their valid values is critical to ensure the response is getting the data it needs to make decisions. Once an agreement is reached, the field data collection forms, response database and other deliverables are created to meet the needs of the response. The data fields and valid values discussed within this plan are considered a minimum description of a oil and hazardous material target and DOES NOT alleviate the need for traditional investigation, SCAT, reporting to NRC and required documentation of a target. The data fields, valid values and resulting products are intended to capture baseline data for Unified Command and Operations Section to properly manage their resources and mitigate oil and hazardous material threats during a post-natural disaster response with multiple targets.

Unique Identifier

A unique identifier is an alpha-numeric label identifies a particular target for tracking purposes. The NRC number usually plays this role, but during a post-natural disaster response, an NRC number might not be immediately available. As a gap fill, a temporary unique identifier for each target shall be assigned in the following format: YYYYMMDD_Team Name_Daily Number. For example: **20121006_HEG2_002** = the second target found by HEG Team 2 on Oct 06, 2012.

The unique identifier should not change over time and should not change as teams subsequently visit the same target. After the first assessment, if a team goes back out or the item is mitigated they should be referencing the unique identifier. For continuity and ease of identification, if field teams can, they should mark the target (with a sticker, hanging tag or spray paint) so that any team visiting the target will know that this target was previously assessed and has been assigned a unique identifier. When a target's unique identifier changes from the temporary unique identifier to the primary NRC number, this update should be reflected on the labeling of the target itself. The temporary unique identifier, primary NRC number and secondary NRC number(s) will be listed in the database for cross reference purposes.

Latitude and Longitude

Obtain a latitude/longitude point with a satellite enabled GPS unit for observed discharges or releases at facilities, vessels or other sources. If the oil and hazardous material target covers an area (not a single point location) obtain lat/long points that outline the target. Make certain that the GPS unit is set to use "WGS84" as the horizontal datum, set to read coordinates in decimal degrees (dd.ddddd) and Auto Tracking is turned on. Documentation needs latitude/longitude to 5 decimal points. The safest location for observing a oil and hazardous material target is upwind.

All personnel **MUST VERIFY** all lat/long position data by comparing observations against satellite imagery by means of GIS application (Google Earth, ERMA, EnterpriseGIS, SONRIS, Response Manager, etc). This step, when combined with data entry, is time consuming and field personnel should return to ICP/FOB early enough in day to ensure sufficient time is dedicated to data entry and QA/QC.

Photo Documentation

Prior to departure to field, ensure that camera is set to local time and spare batteries are available. A clear photo of GPS unit with the time (in 24-hr, hh:mm:ss format) taken at the beginning of operations will allow for geo-referencing of photos by using the Track Log from GPS unit.

It is more important to take a few good photos instead of many useless photos. Utilization of photo scales, recognizable landmarks and "the rule of thirds" will help ensure photos are useful to an audience that is crammed in command post or is not on-scene.

Aerial Team Procedures

Aerial Team could consist of a Rapid Needs Assessment Task Force or a Hazard Evaluation Group Task Force. Aerial Assessment Teams are not expected to conduct detailed documentation of targets, but are expected to capture critical data for decision makers. A special form with limited data entry has been created to reduce the data collection requirements and expedite the assessment process. Data that aerial assessment teams will be capturing are primarily nature of oil versus hazardous material, source, location, and size of affected area.

Surface Team Procedures

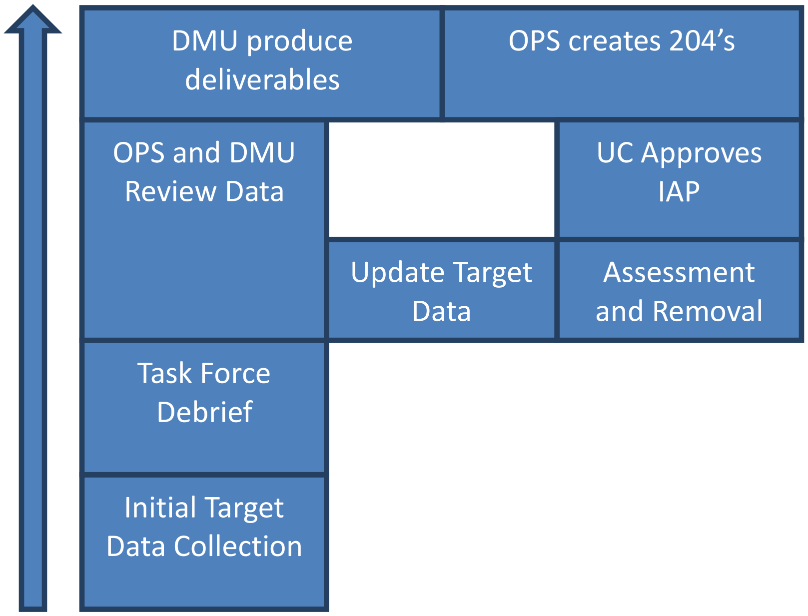
Surface Assessment Team (ground and/or water) and other group task forces will conduct more detailed documentation and complete a more thorough field data collection process because ground assets generally travel slower and have more time to make detailed observations. The field data collection forms will contain most all the data fields.

