



## Vancouver Energy Operations Facility Oil Spill Contingency Plan

Plan No. OP.04 | Revision 00

**Approved by:**

Name, Title: Kelly Flint, Senior Vice President and Corporate Counsel, Savage Companies  
Designated Agent for EFSEC Application No. 2013-01  
Date: 26 June 2015

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# Vancouver Energy Operations Facility Oil Spill Contingency Plan

EFSEC Application for Site Certification No. 2013-01

Docket No. EF131590

26 June 2015



Prepared for

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# Vancouver Energy Operations Facility Oil Spill Contingency Plan

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# Binding Agreement



Washington State Department of Ecology  
**Spill Prevention, Preparedness and Response Program**  
 P.O. Box 47600, Olympia, WA 98504-7600  
 For information, please contact SPPR Program at 360-407-7455.

**WAC 173-182-220. Binding Agreement**  
*Each plan shall contain a written statement binding the plan holder to its use. The binding agreement shall be signed by the owner or operator, or a designee with authority to bind the owners and operators of the facility or vessel covered by the plan. The agreement is submitted with the plan.*

### Submitting Party Information

Company Name:	
Contact Name:	
Address:	
Phone Number:	Fax Number:
Email:	Website:

### Binding Agreement

I certify that I reviewed and am familiar with the information submitted in this Plan. I verify acceptance of the plan and commit to (a) a safe and immediate response to spills and to substantial threats of spills that occur in, or could impact Washington waters or Washington's natural, cultural and economic resources; (b) having an incident commander in the state within six hours after notification of a spill; (c) the implementation and use of the plan during a spill and substantial threat of a spill, and to the training of personnel to implement the plan; (d) the authority and capability to make the necessary and appropriate expenditures in order to implement plan provisions; (e) working in unified command within the incident command system to ensure that all personnel and equipment resources necessary to the response will be called out to clean up the spill safely and to the maximum extent practicable.

\_\_\_\_\_  
 Authorized Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Print Name

\_\_\_\_\_  
 Title

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## Distribution List

Plan No.	Name	Address
1, 2	Vancouver Energy Manager c/o Jared Larabee Field Document	Tesoro Savage Vancouver Energy Distribution Terminal 5501 Northwest Old Lower River Road Vancouver, WA 98660
3	Kelly Flint Tesoro Savage Petroleum LLC	Savage Industries Inc. 901 West Legacy Center Way Midvale, UT 84047
4	Director, Contingency Planning and Emergency Response Eric Haugstad	Tesoro Corporation 19100 Ridgewood Parkway San Antonio, TX 78259
5	Marc Bayer, Tesoro Senior Director Shipping Operations	Tesoro Corporation 19100 Ridgewood Parkway San Antonio, TX 78259
6e	Director, Environmental Marketing and Logistics Rob Donovan	3450 South 344th Way, Suite 201 Auburn, WA 98001
7	Manager, West Coast Terminals John Walker	3003 Navy Drive Stockton, CA 95206
8	Senior Environmental Specialist Peter Hendricks	Tesoro Logistics GP, LLC 803 North 300 West, Suite S-100 Salt Lake City, Utah 84103
9	Lead Contingency Planning Coordinator Craig Hyder	Tesoro Refining & Marketing Company LLC P.O. Box 700 Anacortes, WA 98221
10e, 11e, 12e	U.S. Environmental Protection Agency Region 10	1200 Sixth Avenue, Suite 900 Seattle, WA 98101
13, 14, 15e, 19e	Washington Department of Ecology	300 Desmond Drive Lacey, WA 98503 (P.O. Box 47775, Olympia, WA 98504-7775)
16	Oregon Department of Environmental Quality	Land Quality Division, 7th floor 811 SW Sixth Avenue Portland, OR 97204-1390
17, 18e	Commanding Officer U.S. Coast Guard Sector Puget Sound	Facility & Container Branch 1519 Alaskan Way South, Bldg. 4, 4th Floor Seattle, WA 98134

11=Hard Copies; 7=Electronic Copies

Note: This Preliminary Plan is intended for permitting purposes only. The distribution list is for indicative purposes only, and copies of the plan have not been submitted to the agencies noted above.

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# 1. Introduction

## 1.1 Purpose/Scope of Plan

This preliminary oil spill contingency plan (OSCP) has been prepared for the Tesoro Savage Petroleum Terminal LLC's (Company) Vancouver Energy (Facility) to satisfy Washington State statutes and the federal oil spill planning requirements of the U.S. Coast Guard (USCG) and Environmental Protection Agency (EPA) as set forth by the Oil Pollution Act of 1990. A summary of Facility information is provided in **Figure 1.4**.

This OSCP is a PRELIMINARY version of the plan that will be prepared, implemented, and submitted as necessary to applicable state and federal agencies in accordance with applicable laws and regulations prior to the beginning of operations of the Facility. This OSCP has been developed based on Facility design completed at the time of writing. The Company will update this OSCP based on additional consultation conducted during the permitting effort for the Facility and the final design of the Facility. This preliminary OSCP is intended to be indicative of the planning and response strategies to be implemented by the Company at the Facility.

The purpose of this operations facility OSCP is to provide guidelines for responding to, and documenting, a spill originating from the Facility. A field document is contained in **Section 2** of this OSCP, and copies are also available at the following locations within the Facility for use by field staff. The field document is used to document initial response actions for a spill event.

The Facility has a possible worst-case discharge volume of 380,000 barrels of crude oil from Tank 0300-TK-001. This tank is located approximately 4,000 feet northeast of the Columbia River within Area 300 – Storage Area. The location of the first block valve inside containment for Tank 0300-TK-001 is indicated on **Figure 1.7B**.

The Facility transfers crude oil to vessels over the dock located at berths 13 and 14 inside the Port of Vancouver USA (Port) facility on the Columbia River. Vessels will only be loaded, and only one vessel will be serviced at any given time.

Facility vessel specifications are as follows.

Maximum vessel size: Oil Tanker  
899-foot length overall  
158-foot beam  
43-foot draft  
171,732 deadweight tonnage

The information contained in this OSCP is intended to be used as a guideline for the spill responder. Actual circumstances for each event will vary and will dictate the procedures to be followed, some of which may not be included in this OSCP. This OSCP contains information designed to improve the responder's ability to select appropriate resources, cleanup methods, and to manage an effective response team.

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## 1.2 Regulatory Mandate

This OSCP is designed to satisfy the requirements of the Oil Pollution Act of 1990 (OPA 90) and the State of Washington under WAC 173-182, and has been prepared in accordance and used in conjunction with

- National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300)
- Oil and Hazardous Pollution Contingency Plan for Environmental Protection Agency (EPA) Region 10
- Northwest Area Contingency Plan
- Lower Columbia River, Washington Geographic Response Plan (GRP)

A Compliance Schedule that describes how the Company intends to meet the planning standards in WAC 173-182-310 through 173-182-450 is included in **Figure 1.2**.

## 1.3 Plan Updating Procedures

The Manager of Contingency Planning is responsible for reviewing, updating, and distributing this OSCP. Plan review and updating will be done on an annual basis or more frequently if significant changes occur at the facility that may affect the facility's spill response capability. Key items that influence response capability and that should be reviewed and updated as necessary include

- Inventories of Company spill response equipment.
- Names and/or telephone numbers of the Oil Spill Response Organizations listed in **Section 3**.
- Names and/or telephone numbers of the Company's Oil Response Team personnel, including Qualified Individuals. (OSCP holders with new or incorrect phone numbers should notify the Supervisor of Manager of Contingency Planning immediately of changes).
- Oil storage, transfer, or handling procedures at the Facility.
- Response procedures as necessitated by potential deficiencies identified during training or exercises.
- Revised spill response procedures.
- Pertinent regulations.
- Any change to information relating to circumstances likely to affect full implementation for the OSCP.

OSCP revisions or amendments will be numbered sequentially and entered on the Record of Changes Form (on **page vi**). The changed numbers, date, and description of change (including plan section[s] affected by the review or amendment) and the name and signature of the person completing the review and amendment will also be entered on the form. These amendments will be implemented as soon as possible, but no later than the duration listed in **Section 1.3.1**. These changes are then to be distributed to all plan holders on Distribution List (on **page vii**). When review is completed without changes, the Washington State Department of Ecology (Ecology) will be notified of completion of review.

The Lead Contingency Planning Coordinator will notify Ecology in the event of any significant changes in availability of oil spill response equipment within 24 hours. **Additionally, Ecology will be notified in writing within 30 days of changes that will have significant impact to response capability.**

The OSCP will be centrally located in the Lead Contingency Planning Coordinator office and at the terminal office and will be accessible at any time for agency review.

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### 1.3.1 Periodic Reviews and Evaluations

A review and evaluation will be annually performed to comply with regulatory requirements. As a result of the periodic review and evaluation, the OSCP will be amended, if necessary, to include more current and effective response measures. The time frame for revisions to reflect significant facility changes as described above are as follows.

- Annual review, within one month of the anniversary date of Captain of the Port approval, to incorporate any changes in the listings of economically important or environmentally sensitive areas identified in the Northwest Area Contingency Plan (ACP) in effect six months prior to the OSCP review.
- Five-year review for the portions of the OSCP addressing Ecology, USCG marine transportation-related facility requirements, or after significant change.
- Post-discharge review to evaluate OSCP effectiveness.

Amendments to the OSCP will be submitted to the appropriate agencies for information and approval.

### 1.3.2 Interface with Other Plans

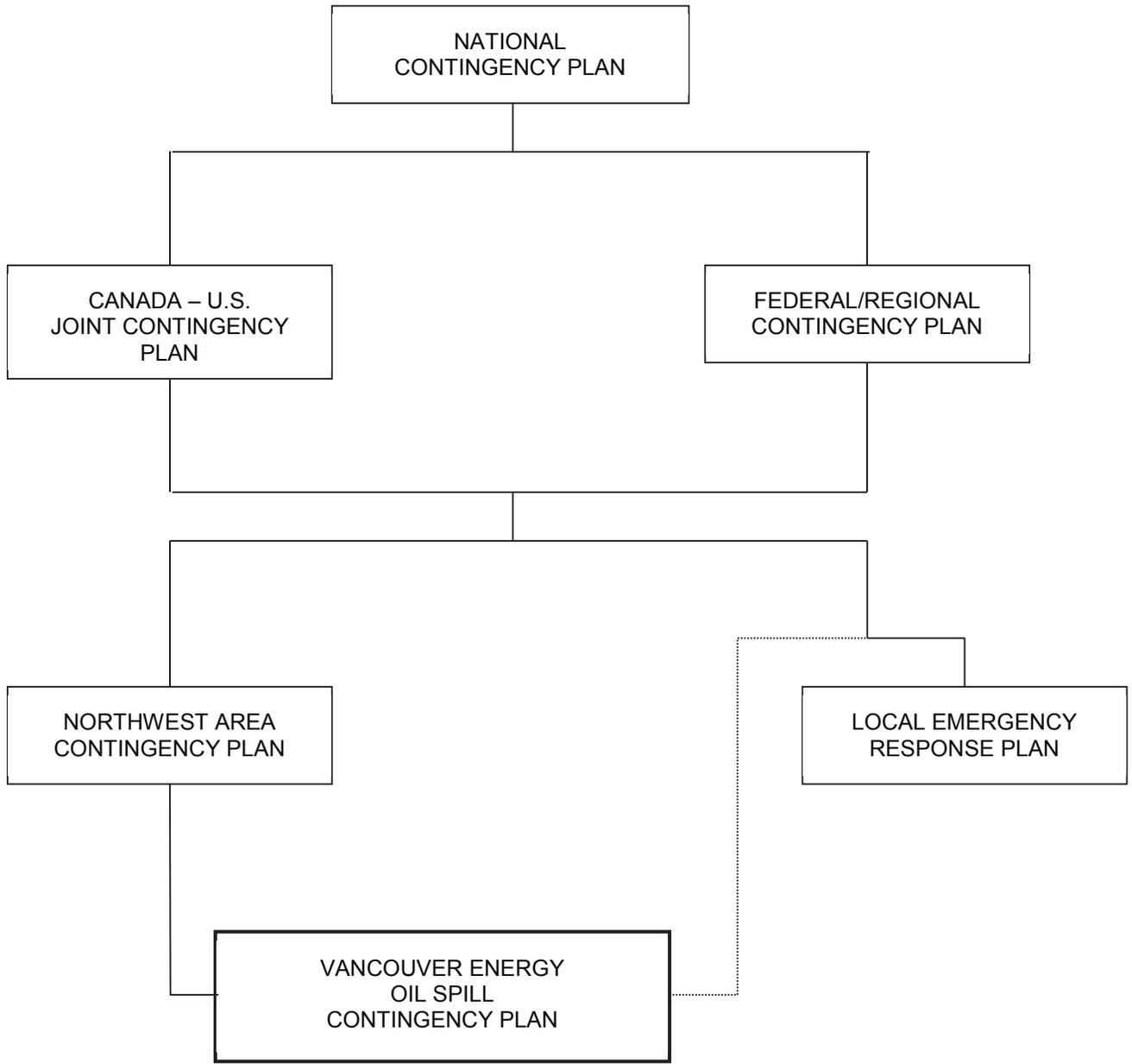
This OSCP interfaces with other federal, state, and local contingency plans as outlined in **Figure 1.1**.

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Figure 1.1. Interface with Other Contingency Plans



— STAND-ALONE CONTINGENCY PLANS  
— FEDERAL, STATE, OR LOCAL ORGANIZATIONAL PLANS

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**Figure 1.2. Planning Standards Compliance Schedule**

WAC 173-182-310	Planning Standards	Compliance Status	
WAC 173-182-315	Planning Standards for non-dedicated work boats and operators	Pending future plan approval (see Note 1)	Appendix B
WAC 173-182-317	Covered vessel planning standards for vessels of opportunity	Pending future plan approval	
WAC 173-182-320	Planning Standards for aerial surveillance	Pending future plan approval	Section 2
WAC 173-182-321	Covered vessel planning standards for aerial surveillance	Pending future plan approval	
WAC 173-182-324	Planning Standards for Group 5 oils	Pending future plan approval	
WAC 173-182-325	Planning Standards for dispersants	Pending future plan approval	Section 7
WAC 173-182-330	Planning Standards for in situ burning	Pending future plan approval	Section 7
WAC 173-182-335	Planning Standards for storage	Pending future plan approval	Section 7 and Appendix B
WAC 173-182-345	Determining effectiveness of recovery systems	Pending future plan approval	
WAC 173-182-348	Determining effective daily recovery capacity	Pending future plan approval	
WAC 173-182-349	Covered vessel plan holders technical manuals	Pending future plan approval	
WAC 173-182-350	Documenting compliance with the planning standards	Pending future plan approval	Appendix B
WAC 173-182-355	Transfer sites for covered vessels at locations where transfers occur, and for facilities with a vessel terminal	Pending future plan approval	Section 7 and Appendix B
WAC 173-182-365	Transmission pipelines and pipeline tank farms	N/A	
WAC 173-182-370	San Juan County planning standard	N/A	
WAC 173-182-375	Padilla Bay planning standard	N/A	
WAC 173-182-380	Commencement Bay-Quartermaster Harbor planning standard	N/A	
WAC 173-182-385	Nisqually planning standard	N/A	
WAC 173-182-390	Dungeness planning standard	N/A	
WAC 173-182-395	Neah Bay staging area	N/A	
WAC 173-182-400	Copalis, Flattery Rocks and Quillayute Needles planning standard	N/A	
WAC 173-182-405	Grays Harbor planning standard	N/A	
WAC 173-182-410	Willapa planning standard	N/A	
WAC 173-182-415	Cathlamet staging area	N/A	
WAC 173-182-420	Vancouver planning standard	Pending future plan approval	Section 7 and Appendix D
WAC 173-182-430	Tri-Cities planning standard	N/A	
WAC 173-182-450	Planning standards for the Washington Coast	N/A	

Note 1: Compliance with the noted standards will be verified upon review of the final contingency plan submitted to the appropriate regulatory agencies, post Site Certification Approval by EFSEC.

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## 1.4 Description of Geographic Area

The Facility is located within the Port and is leased from the Port (see **Figures 1.5, 1.6, and 1.7**). The Port area is zoned “heavy industrial.” The dock facility is located at Columbia River Mile 103.5 (RM 103.5). A detailed description of the terminal and dock and surrounding geographic area is presented in **Section 6** and **Appendix C**.

This OSCP provides for the response to oil spills for which the Company assumes responsibility that may occur within the geographic location boundaries. For planning purposes, the geographic area at risk from a worst-case discharge (unabated release over 72 hours during maximum current speeds) extends from approximately 5 miles upriver from the facility (RM 109) to the mouth of the Columbia River and approximately 100 miles in either direction (north or south) along the Washington and Oregon coastlines (see **Figure 1.5**). The probable route of discharge off the facility property would follow natural drainage patterns from the bulk storage area to the south, past existing rail infrastructure, through the Terminal 4 stormwater pond located on Port property and into the Columbia River (see **Figure 1.6**).

## 1.5 Trajectory Analysis

A trajectory analysis has been completed for the site by NJResources. The trajectory analysis was completed based on a 48-hour worst-case spill condition. The trajectory analysis report is provided in Appendix H. The results of the analysis indicate that the geographic area of potential impact from an incident originating in Vancouver, Washington, within 48 hours of release is the Lower Columbia River from RM 105 (45°38'4.19"N, 122°42'10.55"W) to RM 47 (46° 8'40.52"N, 123°17'46.39"W).

**Figure 1.3** summarizes the types of oil products that will be handled at the facility.

**Figure 1.3. Products Handled**

Product Name	Density (kg/m <sup>3</sup> )	Specific Gravity	API	Oil Group No.	Sulfur Content
Bakken (ND and MT)*	813	0.815	42.1	Group 2	0.18%
WTI (Midland, TX & Cushing, OK)**	823	0.825	40.0	Group 2	0.37%
Syncrude (Canda)	858	0.860	33.0	Group 3	0.16%
Uinta Black Wax (Utah)***	877	0.879	29.5	Group 3	0.13%
WCS (Canada)	932	0.934	20.1	Group 3	3.64%

\* There is natural variability in all produced crude oil, and so the typical pipeline average specs are representative of blended crude oils from multiple wells in the area.

\*\*A majority of the crude oil produced in the Niobrara area (CO/WY) has an API Gravity ranging between 35 and 50 degrees, and so on average is generally in the range of WTI and Bakken crude oils.

\*\*\*Since Uinta Black Wax and Yellow Wax crude oils are typically not pipelined and there are no published market specs, the listed information for Uinta Black Wax is from an example well assay.

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**Figure 1.4. Facility Information Summary**

Owner/Operator	Tesoro Savage Petroleum Terminal LLC 901 West Legacy Center Way Midvale, UT 84047 801-944-6600		
Facility Name/SIC Code	Vancouver Energy / 5171		
Name and Address of person to whom correspondence should be sent	Terminal Manager 5501 NW Old Lower River Rd Vancouver, WA 98660		
County	Clark		
Description of Facility	Includes a diked tank storage area with six welded steel vertical storage tanks with an aggregate storage capacity of 2,220,000 barrels; a covered rail unloading area for delivery of tank cars containing crude oil; three 24-inch transfer pipelines between the unloading area and the storage area; a 36-inch aboveground and buried pipeline between the storage area and dock; a marine vapor control unit; and an office/administrative area.		
Description of Operations	Crude oil is received via rail. Crude oil is temporarily stored at the terminal and distributed via vessel.		
Description of Tanks	Refer to Figure C.2		
Hours of Operating/Manning	Normal hours of operation are 24 hours a day, seven days a week. The Facility is continuously staffed.		
Facility Throughput	Varies according to season and market. Daily average is 360,000 barrels per day.		
Products Handled	Crude oil (see Figure 1.4)		
Physical Address	Tesoro Savage Vancouver Energy Distribution Terminal 5501 NW Old Lower River Road Vancouver, WA 98660		
Mailing Address	Tesoro Savage Vancouver Energy Distribution Terminal 901 West Legacy Center Way Midvale, UT 84047		
Location	Latitude: 45° 39' 6" N, / Longitude: 122° 43' 52"W		
Telephone/FAX	TBD		
Primary Qualified Individual*	TBD	TBD	
Alternate Qualified Individual*	TBD		
Date of Storage Startup	2015 (anticipated)		
Wellhead Protection Area	No		
Basis for Significant and Substantial Harm	The Facility is located in the Port directly adjacent to other industrial facilities and within 1-1/2 miles of residential neighborhoods. There are approximately 2,300 employees at the Port; approximately 400 people may be working at their job sites at any given time. The Port is zoned heavy industrial and is not considered an environmentally sensitive area.		
EPA Worst-Case Discharge (gallons)	15,960,000		
Dates(s) and Type(s) of Substantial Expansion:	2015 – terminal constructed		
Date Prepared	June 2015		

\*For further information on Qualified Individual's training and qualifications, refer to **Section 4.6** and **Appendix A.2** in this OSCP.

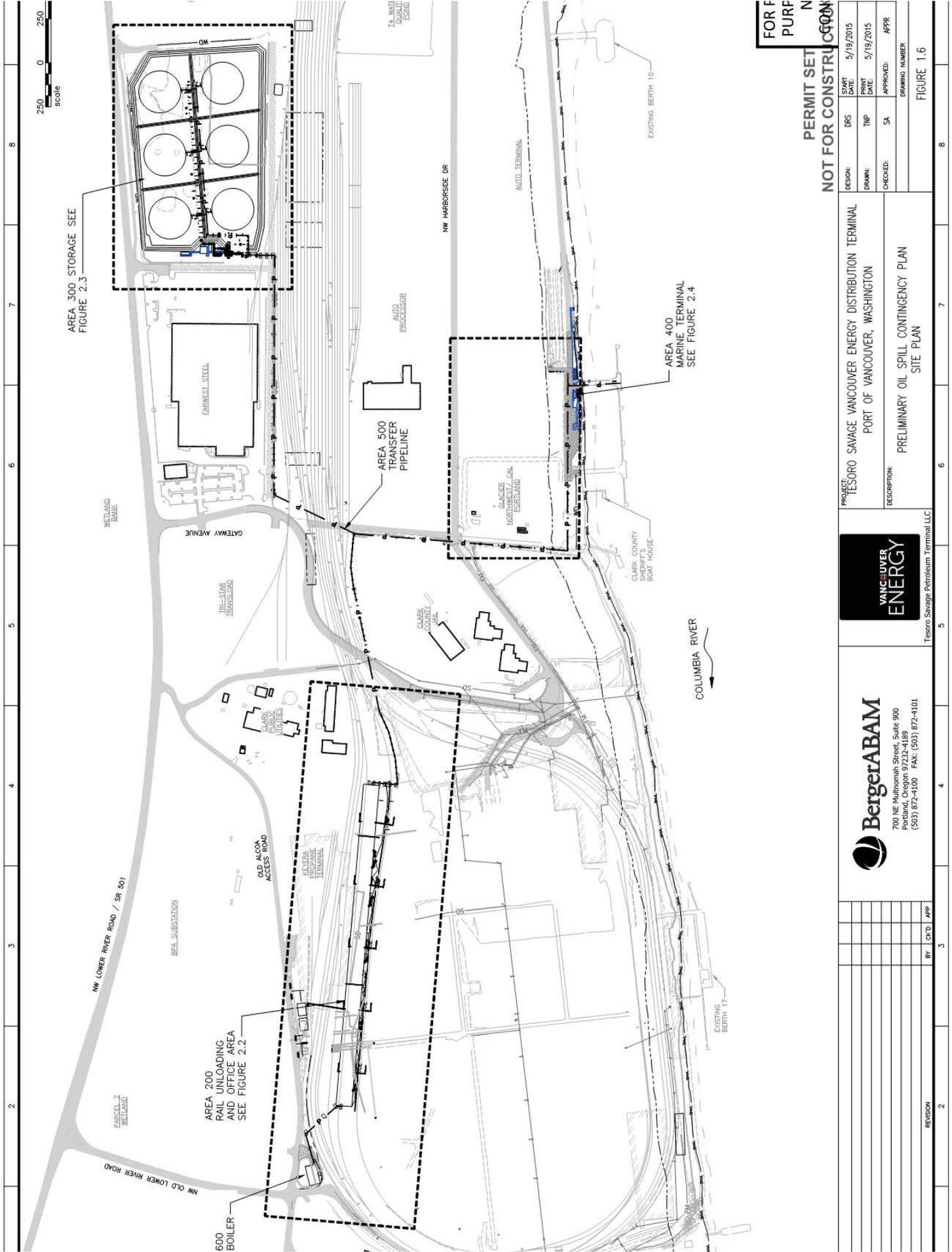
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Figure 1.5. Facility Location Area Map



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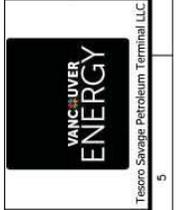


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DRAWING NUMBER			FIGURE 1.6

PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL  
PORT OF VANCOUVER, WASHINGTON

DESCRIPTION: PRELIMINARY OIL SPILL CONTINGENCY PLAN  
SITE PLAN



**BergerABAM**  
700 NE Multnomah Street, Suite 900  
Portland, Oregon 97232-4189  
(503) 872-4100 FAX: (503) 872-4101

REVISION	BY	DATE	APP



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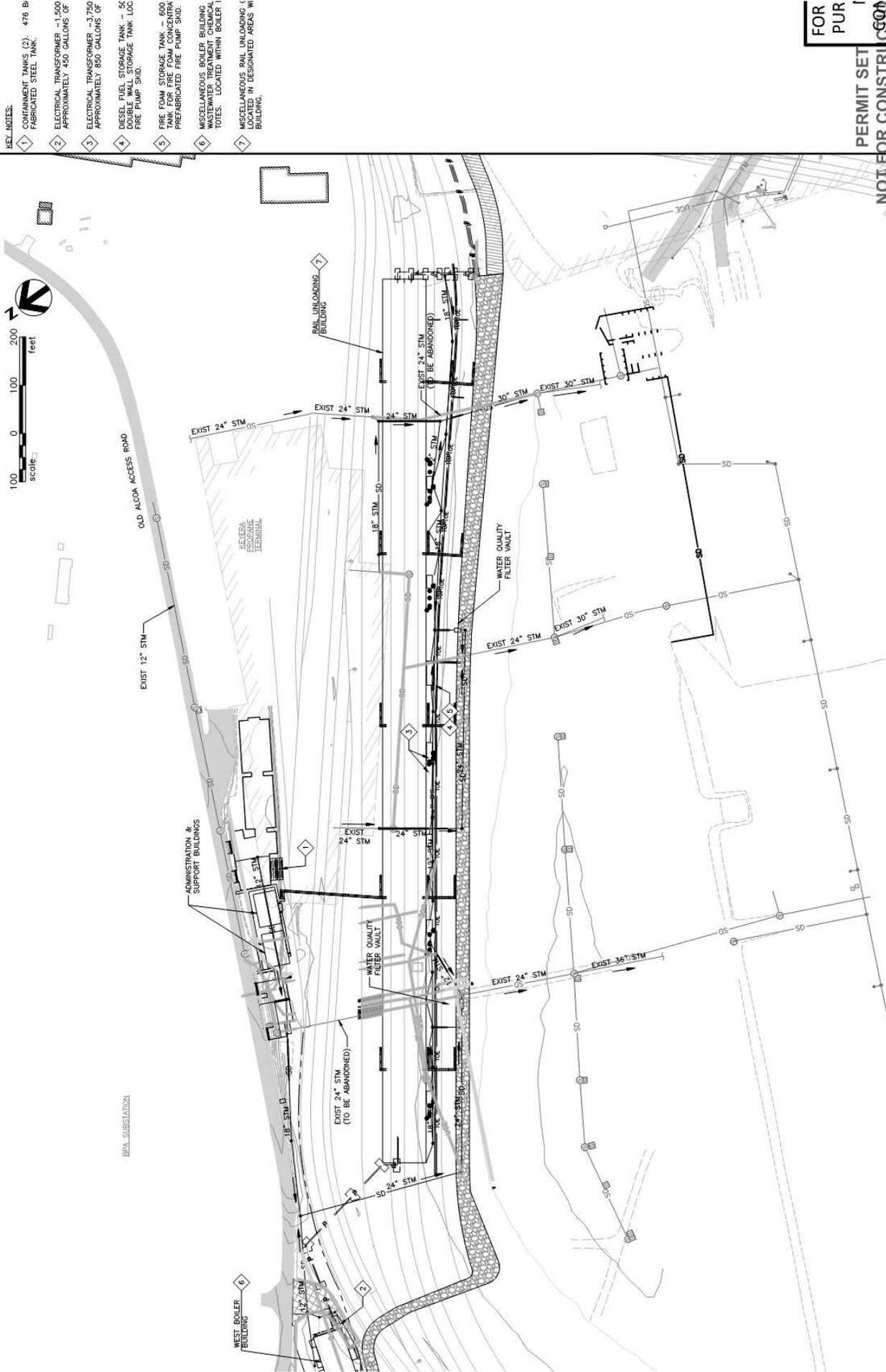
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PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL  
 PORT OF VANCOUVER, WASHINGTON  
 DESCRIPTION: PRELIMINARY OIL SPILL CONTINGENCY PLAN  
 SITE AND DRAINAGE PLAN DETAILS



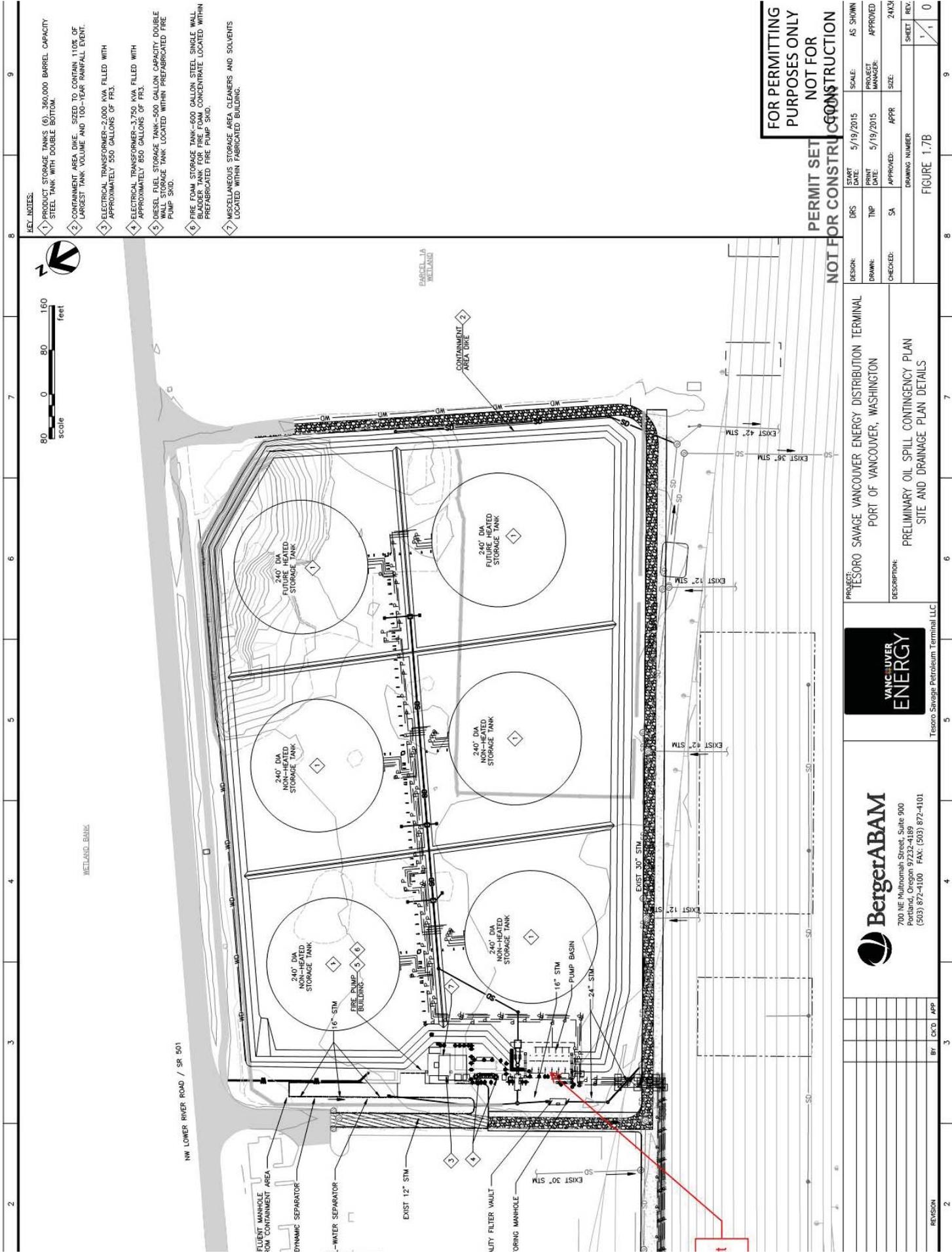
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 700 NE Multnomah Street, Suite 900  
 Portland, Oregon 97232-4189  
 (503) 872-4100 FAX: (503) 872-4101

REV	BY	CHKD	APP



- KEY NOTES:
1. CONTAINMENT TANKS (2) 476 B FABRICATED STEEL TANK, APPROXIMATELY 450 GALLONS OF
  2. ELECTRICAL TRANSFORMER -1,500 APPROXIMATELY 450 GALLONS OF
  3. ELECTRICAL TRANSFORMER -3,750 APPROXIMATELY 850 GALLONS OF
  4. DIESEL FUEL STORAGE TANK - 5C FIRE PUMP SKID.
  5. FIRE FOAM STORAGE TANK - 600 TANK FOR FIRE FOAM CONCENTRATED PRE-FABRICATED FIRE PUMP SKID.
  6. MISCELLANEOUS BOILER BUILDING LOCATED WITHIN DESIGNATED AREAS WITH TOTES. LOCATED WITHIN BOILER BUILDING.
  7. MISCELLANEOUS RAIL UNLOADING (LOCATED IN DESIGNATED AREAS WITHIN BOILER BUILDING.





- REVISIONS:**
- 1 PRODUCT STORAGE TANKS (6), 360,000 BARREL CAPACITY STEEL TANK WITH DOUBLE BOTTOM.
  - 2 CONTAINMENT AREA DIKE, SIZED TO CONTAIN 110% OF LARGEST TANK VOLUME AND 100-YEAR RAINFALL EVENT.
  - 3 ELECTRICAL TRANSFORMER—2,000 KVA FILLED WITH APPROXIMATELY 550 GALLONS OF FR3.
  - 4 ELECTRICAL TRANSFORMER—3,750 KVA FILLED WITH APPROXIMATELY 850 GALLONS OF FR3.
  - 5 DIESEL FUEL STORAGE TANK—500 GALLON CAPACITY DOUBLE WALL STORAGE TANK LOCATED WITHIN PREFABRICATED FIRE PUMP SHED.
  - 6 FIRE FOAM STORAGE TANK—600 GALLON STEEL SINGLE WALL BLADDER TANK FOR FIRE FOAM CONCENTRATE LOCATED WITHIN PREFABRICATED FIRE PUMP SHED.
  - 7 MISCELLANEOUS STORAGE AREA CLEANERS AND SOLVENTS LOCATED WITHIN FABRICATED BUILDING.

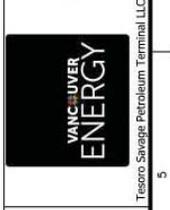
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**PROJECT:** TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL  
PORT OF VANCOUVER, WASHINGTON

**DESCRIPTION:** PRELIMINARY OIL SPILL CONTINGENCY PLAN  
SITE AND DRAINAGE PLAN DETAILS

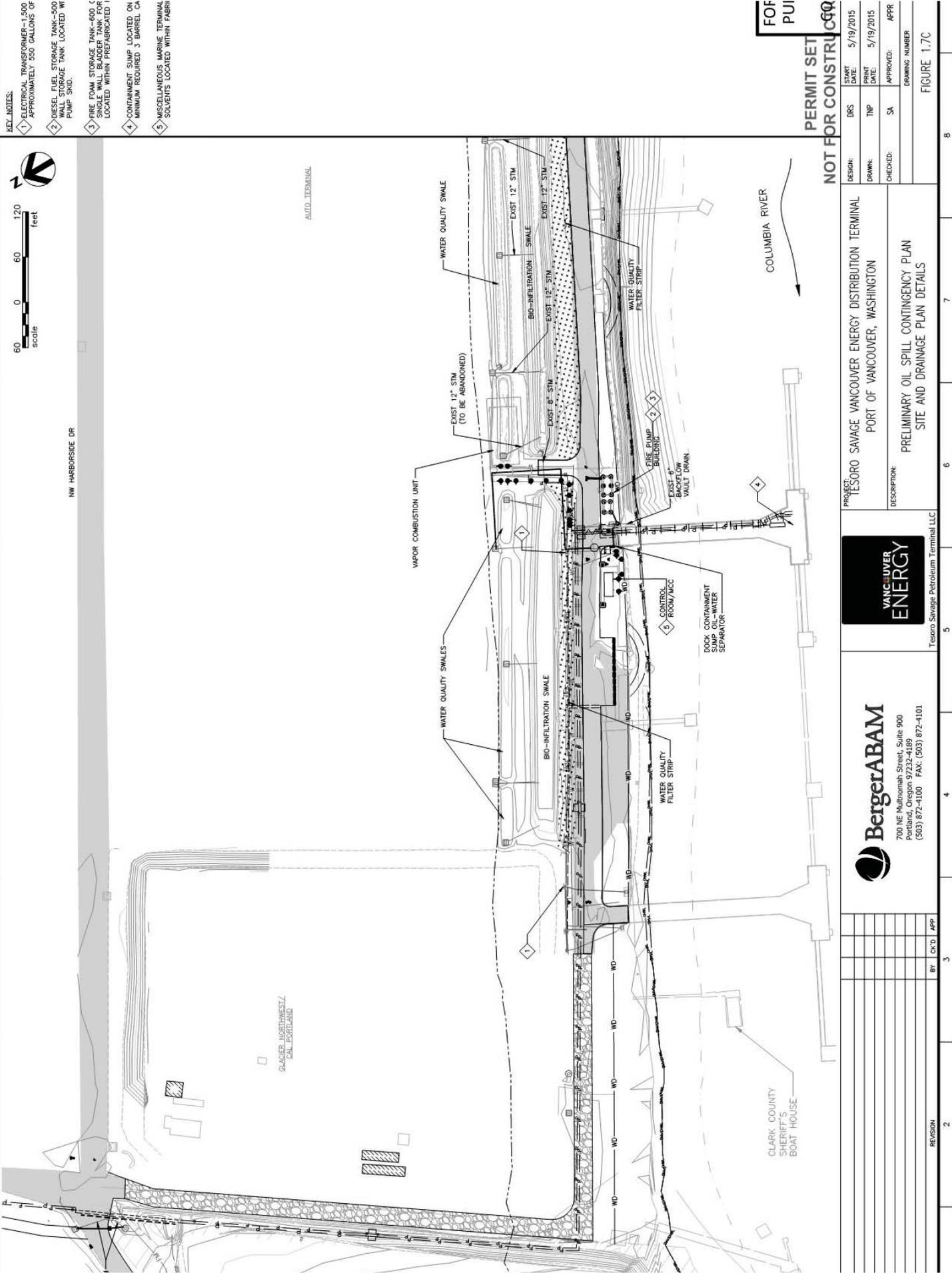


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KEY NOTES:

- 1 ELECTRICAL TRANSFORMER—1,500 APPROXIMATELY 550 GALLONS OF
- 2 DIESEL FUEL STORAGE TANK—500 WALL STORAGE TANK LOCATED W/ PUMP SKID.
- 3 FIRE FOM STORAGE TANK—600 G LOCATED WITHIN PREFABRICATED
- 4 CONTAINMENT SLIMP LOCATED ON MINIMUM REQUIRED 3' BARREL CA
- 5 MISCELLANEOUS MARINE TERMINAL SOLVENTS LOCATED WITHIN FABRI



NW HARBOURSIDE DR

AUTO. TERMINAL

COLUMBIA RIVER

CLARK COUNTY SHERIFF'S BOAT HOUSE

BALSER INVESTMENT CALIFORNIA

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PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL  
 PORT OF VANCOUVER, WASHINGTON

DESCRIPTION: PRELIMINARY OIL SPILL CONTINGENCY PLAN  
 SITE AND DRAINAGE PLAN DETAILS



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## 2. Initial Response Actions

This section includes guidance documents that address the initial response actions to be followed in the event of a discharge at the Facility, including the following.

- Actions taken in the initial emergency phase of a spill
- Source control and mitigation actions
- Spill surveillance actions
- Initial containment actions

### 2.1 Field Document

Information about the time-critical information for the initial emergency phase of a spill is documented in a Field Document, which is available to all personnel at the Facility that participate in all oil handling operations. The Field Document includes the following guidance and procedures.

- Emergency Initial Procedures
- Identification of Reportable Spills to Ground
- Spill Procedures Checklists
- Notification Procedures and Numbers
- Procedures to Detect, Assess, and Document the Spill Size

**A copy of the Facility Field Document is included with this OSCP at the end of this section.** Other copies are available at the Facility in all control rooms.

### 2.2 Safety Information and Facility Evacuation

Information about the Facility relative to evacuation safety is listed in **Figure 2.1**. Evacuation plans for the Facility are provided as **Figure 2.2**.

### 2.3 Source Control and Mitigation

This section provides general guidance for spill mitigation. Each situation is unique and must be treated according to the circumstance present. In every situation, however, personnel safety must be assessed as the first priority. The potential for ignition and/or toxic exposure must be promptly evaluated.

**Figure 2.3** describes mitigation procedures for the types of discharges that could occur at the Facility.

### 2.4 Spill Surveillance

Surveillance of an oil spill should begin as soon as possible following discovery to enable the Incident Commander and other response personnel the ability to assess spill size, movement, and potential impact locations(s). Immediately following discovery of a spill, one or more tracking buoys will be launched in order to effectively track the leading edge of the spill. Tracking buoys are stored at the dock office.

Surveillance is also required during spill response operations in order to gauge effectiveness of response operations, to assist in locating skimmers, and to continually assess size, movement, and impact of spill.

Clouds shadows, sediment, floating organic matter, submerged sand banks, or wind-induced patterns on the water may resemble an oil slick if viewed from a distance.

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### 2.4.1 Aerial Surveillance

Spill surveillance is best accomplished through the use of helicopters or small planes because it is difficult to adequately observe oil on the water surface from a boat, dock, or shoreline. Helicopters are preferred due to their superior visibility and maneuverability. If fixed-wing planes are to be used, high-wing types provide better visibility than low-wing types. Certain helicopters contracted through Marine Spill Response Corporation (MSRC) use infrared sensors for nighttime spill surveillance

It is expected that MSRC will give the Company permission to list them in this OSCP as having the capability to be on-scene within 6 hours of spill awareness and to provide aerial oil spill removal operations for three, 10-hour periods during the initial 72 hours of discharge. They have fixed-wing aircraft available for surveillance and have access to helicopters from Hillsboro Helicopters through contract. Contact information for helicopter and aircraft companies can be found in **Figure 3.3(J)**.

### 2.4.2 On-Water Surveillance

Surface vessels are used to confirm the presence of any suspected oil slicks, IF SAFE TO DO SO. If possible, direct the vessels from the aircraft and photograph the vessels from the air to show their position and size relative to the slick.

In the event of reduced visibility, such as dense fog or cloud cover, boats may have to be used to patrol the area and document the location and movements of the spill. However, this method may not be safe if the spill involves a highly flammable product.

Tracking buoys are used to track the leading edge of an oil spill during nighttime or adverse weather conditions. Two tracking buoys are stored on the dock. Each tracking buoy is equipped with a strobe light, and fresh batteries are located in the storage area. The buoys are marked as Tesoro oil spill response equipment and are not to be removed from the water by unauthorized persons. Within 30 minutes of discovery of an oil spill, at least one tracking buoy must be checked, energized, and placed at the leading edge of the spill. Time of deployment should be logged and visual observation of the buoy should be maintained until such time that aerial or other means of surveillance are established.

### 2.4.3 Documentation of Surveillance

All observations should be documented in writing and with photographs and/or videotapes.

Describe the approximate dimensions of the oil slick based on available reference points (i.e., vessel, shoreline features, and facilities). Use the aircraft or vessel to traverse the length and width of the slick while timing each pass. Calculate the approximate size and area of the slick by multiplying speed and time.

Aerial observations should be recorded on detailed maps, such as topographic maps.

An Oil Spill Surveillance Form is included in **Figure 2.4**. A Glossary of Standard Oil Spill Surveillance Forms is included in **Figure 2.5**.

## 2.5 Spill Volume Estimating

Early in a spill response, estimation of spill volume is required in order to

- Report to agencies;
- Determine liquid recovery requirements;
- Determine manpower and equipment requirements; and
- Determine disposal and interim storage requirements.

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Actual spill volumes are often unavailable or inaccurate so that field estimates are usually required. Some rapid methods to estimate spill size are as follows.

**Catastrophic Failure**

If a spill occurs during transfer operations, the total spill volume can be estimated by multiplying the pumping rate by the elapsed time that the leak was in progress, plus the drainage volume of the line between the two closest valves or isolation points. Volume loss = Pump Rate (bbl/min) x Elapsed Time (min) + Line Contents (bbl).

Rule of Thumb on Line Volumes

Line size (inches)<sup>2</sup> = bbl/1,000 feet

Inside diameter (I.D.)

Outside diameter (O.D.)

Note: 12-inch pipe and smaller is I.D. dimension, 14-inch pipe and larger is O.D. dimension.

For example:

6 inches I.D. = 36 bbl/1,000 feet of line

16 inches O.D. (15-inch I.D.) = 256 bbl/1,000 feet

A high percentage of spills are caused by internal or external corrosion or hole in hose. Spills resulting from a flange or hose leak will likely occur at a significantly lower rate.

For this purpose, the following calculations and techniques may be used.

$$\text{Vol (gal)} \sim 1800 \times A \text{ (in}^2\text{)} \times T \text{ (hrs)} \times (P)^{1/2} \text{ (psig)}$$

The approximate volume in gallons equals approximately 1,800 times the area of the hole (square inches) times the time of leakage (hours) times the square root of the pipeline operating pressure (psig).

This approximation is reasonable when the diameter of the hole is less than 1/4 of the pipes inside diameter, when the liquid is packed over the hole, and when frictional losses are considered negligible.

Another field technique is

- Divide the number 10,286 by the number of seconds it takes to fill a 5-gallon pail.
- A simpler rule of thumb would be to divide 10,000 by the number of seconds to collect 5 gallons for the approximate flow in bbl per day.

**Estimated Drip Rates**

- One drop/second = 1 gallon per day
- Thin stream breaking into drops = 24 gallons per day
- Small stream (about 1/8 inch) = 84 gallons per day
- Large stream (about 1/4 inch) = 336 gallons per day

For tank overfills, the total volume would be limited to the elapsed time multiplied by the pumping rate.

In the event that a more accurate method is not available, an estimate of spill size can be made by visual assessment of the surface area and thickness. Refer to the following procedures.

- Estimate the coverage dimensions of each part of the spill in feet or miles using whichever of the six appearances (**Figure 2.6**) that may be observed in the spill. Multiply the dimensions in feet or in miles by the appropriate factor from the figure. Add the individual parts of the spill areas together.

The combined result is the estimated volume of the spill in gallons or in barrels of oil.

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Volumes that are calculated less than one barrel should be reported in gallons. Spills that are calculated less than a gallon should be reported as “less than one gallon” rather than a decimal amount.

In the event of a large spill that encompasses several miles, use the chart in **Figure 2.8** to estimate the spill volume.

**Example**

A spill has created a “silvery” slick 0.25 mile wide by 2 miles long. From **Figure 2.6**, the amount of oil would be 50 gallons/square mile; and from **Figure 2.7**, the area would be 0.500 square mile. Therefore, 50 gallons/square mile X 0.500 square mile equals 25 gallons of oil spilled. If the quantity cannot be accurately determined, then the best initial estimate discharged should be reported to the Federal and State On-Scene Coordinators. As more accurate estimates are confirmed, they should also be reported.