Procedures for Processing Field Data

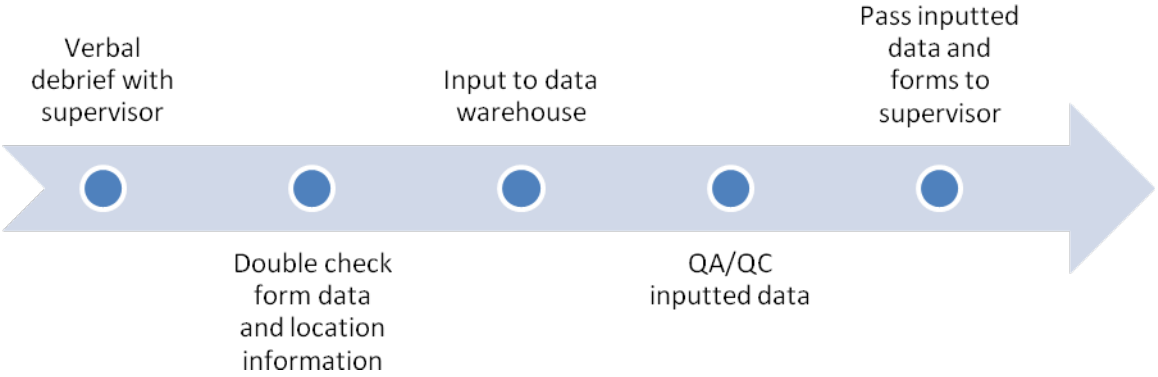
The most challenging aspect of data processing is ensuring that the incoming data is of high quality. In order to overcome this challenge, it has to be emphasized to field personnel the importance of thorough observations and proper documentation. The quality of the incoming data will directly affect the quality of the deliverables that the Unified Command, Section Chiefs and other decision makers will be using to manage the response. The illustrations below illustrate the general flow of data from the field to decision makers. Refer to the diagram below.

Please note that the two data cycles described below intersect at “OPS Chief reviews data.”

Data Flow



Task Forces Debrief



Task Forces are the eyes and ears in the field for the response and collect invaluable data not only about targets, but also about operational challenges and recommendations. This acquired knowledge needs to be debriefed to their respective supervisor and inputted into the response database for processing. The team leader is responsible for initial data entry and initial QA/QC of data because they are the experts about their own field observations. Generally, the team leader is the most experienced member of the team.

Data Fields and Valid Values

The following table describes the data fields and valid values for Louisiana Natural Disaster Response Plan - Marine Environmental Response. The data fields and valid values in this table define the jargon utilized during the response to ensure clear communication. The response database and associated forms are built around these data fields and valid values. The data fields and valid values establish a minimum description of a target and DOES NOT alleviate the need for traditional investigation, SCAT, reporting to NRC and required documentation of a target. These data fields, valid values and resulting products are intended to capture minimum data for Unified Command to properly manage their resources and mitigate pollution threats during a post-natural disaster response with multiple pollution targets.

Data Field	Format	Valid Values
Date Initially Assessed	YYYYMMDD	Date that target was first discovered
Field Team Initially Assessed	AAA0	Three letters and one number – the field team which discovered target
Daily Number	Three digit number	000 to 999, resets each day for each team
Date Updated	YYYYMMDD	Date that entry to spreadsheet is modified, this will allow for tracking the timeline of changes to target information
Field Team Updated	AAA0	Three letters and one number – tracking which field team has provided updated information about target
Location Name	BLANK BAYOU	Waterway, street, landmark, etc
Responsible Party	BLANK ENERGY	When known
Target Latitude	DD.DDDDDD	Positive Number, 0 to 90
Target Longitude	DD.DDDDDD	Negative Number, 0 to 180
Grid	A00	One letter and two numbers
Hazardous Category **Not explicitly in form**	OIL or HAZ	To delineate for OPS

HAZ Type **Only for HAZ targets (CERCLA)**	Three letter code	DRM = Drum CYL = Cylinder TOT = Tote BCK = Bucket TNK = Tank FAC = Facility **DBL = Debris Line (not a single target)**
HAZ Count **Only for HAZ targets (CERCLA)**	Number	Number, or approximate number, of HAZ targets within a debris field or contained within the specified target
Oil Type **Only for oil targets (OPA 90)**	Three letter code	VSL = Vessel PPL = Pipeline FAC = Facility WHD = Wellhead SHN = Sheen UNK = Unknown, Mystery Source
% Coverage **Only for oil targets (OPA 90)**	Percentage of area being covered by product	Percentage of oil within the given length, width
Length **For 2D targets**	Number in feet	For debris fields and oil targets
Width **For 2D targets**	Number in Feet	For debris field and oil targets
Capacity	Number in Gallons	5, 55, 250, 1000, UNK, Worst Case Discharge
Discharge/Release Amount	Number in Gallons, lbs, cubic meters **1 Oil Barrel = 42 US gallons**	50, 100, 10000, UNK – units of measure need to be noted!
Condition	Three letter code	DNO = Damage-No Discharge/Release DDR = Damaged-discharge/release NOD = No damage FIR = Fire EMG = Emergency UNK = Unknown