## 2.6 Monitoring and Predicting Spill Movement (Trajectories)

### Factors Affecting Oil Movement

- Depends primarily on wind and surface currents near the spill.
- Surface currents will dominate oil movement unless the winds are strong.
- When winds are strong, the oil will move at approximately 3.4 percent of the wind speed in the same general direction.
- When currents and strong winds are absent, oil spreading will dictate oil movement.
- If only weak winds or surface currents are present, they will dominate oil movement.
- Examples of oil movement on water surfaces are shown in **Figure 2.10**.
  - Current speeds and directions may be estimated by pacing off a 100-foot section of shoreline, throwing a stick or orange into the water up-current of the section and timing how long it takes the stick/orange to traverse the 100-foot area. The direction of stick/orange movement will also approximate the surface current direction combined with the effects from local winds, if present.

The time required (in seconds) for the stick/orange to move 100 feet is divided into 100 to estimate current speed in feet per second (fps). The resulting fps is then multiplied by 0.5924 to convert the speed into knots. Selected conversions are provided below.

- 0.25 kt = 100 feet/240 seconds (0.42 fps)
- 0.5 kt = 100 feet/120 seconds (0.83 fps)
- 1.0 kt = 100 feet/60 seconds (1.67 fps)
- 1.5 kt = 100 feet/40 seconds (2.5 fps)

### Methods Available for Predicting Slick Movements

To determine the potential impacts of an oil spill and to aid in response operations, it is essential to predict the direction of oil movements.

The initial direction of the oil’s movement should be determined visually.

Once the direction and speed of wind and current are known, a short-term projection can be made by performing a simple vector addition analysis.

- For a large spill, more sophisticated predictions would be generated by the Scientific Support Coordinator using the National Oceanic and Atmospheric Administration (NOAA) Oil Spill Simulation Model (OSSM), or the Company will use the SpillNet Model.

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### NOAA Oil Spill Simulation Model

- The Federal On-Scene Coordinator (FOSC) would access trajectory information generated by the NOAA OSSM.
- This information, supplemented by on-scene observations, would be analyzed and the approximate location of the oil during various time intervals would be projected onto a digitized map of the region.
- Different simulations are possible as conditions at the spill site change.
- These trajectory maps can then be telefaxed to the FOSC at the scene or be directly accessed through a computer terminal (with printer), which would be linked to the NOAA trajectory computer.
- Refer to **Figure 2.9** for a form to provide trajectory coordinator with information to calculate trajectory models.

## 2.7 Initial Containment Actions

Initial containment actions will rely on the use of pre-booming of all crude oil transfers and focus on using remaining on-site containment boom in the most effective manner to

- Control the source and limit the spread of oil, thereby reducing the surface area and shoreline to be cleaned;
- Concentrate the oil, when safe to do so, making physical recovery more efficient.
- Limit the environmental impact to the immediate spill area by immediate identification and initiation of local GRPs.

Selection of the appropriate location and method will depend upon

- Whether the spill occurs during an ebb or flood tide;
- Length of time spill occurs before being noticed;
- Amount of spill;
- Area of coverage;
- Environmental factors, such as wind speed and direction; and
- Immediate notification of the Primary Response Contractor will provide early GRP protection and facilitate on-water recovery within the first hour of occurrence.

### 2.7.1 Safety Considerations

A Site Safety Plan form is located in **Section 5** (Section J of Figure 5.1, Incident Briefing Form). The designated on-scene Safety Officer should use this form as a checklist while performing initial site safety assessment. Communication for monitoring and relaying safety information will be via radio, as described in **Section 7.1.10**. Communication equipment and numbers are summarized in **Section 7.1.10**.

- Air monitoring must be conducted in all spills to water or land in order to determine airborne concentrations of hazardous vapors, potential oxygen deficient and explosive atmospheres, so that safety precautions can be taken. Facility air monitoring equipment used to test breathing air in the vicinity of a spill includes a hand-held multi-gas monitor. These monitoring devices are located in the Terminal Office. Equipment testing and calibration are done daily and monthly.
- Careful consideration should be given to containment actions conducted during inclement weather or adverse conditions, such as high winds or rapid currents.
- Eliminate all ignition sources and keep boats as far as possible from the spill area.
- Be aware of hazards, such as fires, explosions, and exposure to toxic chemicals at lethal or sub lethal levels.
- Avoid contact with the spilled product and ensure that the area remains secure to boat and air traffic.
- Be aware of potential changes to position and movement of slick due to tidal action.
- The Terminal Manager, as the initial Incident Commander, will initially assume the role of Safety Officer and should enlist the help of the Facility Manager of Safety.
- The Terminal Manager will be initially responsible to assure the safety of all people who may be impacted by the spill.
- The Facility Safety Officer will be responsible for the preparation of the Safety and Security Plan, and will establish safety zones, as appropriate.
- All response contractor Safety Officers will be advisors to the Facility Safety Officer on health and safety issues.

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- The Facility Safety Officer will direct teams of trained operators equipped with self-contained emergency air packs, organic vapor respirators, and explosion meters to determine and mark the area of any explosive cloud coming from the spill so that safe limits for response activities can be determined. This equipment is available from Facility.
- The Facility Safety Officer will develop a site safety plan and establish safety zones, as appropriate.

## 2.7.2 Response Guidelines for Crude

The preferred response is to contain and recover product because crude oil exhibits low volatility characteristics.

- Ensure primary boom is deployed before any material transfer operation begins.
- Identify source and stop discharge, if possible.
- Deploy secondary facility containment boom, and skimmers if available, to attempt to isolate the slick and reduce the spread and potential impact area. Monitor the boom for effectiveness.
- If shorelines may be impacted, consider deploying exclusion boom to reduce the impact to shoreline.
- If there is still boom remaining, attempt to isolate pockets of oil where possible to facilitate more efficient recovery.
- If crude oil escapes, deploy sorbents along the shoreline to capture product during tidal cycles. Monitor the sorbents periodically for effectiveness and replace as needed.
- Callout response contractors to assist in containment efforts and begin recovery operations.
- Advise neighboring operators of any threat to their property or personnel. List of neighboring facilities is provided in **Figure 3.3**.
- Determine the direction and expected duration of spill movement. Tide and current tables are contained in the front pocket of this plan.
- Request USCG to establish Vessel Traffic Control in the area.
- Review the location of environmentally and economically sensitive areas in **Section 6**. Use the trajectory analysis in **Appendix H** to assist in prediction of potentially impacted areas. Determine which of these areas may be threatened by the spill and direct contractors to proceed with boom and skimmers to these specified locations.

**Figure 2.1. Emergency Evacuation**

Factor	Description
Stored Material Location	Location in oil storage area. Identified in Facility Diagram (Figure 1.7).
Spilled Material Hazards	Primary hazard is fire/explosion.
Spill Flow Direction	Adjacent, terrain is flat with defined drainage patterns to the north and south. Spilled product will accumulate in low lying areas directly adjacent to terminal.
Prevailing Wind Direction and Speed	Prevailing winds are normally from the west. Because wind direction varies with weather conditions, consideration for evacuation routing will depend in part on wind direction.
Water Currents, Tides, or Wave Conditions	Area currents range between 0.25 and 0.5 knot. Tidal currents may alter, depending on distance off shore and tidal cycle stage and run north and south along the shoreline.
Emergency Personnel Arrival Route	Emergency personnel and equipment would be dispatched by land or boat. By land, facility is accessible via NW Gateway Avenue/NW Harborside Avenue and NW Lower River Road. By water, the facility is accessible via the Columbia River/Port of Vancouver.
Evacuation Routes	Exit terminal from front gate or dock. Assemble up wind from Terminal at the east or west end of the terminal. Criteria for determining safest evacuation routes from Facility may include wind direction, potential exposure to toxics and carcinogens, intense heat, potential for explosion or fire, and blockage of planned route by fire, debris, or released liquid.
Alternative Evacuation Routes	Alternative evacuation route for employees on the dock may be required to evacuate through Berth 10 to the east (Subaru Dock), or the Clark County Sherriff's Boat House, to the west, if fallen power lines are observed at the base of the dock. Employees can also evacuate through the Cal Portland Facility.
Injured Personnel Transportation	Emergency vehicles can be mobilized to the Facility (dial 911).
Alarm/Notification System Location	Terminal uses internationally recognized signs for emergencies.

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Factor	Description
Centralized Check-In Area	Evacuate to identified regroup areas, including, but not limited to, the northwest corner of the intersection of NW Old Lower River Road and Old Alcoa Access Road, the inside of the Terminal 5 rail loop, or the northwest corner of the intersection of Harborside Drive and Gateway Avenue. Terminal Manager is responsible for headcount.
Mitigation Command Center Location	Initial Command Center is located at the Facility. Mobile command posts may be established.
Facility Shelter Location	The office is the only area that could provide adequate heated shelter within the facility.
Community Evacuation Plans	NW Lower River Road (Highway 501) is a community evacuation route. Contact City of Vancouver police and fire departments for assistance with determining evacuation limits and making necessary public and private notifications.

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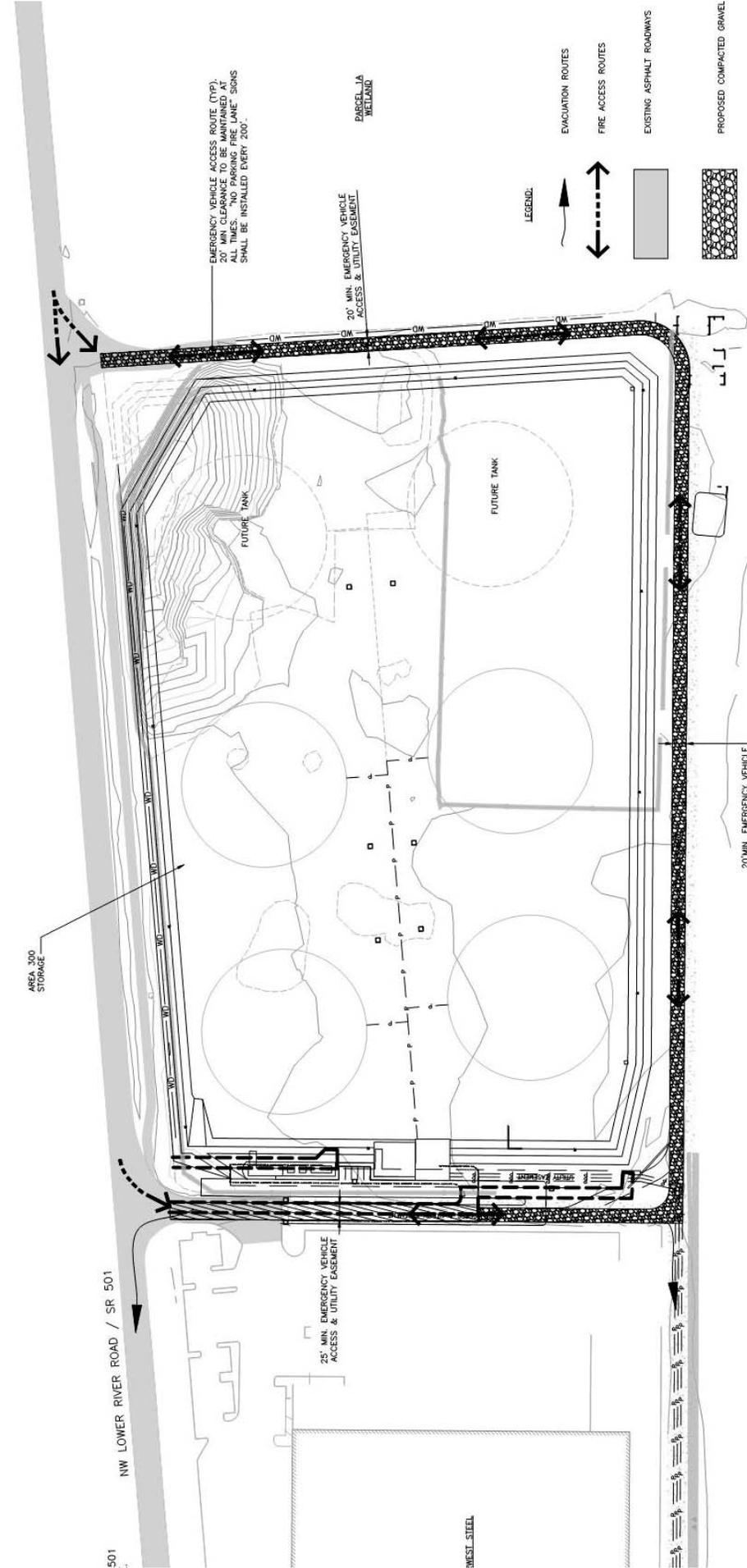
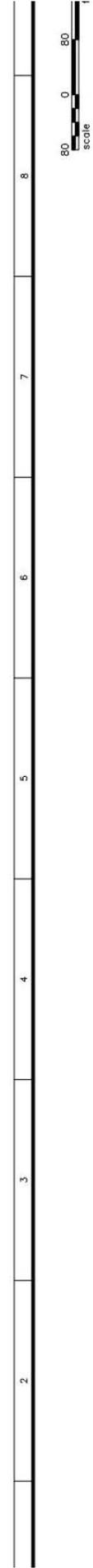
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**NOT FOR CONSTRUCTION**

<p>PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL PORT OF VANCOUVER, WASHINGTON</p> <p>DESCRIPTION: VEHICLE ACCESS PLAN - 2 AREA 300</p>	<p>DESIGN: DRS 5/19/2015</p> <p>DRAWN: TNP 5/19/2015</p> <p>CHECKED: MCH 5/19/2015</p> <p>APPROVED: SA</p> <p>DRAWING NUMBER: 2.4C</p>																												
 <p><b>BergerABAM</b> 700 NE Multnomah Street, Suite 900 Portland, Oregon 97232 (503) 872-4108 FAX: (503) 872-4101</p>	 <p><b>VANCOUVER ENERGY</b> Tesoro Savage Petroleum Terminal LLC</p>																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISION</th> <th>BY</th> <th>CHK'D</th> <th>APP</th> </tr> </thead> <tbody> <tr> <td>TNP DRS SA</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	REVISION	BY	CHK'D	APP	TNP DRS SA				<p>FOR BID</p> <p>FOR BID SET</p> <p>AL DESIGN REVIEW</p> <p>ESIGN REVIEW</p> <p>SMART DESIGN</p>																				
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**Figure 2.3. Spill Mitigation Procedures\***

Type	Mitigation Procedure
Any identified failure	Activate emergency shutdown system (ESO) to close all landside valves and stop transfer pumps.
Failure of Manifold, Mechanical Loading Arm, Transfer Equipment, or Hoses at Dock	<p>Notify vessel and terminal to stop all product transfers.</p> <p>Advise vessel and terminal to close all line and ship manifold discharge valves.</p> <p>Shut down all transfer pumps and close all dockside valves.</p> <p>Eliminate sources of ignition.</p> <p>If hose ruptured, drain hose in a manner that minimizes spillage into water. If other than hose ruptured, determine source of leak and control the source.</p> <p>Initiate spill response.</p>
Tank Overfill/Failure	<p>Stop transfer of product into tank.</p> <p>Eliminate sources of ignition.</p> <p>Consider transferring the product from the overflowing tank into an adjacent tank to stop overflow.</p> <p>Isolate tank by closing all valves.</p> <p>Secure area to protect pedestrian and vehicle traffic and prevent the spreading of spilled oil.</p> <p>Consider facility evacuation for gasoline and ethanol spills.</p> <p>Initiate spill response</p>
Piping Rupture/Leak	<p>Shut down pumps and close pipeline block valves on both sides of the spill.</p> <p>Determine if options are available to minimize line drainage.</p> <p>Secure area to protect pedestrian and vehicle traffic and to prevent spreading of spilled oil.</p> <p>Initiate spill response.</p> <p>Contact pipeline repair specialist. See Figure 3.3.</p>
Explosion/Fire	<p>Alert terminal employees.</p> <p>Request emergency assistance by dialing "911."</p> <p>Secure area to protect pedestrian and vehicle traffic from danger.</p> <p>Evacuate terminal as directed in the evacuation plan.</p> <p>Notify adjacent facilities. See Figure 3.3.</p> <p>Begin firefighting procedures.</p>
Equipment Failure, such as Pumping or Relief Valve	<p>Shut down and close adjacent valves.</p> <p>Eliminate sources of ignition.</p> <p>Secure area to protect pedestrian and vehicle traffic and to prevent spreading of oil.</p> <p>Initiate spill response.</p>

\*Worse-Case Discharge volume calculations are provided in Appendix D.

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**Figure 2.4. Oil Spill Surveillance Form**

Record your observations of spilled oil either in a notebook or directly on a chart, of the area under observation. This checklist is an aid for organizing your observations.

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**General Information**

Date \_\_\_\_\_ Time \_\_\_\_\_ Case name \_\_\_\_\_

Observer's name \_\_\_\_\_ Observer's affiliations \_\_\_\_\_

Current stage of tide (flood, ebb, slack) \_\_\_\_\_

On-scene weather (wind, sea state, visibility)

TIDES: HIGH(s) \_\_\_\_\_ MAX CURRENT: \_\_\_\_\_  
LOW(s) \_\_\_\_\_ (W/VELOCITY FLOOD) \_\_\_\_\_

DAYLIGHT: SUNRISE \_\_\_\_\_ SLACK \_\_\_\_\_  
SUNSET \_\_\_\_\_ WATER \_\_\_\_\_

WIND: SPEED \_\_\_\_\_ DIRECTION \_\_\_\_\_

CURRENT CONDITIONS:

\_\_\_\_\_  
\_\_\_\_\_

FORECAST (NEXT OPERATIONAL PERIOD):

\_\_\_\_\_  
\_\_\_\_\_

Platform (helicopter, fixed-wing aircraft, boat) \_\_\_\_\_

Flight path/trackline \_\_\_\_\_

Altitude where observation taken (feet) \_\_\_\_\_

Location of oil's source (if known) \_\_\_\_\_

Areas not observed (e.g., foggy locations, restricted air spaces, shallow water areas)

\_\_\_\_\_  
\_\_\_\_\_

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**Figure 2.4 – Oil Spill Surveillance Form (continued)**

**Oil Observations**

Slick location(s) \_\_\_\_\_

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_ (central point)

Slick dimension(s) \_\_\_\_\_

Orientation of slick(s) \_\_\_\_\_

Description of oil distribution (e.g., as windrows, streamers, pancakes, or patches)

\_\_\_\_\_  
\_\_\_\_\_

Color and appearance (e.g., rainbow, dull or silver sheen, black, or brown in color, or mousse)

\_\_\_\_\_

Percent coverage \_\_\_\_\_

Is oil recoverable (Y/N)? \_\_\_\_\_

(examples of recoverable oil types include black oil, mousse, and heavy dull- or dark – colored sheens)

**Considerations**

1. During surveillance flights, travel beyond known impacted areas to check for oil beyond these areas.
2. Include the name and phone number of the person making the observations.
3. Clearly describe the locations where oil is observed, as well as the areas where no oil has been seen.

**Other Observations**

**Response Operations**

*Skimmer deployment* (general locations where skimmers are working).

Are they working in the heaviest concentration of oil? Describe.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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**Figure 2.4 – Oil Spill Surveillance Form (continued)**

*Boom deployment*

Describe general locations of boom(s). \_\_\_\_\_

Does the boom contain oil? \_\_\_\_\_ Is oil entraining under the boom? \_\_\_\_\_

**Environmental Observations**

Locations of any convergence line, rip tides, and sediment plumes

\_\_\_\_\_

Locations of kelp beds, seagrass beds, and other features that could be mistaken for oil

\_\_\_\_\_

General description of wildlife present in area (locations and approximate numbers of birds and marine mammals)

BIRDS \_\_\_\_\_

\_\_\_\_\_

MARINE MAMMALS \_\_\_\_\_

\_\_\_\_\_

**General Comments:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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**Figure 2.5. Glossary of Standard Oil Spill Observation Terms**

**Black oil**

A black or very dark brown layer of oil. Depending on the quantity spilled, oil tends to quickly spread out over the water surface to a thickness of about 1 millimeter (0.04 inch). However, from the air, it is impossible to tell how thick a black oil layer is.

**Convergence line**

A line on the water surface where floating objects and oil collect. A convergence can be in the interface between two different types of bodies of water, or it can be caused by a significant depth change, tidal changes, or other common phenomena. Convergences are common in the marine environment.

**Dispersion**

The breaking up of an oil slick into small droplets that are mixed into the water column by breaking waves and other sea surface turbulence.

**Emulsification**

The formation of a water-in-oil mixture. Different oils exhibit different tendencies to emulsify, and emulsification is more likely to occur under high energy conditions (strong winds and waves). An emulsified mixture of water in oil is commonly called “mousse,” its presence indicates a spill that has been on the water for some time. See also **mousse**.

**Entrainment**

The loss of oil from containment when it is pulled under a boom by a strong current. Entrainment typically occurs from booms deployed perpendicular to currents greater than 1 knot (0.5 meter per second).

**Mousse**

An emulsified mixture of water in oil. Mousse can range in color from dark brown to nearly red or tan, and typically has a thickened or pudding-like consistency compared with fresh oil. Incorporation of up to 75 percent water into the oil will cause the apparent volume of a given quantity of oil to increase by up to four times. See also **emulsification**.

**Pancakes**

Isolated, roughly circular patches of oil ranging in size from a few feet across to hundreds of yards (or meters) in diameter. Sheen may or may not be present.

**Recoverable oil**

Oil in a thick enough layer on the water to be recovered by conventional techniques and equipment. Only black or dark brown oil, mousse, and heavy sheens (which are dull brown in color) are generally considered to be thick enough to be effectively recovered by skimmers.

**Sheen**

A very thin layer of oil (less than 0.0001 inch or 0.003 millimeter in thickness) floating on the water surface. Sheen is the most commonly observed form of oil during the later stages of a spill. Depending on thickness, sheens range in color from dull brown for the thickest sheens to rainbows, grays, silvers, and near-transparency in the case of the thinnest sheens.

**Slick**

Oil spilled on the water, which absorbs energy and dampens out surface waves, making the oil appear smoother or slicker than the surrounding water.

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### Figure 2.5 - Glossary of Standard Oil Spill Observation Terms (continued)

#### Streamers

A narrow line of oil, mousse, or sheen on the water surface, surrounded on both sides by clean water. Streamers result from the combined effects of wind, currents, and/or natural convergence zones. Often, heavier concentrations of mousse or sheen will be present in the center of a streamer, with progressively lighter sheen along the edges. Streamers are also called “fingers” or “ribbons.”

#### Tarballs

Weathered oil that has formed pliable balls or patches that float on the water. Tarballs can range in diameter from a few millimeters (much less than an inch) to a foot (0.3 meter). Depending on how weathered, or hardened, the outer layer of the tarball is, sheen may or may not be present.

#### Weathering

A combination of physical and environmental processes, such as evaporation, dissolution, dispersion, and emulsification, which act on spilled oil to change its physical properties and composition.

#### Windrows

Streaks of oil that line up in the direction of the wind. Windrows typically form early during a spill when the wind speed is at least 10 knots (5.1 meters per second). Sheen is the form of spilled oil that most frequently windrows.