Status	Three letter code Color designation is for target maps	RED FAR = Further Assessment Required RP = Requires RP action SOP = Requires Special Ops YELLOW MIT = Mitigation underway RDY = Ready for stakeholder site visit and sign off GREEN INF = Item not found REF = Refer to other agency (and agency is noted in comments) LIP = leave in place and no further action NFA = No Further Action REM = Removed and brought to pad RRP = Removed by RP DIS = Disposed SGN = closed by stakeholder site visit and sign off
Concurrence	Drop-down	*No Concurrence (No Sign-off)* *No Further Action (Signed-off)* *Referred to Regulatory Agency (Signed-off)* *Unfounded (Signed-off)*
Concurrence Note	Comment Box	Notes about concurrence
Action Taken	Text Box	Details to support the chosen STATUS
Recommendations	Text Box	Recommendation for mitigation
Resource Needs	Text Box	Supporting the recommendations
Comments	Text Box	Catch all for other data
Photographs	Text Box	For listing the names of photographs associated with target

Primary NRC Number	123456	This should have only one value and used as the primary NRC number
Support NRC Number(s)	123456	This is a listing of other NRC numbers associated with this one target i.e. 123456. 234567, 345678, 987654

TAB B – Surface Hazard Evaluation Form

Field Team:	TIME - 24hr Format Start:	End:
Date (YYYYMMDD):		
Evaluation by: Foot / Boat / Airboat / Helicopter / Plane	Weather: Sun / Cloud / Fog / Rain / Snow / Windy	
Start Latitude:	Start Longitude:	
End Latitude:	End Longitude:	
Name	Organization	Phone
Unique Identifier: *(i.e. 20130801_HEB1_002)*		
Date (YYYYMMDD):	**Team Name (ABC#)**	**Daily Seq Number:**
Latitude (dd.dddddd):	Grid:	
Longitude (dd.dddddd):	Responsible Party:	
Location Description:	**HAZ Type:**	**Oil Type:**
	HAZ Count:	**% Coverage:**
Capacity: gallons/lbs/cu m		
Discharge/Release Amount: gallons/lbs/cu m	Length: feet	Width: feet
Condition:	Status	
Action Taken:		
Recommendations:	Resource Needs:	
Comments:	Photographs:	
Primary NRC:	Support NRC:	
Unique Identifier: *(i.e. 20130801_HEB1_002)*		
Date (YYYYMMDD):	**Team Name (ABC#)**	**Daily Seq Number:**
Latitude (dd.dddddd):	Grid:	
Longitude (dd.dddddd):	Responsible Party:	
Location Description:	**HAZ Type:**	**Oil Type:**
	HAZ Count:	**Oil % Distr:**
Capacity: gallons/lbs/cu m		
Discharge/Release Amount: gallons/lbs/cu m	Length: feet	Width: feet
Condition:	Status	
Action Taken:		
Recommendations:	Resource Needs:	
Comments:	Photographs:	
Primary NRC:	Support NRC:	

TAB C – Arial Hazard Evaluation Form

Field Team:	TIME - 24hr Format Start:	End:
Date (YYYYMMDD):		
Evaluation by: Foot / Boat / Airboat / Helicopter / Plane	Weather: Sun / Cloud / Fog / Rain / Snow / Windy	
Start Latitude:	Start Longitude:	
End Latitude:	End Longitude:	

Name	Organization	Phone

Unique Identifier: *(i.e. 20130801_HEB1_002)*		
Date (YYYYMMDD):	**Team Name (ABC#)**	**Daily Seq Number:**
Latitude (dd.dddddd):	Grid:	
Longitude (dd.dddddd):	**HAZ Type:**	
Location Description:	**HAZ Count:**	**Oil Type:**
	HAZ Count:	**% Coverage:**
Capacity: gallons/lbs/cu m		
Discharge/Release Amount: gallons/lbs/cu m	Length: feet	Width: feet
Unique Identifier: *(i.e. 20130801_HEB1_002)*		
Date (YYYYMMDD):	**Team Name (ABC#)**	**Daily Seq Number:**
Latitude (dd.dddddd):	Grid:	
Longitude (dd.dddddd):	**HAZ Type:**	
Location Description:	**HAZ Count:**	**Oil Type:**
	HAZ Count:	**% Coverage:**
Capacity: gallons/lbs/cu m		
Discharge/Release Amount: gallons/lbs/cu m	Length: feet	Width: feet
Unique Identifier: *(i.e. 20130801_HEB1_002)*		
Date (YYYYMMDD):	**Team Name (ABC#)**	**Daily Seq Number:**
Latitude (dd.dddddd):	Grid:	
Longitude (dd.dddddd):	**HAZ Type:**	
Location Description:	**HAZ Count:**	**Oil Type:**
	HAZ Count:	**% Coverage:**
Capacity: gallons/lbs/cu m		
Discharge/Release Amount: gallons/lbs/cu m	Length: feet	Width: feet

TAB D – Operational Strategy for Oil Release

Summary

This guidance is developed under the Natural Disaster Subcommittee of the New Orleans and Morgan City Area Committees to ensure net environmental benefit during natural disaster response operations. This document focuses primarily on oil releases into marshes, but similar practices should be adapted for chemical releases. If the techniques below are not applicable to non-oil release, then consult with the Environmental Unit for target review and recommendations.