Figure 2.6. Spill Estimation Factors

Definitions	Gallons of Oil per Square Mile
barely visible	25
silvery	50
slightly colored	100
brightly colored	200
dull	666
dark	1,332



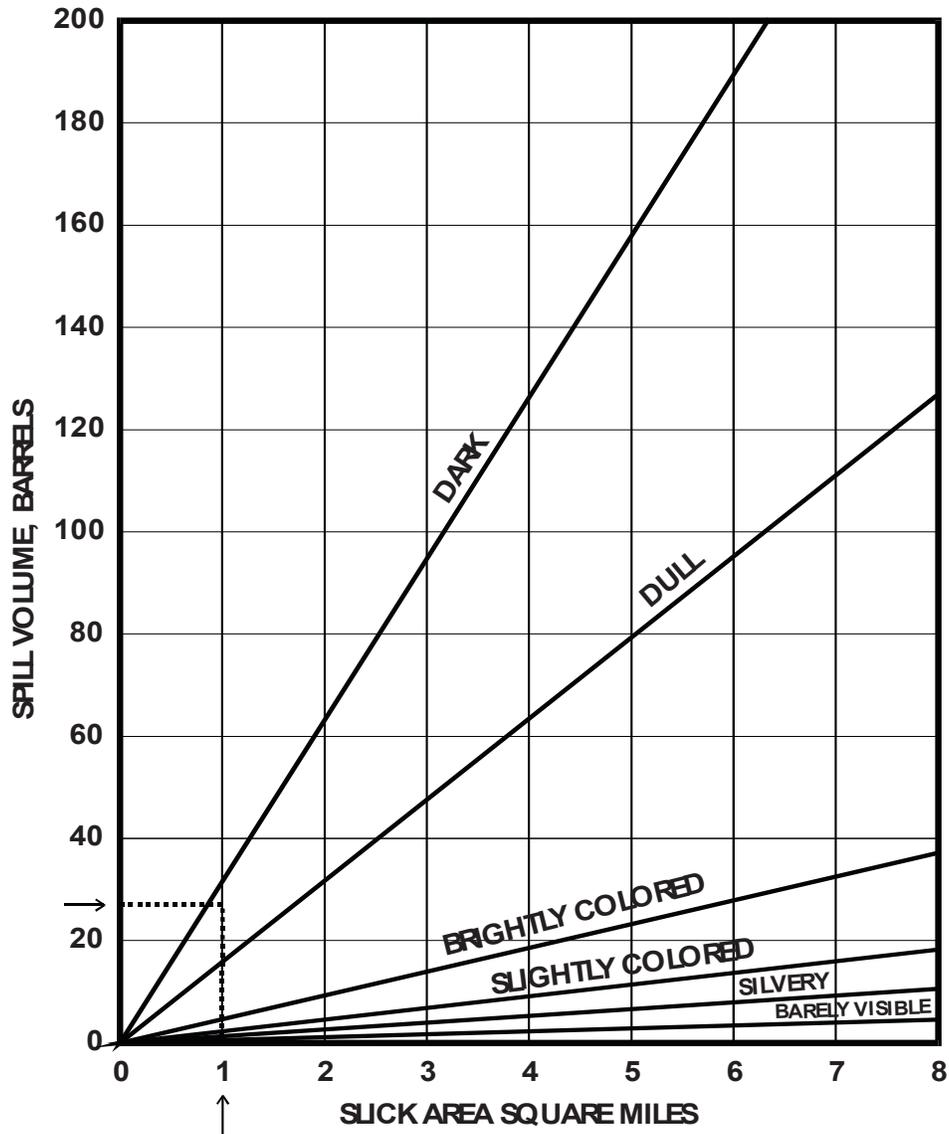
Figure 2.7. Visual Slick Size in Fraction of a Square Mile Chart

WIDT H	LENGTH (FEET)										LENGTH (MILES)														
	100	200	300	400	500	600	700	800	900	1000	1200	1/4	1/2	3/4	1	2	3	4	5	6	7	8	9		
10																	0.013	0.015	0.019	0.023	0.011	0.013	0.015	0.017	
20																		0.017	0.023	0.034	0.046	0.015	0.023	0.030	0.034
30																0.011	0.017	0.028	0.046	0.071	0.015	0.023	0.040	0.051	
40																0.010	0.023	0.038	0.061	0.106	0.019	0.034	0.061	0.088	
50															0.011	0.023	0.047	0.085	0.152	0.028	0.047	0.066	0.076	0.085	
60															0.010	0.023	0.057	0.113	0.227	0.034	0.057	0.091	0.091	0.102	
70															0.010	0.023	0.066	0.136	0.284	0.040	0.066	0.106	0.106	0.119	
80															0.011	0.030	0.076	0.152	0.303	0.045	0.076	0.121	0.121	0.136	
90															0.013	0.034	0.085	0.171	0.341	0.051	0.085	0.136	0.136	0.153	
100															0.014	0.038	0.095	0.189	0.378	0.057	0.095	0.152	0.152	0.170	
150															0.014	0.057	0.142	0.284	0.568	0.085	0.142	0.227	0.227	0.256	
200												0.010	0.019	0.028	0.038	0.076	0.114	0.227	0.455	0.114	0.199	0.265	0.303	0.341	
300												0.014	0.028	0.042	0.057	0.113	0.171	0.341	0.683	0.171	0.284	0.397	0.455	0.511	
400												0.010	0.038	0.057	0.076	0.151	0.226	0.455	0.911	0.226	0.379	0.530	0.606	0.662	
500												0.010	0.047	0.071	0.095	0.189	0.284	0.568	0.911	0.284	0.472	0.662	0.756	0.852	
600												0.010	0.057	0.085	0.117	0.227	0.341	0.683	0.911	0.341	0.568	0.795	0.911		
1/4 MILE		0.010	0.014	0.019	0.024	0.028	0.033	0.038	0.043	0.047	0.056	0.066	0.125	0.187	0.250	0.500	0.750			0.066	0.106	0.152	0.206		
1/2 MILE		0.010	0.019	0.028	0.038	0.047	0.057	0.066	0.076	0.085	0.114	0.125	0.250	0.375	0.500					0.125	0.199	0.265	0.341		
3/4 MILE		0.014	0.028	0.042	0.057	0.071	0.085	0.099	0.114	0.128	0.171	0.187	0.375	0.562	0.750					0.187	0.284	0.397	0.455		
1 MILE		0.019	0.038	0.057	0.076	0.095	0.117	0.133	0.152	0.171	0.189	0.227	0.500	0.750						0.227	0.341	0.455	0.511		
2 MILE		0.038	0.076	0.113	0.151	0.189	0.227	0.285	0.304	0.342	0.379	0.455	0.500							0.341	0.455	0.530	0.606		
3 MILE		0.057	0.114	0.171	0.228	0.284	0.341	0.398	0.455	0.512	0.568	0.673	0.750							0.455	0.568	0.662	0.756		
4 MILE		0.076	0.152	0.227	0.303	0.378	0.455	0.530	0.607	0.683	0.768	0.910								0.568	0.683	0.795	0.911		
5 MILE		0.095	0.189	0.284	0.379	0.472	0.568	0.662	0.759	0.854	0.948									0.662	0.795	0.911			
One square mile = 27.878 x 10 <sup>6</sup> square feet																									
GREATER THAN ONE (1) SQUARE MILE																									

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Figure 2.8. Estimations of Spilled Oil Volumes from Slick Appearances (Large Volumes)



Source: NOAA Spill Volume Estimating Guide

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**Figure 2.9. Oil Spill Trajectory Information Form**

**INCIDENT INFORMATION**

Company: \_\_\_\_\_ Contact: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Date/Time of Spill: \_\_\_\_\_

Location of Source (*Latitude/Longitude*): \_\_\_\_\_

Last Known Location of Spill (*Latitude/Longitude*): \_\_\_\_\_

Type of Oil (*API, if known*): \_\_\_\_\_ Estimated Volume of Initial Release: \_\_\_\_\_

If continuing release, how much? \_\_\_\_\_ For how long? \_\_\_\_\_

**WEATHER CONDITIONS**

Present Time: \_\_\_\_\_ Air Temperature: \_\_\_\_\_

Wind Direction: \_\_\_\_\_ Wind Speed: \_\_\_\_\_

Wave Height: \_\_\_\_\_ Water Temperature: \_\_\_\_\_

Current Direction: \_\_\_\_\_ Current Speed: \_\_\_\_\_

Weather Forecast: \_\_\_\_\_

Additional Information: \_\_\_\_\_

Submit Results To:

Company: \_\_\_\_\_

Name: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Office Number: \_\_\_\_\_

Home Number: \_\_\_\_\_

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Figure 2.10. Examples of Oil Movement on Water Surfaces

**WIND AND CURRENT DIRECTLY ALIGNED:**

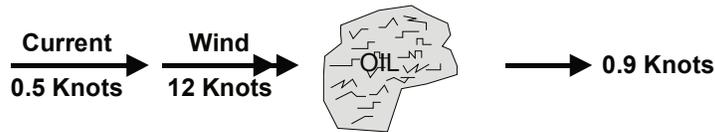
**Water Current Only, No Wind:**



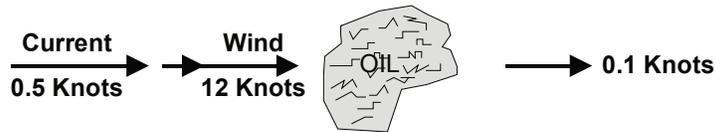
**Wind Only, No Water Current:**



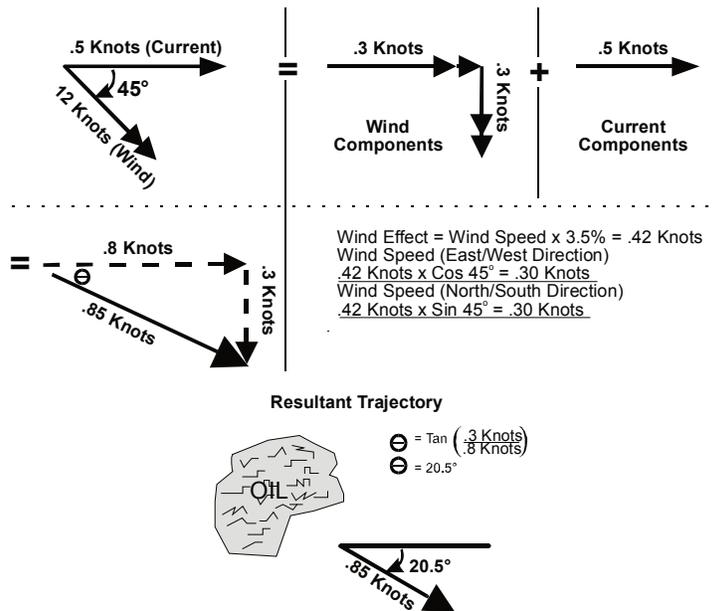
**Wind With Water Current:**



**Wind Opposite Water Current:**



**WIND CURRENT AND WIND NOT DIRECTLY ALIGNED:**



company:///graphics/library/figures/oil\_movement.cdr

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**OIL SPILL RESPONSE – EMERGENCY PROCEDURES**

- **STOP THE PRODUCT FLOW:** Act quickly. Secure pumps. Close valves, etc.
- **WARN PERSONNEL:** Enforce safety and security measures.
- **SHUT OFF IGNITION SOURCES:** Motors, electrical circuits, open flames, etc.
- **CONTAIN / CONTROL THE SPILL:** Use berms, boom, absorbents, etc.

**DO NOT** use any cleaning or dispersing agents on the spilled oil (e.g. no liquid soaps, chemical dispersants, and bio-agents). The use of such products is strictly controlled by government laws and regulations and will result in fines/penalties.

**IDENTIFICATION OF REPORTABLE SPILLS TO GROUND**

All spills are considered reportable spills to ground, except as follows:

- Spills of known volume less than 42 gallons,
- CERCLA releases,
- Air releases to atmosphere only.
- Releases from underground storage tanks
- Spills contained within areas controlled by NPDES permitted systems that are not likely to threaten groundwater and do not exceed federal reportable quantities.

For spills of unknown volume, the spill should be considered reportable if the spill is ongoing, if the spill has a pathway to water of the state, if environmental conditions (rain or high groundwater) might lead to environmental exposure, if the volume is not known to be less than 42 gallons.

**SPILL OBSERVER INITIAL PROCEDURES CHECKLIST**

- \_\_\_ Make an immediate and rapid assessment to determine:
  - If anyone has been injured
  - If situation poses hazards to other personnel or the public (i.e., fire, explosion, fumes, etc.)
  - Source of the spill
  - Type of material spilled and approximate size
- \_\_\_ Take immediate steps to stop the flow.
- \_\_\_ Ensure the safety of personnel. If someone requires medical attention or there is an emergency, dial 911.
- \_\_\_ Notify the Terminal Manager and/or the Area Supervisor.
- \_\_\_ Evacuate personnel as necessary (refer to Figures 2.3 and 2.4 in the Spill Contingency Plan).
- \_\_\_ Shut down and control the source of the spill, if safe to do so. Assess the potential hazards for explosion and airborne toxins.
- \_\_\_ If safe to do so, shut down or direct appropriate personnel to shut down potential ignition sources.
- \_\_\_ Monitor the area for potential explosion and fire hazards. If fire is present, enable fire alarm and water system.
- \_\_\_ Ready the area for firefighting, if necessary.

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- \_\_\_ Use whatever resources are available to limit the spread of the spill (see **DO NOT** note above)
- \_\_\_ Establish a safety zone around the spill.
- \_\_\_ Complete the Initial Spill Documentation Forms (see below)

**All Facility employees have the authority to activate the Facility Spill Response Team, activate spill response action contractions, and act as the Incident Commander if a designated Incident Commander, Deputy Commander, or a more Senior Facility Manager is not available.**

### INCIDENT COMMANDER PROCEDURES CHECKLIST

***Terminal Manager receives initial report from Facility operator or Area Supervisor, and assumes role as initial Incident Commander.***

- \_\_\_ Determine the degree of spill response that will be required. Assessment should include:
  - Product and volume spilled
  - Spill trajectory
  - Response personnel and equipment needs
- \_\_\_ Make mandatory and internal Notifications (see **NOTIFICATIONS PROCEDURES** below).
- \_\_\_ Activate the following response teams, as appropriate:
  - Facility Incident Response Team
  - Primary Response Contractors (see Spill Contingency Plan)
  - Tesoro West Coast Regional Response Team
- \_\_\_ A Spill Report Form is provided in **Figure 3.2**.
- \_\_\_ Establish a Command Post
  - Primary Location: Vancouver Energy Terminal Office
  - Alternate Location: Hilton Hotel Vancouver
- \_\_\_ Act as initial Site Safety Officer.
- \_\_\_ Notify down river water users as appropriate (see the Spill Contingency Plan)

### INITIAL SPILL DOCUMENTATION FORMS

Initial documentation of a spill shall be completed by the initial observer(s) of the spill. This documentation is to be provided to the Incident Commander and used to evaluate the need for and extent of additional response actions and notifications. The following form is included at the end of this Field Document.

- **Procedures to Detect, Assess, and Document the Spill Size**

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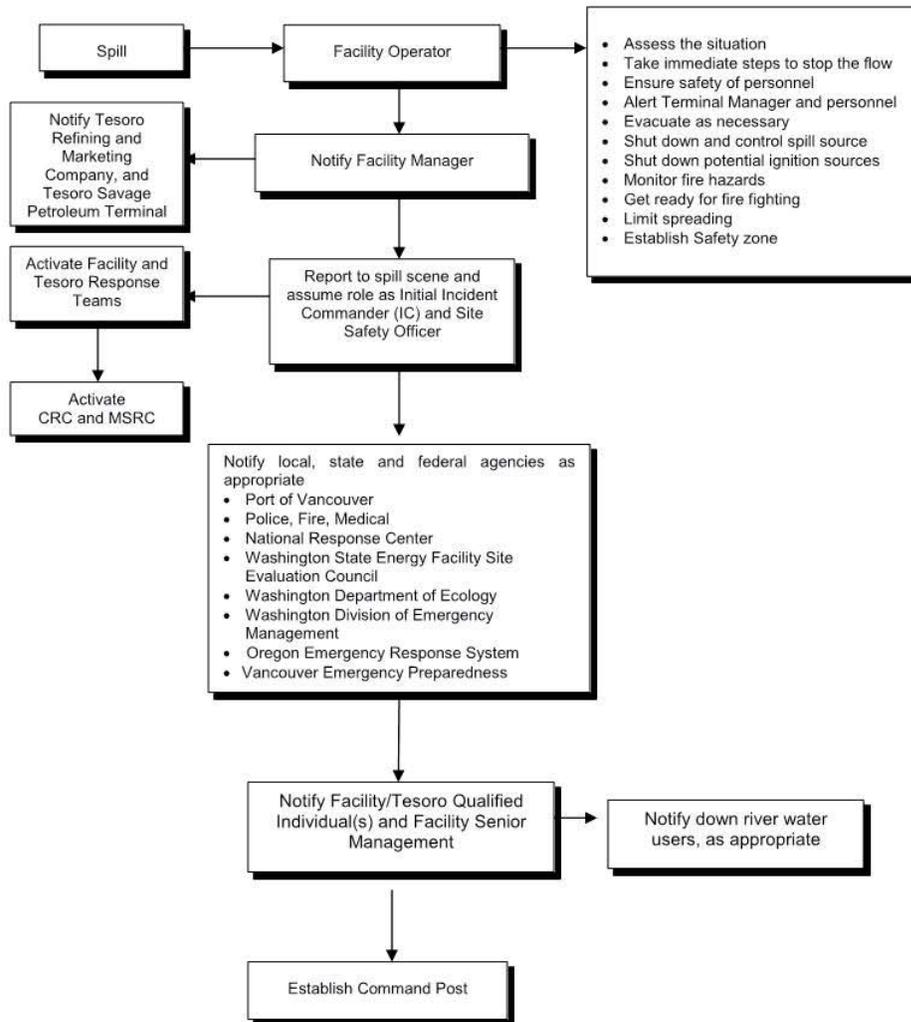
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NOTIFICATION PROCEDURES



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**NOTIFICATION NUMBERS**

**Facility Manager**

Work: TBD  
Cellular: TBD  
Home: TBD

**Alternate Incident Commander**

Work: TBD  
Cellular: TBD  
Home: TBD

**Mandatory Calls**

National Response Center  
(800) 424-8802  
For USCG and EPA

WEMD (800) 258-5990  
(Washington Division of Emergency Management)

Port of Vancouver Security  
(360) 992-1120

**Secondary Calls**

Clean Rivers Cooperative  
(503) 220-2040

Marine Spill Response Corporation  
(425) 252-1300  
(800) 645-7745

Department of Ecology (SW Office)  
(360) 407-6300

Oregon Emergency Response System  
(800) 452-0311

Clark Regional Emergency Services  
(360) 737-1911

USCG Marine Safety Unit – Portland  
(503) 240-9301

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**PROCEDURES TO DETECT, ASSESS, AND DOCUMENT THE SPILL SIZE**

*The Vancouver Energy Operations Facility Oil Spill Contingency Plan Section 2 contains guidelines for estimating the volume of a spill, and predicting spill movement, and should be referenced for completing this document.*

*This form shall be completed by the first spill observer(s), and shall be provided to the Incident Commander to be used to evaluate the need for and extent of additional response actions.*

1. Location of the Spill: \_\_\_\_\_
2. Type of Oil Product Spilled: \_\_\_\_\_
3. Color of Oil Spill:
  - Rainbow
  - Silver
  - Dark
4. Length of Oil Spill: \_\_\_\_\_ feet/meters
5. Width of Oil Spill: \_\_\_\_\_ feet/meters
6. Estimated Volume of the Spill: \_\_\_\_\_ gallons
7. Is the Spill Contained?: Yes: \_\_\_\_\_ No: \_\_\_\_\_
8. If no, what is the estimated rate of release?: \_\_\_\_\_
9. Is there a potential for impact to the waters of the state? Yes: \_\_\_\_\_ No: \_\_\_\_\_

This form was completed by: \_\_\_\_\_  
Print Name

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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## 3. Notification Procedures

### 3.1 Emergency Reporting and Notification Procedures

This section describes required notifications and information summaries to be provided in the event of a spill. The priority of actions and response procedures will depend upon actual circumstances, and will be determined by the Incident Commander.

Spillage of any petroleum hydrocarbon or other hazardous substance onto land or water must be immediately reported, without exception.

### 3.2 Oil Spill Prioritized Notifications

The priority of notifications is summarized below and illustrated on **Figure 3.1**. All notifications should be documented on **Figure 3.3**. **Figure 3.4** is a summary of agency notification requirements.

- The **Spill Observer** notifies the Area Supervisor, nearby vessel personnel, and Terminal Manager.
- Area Supervisor or **Terminal Manager** notifies the Incident Commander (or assumes that role).
- **Incident Commander** notifies the following in the order listed.

Mandatory Notifications

- National Response Center (NRC)
- Washington Emergency Management Division (EMD)
- Port Security

Secondary Notifications

- Clean Rivers Cooperative
- Marine Spill Response Corporation
- Ecology – Southwest Office
- Oregon Emergency Response System
- Clark Regional Emergency Services Agency
- USCG Marine Safety Unit – Portland Office

Company Internal Notifications

- Tesoro West Coast Regional Response Team
- Tesoro Refining and Marketing Company
- Tesoro Savage Petroleum Terminal LLC

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### 3.3 Oil Spill Information Requirements and Procedures

The following information should be collected to the maximum extent possible and documented, where appropriate in the Notification Information Reporting Form (**Figure 3.2**).

- If a spill is detected the following information should be provided to the **Incident Commander**.
  - Was anyone hurt?
  - Location of spill
  - Time of spill
  - Product/volume spilled
  - Source of spill
  - Actions taken
  - Weather conditions
  - Projected spill movement
  - Equipment needed
  - Environmental concerns
- Never speculate when reporting a spill. Report only facts.
- Employees and contractors are not to give any information about a spill to anyone other than the designated on-scene representatives of Ecology, USCG, or the EPA.
- No statements should be made regarding the following subjects, except by persons designated by the Incident Commander.
  - Liability for spill.
  - Estimates of damage expressed in dollars.
  - Estimates of the duration of cleanup.
  - Commitments regarding effectiveness of cleanup.
  - Comments regarding appropriateness or effectiveness of public or private involvement.

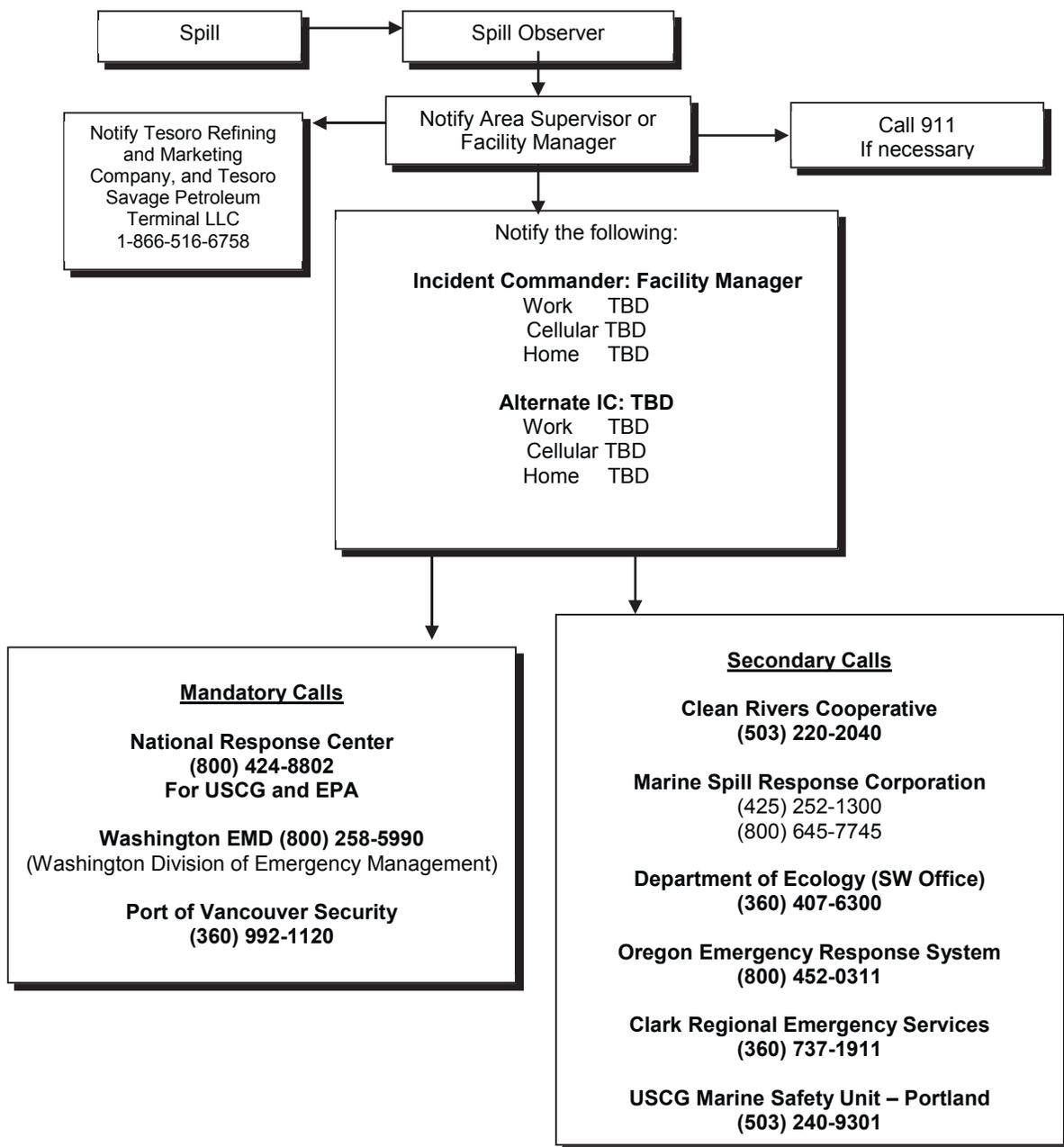
All inquiries from newspapers, radio stations, and television stations will be referred to the Incident Commander.