Marsh Operations Plan

Aggressive cleanup of free product releases in marshes may actually cause greater long-term damage than the pollutant itself. Any physical cleanup activities in marsh areas must comply with the follow items to prevent unacceptably high collateral damage to marsh vegetation and entrainment or entrapment of oil product into sediments:

- Any foot traffic access to the marshes shall avoid oiled grasses and sediments and utilize one-way-in and one-way-out traffic with walking boards in travel lanes and crosswalks on the marsh.

- *All treatment operations in the marshes will be done on the walking* boards, without direct foot traffic in the marsh. Walking boards should not be placed in un-oiled marsh areas or landward of the oiled wrack line, and no foot traffic or other entry by response personnel or equipment should occur in these un-oiled areas unless approved by the Unified Command.

- All vessel approaches to the marshes shall be limited to grounding the bow of the vessel on the fringe of the marsh, avoiding landing directly on top of the marsh grasses as much as possible.

- Water channels shall be used for navigation through the marshes. Under no circumstances shall vessels run over the top of or across the marsh grasses. Stopping or landing a vessel on top of the marshes is prohibited.

Sorbent boom should be staked along the front edge of oiled marsh for passive recovery of sheens. These sorbents must be inspected and replaced routinely. Best professional judgment by the Environmental Unit should be used to determine if further treatment or cleanup would provide net environmental benefit or might delay, rather than accelerate, recovery of the vegetation. This judgment should be based on fact, past studies or data from previous oil spills.

Oiled vegetative wrack at the water's edge can be manually picked up and removed with hand tools such as shovels, rakes, and pitchforks. Wrack in the marsh interior should not be removed, even near the source, unless heavily oiled with the potential to cause sheen or substantial contact risk to wildlife.

Pooled oil in areas that are difficult to access because of water depth may potentially be collected from a shallow skiff or airboat by using sorbent pads or vacuum systems with duck bills or other applicable and approved methods.

Low-pressure, high-volume flushing can be utilized by operations to mobilize oil from marsh and into a containment boom with sorbent tubes and/or collection system. The Environmental Unit is to be notified if this technique is desirable and to be utilized.

Cleanup is expected to progress in three phases:

Phase 1 – Source Control and Removal Phase that focuses on containment, recovery of mobile oil, and initial shoreline cleanup (e.g., bulk oil removal/gross decontamination).

Phase 2 – Managed Recovery Phase that consists of any final cleanup activities to mitigate residual pollution. The Managed Recovery Phase would typically include oil recovery using sorbent booms, demobilization and cleaning of equipment no longer needed, and final disposal issues. Although generally reduced, the Managed Recovery Phase still requires Federal and State oversight to ensure that all threats to the environment, as well as, public health and safety are minimized.

Phase 3 – Natural recovery and restoration. No additional cleanup or active mitigation is required. Once any and all remaining booms, sorbents, cleanup materials, and response waste (if any) has been removed, the site will be left for natural recovery and closure and sign-off procedures will be implemented.

The overall cleanup objective is to minimize or eliminate threats to wildlife and natural resources while avoiding doing more harm than good. Site-specific guidance for each cleanup division grid may be generated by the Environmental Unit.

The defined cleanup criteria may not be applicable (or even achievable) at all sites. Best professional judgment and the consensus of the Environmental Unit should be used to assess when the cleanup meets the above objectives. There may be additional requirements defined by private landowners or municipal managers, and such requirements may be outside the scope of the Unified Command.

TAB E – Operation Strategy for Orphan Containers

Summary

As a result of a natural disaster, the Louisiana coastal zone can littered with numerous drums, cylinders, tanks, and other containers that contain crude oil, refined petroleum products, chemicals and other hazardous materials (HAZMAT). Many of these items are stranded in and adjacent to residential communities, but many others are stranded in adjacent coastal habitats that are accessed and utilized by the public. Most of these items are classified as orphaned, or abandoned, and are a threat to public health and safety because of the potential for direct exposure or secondary contamination. Additional concerns include the unknown nature of many of the contents. Changing weather conditions or exposure to fires may cause releases that would result in increased public risk and possible need for evacuations.

To mitigate the threat posed by orphaned drums and hazardous materials, field operations will include a wide range of response activities and techniques. Because of the geographic extent of operations, the development of Forward Operating Base(s) may be essential to enhancing operational effectiveness. The goal of all recovery operations will be to minimize the risk to the public, and the responders, while minimizing the environmental impact of the response operations overall. Any orphan container that can be accessed by field response teams would also be accessible to the public and therefore constitutes a potential threat to public health and safety.

There are several phases to the orphaned drum and hazardous material container removal project: Assessment, Investigation, Operational Planning, Oil/Hazardous Material Removal and Disposal.