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Figure 3.1. Notification Flow Chart



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### Figure 3.2. Notification Information Reporting Form

Required in a Report to the National Response Center (NRC): 24/7 TELEPHONE: (800) 424-8802

**Note: it is not necessary to wait for all information before calling NRC. Notification Must Occur within the First Hour.**

REPORTING PARTY INFORMATION								
Name: _____		Position: _____		Company: _____				
Day Telephone: <u>TBD</u>		Evening Telephone: _____						
Address: <u>5501 NW Old Lower River Rd</u>								
City: <u>Vancouver</u>		State: <u>WA</u>		Zip: <u>98660</u>				
Were Materials Discharged?		<u>YES/NO</u>		Confidential? <u>YES/NO</u>				
Meeting Federal Obligations to Report?		<u>YES/NO</u>		Date Called: _____				
Are you calling for the responsible party?		<u>YES/NO</u>		Time Called: _____				
INCIDENT DESCRIPTION								
Source and/or Cause of incident: _____								
Date of Incident: _____			Time of Incident: _____					
Incident Address/Location: _____								
Nearest City: _____		State: _____		County _____ Zip _____				
Distance From City: _____			Direction from City: _____					
Section _____		Township _____		Range _____ Borough _____				
Container Type _____			Tank Oil Storage Capacity _____					
Facility Oil Storage Capacity: _____								
Facility Latitude: _____			Facility Longitude: _____					
MATERIAL DISCHARGE								
CHRIS CODE	Discharged Quantity	Unit of Measure	Material Discharged in Water	Quantity	Unit of Measure			
RESPONSE ACTION								
Actions Taken to Correct, Control, or Mitigate Incident? _____								
IMPACT								
Number of Injuries: _____			Number of Fatalities: _____					
Were there Evacuations? <u>YES/NO</u>			Number Evacuated: _____					
Was there any Damage? <u>YES/NO</u>			Damage in Dollars (approximate): _____					
Medium Affected: _____								
Description: _____								
More Information about Medium: _____								
ADDITIONAL INFORMATION								
Any Information about the incident not recorded elsewhere in the report: _____								
CALLER NOTIFICATIONS								
<b>EPA</b>	YES/NO	<b>USCG</b>	YES/NO	<b>STATE</b>	YES/NO	<b>OTHER</b>	YES/NO	<b>Describe:</b>

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**Figure 3.3. Notification Summary and Documentation Form**

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>A. COMPANY PERSONNEL</b>			
TBD	TBD		
<b>B. MANDATORY NOTIFICATIONS</b>			
National Response Center (NRC)	(800) 424-8802*		
Washington Emergency Management Division (EMD)	(800) 258-5990		
Port of Vancouver Security	360-992-1120		
<b>C. SECONDARY NOTIFICATIONS</b>			
Clean Rivers Cooperative	(503) 220-2040		
Marine Spill Response Corporation	(425) 252-1300 (800) 645-7745		
Department of Ecology – Southwest Office	(360) 407-6300		
Oregon Emergency Response System	(800) 452-0311		
Clark Regional Emergency Services Agency	(360) 737-1911		
USCG Marine Safety Unit – Portland	(503) 240-9301*		

\*Represents after-hour telephone numbers



**Figure 3.3. Notification Summary and Documentation Form (continued)**

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>C. NOTIFICATIONS AS APPROPRIATE</b>			
<b>Federal Agencies</b>			
EPA Region 10 – Seattle	(206) 553-1264*		
National Ocean and Atmospheric Association (NOAA) Seattle (Hazmat)	(206) 526-6317 (206) 526-4911		
National Weather Service Portland	(503) 326-2340 (503) 326-2720		
Federal Bureau of Investigation Portland	(503) 224-4181*		
U.S. Forest Service Mountlake Terrace, WA	(800) 627-0062		
U.S. Department of the Interior Portland, OR	(503) 326-2489		
<b>Tribal Nations</b>			
TBD	TBD		
<b>Other State Agencies</b>			
(EFSEC) State of Washington Energy Facility Site Evaluation Council	TBD		
Washington Highway Patrol (Emergency Only)	(360) 757-1175* (360) 753-6540		
Washington State Department of Fish and Wildlife	(800) 258-5990 (360) 534-8233 (pager) (360) 902-8124 (office)		
Washington State Department of Fish and Wildlife Oil Spill Response Team	(360) 534-8233 (pager) (360) 902-8124 (office)		
Washington State Department of Natural Resources (Regional)	(360) 856-3500		
Washington State Department of Parks and Recreation	(360) 755-9231		
Washington State Fire Marshall	(360) 596-3900		
Washington State Dept. of Transportation – Southwest Region	(360) 905-2000		
Oregon Department of Wildlife	(503) 872-5268		
<b>Local Agencies</b>			
Vancouver Public Works Operations Ctr	(360) 693-9302		
Clark Public Utilities	(360) 992-3000		
Clark County Public Works (waste water)	(360) 397-6118		
Vancouver-Clark Parks and Recreation	(360) 487-8311		
Clark County Public Health	(888) 727-6230		

\*Represents after hours telephone numbers

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**Figure 3.3. Notification Summary and Documentation Form (continued)**

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>D. EMERGENCY SERVICES</b>			
<b>Emergency Medical and Hospitals</b>			
Legacy Salmon Creek Hospital	(360) 487-1000		
SW Washington Medical Center (Emergency Room)	(360) 514-2064		
Clark County/Vancouver Emergency Services	(360) 737-1911 or 911		
Clark County Public Health	(360) 397-8215		
Oregon Health & Science University (Portland)	(503) 494-7686		
Providence Portland Medical Center	(503) 215-1111		
Legacy Good Samaritan Hospital & Medical Center (Portland)	(503) 413-7711		
<b>Fire Departments</b>			
Vancouver Fire Department	911 or (360) 487-7211		
Clark County Fire Marshall	(360) 397-2375 x-2186		
Clark County Hazardous Materials	(360) 397-2375		
<b>Police Departments</b>			
Vancouver Police Administration	911 or (360) 487-7400		
Clark County Sheriff Administration	911 or (360) 397-2366		
<b>E. MEDIA</b>			
<b>Radio</b>			
AM 750 KXL, Portland	(503) 417-9595		
AM 1190 KEX, Portland	(503) 225-1190		
<b>Television</b>			
KING TV NBC, Channel 5 (Seattle)	(206) 448-5555		
KIRO TV CBS, Channel 7 (Seattle)	(206) 728-7777		
KOMO TV ABC, Channel 4 (Seattle)	(206) 404-4145		
KATU ABC, Channel 2 (Portland)	(503) 231-4222		
KOIN NBC, Channel 6 (Portland)	(503) 464-0600		
KGW NBC, Channel 8 (Portland)	(503) 226-5000		
<b>Newspapers</b>			
Seattle Times	(206) 464-2111 (206) 464-2261 (fax)		
Associated Press	(206) 682-1812		
The Columbian (Clark County)	(360) 699-6006		
The Oregonian (Portland)	(503) 221-8100		

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Figure 3.3. Notification Summary and Documentation Form (continued)

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>F. RESPONSE CONTRACTORS</b>			
Marine Spill Response Corporation	1-800-645-7745 (360) 417-9287 (Office) (206) 799-1621 (Cell)		
Clean Rivers Cooperative	(503) 220-2040*		
TBD Environmental Consultants	TBD		
Global Diving and Salvage Inc. (no contract in place)	(206) 623-0621* 1-800-441-3483		
NRC (no contract in place)	(800) 337-7455		
Harder Mechanical	(503) 281-1112		
<b>G. MUTUAL AID</b>			
Nustar	(360) 694-8591 (360) 772-5031 (Cell) (360) 567-8871 (Cell)		
<b>H. MARINAS/PORTS</b>			
Port of Vancouver	(360) 992-1120		
Port of Portland	(800) 547-8411		
Tomahawk Island Marina	(503) 289-5511		
Marineland at Pier 99	(503) 286-8221		
Ridgefield Marina	(360) 903-8517		
Kadow's Marina	(360) 693-0723		
<b>I. LOCAL WATER SUPPLY</b>			
City of Vancouver Municipal Water Treatment	(360) 696-8177		
Clark County Groundwater	(360) 397-6118		
Port of Vancouver Facilities	(360) 518-0501		
<b>J. HELICOPTERS AND AIRCRAFT CHARTERS</b>			
C&C Aviation (Portland)	(503) 760-6969		
Precision Helicopters	(503) 537-0108		
Hillsboro Helicopters (Contract with)	(503) 648-2831		

\*Represents after hours telephone numbers

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**Figure 3.3. Notification Summary and Documentation Form (continued)**

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>K. WILDLIFE REHABILITATION SPECIALISTS</b>			
International Bird Rescue & Research Center (IBRRC)	(888) 447-1743*		
Focus Wildlife	(310) 386-5965 (800) 578-3048		
Oiled Wildlife Care Network	(530) 979-7561 (800) 645-1911 (oil spill) (877) 823-6926 (oiled animal)		
Progressive Animal Welfare Society (PAWS)	(425) 787-2500 (425) 412-4040		
Tri-State Bird Rescue	(302) 218-7371 (cell) (302) 737-7241		
<b>L. LOCAL ACCOMMODATIONS</b>			
Staybridge Suites	(360) 891-8282		
Homewood Suites	(360) 750-1100		
Red Lion at The Quay	(360) 694-8341		
Gateway Inn Express	(360) 576-1040		
La Quinta Inn	(360) 566-1100		
Hilton	(360) 993-4500		
<b>M. NEIGHBORING FACILITIES</b>			
Glacier/CalPortland	(360) 693-3611		
NGL Supply Terminal Company	(360) 892-5100 (360) 907-9607 (cell) (360) 694-9420 ext. 1 (Office)		
Clark Public Utilities	360-694-2844		
Clark County Jail Work Center	360-992-3000		
Tidewater Terminal Company	360-397-2138		
Farwest Steel	360-693-1491		
Subaru of America	360-735-8744		
Tri-Star Transload	360-737-7630		
West Vancouver Materials Recovery Center	503-807-2952 (24-hr)		
HME Construction	360-690-6842 (24-hr) or 360-904-0667		
BPA Substation	360-695-4553 or 888-699-1053		
Kelly Pipe	360-570-4338 (Office) 360-951-4464 (Cell)		

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**Figure 3.3. Notification Summary and Documentation Form (continued)**

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>N. DOWNRIVER WATER USERS</b>			
U.S. Fish & Wildlife Services Ridgefield Refuge (River Mile 94)	(360) 887-4106		
Bachelor Island Ranch (5 Intakes) (River Mile 90)	(360) 887-3883		
Boise Cascade Industrial Intake (River Mile 88)	(503) 397-2900		
Emerald Environmental (River Mile 75)	(360) 673-2550		
Trojan Nuclear Power Plant Intake (River Mile 73)	(503) 556-3713		
City of Rainier Drinking Water (River Mile 68)	(503) 556-7301 (City Hall) (503) 410-2173 (Cell)		
Longview Fiber (River Mile 68)	(360) 425-1550		
Weyerhaeuser Company (4 Intakes) (River Mile 64)	(360) 425-2150		
City of Longview (Discharge only) (River Mile 64)	(360) 442-5000		
Jammies Environmental (River Mile 58)	(360) 577-5691		
Portland General Electric (River Mile 53)	(503) 728-7470		

\*Represents after hours telephone numbers

NOTE: For information about local food services and local transportation resources, consult the Vancouver-area yellow pages.

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**Figure 3.4. Agency Notifications Requirements**

Agency	Spill Size	Verbal Report	Written Report
<b>NRC (USCG, EPA, and DOT notified)</b>	Immediately for all spills that impact or threaten navigable water or adjoining shoreline  Any size on land if threatening surface waters  Fire/explosion/injury from regulated pipeline	Call NRC Immediately (Within 1 hour): 800-424-8802	None
<b>EPA Region 10</b>	If spill is 1,000 gal or more (on land), or >42 gallons in each of 2 discharges within 12-month period	No	Yes (within 60 days)
<b>USDOT</b>	Any size from a regulated pipeline	Immediately	Within 30 days on DOT Form 7000-1 <a href="http://phmsa.dot.gov">http://phmsa.dot.gov</a>
<b>WSDOT</b>	Spill on WSDOT-regulated roadway	Immediately: Washington Traffic Safety Commission: 360-753-6197	None
<b>Energy Facility Site Evaluation Council</b>	<ul style="list-style-type: none"> <li>TBD by Site Certificate</li> </ul>	TBD by Site Certificate	TBD by Site Certificate
<b>Port of Vancouver</b>	<ul style="list-style-type: none"> <li>Any amount on land or water requiring notification outside of Facility Management</li> </ul>	Immediately Security 360-992-1120	As may be requested by the agency
<b>Department of Ecology – Spills Program</b>	<ul style="list-style-type: none"> <li>Any amount into or threatening state waters – inland, marine, or groundwater.</li> <li>Any amount into a storm drain or ditch</li> <li>Any amount onto snow</li> <li>Any amount onto state highways and freeways.</li> <li>Any amount onto land which could threaten waters of the state (including groundwater)</li> </ul>	Immediately (within 30 minutes) WA Emergency Management Division: 800-258-5990	As may be requested by the agency
<b>Department of Ecology – Dangerous Waste Program</b>	<ul style="list-style-type: none"> <li>Any amount released to the environment which poses a threat to human health or the environment</li> <li>Any amount released to containment which is not “promptly” cleaned up.</li> </ul>	Immediately (within 60 minutes): Ecology Eastern Regional Office: 509-329-3400	As may be requested by the agency
<b>Washington Utilities Commission</b>	<ul style="list-style-type: none"> <li>Any release of product from a pipeline &gt;5 gallons</li> <li>Damage to a pipeline exceeding \$25,000</li> <li>Other “significant occurrences” (especially if reported by news media)</li> <li>Ref: WAC 480-75-630</li> </ul>	Immediately (within 2 hours): Pipeline Safety Notification: 888-321-9144	Written report within 30 calendar days
	<ul style="list-style-type: none"> <li>Emergency pipeline shutdown, discovery of material defects, or physical damage that impairs pipeline</li> </ul>	Immediately (within 24 hours): Pipeline Safety Notification: 888-321-9144	As may be requested by the agency
<b>Washington Department of Natural Resources (DNR)</b>	<ul style="list-style-type: none"> <li>Any amount which may impact state-owned aquatic lands</li> </ul>	Immediately: WA Emergency Management Division: 800-258-5990 Rivers DNR Aquatic District: 360-577-2025	As may be requested by the agency

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## 4. Response Team Organization

### 4.1 Description

The Facility is owned and operated by Tesoro Savage Petroleum Terminal LLC (Company), a joint venture of Savage Companies and Tesoro Corporation. In addition to Facility employees, the Company provides staffing of Area 400, Marine Terminal, operations. Oil spill response at the Facility relies both upon Facility-specific resources, as well as the Company spill response organization and resources deployed region-wide.

The effective management of personnel and resources during a spill event is integral to the overall success of the response effort. The Facility and Company have developed its oil spill response organization around the Incident Command System (ICS), which provides the structure for effective management of spill resources. The duties and responsibilities of the ICS team members are described in **Figure 4.4**.

In addition, Facility is committed to follow the guidelines established by the Northwest ACP. The components of organization would be activated and mobilized in accordance with the size and complexity of the incident.

The Company's oil spill response organization consists of

- Facility Initial Response Team (IRT)
- Tesoro West Coast Regional Response Team (West Coast RRT)

If a response exceeds the Terminal IRT's capabilities, the Incident Commander may activate the West Coast RRT in all or part. Procedures are in place to activate this team.

#### 4.1.1 Facility Initial Response Team

The Facility IRT consists of the Facility Manager and Operators, or Tesoro Area Manager and Marine Superintendent supported by the primary spill response contractors, Clean Rivers Cooperative (CRC) and the MSRC. The IRT is responsible for

- Local planning and preparation activities to enable effective response actions.
- Providing first and sustained response to a spill originating from the Terminal.

Phone numbers for the IRT are provided in **Figure 3.3 Part A**.

#### 4.1.2 West Coast Regional Response Team

The Company has an established oil spill incident command and spill management team, which assists the Company's West Coast terminals and refining operations as needed. The West Coast RRT is available to support spill response activities at the Facility. Team members are made available, as needed, for a response at the Facility. Arrival time of the team members will vary depending on work schedules, but team members should typically arrive within 4 to 12 hours of notification. A roster of the West Coast RRT is provided in **Figure 4.2**. Adequate trained personnel are available to manage the first 7 days of response.

The West Coast RRT members have cellular telephones, portable radios, computers, printers, and fax machines immediately available to carry with them to the spill site. Team members are trained to work as commanders, officers, chiefs, and responders under the National Incident Management System (NIMS). The initial Incident Commander has the authority to activate any portion or all of the West Coast RRT. Once activated, the team will

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- Assess the magnitude of the incident and its potential impact,
- Estimate the level of effort necessary for minimizing its impact, and
- Arrive on scene, if necessary, as soon as possible.

Once on scene, West Coast RRT members will integrate with the terminal initial response personnel and contractors on scene. The terminal IRT organization is provided in **Figure 4.1**.

### 4.1.3 Contractor Equipment, Personnel, and Services

Facility and/or the Company have contracted with MSRC as a primary response contractor (PRC) to provide spill response services at the Facility. Contact information for each PRC is provided in **Appendix B**. Spill response equipment and a projected deployment schedule for MSRC equipment is described in **Section 7** and **Appendix B**. Written agreement of the contract relationship is contained in **Appendix B**.

- Within 2 hours of notification, MSRC will have response equipment on site.
- Upon arrival at the spill site, representatives from MSRC will lead on-water operations until relieved.
- MSRC will also assist in logistics to assure that equipment arrives on the scene as needed.
- Within 6 hours of notification, MSRC will provide 10 additional responders through their subcontractors.
- Within 10 hours of notification, MSRC will provide 16 additional personnel through their contractors.
- The Facility Manager will continue to be the Incident Commander. He will rely on MSRC and their subcontractors to help address initial health and safety and environmental concerns. He will also look to members of the Company West Coast RRT to provide help or guidance as needed.

### 4.1.4 Volunteers

The Facility does not intend to use citizen volunteers for spill response. All people who volunteer will be referred to persons designated by the federal and state OSCs.

Members of MSRC have trained personnel who may be available to provide mutual assistance during an oil spill. These people will be directed to report to the Facility Incident Commander for job assignments.

## 4.2 Activation Procedures

Activation of the West Coast RRT may be accomplished in stages as described below and illustrated in **Figure 4.3**.

- Spill Observer (most likely vessel or terminal personnel) reports spill to West Coast or Terminal Manager, who then assumes the role of Incident Commander.
- Incident commander directs certain members or entire Facility/Company West Coast RRT to travel to the spill site and evaluate the spill.
- Incident Commander follows established Facility Response Plan (FRP) checklists and uses Facility/Company IRT and Oil Spill Removal Organizations (OSROs) to initiate a response to the oil spill.

## 4.3 Team Member Response Times

During normal business hours, the IRT would organize immediately; during night operations, the IRT could be mobilized within 1 hour. Initial deployment of equipment and personnel at the spill site will occur within 1 hour of discovery given suitable safety conditions.

### ***Transition of Response Staff***

Shift change and the transition of initial staff to incoming local or away team personnel shall occur in an orderly and deliberate manner. The incoming staff shall be sufficiently briefed by the outgoing staff before the outgoing staff is relieved. The briefing shall include a review of the ICS-201 or the Incident Action Plan. The incoming staff will acknowledge understanding of the transition briefing in writing. The outgoing

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staff shall ensure that both the organizational chart and communication plan reflect appropriate personnel changes.

## 4.4 Command Post

### 4.4.1 Location

It is vitally important to establish a central location to serve as a base for each of the functional groups (i.e., Command, Operations, Planning, Logistics, and Finance) and to conduct meetings, post spill/response-related information, and to handle response communications.

Command post features should include

- Sufficient size to allow response personnel to operate effectively and comfortably.
- Conference/media room.
- “Situation room” with wall maps to track the spilled oil, response equipment, sensitive resource areas, personnel, etc.; erasable boards for phone numbers to track equipment; and posted organizational charts.
- Secure phone line and fax phone line for Incident Commander and response managers.
- Full security.
- Office support systems (e.g., fax machines, copiers, phone lines, computers, file system, AM radios, VHF/UHF radio, telephones, base communication station, pagers, courier services, and secretarial service).

In the event of a major spill, both an off-site corporate command post and a facility command post will be established. For a minor spill, the facility command post will be established in one of the following locations.

- Primary Command Post - Facility Office
- Alternate Command Post - Hilton Hotel Vancouver

Depending on the area affected by the spill, additional field command posts may be established.

If the incident involves events that impact the community and require the involvement of government agencies, Unified Command meetings would be conducted at a Joint Operations Center. Members of the response team, along with personnel from the governmental agencies would assume responsibility for the overall management of the spill incident under an ICS Unified Command structure.

In the unlikely event the designated facilities are unavailable, an alternate location that would be considered for use is

Hilton Hotel Vancouver  
 301 West Sixth Street  
 Vancouver, WA 98661  
 Phone number: (360) 993-4500

This facility generally meets all of the aforementioned criteria for a command post.

During a major spill response, a number of warehouses may also be necessary to receive, maintain, store, and distribute response equipment and/or supplies. Warehouses would be located in areas readily accessible by land, air, and/or water, and preferably in proximity to the site(s) where equipment/supplies would be used. The amount of warehouse space required would depend largely upon the incident but it should have, or have the capability for obtaining, the following services.

- Electricity
- Telephones
- Security
- Sanitation facilities

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The warehouse would be manned 24 hours per day and have defined shipping and receiving areas, appropriate inventory control mechanisms, and maintenance equipment.

#### 4.4.2 Staging Areas

In a major spill response, numerous staging areas may be required to support containment and cleanup operations. The Port facility may be used as staging.

In selecting a suitable staging area, the following criteria should be considered.

- Direct access to impacted areas.
- Proximity to secure parking, airports, docks, pier, or boat launches.
- Ability to be a secured area.
- Proximity to populated areas or environmentally sensitive areas.
- Adequate lighting.

Access/staging areas for personnel and equipment within the location boundaries of this OSCP are identified in Response Maps as part of the *Lower Columbia River Geographic Response Plan*. These access/staging areas should meet the following criteria.

- Be readily accessible to large trucks and trailers, which may be used to transfer equipment and should be located near the waterfront.
- Be in a large open area in order to provide storage for equipment and not interfere with equipment loading and offloading operations.
- Have a dock/pier on site for deploying equipment. In addition, moorage should be available for vessels to facilitate the loading/offloading of personnel.

### 4.5 Unified Command System

The Unified Command Structure will be used as a method of integrating federal, state, and local agencies with the Incident Management Team (IMT). The purpose of this system is to organize the variety of agencies that may be involved in a response into a consistent team that performs their duties in a concerted, unified effort. An organizational chart for the IMT is shown in **Figure 4.1**.