<u>Assessment</u> includes ground and aerial surveillance using small boats, airboats, and helicopters to identify and chart suspected threats. Aerial photographs will be correlated with recorded GPS overflight track lines for mapping and display in ERMA. Identified hazardous material and oil pollution related debris will be classified as drum, tank, cylinder, container, or other and prioritized by: no damage, damaged no spill, damaged leaking, or could not discern. The reconnaissance information will be used to develop situational awareness as to the scope of the problem and to direct future field activities.

<u>Investigations</u> relate to large orphan containers that have a known and viable industry owner. One objective of the investigation process is to attempt to

contact the suspected owner to coordinate removal and any required pollution response under the owner's funding.

Operational Planning includes charting suspected targets using a GIS system, development of operational tactics, and any required natural resource trustee consultations. Technical experts and appropriate spill response guides such as the Emergency Response Guide (ERG), Material Safety Data Sheets (MSDS's), Chemical Hazards Response Information System (CHRIS), and Computer-Aided Management of Emergency Operations (CAMEO) reference resources should be consulted during operational planning to ensure a safe and properly mitigated response.

Actual Oil/Hazardous Material Removal will be conducted in a safe manner. Based on mitigation options available, consideration will be given to that which results in the least environmental impact, i.e., "do no more harm than good".

Preferred Response Options:

Container is leaking and there is an observable spill of oil/hazardous material:

1) Non-Oil/HAZMAT responders should only function in the First Responder role – identify threat, secure area with caution tape, and notify appropriate response team for technical support.
2) Secure leak if it can be done safely.
3) Mitigate and recover spilled material using appropriate technology and qualified Oil/HAZMAT personnel.
4) Remove gross environmental contamination using appropriate technology.
5) Recover contents by a transfer to drum or other temporary storage container.
6) Recover lightered, partially evacuated, or partially empty container to remove threat of residual Oil/HAZMAT contents.
7) Leave lightered, partially evacuated, or partially empty container in place if removal would create unacceptable habitat damage. Ensure the container is properly cleaned, marked and documented if left.

Container is damaged, but not leaking:

1) For damaged drums and smaller containers, consider over-packing and removal.
2) Recover contents by transfer to a drum or other temporary storage container.
3) Recover lightered, partially evacuated, or partially empty container to remove threat of residual Oil/HAZMAT contents.
4) Leave lightered, partially evacuated, or partially empty container in place if removal would create unacceptable habitat injury. Ensure the container is properly cleaned, marked and documented if left in the environment.

Container is undamaged and structurally sound:

1) Recover the container intact and transport to staging area for disposition if feasible.
2) Recover contents by transfer to a drum or other temporary storage container.
3) Recover lightered, partially evacuated, or partially empty container to remove threat of residual Oil/HAZMAT contents.
4) Leave lightered, partially evacuated, or partially empty container in place if removal would create unacceptable habitat injury.
5) Consider leaving container and contents in place if inaccessible or access with heavy equipment would result in unacceptable habit damage relative to Oil/HAZMAT risk. Ensure the container is properly cleaned, marked and documented if left.

Because of the variability in habitat and accessibility, each container or accumulations of orphan containers along a debris line might require a unique recovery project using a different assemblage of field equipment. Hazardous Household Waste (HHW) may be recovered by orphaned drum and orphan container recovery teams at sites where field activities are being conducted.

Disposal for the field component of this operation is limited to transferring the material to one of the established disposal staging areas. Final disposal of collected Oil/HAZMAT debris is outside of the scope of this document.

As previously stated, all orphan containers that pose a risk to public health and safety will be removed unless the risk for habitat damage exceeds the benefit of removal.

TAB F – Endpoints for Target Closure

Summary

These guidelines establish target endpoints for cleanup operations for pollution targets, including free product release and containerized product. Because all releases are unique and present distinct cleanup challenges, these endpoints may be amended to address as yet unforeseen circumstances and do not constitute shoreline restoration or full recovery criteria, which may be addressed through a longer-term process. These endpoints define the conclusion of cleanup operations while attempting to minimize overall impact (including those from operations) to sensitive resources.

Endpoint Criteria for Free Product Free Oil Product

- Oiled shorelines shall be free of recoverable product and not produce continuous sheen under normal weather and tidal conditions.

- There shall be no recoverable oiled debris.

- Oil stain or sporadic coat on vegetation and large immobile debris that does not produce continuous sheen and is not a contact risk to wildlife may be allowed to weather and degrade naturally. If the decision is to allow oil stain or sporadic coat to degrade naturally, monitoring of the area must occur.

- Oil stain or coat may still be present if best professional judgment of the Environmental Unit Leader (as defined below) determines that further recovery will not produce environmental benefit. Such residual oiling would be allowed to degrade naturally. If the decision is to allow oil stain or coat to degrade naturally, monitoring of the area must occur.

General Cleanup Endpoint Criteria for Orphan Containers

- An orphan container that poses actual or potential imminent or substantial threat to a navigable waterway will be removed, unless removal will cause undue harm to sensitive resources as is determined by the Environmental Unit Leader, using best professional judgment.

- Leaving an orphan container in place will be determined on a case-by-case basis to ensure net environmental benefit and shall be properly cleaned and identified, including documented coordinates.