The Unified Command Structure consists of four key On-Scene Coordinators: Federal On-Scene Coordinator (FOSC), State On-Scene Coordinator (SOSC), Local On-Scene Coordinator (LOSC), and Tribal On-Scene Coordinator (TOSC), each assisting the Responsible Party/Incident Commander (RP/IC). These five entities will share decision-making authority as Incident Commanders in the Command Center and will consult with each other regarding spill response management issues. The FOSC will coordinate all federal agencies involved in the response. The SOSC will coordinate all state and local agencies involved in the response activities. The LOSC will coordinate all local and 911 response activities. The TOSC will evaluate and input on sensitive tribal issues, and the RP/IC will coordinate all company activities.

Depending upon the size and complexity of the incident, additional federal and state agency personnel may integrate into the other functions of the SMT.

### 4.6 Qualified Individual

The Qualified Individual oversees the management of the entire response, establishes the response priorities and objectives, serves as the liaison with corporate management, and works with the SOSCs and FOSCs in Unified Command. The Qualified Individual is an English-speaking representative of the Facility, available on a 24-hour basis, familiar with the implementation of this OSCP, and trained in responsibilities outlined in this section.

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The Incident Commander/Qualified Individual is the primary senior contact person for the Deputy Incident Commander. The Incident Commander/Qualified Individual has the access to senior management personnel that will establish company policies and ensure that the Deputy Incident Commander, Operations Section Chief, Logistics Section Chief, Finance Section Chief, and Planning Section Chief all have the resources and support necessary to mount and sustain response operations.

The Incident Commander/Qualified Individual will keep the Deputy Incident Commander and command staff fully advised of decisions that may impact oil spill response strategies.

The designated Company Incident Commander/Qualified Individual is the Company West Coast RRT or Facility Manager.

Arrival Time: **TBD hours**.

The Qualified Individual has the following responsibilities and authorities as required by the OPA 90 (40 CFR Parts 9 and 112).

- Activate internal alarms and hazard communications systems to notify all appropriate personnel;
- Notify all response personnel as needed;
- Identify character, exact source, amount and extent of the release, and other necessary items needed for notifications;
- Notify and provide information to appropriate federal, state, and local authorities;
- Assess the interaction of the spilled substance with water and/or other substances stored at the Facility and notify on-scene response personnel of assessment;
- Assess possible hazards to human health and the environment;
- Assess and implement prompt removal actions;
- Coordinate rescue and response actions;
- Access company funds to initiate cleanup activities;
- Initiates a claims process where oil is uncontained and ensures claims information is made public; and
- A direct cleanup activity until properly relieved of responsibility or incident is terminated.

The Qualified Individual and alternates have adequate knowledge and/or have received sufficient training or experience in the following areas.

- Applicable Federal/Occupational Safety and Health Administration standards for emergency response operations (29 CFR 1910.120);
- How to implement the OSCP;
- Requirements of the National Contingency Plan and Northwest ACP;
- Overall spill prevention and response provisions in the OSCP and the specific responsibilities assigned to the Qualified Individual position;
- Resources committed or that could be potentially committed during an incident;
- Procedures for obtaining and obligating funds to carry out the necessary or directed response activities; and the persons or offices to contact outside or within the Company who would facilitate and expedite such actions;
- Ability to perform liaison duties between the Company and the FOSC and SOSC; and
- Ability to assess the needs for additional resources, and to make the appropriate notifications and contractual agreements.

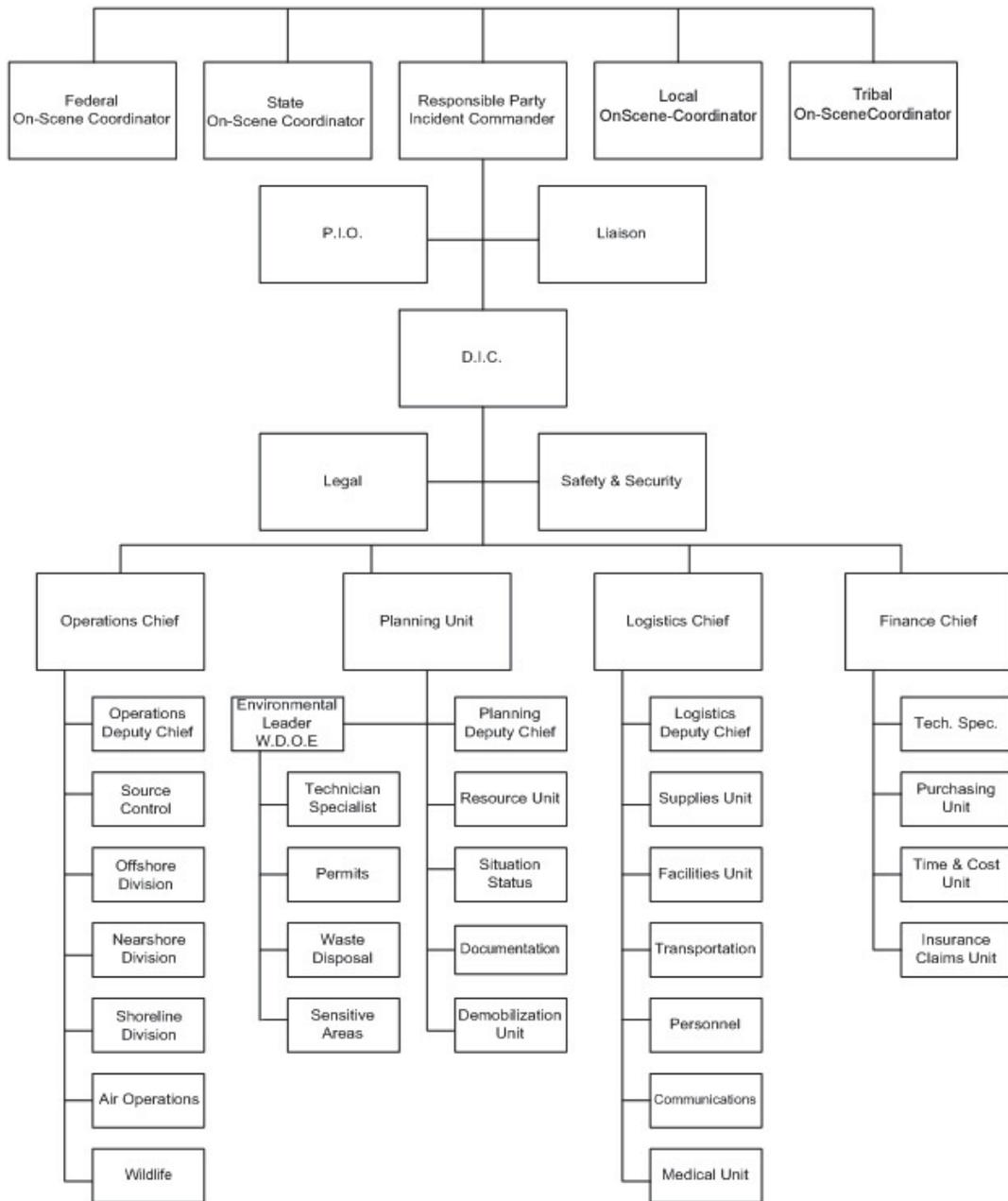
If for any reason the responsibility of the Qualified Individual is transferred to an alternate during spill response activities, the SOSC and FOSC will be notified. The process by which the Qualified Individual's responsibility is transferred also includes internal notification of the IMT. Notification procedures are provided in **Section 3**.

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Figure 4.1. Facility/Company Incident Management Team

Organizational Chart



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**Figure 4.2. Company West Coast Regional Response Team  
(Primary and Alternate Leaders)**

Position	Last name	First name	Office	Cell	Location
Incident Commander/Deputy IC	Brown	Shawn			AK
	Carter	Jeffrey			AK
	Haugstad	Eric			TX
	Schumacher	John			WA
	Walker	John			CA
Legal	Haffner	Jeff			TX
	Harriss	Heather			TX
	Vail	Vanessa			TX
	Vining	Stoney			TX
Public Information Officer	Barbee	Christina			TX
	Marcy	Mike			CA
	Saletta	Jill			TX
Liaison	Bean	Jack			CA
	Dami	Kenneth			CA
	Gill	Matt			AK
	Marcy	Mike			CA
	Riley	Daniel			TX
Safety	Sotelo	Brissa			CA
	Alder	Anne			UT
	Larrigan	Harry			TX
Intelligence	Pineda	Gerald			TX
	Kohler	Jeffry			AK
Operations	Alleyn	Michael			WA
	Carter	Brock			UT
	Markee	Thomas			TX
	McCaughey	Robert			CA
	Miller	Bob			CA
	Rosin	Scott			AK
	Waldron	Clark			UT
Planning	Carter	Brock			UT
	Helberg	Pamela			WA
	Jungbluth	Robert			TX
	Miller	Bob			CA
	Shea	Mike			WA
	Waldron	Clark			UT
Environmental	Baker	Jeff			WA
	Donovan	Robert			WA
	Scheetz	Doug			ND
	Norcross	Neil			WA
	Ribbens	Peter			AK
	Spencer	Claire			CA
	Stockdale	Robert			CA
	Trujillo	Sharon			CA

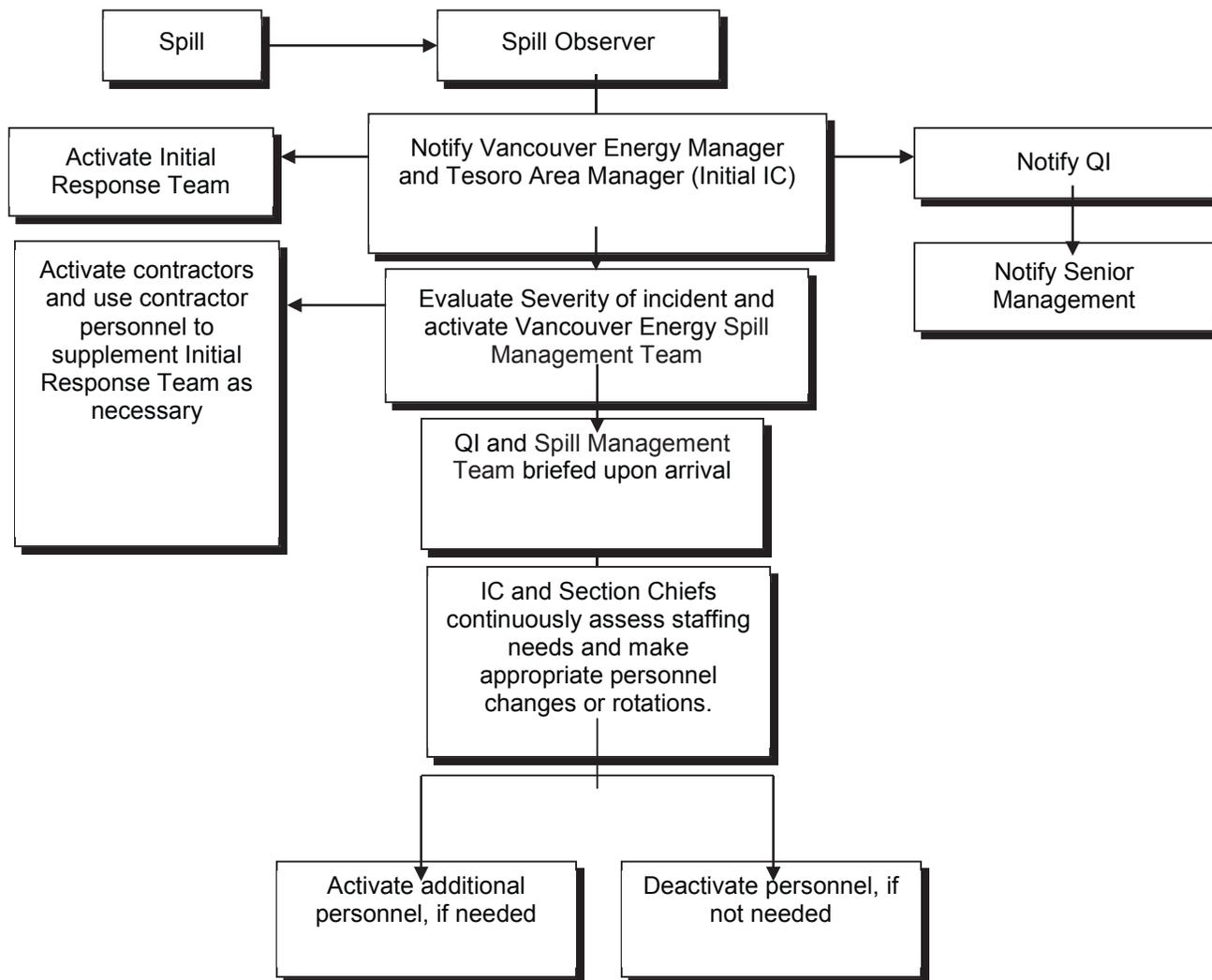


Position	Last name	First name	Office	Cell	Location
Documentation	Courtney	Jeannie			HI
	Cox	Gloria			UT
	Grinton	Leilani			CA
	Stigall	Amanda			AK
	Straus	Michelle			WA
	Young	Carol			WA
Resources	Carter	Brock			UT
	Kestenbaum	Robert			CA
Situation	Cowan	Tracy			TX
	Harris	Sherry			UT
	Pedroza	Roel			WA
Logistics	Carroll	Jason			ND
	Havard	Tara			WA
	Kohler	Jeffry			AK
	Tingey	Roy			UT
Security	Burris	Mark			WA
	Griffin	Bonnie			TX
Finance	Devito	Aleja			AK
	Elsberry	Jamie			CA
	Gillett	Bruce			WA
Human Resources	Kimmel	Ryan			TX
	Sambrano	Rose			TX
IT	Keith	Kris			CA
	Necessary	Lance			AK

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Figure 4.3. Spill Management Team Activation Procedure



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**Figure 4.4. Incident Command Team Duties and Responsibilities**

Facility positions and roles described in the Facility Response Plan (FRP) are intended to be representative of the positions and roles described in the most currently updated Northwest ACP. For the purpose of training and/or role clarification, the Facility plan will refer to the Northwest ACP roles that apply to our ICS positions. Abbreviated role descriptions in the FRP are intended to help reduce the bulk of the plan. Facility may, from time to time, elect to fill certain ICS support positions with approved PRC or contract personnel; **at no time will these individuals be cast in the role of Incident Commander or Section Chief.** Reference **Appendix C** of the approved PRC Application.

Facility and Company will follow a planning cycle consistent with the Northwest ACP.

**SPILL RESPONSE MANAGER**

**Incident Commander/  
Responsible Party  
(IC/RP):**

Responsible for managing the crisis including the development and implementation of strategic decisions. The IC/RP may designate a Deputy to delegate the duties and responsibilities found on the checklist of positions identified in the IMH.

**Deputy Incident  
Commander (Deputy IC):**

Assists by carrying out assignments and duties as given by the IC/RP. In the event the IC/RP could no longer perform required duties, the Deputy IC would assume those duties. The Deputy IC is trained to perform the role of the IC/RP.

**COMMAND STAFF**

**Legal Officer:**

Provides advice to the Incident Commander on certain aspects of an oil spill incident. The Legal Officer ensures that information that may be relevant to the defense and/or settlement of future claims against the company is gathered and preserved. The Legal Officer also assists other members of the SMT upon request in making legal judgments and decisions related to safe and expedient resolution of the response.

**Liaison Officer:**

Responsible for communicating with local, state, and federal government agencies not involved in the unified command structure. Also advises interested groups, corporations, and organizations of the actions that the SMT and/or Unified Command is taking to address concerns. This position may be filled by an agent of Ecology rather than the Company, unless otherwise directed by the Unified Command.

**Information Officer:**

Responsible for the formulation and release of information about the crisis to the news media. Is expected to work in concert with other members of the Joint Information Center when the magnitude of an event warrants formation of a Joint Information Center. Provides Company-based information to be used in dissemination of facts and information regarding a crisis event. This position may be filled by an agent of Ecology rather than the Company unless otherwise directed by the Unified Command.

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**Safety Officer:** Responsible for monitoring and assessing hazardous and unsafe situations and developing measures for ensuring personnel safety. Follows prescribed guidelines detailed in the IMH and Northwest ACP in an effort to anticipate potential hazardous working conditions and prevent exposures to the public and response personnel.

**Security Officer:** Responsible for providing safeguards needed to protect personnel and property from loss and damage. Specific “Post Orders” are developed to custom-fit the security needs of the crisis. Generally keeps watch over areas defined by the Unified Command as limited or no-access areas. May work directly with LOSC or other local authority upon request.

**Staff Assistants:** Staff assistants support the Incident Commander team by performing administrative secretarial duties, such as photocopying, taking notes, and recording action items at all meetings, delivering general messages, and assisting with records management, at the direction of the Documentation Unit Leader. Company provides a staff assistant for each Section and the Command staff in an effort to improve the flow of information throughout the response activity. **(Not included in the IMH and Northwest ACP)**

**OPERATIONS SECTION**

**Operations Chief:** Responsible for the management of all operations directly applicable to control, containment, recovery, clean up, and rehabilitation. Activates and supervises organizational elements in accordance with the response objectives set forth in the Incident Action Plan (IAP). Follows the guidance of the IMH and Northwest ACP by drafting primary and alternative response strategies, work assignments, and identifiable resources necessary to sustain a long-term response activity.

**Operations Specialist:** Assists and provides information for field operations.

**Field Supervisors:** Responsible for the implementation of an assigned portion of the IAP, assignment of resources within the progress of control operations, and the status of resources.

**Air Ops Branch:** Primarily responsible for preparing the air operations portions of the IAP. The plan reflects Company or agency restrictions that have an impact on the operations capability of utilization of resources.

**PLANNING SECTION**

**Planning Section Chief:** Responsible for the collection, evaluation, dissemination, and use of information about the development of the spill and status of resources. The information is needed to understand the current situation, predict the probable course of incident events, and prepare alternate strategies and control operations for the incident. The Planning Chief will follow the Planning Cycle as outlined in the Northwest ACP Section 2100.

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- Resources Unit:** Responsible for establishing all check-in activities; preparation and maintenance of displays, charges, and lists that reflect current status; the preparation and processing of resources status change information and the location of incident resources.
- Situation Unit:** Collects and organizes spill status and situation information. Responsible for the evaluation, analysis, and display of that information.
- Documentation Unit:** Maintains accurate and complete historical files, provides duplicating services, and stores incident files for legal, analytical, and historic purposes.
- Environmental Unit:** Company recognizes the Environmental Unit Leader position will initially be filled by an IC/RP designee until such time that Ecology or other trustee agency of the state of Washington arrives. At this point, Unit Leader responsibilities may be passed to the State until it is deemed appropriate to return this function to the IC/RP designee, or until such time the IC/RP or Unified Command directs the change to be made.
- The Environmental Unit determines the extent of environmental damage and evaluates the effects of cleanup methods on the environment, obtains necessary permits, coordinates with government agencies to arrange for disposal of recovered oil and waste, and implements wildlife protection and treatment plans.
- Technical Specialist:** Technical specialists are advisors with special skills needed to support incident options. They may report to the Planning Section Chief. They function within an existing unit such as the situation unit, form a separate unit if required, or can be reassigned to other parts of the organization. Filled by contract services personnel.

**LOGISTICS SECTION**

- Logistics Section Chief:** Responsible for providing facilities, services, and materials in support of all phases of the incident response.
- Supply Unit:** Orders personnel, equipment, and supplies; receives and stores supplies; maintains inventories and distributes supplies as requested.
- Facilities Unit:** Provides for office work areas, living quarters and storage buildings; provides sanitation facilities, manages remote camps and general maintenance to facilities.
- Group Support Unit:** Provides for transportation of personnel, supplies, food, and equipment; performs fueling, service and repair work to vehicles and other ground support equipment; implements traffic plan for the incident.
- Medical Unit:** Develops a medical emergency plan and renders medical aid for injured and ill personnel assigned to the spill.
- Food Unit:** Determines feeding requirements at all spill locations and facilities; provides drinking water and contractor oversight.

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- Communications Unit:** Develops plans for the effective use of spill communications equipment and facilities; installs and tests equipment, and operates an Incident Communications Center.
- Radio Dispatch:** Maintains communication links between command post and field supervisors. Provides for recording of all communications and routing of hard copy to required parties.
- Procurement Unit:** Administers and establishes, as necessary, vendor contracts for operations support-related supplies, services, and technical consultants.

<b>FINANCE UNIT</b>
---------------------

- Finance Section Chief:** Responsible for all financial and cost analysis aspects of the spill.
- Time/Cost Unit:** Provides time/cost reporting of labor, materials, and supplies used during spill containment and repair.
- Insurance Unit:** Manages claims activities and works with insurance company to ensure claims are accurately documented and evaluated. Initiates investigation and documentation on all claims other than personal injury and arranges for damage surveyors and adjusters.

## 4.7 Response Team Training Program

The Facility training program for spill response, including training for the Spill Management Team (SMT), is included in **Appendix A** of this OSCP.

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## 5. Incident Planning/Documentation

### 5.1 Documentation Procedures

Facility and Company have adopted the NIMS as their response management system. The Company Supervisor of Contingency Planning maintains a set of all forms for documentation during an exercise or actual spill event. In addition, each section chief maintains the forms specific to their functional group.

Documentation of all events of an oil spill is important in order that management can keep informed, and that accurate reports can be provided to government agencies and the media. The following provides considerations to ensure that effective documentation practices are followed.

Documentation of an oil spill will provide a record of the events as they occur. It will provide the necessary data to determine the accuracy of trajectory analysis, spill size predictions, success of containment, and cleanup operations. Thorough documentation of all events will aid in determining adequacy of spill response plan, modifications needed, and potential improvements for future response operations.

Documentation should begin immediately upon notification of an oil spill and continue until post spill assessments have been made. Initial response actions are documented using Forms provided in **Section 3.2**, which include a Notification Information Reporting Form (provided as **Figure 3.2**) for reporting to NRC, a Notification Summary and Documentation Form (provided as **Figure 3.3**) for summarizing all parties that were notified of the incident, and **Figure 5.1** an Incident Briefing Form used to document the incident and response actions taken (this form complies with Incident Command System Form 201). The type of information required to provide adequate documentation are discussed in the following subsections.

#### 5.1.1 Origin of Spill

All factors, which led to a failure resulting in a spill, should be documented. This should include the following information, if applicable.

- Description of exact piece of equipment that failed.
- Persons responsible for causing spill, including their affiliation with contractors or other organizations.
- Apparent cause of equipment failure.
- If safety or operations practices were not followed, state details.
- If act of vandalism, report any indications leading to identity of persons involved.

#### 5.1.2 Spill Characteristics

All relative information pertaining to the oil spill should be recorded throughout the incident. Records should include, but not be limited to, the following information.

- Person discovering the spill.
- Date and time spill occurred or was first observed.
- Location of spill occurrence and area covered by oil.
- Actual or estimated spill volume and direction of movement.
- Type of pollutant.
- Rate of release, known or estimated.
- Effectiveness of containment.

#### 5.1.3 Photographic Surveys

Photographic coverage of the oil spill incident could provide important documentation of the incident, if warranted and feasible. Consideration should be given to photographing important activity/events.

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All photographs should properly be identified with respect to location, date, subject, time, direction, photographer's name, and any witnesses present.

### 5.1.4 Climatological Reports

Climatological data to be gathered for the affected areas during the incident would include

- Temperature.
- Precipitation.
- Wind direction and speed.
- Surface currents (estimate velocity).
- Ice and/or snow cover.

### 5.1.5 Cost Information

A complete record of all costs incurred during the oil spill incident should be maintained, including costs of

- Equipment.
- Contractual support (labor and equipment).
- Supplies and materials.
- Property damage claims.
- Repair.
- Support services (photographic, sample analysis, transportation, food, etc.).
- Legal services.

### 5.1.6 Equipment Utilization and Evaluation

Records should be maintained of all equipment used during the spill incident and necessary data and information should be gathered to allow an evaluation of the performance of major equipment items, i.e., skimmers, booms, and sorbents. This information will allow updating of containment, exclusion and clean-up procedures and will indicate the need for obtaining additional and/or different equipment.

### 5.1.7 Logs

Copies of personal logs that individuals maintained during response operations should also be gathered as part of the documentation record. This information would be particularly useful during the post-spill assessment in determining the strengths and weaknesses of the response efforts.