- Responsible Party is identified and assumes responsibility for removal.

Target Closure for Oil Pollution Targets

A joint site visit or an administrative review by Unified Command will be acceptable for Target closure. A joint site visit shall be made by an assessment team consisting of representatives of the Unified Command, natural resource trustees and, when possible, a parish representative. Incident-specific cleanup assessment and inspection forms will be generated to track progress. The FOSC and SOSC will sign off each target as having met the endpoints based upon the administrative review or on the observations and recommendations of the assessment team.

Sign off on endpoints does not constitute any acknowledgment that damages to natural resources caused by this incident have been adequately addressed.

It is recognized that the above endpoints may not be applicable (or achievable) at all sites. Best professional judgment and the consensus of federal, state and, if applicable, the RP’s environmental consultants (identified herein as “Environmental Unit”) should be used to assess when the cleanup meets the above objectives. The Environmental Unit Leader for these endpoints will be a representative of the state of Louisiana. If a responsible party exists for a given target, there may be additional requirements defined by private landowners or municipal managers, and such requirements may be outside the scope of the Unified Command.

TAB G – Best Management Practices (BMPs) for the Protection of Sensitive Ecological & Cultural Resources

Summary

All operations shall be conducted with the overarching philosophy of "do no more harm than good". Many of the following BMPs are provided for the protection of Federal & State protected species and other sensitive resources. For species identification, refer to the "EU Guidance on Threatened/Endangered Species".

For All Personnel

- Watch for and avoid collisions with wildlife. Report all distressed or dead wildlife to Wildlife Rehab Task Force
- Report any distressed or dead sea turtles or marine mammals
- Remove all personal & Response trash or anything that would attract wildlife to work areas

For all Field Operations

Cultural Resource Protection:

- Any Native American graves or burials must be reported to the State Historic Preservation Office
- Native American and historic-era artifacts (e.g. pot shards & arrowheads) must not be collected.
- When activity occurs within 250 meters of a sensitive cultural resource as indicated by EU, a qualified archaeologist or other qualified historic preservation professional must be present to monitor the work.

Natural Resource Protection:

- Do not disturb wildlife or habitat (including foraging or nesting areas).
- Report any distressed or dead sea turtles or marine mammals to the stranding networks:
  Report sea turtles to **225-765-2377**
  Report dolphins to **1-877-WHALEHELP** (**1-877-942-5343**)
- Perform site visits & work from waterway, paved surfaces or existing roadways whenever possible to minimize impacts to sensitive habitats.
- Select vehicles and equipment which are least likely to disturb soils/sediments and keep loading to a minimum to reduce ground pressure (on unpaved surfaces).

- Sensitive, non-ecological sites (i.e. cultural, historical, pipelines, water control structures, etc.) must be avoided unless otherwise authorized. EU will identify sensitive sites in the vicinity of actionable targets, though all field personnel should take care when transiting to and from actionable targets.
- Avoid minimize the release of contaminants from orphaned containers into critical habitat and other aquatic areas.
- Removal of orphan pollution containers from sensitive habitats may require specialized operations to minimize impacts. Such operations shall be closely coordinated with Environmental Unit.

For Specific Response Activities

Aerial Operations:
- Avoid hovering or landing aircraft in/near posted bird sites or areas with high bird concentrations.
- No flights below 500 feet over Wildlife Refuges, Management Areas, bird rookeries or National Parks.

Open-water Operations:
- Do not block major egress points in channels, rivers, passes, and bays.
- Water channels shall be used for navigation through the marshes. Under no circumstances shall vessels run over the top of or across the marsh grasses. Stopping or landing a vessel on top of the marshes is prohibited.
- All vessel approaches to the marshes shall be limited to grounding the bow of the vessel on the fringe of the marsh, avoiding landing directly on top of the marsh grasses as much as possible.
- Special Use Permits are required for conducting Air Boat operations in National Wildlife Refuges. Contact EU to ensure proper permits have been obtained.
- If using Air Boats, maintain a distance of 1,000 feet from critical habitats, rookeries, and/or other high bird use areas to minimize disturbance.
- Monitor boom, lines & underwater equipment regularly to prevent fish/wildlife entanglement/entrapment.
- If a sea turtle or marine mammal is observed trapped or entangled in a boom, line, or anchoring systems, open the boom to free the animal and notify the Wildlife Branch & Environmental Unit.
- Watch for and avoid collisions with sea turtles and dolphins.

Land-based Operations (includes river levees, battures and spoil banks):
- Minimize ground-disturbing activities to as small an area as feasible to complete the task.

- Avoid posted/marked or other high bird use areas and minimize activities in critical habitat areas for Endangered Species.
- When working on/near sand beaches, do not disturb Piping Plovers

Marsh Operations - Protect marsh vegetation & associated soils by doing the following:

- Maximize use of open water, dikes, existing roads and trails and stay away from undisturbed marsh. Access routes should be planned to minimize impacts to the environment.
- Do not create unnatural ruts, channels, dikes or drainage routes and do not re-use previously made tracks.
- Use care around bank and shoreline crossings at canals, natural water bodies and ditches.
- Avoid disturbing vegetation, marsh soils, or peat with foot traffic/boats/equipment.
- Travel corridors should be as narrow as possible with designed turn around area. Stay within designated access or travel lanes when present.
- Minimize removal of clean sediment, seaweed and natural debris. Replace removed materials, if practical.
- Use low-pressure tire vehicles (e.g. ATVs, Gators) when practical and consult with the EU to minimize impact
- Avoid posted/marked or other high bird use areas and minimize activities in critical habitat areas for Endangered Species.
- Activities that may require removal of forested and shrub or scrub habitat should be minimized
- Any foot traffic access to the marshes shall avoid oiled grasses and sediments and utilize one-way-in and one-way-out traffic with walking boards in travel lanes and crosswalks on the marsh.
- All foot traffic in oiled marshes will be done on the walking boards, with no direct foot traffic in the marsh. Walking boards should not be placed in un-oiled marsh areas, and no foot traffic or other entry by response personnel or equipment should occur in these un-oiled areas unless approved by the Unified Command.
- If pollution target location is inaccessible or access with heavy equipment would result in unacceptable habitat damage relative to that posed by the pollution threat, then specialized operations may be needed to minimize impacts. Such operations shall be closely coordinated with Environmental Unit.
- Water channels shall be used for navigation through the marshes. Under no circumstances shall vessels run over the top of or across the marsh grasses. Stopping or landing a vessel on top of the marshes is prohibited.

The Unified Command recognizes the importance of partnerships with trust resource agencies and the stewardship of the environment. The procedures below are intended to expedite target closure and sign-off process while allowing opportunity for trustee input.

The Operations Section will use their professional judgment to apply the appropriate status (open or closed) to a target in the database. Once a target is set to be closed, that target will be routed to the Environmental Unit via spreadsheet summary for review. The Environmental Unit will determine if concurrence with closed status exists by approved methods. If concurrence does not exist, recommendations for further action will be provided to Operations Section. If concurrence exists, then the database will be updated to reflect change and supporting documentation completed.

The acceptable methods for achieving concurrence on closure status of a target may include administrative decision, aerial inspection or site inspection. The Environmental Unit will use their best professional judgment to determine the risk of a target and an appropriate method for achieving concurrence.

For HAZMAT Targets

- Low risk targets will achieve concurrence by administrative decision, provided collected field observations and data can sufficiently justify concurrence

- Potentially high risk targets may require aerial inspection or site inspection to achieve concurrence.

For Oil Targets

- Any target that threatened or impacted navigable waters per National Contingency Plan (40CFR300.3), may require an aerial or site inspection to achieve concurrence

To support proper documentation of the above closure and concurrence process, the database will contain fields to capture such information. “Status” is a field that tracks operational status and is described in Data Management Plan. “Concurrence” is a field that tracks the consensus on target closure between Operations Section, Environmental Unit, Unified Command and supporting resource agencies. An additional field, “Concurrence Comment,” will capture any additional information that will ensure thorough documentation. The following table lists the valid values for “Concurrence” with definitions and examples.

Concurrence	**Definition**	**Example**
No Concurrence (No Sign-off)	UC has determined that clean up endpoints have not been met and additional cleanup is required	-Operations determines that cleanup endpoints have been met, but UC determines otherwise
No Further Action (Signed-off)	UC determines that no further action is required and cleanup endpoints have been met	- UC concurs that endpoint has been met for a given target -Orphan container left in place in a satisfactory condition
Referred to Regulatory Agency (Signed-off)	UC determines that another agency is better suited to take responsibility for the target based on authority and jurisdiction and notes agency in comments field. Target responsibility is handed off.	-LDEQ assumes responsibility for target -USFWS, LDWF, LDEQ and/or Corps of Engineers
Unfounded (Signed-off)	Target lacks the minimum information to be further investigated	-Unsubstantiated reports -No lat/long info -No known pollution threat

NOTE: For initialization of “Concurrence” field, each entry will be populated with No Concurrence (Pending) and this will be the default value for new entries.
All targets on graphical representations shall conform to the following convention:

- All targets Open and No Sign-off will be shaded red
- All targets Closed and No Sign-off will be shaded blue
- All targets Closed and Signed-off will be shaded green
- All oil targets will be a circle with a black border and black dot in the centroid
- All HAZMAT targets will be a triangle with a black border and black dot in the centroid

TAB H – Target Site Inspection Form

1. GENERAL INFORMATION	Date (ddmmyy)	Time (24h rs Local Time)	Tide Height LMH
Site Name:			
SCAT Division/Grids:			
Inspection By: Foot -Airboat -Boat -Other		Sun- Clouds- Fog -Rain- Snow -Windy	

2. INSPECTION TEAM	Name , Organization , and Signature	

3. Grids	Description of Shoreline Surveyed:

4 SHORELINE TYPES	Select Primary (P) and Secondary (S) Habitat Types Present		
	Marsh or Wetlands (includes Floating Marsh)		Manmade Structures
	Tidal Flats/Mud Flats		Wave-cut Scarps
	Shell or Mixed Sand & Shell Beaches		Other:

5 CLEANUP ENDPOINTS	**REFER TO ENDPOINTS (09 SEPTEMBER 2012)**

Yes No

Has Operations remediated the target such that all endpoints been reached?