### 5.1.8 Record of Contacts with and Permits Obtained from Regulatory Agencies

All contacts with and directives from regulatory agencies should be recorded and copies should be made of all permits obtained for specific operations that are subject to regulations, such as disposal of oil materials, utilization of government owned equipment, access to land.

### 5.1.9 Copies of Plans Prepared for the Incident

All of the plans that were prepared to guide response operations should be copied and maintained as part of the documentation records. This plan provides a chronological record of the significant decisions that were made and actions taken during the incident response.

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Figure 5.1. Incident Briefing Form (ICS 201 Equivalent)

**A. SITE DESCRIPTION**

Location Date \_\_\_\_\_  
Hazards \_\_\_\_\_  
Area Affected \_\_\_\_\_  
Surrounding Population \_\_\_\_\_  
Topography \_\_\_\_\_  
Weather Conditions \_\_\_\_\_

**B. ENTRY OBJECTIVE**

The objective of the initial entry to the contaminated area is to:  
\_\_\_\_\_  
\_\_\_\_\_

**C. OFF-SITE ORGANIZATION AND COORDINATION**

**(SEE FACILITY INCIDENT COMMAND CHART)**  
The following personnel are designated to carry out the stated job functions on site. (Note: One person may carry out more than one job function.)

**TASK FORCE LEADER** \_\_\_\_\_  
**SITE SAFETY OFFICER** \_\_\_\_\_  
**SECURITY OFFICER** \_\_\_\_\_  
**FEDERAL AGENCY REPS** \_\_\_\_\_  
**STATE AGENCY REPS** \_\_\_\_\_  
**LOCAL AGENCY REPS** \_\_\_\_\_  
**CONTRACTORS** \_\_\_\_\_

All personnel arriving or departing the site should log in and out with the Site Security Guard. All activities on site must be cleared through the Project Team Leader.

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Figure 5.1. Incident Briefing Form (continued)

**D. OFF-SITE CONTROL**

\_\_\_\_\_ has been designated to coordinate access control and security on site. Safe perimeter has been established at \_\_\_\_\_

No unauthorized person should be within this area.

The on-site Command Post and staging area have been established at \_\_\_\_\_

prevailing wind conditions are \_\_\_\_\_. This location is upwind from the Exclusion Zone.

Control boundaries have been established, and the Exclusion Zone (the contaminated area), hotline, Contamination Reduction Zone, and Support Zone (clean area) have been identified and designated as follows: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

These boundaries are identified by

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**E. HAZARD EVALUATION**

The following substance(s) are known or suspected to be on site. The primary hazards of each are identified.

<u>Substances Involved</u>	<u>Concentrations (if known)</u>	<u>Primary Hazards</u>

The following additional hazards are expected on site: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Hazardous substance information form(s) for the involved substance(s) have been completed and are attached.**



Figure 5.1. Incident Briefing Form (continued)

**F. PERSONAL PROTECTIVE EQUIPMENT**

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas or tasks.

<u>Location</u> Hot Zone	<u>Job Function</u>	<u>Level of Protection</u> A B C D Other
<u>Decontamination Area</u>		A B C D Other

Specific protective equipment for each level of protection is as follows.

LEVEL A	LEVEL B	LEVEL C	LEVEL D	OTHER

If air-purifying respirators are authorized, \_\_\_\_\_ is the appropriate canister for use with the involved substances and concentrations. A competent individual has determined that all criteria for using this type of respiratory protection have been met.

**NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER AND THE PROJECT TEAM LEADER.**

**G. ON-SITE WORK PLANS**

Work party(s) consisting of \_\_\_\_\_ persons will perform the following task:

Project Team Leader \_\_\_\_\_

Work Party #1 \_\_\_\_\_

Work Party #2 \_\_\_\_\_

Rescue Team (required for IDLH entry) \_\_\_\_\_

Decontamination Team \_\_\_\_\_

The work parties were briefed on the contents of this plan at \_\_\_\_\_



Figure 5.1. Incident Briefing Form (continued)

**H. COMMUNICATION PROCEDURES**

Channel \_\_\_\_\_ has been designated as the radio frequency for personnel in the **HOT ZONE**. All other on-site communications will use Channel \_\_\_\_\_.

Personnel in the **HOT ZONE** should remain in constant radio communication or within sight of the Project Team Leader. Any failure of radio communication requires an evaluation of whether personnel should leave the **HOT ZONE**.

\_\_\_\_\_ is the emergency signal to indicate that all personnel should leave the **HOT ZONE**. In addition, a loud hauler is available if required.

The following standard hand signals will be used in case of failure of radio communications:

- |   |                            |
|---|----------------------------|
| Hand gripping throat                            | Out of air - can't breathe |
| Grip partner's wrist or both hands around waist | Leave area immediately     |
| Hands on top of head                            | Need assistance            |
| Thumbs up                                       | I am alright, I understand |
| Thumbs down                                     | Negative                   |

Telephone communication to the Command Post should be established as soon as practical. The phone number at the Command Post is \_\_\_\_\_.

**I. DECONTAMINATION PROCEDURES**

Personnel and equipment leaving the **HOT ZONE** shall be thoroughly decontaminated. The standard level \_\_\_\_\_ decontamination protocol shall be used with the following decontamination stations: (1) \_\_\_\_\_

- |               |           |            |
|---------------|-----------|------------|
| (2) _____     | (3) _____ | (4) _____  |
| (5) _____     | (6) _____ | (7) _____  |
| (8) _____     | (9) _____ | (10) _____ |
| (Other) _____ |           |            |

Emergency decontamination will include the following stations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The following decontamination equipment is required: \_\_\_\_\_  
\_\_\_\_\_ will be used as the decontamination solution.

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Figure 5.1. Incident Briefing Form (continued)

**J. SITE SAFETY AND HEALTH PLAN**

**1. Site Safety Officer**

\_\_\_\_\_ is the Site Safety Officer and is directly responsible to the Project Team Leader for safety recommendations on site.

**2. Emergency Medical Care**

\_\_\_\_\_ and \_\_\_\_\_ are the qualified EMT's on site.

\_\_\_\_\_ was contacted at \_\_\_\_\_ and briefed on the situation, the potential hazards, and the substances involved. A map of alternative routes to this facility is available at \_\_\_\_\_.

Local ambulance service is available from \_\_\_\_\_ at phone number \_\_\_\_\_. Their response time is \_\_\_\_\_ minutes. Whenever possible, arrangements should be made for on-site standby.

**First-aid equipment is available at the following locations.**

**First Aid Equipment**

**Location**

**First Aid Kit**

\_\_\_\_\_

**Emergency Eye Wash**

\_\_\_\_\_

**Emergency Shower**

\_\_\_\_\_

**Emergency medical information for substances present:**

<u>Substance</u>	<u>Exposure Symptoms</u>	<u>First-Aid Instructions</u>



**Figure 5.1. Incident Briefing Form (continued)**

List of emergency phone numbers:

<u>Agency/Facility</u>	<u>Phone/Contact</u>
Police	_____
Fire	_____
Hospital	_____
Airport	_____
Public Health Advisor	_____

**3. Personnel and Environmental Monitoring**

The following environmental monitoring instruments shall be used on site at the specified intervals. (Strike if not applicable)

Combustible Gas Indicator	continuous/hourly/daily/other _____
O <sub>2</sub> Monitor	continuous/hourly/daily/other _____
Colorimetric Tubes	continuous/hourly/daily/other _____
HNU/OVA	continuous/hourly/daily/other _____
Other	continuous/hourly/daily/other _____

**4. Emergency Procedures**

(Should be modified as required for incident)

The following standard emergency procedures will be used by on-site personnel. The Site Safety Officer shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate procedures are followed.

**Personnel Injury in the HOT ZONE:**

Upon notification of an injury in the HOT ZONE, the designated emergency signal \_\_\_\_\_ shall be sounded. All site personnel shall assemble at the decontamination line. The rescue team will enter the HOT ZONE (if required) to remove the injured person to the hotline. The Site Safety Officer and Project Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. The on-site EMT shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required). No persons shall reenter the HOT ZONE until the cause of the injury or symptoms is determined.

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**Figure 5.1. Incident Briefing Form (continued)**

**Personnel Injury in Support Zone:**

Upon notification of an injury in the support Zone, the Project Team Leader and Site Safety Officer will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of on-site personnel, operations may continue, with the on-site EMT initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal \_\_\_\_\_ shall be sounded and all site personnel shall move to the decontamination line for further instructions. Activities on site will stop until the added risk is removed or minimized.

**Fire/Explosion:**

Upon notification of fire or explosion on site, the designated emergency signal \_\_\_\_\_ shall be sounded and all site personnel shall assemble at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

**Personal Protective Equipment Failure:**

If any site worker experiences a failure or alteration of protective equipment that affects the protection factor that person and his/her buddy shall immediately leave the HOT ZONE. Reentry shall not be permitted until the equipment has been repaired or replaced.

**Other Equipment Failure:**

If any other equipment on site fails to operate properly, the Project Team Leader and Site Safety Officer shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety or personnel or prevents completion of the work plan tasks, all personnel shall leave the HOT ZONE until the situation is evaluated an appropriate actions taken.

The following emergency escape routes are designated for use in those situations where egress from the HOT ZONE cannot occur through the decontamination line: \_\_\_\_\_

\_\_\_\_\_

In all situations, when an on-site emergency results in evacuation of the HOT ZONE, personnel shall not reenter until:

- (1) The conditions resulting in the emergency have been corrected.
- (2) The hazards have been reassessed.
- (3) The Site Safety Plan has been reviewed.
- (4) Site personnel have been briefed on any changes in the Site Safety Plan.

**5. Personal Monitoring:**

The following personal monitoring will be in effect on site: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Personal exposure sampling: \_\_\_\_\_

\_\_\_\_\_

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Medical monitoring: The expected air temperature will be \_\_\_\_\_ F. If it is determined that heat stress monitoring is required (mandatory if over 70 F), the following procedures shall be followed: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**All site personnel have read the above plan and are familiar with its provisions.**

**Site Safety Officer** \_\_\_\_\_

**Project Team Leader** \_\_\_\_\_

**Other Site Personnel** \_\_\_\_\_

## 5.2 Claims Process

The Facility and Company establishes the claims process when an incident poses a potential impact to personal injury and/or property, as determined by Unified Command. Responsibility for activating the claims process resides with the Director, Business Insurance within the Finance Section.

The individual ultimately responsible for managing the claims process is the Director, Business Insurance. In addition, the company contracts with a claims processing contractor to manage the claims process.

### **Actions to be taken by Finance Section:**

- Contact Director, Business Insurance to notify him/her of the incident.
- Provide a point of contact for Director, Business Insurance within the Finance Section (Should be Finance Section Chief, Deputy, or Claims Unit).
- Provide Public Information Officer with the predefined Claims phone number (1- 800-753-6737) to post on the company incident response website ([www.tesoronews.com](http://www.tesoronews.com)) and also communicate it to the local media via news release.
- Inform the response team of the predefined claims number.

### **Actions to be taken by Director, Business Insurance:**

- Contact Broadspire to initiate their management of the claims process.
- Appoint a representative to provide supervision and guidance for the claims processing contractor.
- Keep Incident Commander informed by providing regular updates through the designated Finance Section liaison.

### **Actions to be taken by the claims processing contractor:**

- Monitor the predefined claims phone number and provide a report of activity when requested.
- Provide claim forms (**FIGURE 5.2 Oil Spill Claim Form**) to claimant.
- Document, evaluate, and adjudicate claims. There is no time limit for filing claims.

Company captures incident data on the Incident Notification Form to communicate to Broadspire for claims activation.

Broadspire can handle third-party injury and damage claims resulting from explosions, fires, chemical releases, and oil spills. They also offer a cost containment program that uses bar-coders to identify and track cleanup resources. This database is used to provide logistics reports, cost estimation reports, and reconcile contractor billings through invoice review.

Broadspire adjusters work under the supervision and guidance of the Company's Business Insurance Group (Finance Section/Claims Unit).

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### **How to Initiate Claim:**

Broadspire can be activated by contacting the 24-hour teleplus line number at 800-753-6737.

Be prepared to provide the following information.

- Your name, company name
- Telephone and fax number
- Nature and location of the emergency
- Nearest airport
- If the public has been evacuated or threatened and if so how many
- If would you like to establish an “800” phone number

Your call will be returned by a Broadspire Claims Adjuster who will act as the point of contact and coordinator of response.

The team will immediately appoint a representative to provide supervision and guidance for Broadspire.

## **5.3 Dispersant Plan**

The Facility is located in an area that is not under pre-approval for dispersant use and the Company does not intend to use dispersants unless directed by Unified Command.

## **5.4 Bioremediation**

A bioremediation checklist is provided as **Figure 5.2** and should be used for bioremediation processes initiated at the Facility. See **Section 7.3.5** for a discussion of bioremediation processes.

## **5.5 In-Situ Burning**

The Facility is located in an area that is not under pre-approval for in-situ burning and the Company does not intend to use in-situ burning unless directed by Unified Command.

## **5.6 Decanting**

Decanting procedures are summarized in the Recovered Oil and Water Management Plan contained in **Section 5.8**. An Oil Spill Request for Decanting Authorization is included as **Attachment 1** in the Recovered Oil and Water Management Plan (**Section 5.8**).

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**Figure 5.2. Bioremediation Checklist**

<b>Bioremediation Checklist</b>	
<b>SPILL DATA/INCIDENT INFORMATION</b>	
Cause (specific):	
Date/Time:	
Location:	
Volume and Type of Release (cont., intermittent):	
Potential Volume to be Released:	
Confidence in Data (high, medium, low):	
<b>CHARACTERISTIC OF SPILLED OIL</b>	
Oil Type/Name:	
Specific Gravity:	Flash Point:
Pour Point:	Viscosity:
% Aromatics:	% Saturates:
% Asphaltiness:	
<b>WEATHER AND WATER CONDITIONS/FORECAST (48-HR)</b>	
Water Temp:	Air Temp:
Current Info:	Wind Speed:
Salinity:	Wind Direction:
Water Depth:	Sea State:
Tide Info:	
Comments:	



**Figure 5.2. Bioremediation Checklist (continued)**

	Product 1	Product 2	Product 3
Name			
Manufacturer			
EPA Listed			
State Licensed			
Stockpile Location			
Point of Contact			
When Available			
Amount Available			
Amount Needed			
Amount on Hand			
Toxicity			
Type (concentrate/mix)			
Physical Reactivity			
Applicability on Oil			
Efficiency (% projected)			
Application Means			
Positive Dosage Control			
Dosage Rate Settings			
Dosage Charts Available			
Bioremediation Application Information/Evaluation:			
Proposed Bioremediation Application Plan:			



## 5.7 Disposal Plan

Figure 5.3. Sample Incident Disposal Plan

### Model Disposal Plan for Oil Spills in Washington State

\_\_\_\_\_  
(Incident Name)

**Responsible Party:** \_\_\_\_\_  
**Spilled Material:** \_\_\_\_\_  
**Spill Volume (estimate):** \_\_\_\_\_  
**Spill Location:** \_\_\_\_\_  
**Spill Date/Time:** \_\_\_\_\_  
**Report Update Time:** \_\_\_\_\_

#### ***Disposal Plan Authorization***

This plan is written at the request of the USCG and/or EPA and Ecology. The responsible party will recover the maximum feasible amount of oil spilled during the above named incident. In addition, an unknown quantity of oily waste debris (including plastics, sands, etc.) will be recovered. When disposing of this material, the responsible party will abide by all applicable state, local, and federal laws and regulations. Disposed material will be tracked to provide an accurate means of estimating total oil recovered. Each section of this incident specific disposal plan addresses and corresponds with the waste disposal "Guideline" found in Section 9620 of the Northwest ACP.

This plan may be amended as necessary to ensure compliance with all applicable laws and regulations. Amendment may occur only upon mutual agreement of the responsible party, the federal OSC (USCG/EPA), and/or the state OSC (Ecology).

Submitted By: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by Ecology: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed by USCG/EPA: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by Responsible Party: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by other Local Government Representative(s) (Optional):  
 \_\_\_\_\_ Date: \_\_\_\_\_

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**SECTION I WASTE HANDLERS**

The following licensed transporters and approved treatment and disposal facilities are to be used for waste handling and disposition unless otherwise directed by Ecology. All waste handlers have read and are working in accordance with this plan.

*Name of Company                      Disposal Functions                      Company Representative Signature.*

**SECTION II DESIGNATION**

The spilled material was deemed (non-) dangerous waste based on the following:

**SECTION III INTERIM STORAGE, SEGREGATION, AND TRACKING**

A. INTERIM STORAGE OF SOLID MATERIAL

Interim storage sites will be located at: \_\_\_\_\_

\_\_\_\_\_

Provide a description each site, lined roll-off boxes, etc. Describe how each site was constructed, bermed, covered, etc. to minimize infiltration of rainwater and prevent leaching.

Describe measures that will be taken to return sites to their original condition

Ecology's authorization

B. SEGREGATION

Describe measures taken to ensure material recovered was properly segregated. Material recovered must be segregated in the following manner unless otherwise directed by the State or Federal OSC:

1. Oil collected from sources other than state waters/shorelines (e.g. on vessels or pier)
2. Oil and oil/water mixtures recovered from state waters/shorelines
3. Oiled organic debris: wood, aquatic vegetation... Oily debris should be placed in **clear plastic bags** for ease of identifying contents and segregation. To the extent possible efforts should be made to homogenize recovered organic debris e.g., heavily oiled eel grass should be kept separate from dissimilar debris
4. Oiled sorbent material: oil snares, pads, and booms
5. PPE and other typically non-sorbent materials

C. WASHINGTON STATE OIL RECOVERY CREDIT FOR NATURAL RESOURCE DAMAGES

Detail measures taken to ensure segregation as per oil spill recovery credit. See Washington Department of Ecology document "Compensation Schedule Credit for Oil Recovery, RDA Committee Resolution 96-1".

D. TRACKING

Describe the waste tracking system used during this response. Include copies of waste tracking forms.

E. DECANTING

Decanting authorization form (if approved) should be attached.

**SECTION IV DECONTAMINATION**

Describe the areas designated for decontamination including location, set up, and pollution prevention measures.

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**SECTION V ANIMAL CARCASSES**

If applicable, describe the number of animal carcasses disposed of and methods used for their disposal.

**SECTION VI WASTE DISPOSITION AND FINAL DISPOSAL**

**ICS Form 209 Final Waste Status Summary**

Type	Recovered	Stored	Disposed of
Oil (bbl)			
Oily Liquids (bbl)			
Oily Solids (tons)			
Solids (tons)			

Include copies of waste tracking forms for final disposal if used, (See Appendix A for example). Also, include copies of receipts from disposal facilities.

**A. RECOVERABLE OIL**

Oil recovered will be transported by \_\_\_\_\_ to \_\_\_\_\_.

Company names and Contacts

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**B. BURNABLE MATERIAL:**

Burnable material includes oily wood, debris, PPE, sorbents, oil snares and other suitable organic material collected during cleanup operations. The debris will be transported from the interim storage site by \_\_\_\_\_ to \_\_\_\_\_.

Transporter(s)	Facility

**C. OTHER MATERIAL:**

This material may consist of sand and tar balls and other assorted material that has been collected from the cleanup effort and has been stored at interim storage sites. All of this material will be transported to a licensed facility

Transporter(s)	Facility





## 5.8 Recovered Oil and Water Management Plan

This section provides a format for a recovered oil and water management plan.

**Incident Name:** \_\_\_\_\_

**Responsible Party:** \_\_\_\_\_

**Spilled Material:** \_\_\_\_\_

**Spill Volume (estimate):** \_\_\_\_\_

**Spill Location:** \_\_\_\_\_

**Spill Date/Time:** \_\_\_\_\_

**Report Update Time:** \_\_\_\_\_

**Submitted By:** \_\_\_\_\_

**Approved By:** \_\_\_\_\_

Tesoro Savage Petroleum Terminal LLC  
901 West Legacy Center Way  
Midvale, Utah 84047  
801-944-6600

Vancouver Energy  
5501 Northwest Old Lower River Road  
Clark County  
Vancouver, Washington 98660

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- 1.0 RECOVERED OIL
- 2.0 OILY WATER
  - 2.1 Oily Water Decanting
- 3.0 DISPOSAL OF RECOVERED OIL AND OILY WATER

## LIST OF ATTACHMENTS

- Attachment 1 Oil Spill Request for Decanting Authorization
- Attachment 2 Northwest Area Contingency Plan, Form 7.3.2 Oil Spill Decanting Authorization

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## 1.0 RECOVERED OIL

Oil, oil and seawater, and oil and freshwater mixtures will be collected from the spill area using oil recovery equipment deployed by the Oil Spill Response Organization (OSRO) and/or a vacuum truck supplied by another response contractor. Recovered oil and water mixtures will be immediately transported to designated waste staging areas to bulk storage fractionation tanks (frac tanks) used in the spill response operations. **Tank gauging must be conducted at that time to document the volumes of oil and water recovered.**

Shoreside storage at the terminal may vary according to current terminal operations. In the event that adequate shoreside storage is not available at the terminal, Facility will use frac tanks, vac trucks, and floating storage to enable recovery operations to continue while oil is transferred to a location where it can be refined.

Proper tank, drum, and container gauging is a critical component of all response actions. **Third-party certified gauging contractors must be mobilized so that accurate documentation of recovered oil and oil/water volumes can be achieved.**

**No recovered oil or oil/water mixtures can be discharged or disposed of prior to gauging and volume inventory reconciliation completion.**

Once oil has been transferred to frac tanks and allowed to settle, as much liquid oil as possible will be separated. Potential management methods for recovered liquid hydrocarbons include: re-injection or recycling into a crude or bunker fuel process stream, oil reclamation, and/or recycling at other oil industry facilities. The volume and the presence or absence of other potential contaminants in the oil must be determined prior to recycling.

Crude oil recovered early in the clean-up operation will be the easiest to process. Injection of recovered crude into a product stream after a spill will be a preferred option.

## 2.0 OILY WATER

Oily water recovered as part of the cleanup process will be managed by one of the following methods:

- A. Reclaimed along with entrained oil by a third party oil reclaimer retained by the Facility,
- B. Injected into Facility process water treatment facilities, if available,
- C. Injected into a nearby publicly owned treatment works wastewater influent stream (local, state, or federal approval required), or
- D. Treated on site in a portable, temporary wastewater treatment system in accordance with applicable surface water quality standards and discharged (state/federal permit approval required). Where possible, oily freshwater and oily saltwater (ocean) should be segregated because the salinity of ocean water limits its treatability.

### 2.1 Oily Water Decanting

Decanting of water from oily mixtures is a common procedure used during a spill response. Decanting is the process of draining off recovered water from portable tanks, barges, collection wells, or other containers to increase available recovered oil storage capacity.

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During a response, it may become necessary for Facility to request the FOSC/SOSC authority to decant water while recovering oil so that response operations do not become impaired. Authorization from FOSC is required in all cases; authorization from the SOSC is required for decanting activities in state waters. Expeditious review and approval of such requests is necessary to ensure efficient recovery operations. The request, decision and permission to decant **must** be documented. Decanting permit applications appear as **Attachment 1**.

The following criteria should be considered when determining whether decanting is applicable, unless circumstances dictate otherwise:

- A. 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.
- B. Vessels employing sweep booms with recovery pumps in the apex of the boom should decant forward of the recovery pump.
- C. All vessels, motor vehicles, and other equipment not equipped with an oil/water separator should allow retention time for oil held in internal or portable tanks and should transfer oil/water mixtures to a vessel or onshore equipment with approved oil/water separation technology. Unequipped vessels should not decant oil/water mixtures.
- D. Visual monitoring of the decanting area shall be maintained at all times so that discharge of oil in the decanted water is detected promptly.

### 3.0 DISPOSAL OF RECOVERED OIL AND OILY WATER

Recovered oil and oily water will be transported by company-owned vacuum trucks to on-site tankage. Approved oil reclamation contractors are identified in **Attachment B** of the Oil Spill Waste Management and Disposal Plan. Applicable company names and contacts for the off-site disposal of recovered oil and oily water are as follows.