If no, please explain:

Other oiling conditions or observations:

6 RECOMMENDATIONS

Yes No Recommend Additional Active Cleanup (Stage 1). Comments:

Yes No Recommend continued maintenance of passive sorbent recovery for sheens (Stage 2). Comments:

Yes No Site meets the interim cleanup endpoints (Stage 3). Recommend natural recovery for residual pollution.

Photos taken? Yes – No Additional Comments: Yes – No (if yes, see attached)

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New Orleans Area Contingency Plan

Chapter 9000
Appendix Z
Bioremediation Policy

New Orleans Area Contingency Plan

Chapter 9000 Appendices, Appendix Z Bioremediation Policy

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Bioremediation Policy

Bioremediation is a treatment technology that enhances existing biological processes to accelerate the decomposition of petroleum hydrocarbons and some hazardous wastes. Bioremediation has been used extensively in waste water treatment of spilled oil. The most extensive field research efforts have been the shoreline treatment studies in Alaska following the Exxon Valdez incident. This research suggested that shoreline treatment by nutrient enhancement significantly increased degradation rates of oil when compared to untreated shoreline areas. The benefits of bioremediation, however, have not been adequately demonstrated through field applications. Consequently, this technology should be considered more experimental than an accepted standard for clean-up of oil spills.

The data collected using bioremediation during the response to Deepwater Horizon has not been evaluated for inclusion in this plan at this time.

The promise of bioremediation providing increased rates of oil degradation with minimal input of human effort to clean-up the spilled oil is attractive. However, the technology is time consuming, unproven in open water environments, and probably best suited to treatment of specific types of shorelines and marsh habitats. At present, bioremediation should be viewed as a polishing agent for the final stages of cleanup rather than as a primary response tool- especially considering the slow rates of reaction to degrade the oil.

NOAC Approach to Bioremediation Use on Oil Spills

The primary objective of oil spill abatement and cleanup is to reduce the effect of spilled oil in the environment. Physical removal is the preferred method. However, mechanical recovery may be limited by equipment capability, weather, and sea conditions, spill magnitude, safety considerations, site accessibility, and surface load restrictions. In addition, efforts and equipment used for mechanical recovery may prove to be more destructive to the environment than the original contamination of oil.

Based on the results of research, and a general understanding of the principles of bioremediation, it is NOAC policy that this technology should be used strictly as a shoreline remediation tool with a preference for nutrient enhancement without the introduction of indigenous and/or non-indigenous microbes.

NOAC Policy Guidelines for Bioremediation Use

The FOSC can request the use of a bioremediation agent through the processes outlined in the Bioremediation Checklist. Each agency resource trustee representative will be the point of contact for his/her constituency; the SSC will be the point of contact for all not represented.

The NCP, 40 CFR Part 300.190, authorizes the use of biological additives for the dispersion/abatement of oil spills. The product must be listed on the NCP Product Schedule to be considered for use.

Bioremediation Checklist

Spill Data/Incident Information

Cause (Specific):

____

____

Date/Time: ____________________ Location: __________________________

Volume and Type of Discharge: ____

____

Potential Volume of Discharge: ____

____

Confidence in Data (high, medium, low): __________________________________

Characteristics of Spilled Oil

Oil Type/Name:

Specific Gravity: Flash Point:

Pour Point: Viscosity:

%Aromatics: %Saturates:

%Asphaltenes:

Weather and Water Conditions/Forecast (48HR)

Water Temp: Air Temp:

Current Info: Wind Speed:

Salinity: Wind Direction:

Water Depth: Sea State:

Tide Info:

Comments: ____

____

Habitat Type/Area of Impact

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________
9. ______________________________
10. ______________________________

Bioremediation Characteristics

	Product 1	Product 2	Product 3
Name:			
Manufacturer:			
EPA Listed:			
Stockpile Location:			
Point of Contact:			
When Available:			
Amount Available:			
Amount Needed:			
Toxicity:			
Type (i.e., Mix):			
Physical Reactivity:			
Applicability on Oil:			
Efficiency:			
Application Means:			
Pos. Dosage Control:			
Dosage Rate Settings:			
Dose Charts Available:			

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Bioremediation Application Information/Evaluation:

Proposed Bioremediation Application Plan: ____________________________________
____
____

Equipment Proposed for Use: ____
____
____

Responders Adequately Trained: ____

Location of Area to be Treated: ____
____
____

Schedule of Bioremediation Operations: ___________________________________
____
____
____

Forecasted Weather Conditions at Time of Application: _____________________
____
____

Is the Vehicle for Application Efficient and Proper Given the Conditions Above:
____

Are Monitoring Schemes in Place or Readily Available: _____________________

Witness to the Application

Names	Date/Time
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________

Platform Used: ____
____

Observation: ____

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New Orleans Area Contingency Plan

Chapter 9000
Appendix AA
Sample Incident Action Plan (IAP)

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