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

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ATTACHMENT 1

**OIL SPILL REQUEST FOR DECANTING AUTHORIZATION**

Responsible Party (RP): \_\_\_\_\_ Date: \_\_\_\_\_

The RP hereby requests permission to decant free water from its on-water storage systems. The free water collected during skimming operations will be decanted back into a contaminated area (i.e., into containment boom).

The following information is provided for your consideration:

Name of Oil Spill: \_\_\_\_\_

Location of Spill (latitude/longitude): \_\_\_\_\_

Vessel Names: \_\_\_\_\_

Product: \_\_\_\_\_

Skimming Platforms: \_\_\_\_\_

Weather: \_\_\_\_\_

Tides: \_\_\_\_\_

Approved  Disapproved

RP Representative Signature: \_\_\_\_\_

Dates Approval Effective: \_\_\_\_\_

Conditions (circle numbers that apply):

1. All decanting should be done in a designated response area within a collection area, vessel collection well, recovery belt, or weir area, or directly in front of a recovery system.
2. Visual monitoring of the decanting shall be maintained at all times so that discharge of oil in the decanted water is detected promptly.
3. 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.
4. Additional site-specific conditions (continue on reverse side if necessary).

\_\_\_\_\_  
USCG

\_\_\_\_\_  
SOSC

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## 5.9 Recovered Oil Quantification Plan

This section provides a format for a Recovered Oil Quantification Plan.

Incident Name: \_\_\_\_\_

Date: \_\_\_\_\_

Submitted By: \_\_\_\_\_

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- 1.1 Oiled Media Sampling
- 1.2 Estimates of Recovered Oil and Oily Water
- 1.3 Estimates of Recovered Oil from Booms/Swipes/Absorbents and PPE
- 1.4 Estimates of Recovered Oil from Decontamination Water
- 1.5 Estimates of Recovered Oil from Contaminated Soil
- 1.6 Compilation of Recovered Oil Estimates and Reporting

#### TABLES:

Table 1 – Recovered Oil Summary

### 1.0 ESTIMATION METHODS FOR QUANTIFICATION OF RECOVERED OIL

The amount of spilled oil recovered during cleanup operations must be estimated. The amount of free oil, oily water, oil recovered from absorbents and decontamination water, and oil trapped in contaminated soil will be estimated separately. Materials identified as contributing to the total recovered hydrocarbons include, but are not limited to, oil collected in skimming tanks, oil from decontamination procedures, recovered oil tar balls, oily absorbents, oily debris, and oiled personal protective equipment (PPE) such as gloves and coveralls. **Table 1** should be used to document the total amount of oil recovered in a given spill response.

#### 1.1 Oiled Media Sampling

All samples for analysis of chemical concentrations or calculation of oil must be collected according to established sampling protocols and sent for analysis using chain of custody forms. Upon request, the responsible party will provide a copy of the material safety data sheet for the hydrocarbon product released for all sampling exercises. Proper PPE, Level D minimum, will be used at all times during sampling. Sampling guidelines are presented in a separate document entitled *The Spill Response Sampling Plan*.

#### 1.2 Estimates of Recovered Oil and Oily Water

During spill activities, a qualified third-party contractor will be retained to record the data needed to estimate total oil recovery. Oil-containing media generated and estimates of the amount of recovered oil include free liquids recovered from surface waters (oil and water mixture) and oily water. Various containers may be used to collect and store recovered oily water containing recovered liquid hydrocarbons.

Free liquids will be measured according to the following procedure:

- Liquid will be removed from the water by pumping into ballast tanks, fractionation or other storage tanks on-shore.
- The liquids will be allowed to sit for a minimum of 30 minutes to 3 hours to allow separation into the two fractions (water and oil).
- The still liquid will be gauged to determine the total depth of liquid, the thickness of the water layer, and the thickness of the oil layer. Gauging will be done with a ruler or tape measure and water finding paste or similar product. Measurements will be made to the nearest 1/4 inch. Where possible in clean oil/water interfaces, American Petroleum Institute (API) tank gauging methods (e.g., a reel and water paste) will be used in conjunction with engineering data such (e.g., strapping tables) to determine the oil levels and volumes in the container. When practical, multiple tank gauges will be conducted, with the results averaged for final calculations. For pure water or oil/water emulsions, multiple samples will be taken and analyzed for total petroleum hydrocarbon content. The averaged analytical results, coupled with engineering data, will be used to determine the oil content of the liquid.

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- Using the height of each layer of liquid and the surface area of the frac tank, the volume of each liquid will be calculated using the formula: **1 cu. ft. = 7.48 gal.** Calculated values will be reported on the summary.
- After measurement and unified command approval, the recovered oil/water will be managed in accordance with the methods selected for the spill event, typically to an approved reclaimer/recycler.

A qualified contractor will collect a representative sample from each hold or container of recovered oil according to established sampling protocol for each vessel arriving at the facility intending to offload recovered spill material. Each sample will be submitted for a bottom sediment and water (BS&W) analysis. From the result, subtract percent solids and water to yield the total estimated percent oil.

*Equation 1*

$$(\% \text{ oil from BS\&W}) (\text{hold/container volume in gallons}) = \text{oil volume (gallons)}$$

This information should be included in **Table 1**. At hour 33 after the spill occurs, a qualified contractor will initiate collecting representative samples from all containers in the field until hour 36, in accordance with established sampling protocol. At hour 36, all sampling ends and all collected samples will be submitted for BS&W analysis as per above paragraph. This process is repeated for longer spill requiring longer response periods.

### 1.3 Estimates of Recovered Oil from Booms/Swipes/Absorbents and PPE

The oil in booms, swipes and absorbents may be estimated separately from the oily debris and PPE. All oily material is typically collected and placed into heavy-duty garbage bags. The garbage bags are then placed into a lined container, such as a roll off container, for transport to a waste handling and processing facility. It is assumed that the bags of oily material will not have any free liquid, as characterized by the type of spilled oil.

Manufacturers' estimates for the amount of oil on swipes/absorbents can be determined by assuming half the recovered absorbents' weight may be attributed to oil loading. The oiled booms/swipes/absorbents need to be weighed. Calculation can then be made as follows to calculate the volume of the oil in gallons:

*Equation 2*

$$(\text{absorbent weight in lbs}) (50\%) (0.018 \text{ ft}^3/\text{lb oil}) (7.48 \text{ gal}/\text{ft}^3) = \text{oil volume (gallons)}$$

Oil collected from sorbent pads will be estimated by multiplying the known absorbency of the pads (gallons per pad) by the number of pads. Since the sorbent pads have, on average, been saturated to approximately 50 percent, this value will be divided by two.

*Equation 3*

$$(\text{pad absorbency in gallons}) (\# \text{ of pads}) (50\%) = \text{oil volume (gallons)}$$

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The procedure for determining the amount of liquid hydrocarbons on oily material will be as follows:

- (a) Visually check all garbage bags to make a determination of the contents.
- (b) Sort the garbage bags by waste type (tar balls, absorbent pads, etc.), as determined by the majority of the contents of the garbage bag into separate roll-off containers.
- (c) For each waste type, use the following guidelines for collecting a representative sample:
  - Mark off a 4-foot-square grid pattern in each roll-off.
  - Within each grid, collect a grab sample from a garbage bag at three different layers (top, middle, and bottom).
  - Combine the individual grid samples into one composite sample.
  - Collect three 16-ounce samples from the composite sample. Submit one for analysis and keep two for retains.
- (d) Analyze each sample for total hydrocarbon content using a third party analytical laboratory facility. The samples will be analyzed for total petroleum hydrocarbons (TPH) using the specific method the state regulatory agency recommends to characterize TPH.
- (e) For each waste type, weigh the garbage bags of oily material to obtain a gross weight.
- (f) Determine the calculated weight of the recovered oil in the material by multiplying the weight of the oily material by the hydrocarbon content result of the composite sample (converted to kg by dividing by 1,000,000 mg/kg). Determine the oil volume in liters by multiplying by the density of water (1 liter/kg) divided by the specific gravity of the oil. Convert to gallons by dividing by 3.785 L/gallon. The information should be included in **Table 1**.

*Equation 4*

$$\frac{(\text{weight of recovered oily material [kg]} \times (\text{TPH concentration [mg/kg]} \times (1 \text{ L/kg}))}{(1,000,000 \text{ mg/kg}) \times \text{specific gravity of oil} \times (3.785 \text{ L/gallon})} = \text{gallons of oil}$$

**1.4 Estimates of Recovered Oil from Decontamination Water**

Decontamination water will be collected on site and the total volume will be recorded. The amount of liquid in each container will be determined by using engineering data available on the container such as strapping tables or construction drawings, by actual field measurements, or by weighing the containers. Representative composite samples of the wash water should be collected and analyzed for TPH using the specific method the state regulatory agency recommends to characterize TPH. The amount of recovered oil contained in the decontamination water will be estimated by using the average total petroleum hydrocarbon (as measured by Environmental Protection Agency [EPA] Method 418.1) analytical results from analysis of representative composite samples collected. The estimate of oil recovered in decontamination waters will not account for variables such as evaporation or operational losses. The average TPH will be converted into total gallons of oil by the following equation:

*Equation 5*

$$(\text{TPH mg/L}) \times (\text{decon volume gal}) \times (1 \times 10^{-6} \text{ kg/mg}) \times (8.34 \text{ lbs/gal}) \times (0.018 \text{ ft}^3/\text{lb oil}) \times (7.48 \text{ gal/ft}^3) = \text{total gallons of oil recovered}$$

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### 1.5 Estimates of Recovered Oil from Contaminated Soil

Stockpiled contaminated soil will be cross-sectioned by on-site survey personnel and the total volume in cubic yards will be recorded. Representative samples of the stockpiled soil should be collected and analyzed for TPH. The amount of recovered oil contained in contaminated soil will be estimated by using the average TPH analytical results. The estimate of oil recovered in soil will not account for variables such as soil moisture or losses due to volatilization so the estimate will be conservative. The average TPH will be converted into gallons of oil by the following equation:

*Equation 6*

$$(\text{TPH mg/kg}) \times (\text{Volume}) \times (1-\text{COARSE}) \times (1 \times 10^{-6} \text{ kg/mg}) \times (125 \text{ lbs/ft}^3 \text{ soil}) \times (27 \text{ ft}^3/\text{yd}^3) \times (0.018 \text{ ft}^3/\text{lb oil}) \times (7.48 \text{ gal/ft}^3) = \text{gallons of oil}$$

Where:

- TPH = Unweighted mean of TPH results (including duplicate) to date in mg/kg
- Volume = Volume of recovered contaminated soil in yd<sup>3</sup>
- COARSE = Discount for coarse material >2 inches (default estimated at 20 percent or 0.2 for the formula)

### 1.6 Compilation of Recovered Oil Estimates and Reporting

The total estimated amount of liquid oil recovered, oil recovered in contaminated soil and in sorbent pads/booms, and oil recovered with decontamination water will be combined into an overall oil recovery estimate. This estimate will be calculated and/or measured from recovered oil skimmings and recovered oily materials. The estimate of oil recovered is not an estimated of spill size. An estimate of spill size will not be possible until the complete extent of surface and/or subsurface contamination has been determined at a later date.

A report must be prepared containing all calculations of the total oil recovered, including free liquid and oil contained in contaminated soils. **Table 1**, completed with pertinent information from this spill, should be included in the report. The report will contain estimated volume of contaminated soil recovered, conversion factors for estimating the amount of oil in the contaminated soil, estimated volume of oil recovered in sorbent pads, and total estimate of total oil recovered.

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Table 1 – Recovered Oil Summary

EVENT NAME: \_\_\_\_\_

Source/Media Of Material	Type of Material	Amount Collected	Material Discarded	Amount Of Material Discarded	Recovered Oil Volume
Free Liquid Vac Truck 1					
Free Liquid Vac Truck 2					
Free Liquid Vac Truck 3					
Free Liquid Frac Tank 1					
Free Liquid Frac Tank 2					
Free Liquid Frac Tank 3					
Free Liquid Barge 1					
Free Liquid Barge 2					
Free Liquid Other (tote tanks, drums, etc.)					
Free Liquid Other (tote tanks, drums, etc.)					
Absorbent Booms					
Absorbent Booms					
Absorbent Booms					
Absorbent Pads					
Absorbent Pads					
Absorbent Pads					

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EVENT NAME: \_\_\_\_\_

Table 1 – Recovered Oil Summary

Source/Media of Material	Type of Material	Amount Collected	Material Discarded	Amount of Material Discarded	Recovered Oil Volume
Sand/Sediment/Soil					
Sand/Sediment/Soil					
Personal Protective Equipment					
Garbage Bags Waste Storage Area 1					
Equipment					
Decontamination Water Decon Area 1					
Equipment					
Decontamination Water Decon Area 2					
Personnel Decontamination Water Decon Area 1					
Personnel Decontamination Water Decon Area 2					
Personnel Decontamination Water Decon Area 3					
Other					
Other					
Other					
<b>TOTAL</b>					

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## 6. Facility Sensitive Areas/Response Tactics

### 6.1 Introduction

This section describes different ecologically and culturally/economically sensitive resources, which may be impacted by a spill from this Facility. These sensitivities are identified in the Northwest Area Committee Geographic Response Plans (GRPs); specifically the Lower Columbia River GRP. Sensitive resources that may be impacted by a spill, and protection strategies and priorities for allocating response resources must be identified. **Figure 6.1** presents an implementation sequence for protection of sensitive areas. Methods for protecting these sensitive resources are also described in **Appendix F** and in the Northwest ACP.

A link to Ecology’s GRP website is: <http://www.ecy.wa.gov/programs/spills/preparedness/GRP/index.html>

### 6.2 Types of Sensitive Resources

Key sensitive resources may include fish and wildlife species, sensitive habitats, and recreationally, culturally, and economically important areas.

- Sensitive species may include shorebirds and other water fowl, seals and other marine mammals, shellfish, and commercially important finfish.
- Sensitive habitats range from protected bays with marshes and tidal flats to open coast areas used as marine mammal or bird breeding sites.
- Areas of more direct importance to humans include native lands, sole source aquifers, waterfront parks and recreational areas, as well as harbors and anchorages.

These sensitive resources are discussed below and in **Figure 6.2** with a presentation of NOAA’s Environmental Sensitivity Index (ESI) classification scheme.

#### 6.2.1 Key Sensitive Resources

Upstream from the Facility, there are minor shoreline environmental sensitivities, as well as shorebird habitat, sensitive marshes, and critical wetland habitat. Downstream from the Facility, key sensitive resources include Bachelor Island Slough, the mouth of the Willamette River, Sauvie Island, and Multnomah Channel. Bachelor Island Slough is a great blue heron spring nesting location, waterfowl nesting area, and sandhill crane wintering spot.

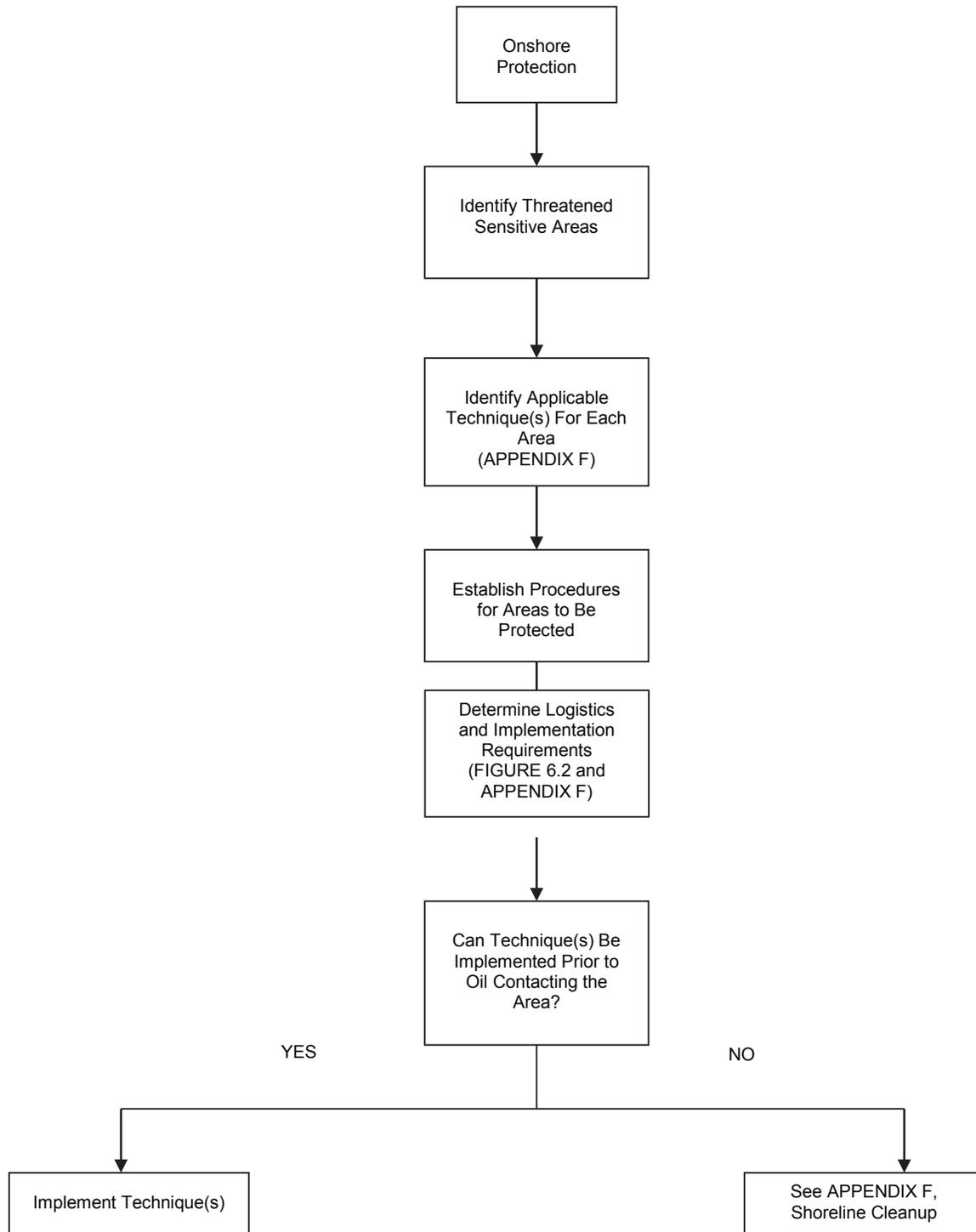
The 15-mile segment of the Columbia River downstream from the Facility dock is a critical wetland habitat. The mouth of the Willamette River, Sauvie Island, and Multnomah Channel are home to waterfowl, shorebirds, cranes, and egrets. These areas also provide winter feeding grounds for eagles and a fish entry point. The Multnomah Channel is a critical sensitive area.

Another critical wetland area is the flushing channel to Vancouver Lake. Entry of any oils into the lake could affect several waterfowl species.

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**Figure 6.1. Sensitive Area Protection Implementation Sequence**



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## 6.2.2 General Sensitive Resources

For shoreline areas that are not associated with a particular sensitivity, a general sensitivity ranking system known as the Ecological Site Inventory (ESI) has been adopted by NOAA and can be used for prioritization. The ESI system ranks various shoreline types in order of their increasing potential for long-term persistence and biological damage (i.e., an ESI ranking of 2 has a higher overall sensitivity than a ranking of 1). A summary of the shoreline types and associated rankings is provided in **Figure 6.2**.

Protection strategies should also consider the impact of oil on the general intertidal biological community. The level of impact is often dependent on the type of shoreline as different shoreline/substrate types support different intertidal communities. Shore types affect oil deposition within the intertidal area, as well as oil persistence. Description of the most common types of shorelines, their associated biological communities, and the potential impacts of oil spills are provided in **Appendix F**. Shoreline types indicative of the Lower Columbia River area may be found in the Northwest ACP.

**Figure 6.2. ESI Shoreline Types and Rankings**

ESI Ranking	Shoreline Type	Persistence Potential	Comments
1	Exposed Rocky Headlands/ Cliffs/Seawalls/ Bulkheads/Pilings	Low	Wave-induced cleansing generally removes oil in several weeks.
2	Exposed Wave-Cut Rock Platforms	Low	Wave-induced cleansing generally removes oil in several weeks.
3	Exposed Fine-Grained Sand Beaches	Low	Penetration is usually minimal and wave-induced erosion can expedite oil removal.
4	Exposed Coarse-Grained Sand Beaches	Moderate	Penetration is usually moderate and oil may be retained for months.
5	Exposed Mixed Sand/Gravel Beaches	Low	Most oil naturally removed in several months.
6	Sheltered Sand Beaches (Coarse or Fine)	High	Oil can persist for years.
7	Exposed Gravel/Boulder Beaches	High	Significant penetration can result in long-term oil persistence.
8	Sheltered Rocky Shores and Riprap	High	Oil may persist for many years.
9	Sheltered Tidal Flats	Moderate	Oil may persist for a significant period of time.
10	Marshes	Very High	Oil may persist for several years.

## 6.3 Area Description

The Facility is located in the Port, directly adjacent to other industrial facilities and within approximately 1-1/2 miles of residential neighborhoods. The Port is zoned as a heavy industrial area.

The Facility receives crude oil by rail, stores it on site in storage tanks, then pumps through pipelines to the terminal where it is loaded onto marine vessels for shipment. The terrain directly adjacent to the terminal is relatively flat with undefined drainage patterns. The dock is located on the Columbia River, an important conduit for oceangoing tank, freight, and passenger vessels that move a variety of products up and downstream.

Downstream areas from the terminal are heavily populated and industrialized. Recreational boating and fishing are common activities throughout the Columbia River system, and annual salmon migrations occur in the river waters.

Flight restriction zones exist in the area to protect sensitive wildlife species. Additional information about the natural resources in the lower Columbia River area are located in the Northwest ACP.

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### 6.3.1 Tide and Current Considerations

The river currents in the Willamette and Columbia rivers will be a deciding factor when planning for oil spill containment and cleanup operations. For planning purposes, the average current in the Columbia River is 2 knots; however, current velocity in the main channel of the lower Columbia and Willamette rivers typically varies from 1 to 6 knots. In upper segments of the lower Columbia River, currents have been recorded as high as 7 knots during seasonal floods. Current flow in the sloughs and back channels are generally much less than the main channels. This velocity is highly variable and is heavily influenced by seasonal runoff levels, the strength of the tidal current, and the volume of water released by the dams.

Tidal influence is a consideration for most of the lower Columbia and Willamette rivers. The diurnal rise and fall of the tides create a tidal current that, during low river flow conditions, can create a reversal in the downstream current. It will then increase significantly on an outgoing tide, especially when coupled with a heavy spring runoff. During high river flows, current reversals by tidal influences are limited to the Columbia River estuary.

Saltwater intrusion at the mouth of the Columbia River and the estuary has an effect on water movement, usually by creating a two-layered circulation pattern. Saltwater will flow inland near the bottom of the river and estuary while the river continues to flow downstream at the top layer. The extent of saltwater intrusion is largely influenced by the rate and volume of river discharge, tides, and water depth.

Offshore or coastal currents along the Oregon/Washington coast may also affect oil movement if it travels to the river mouth and is discharged into the ocean. Generally, the surface currents drift southward along the Oregon coast in the summer and are pushed northward along the coast of Washington during the winter. However, the prevailing winds, tidal forces, and the local topography will continue to affect the surface movement of water and oil, creating a complex and constantly changing pattern of movement.

The Multnomah Channel runs from the Willamette River to the Columbia River on the southwest side of Sauvie Island near Portland. During the spring and early summer when flow rates down the Columbia River are high, the water level of the Columbia River may be higher than the level in the Willamette River at the junction where both rivers meet. When this occurs, part of the Columbia River will actually flow up the Willamette River until it reaches the Multnomah Channel where the combined flow of both rivers will be directed downstream through the Multnomah Channel until it converges again with the mainstream of the Columbia River.

At the junction of the Willamette River and Multnomah Channel, the converging currents create a slack water that tends to disperse the pollutants to both sides of the Willamette River. Areas that will be affected by the Multnomah Channel during an oil spill are Kelly Point Park, Columbia Slough, numerous marines and houseboat moorages, and log rafts along Multnomah Channel.

### 6.3.2 Climate

Local weather is determined primarily by the region's topography, prevailing wind direction, and proximity to the Pacific Ocean. Maritime air dominates the area creating a climate with mild temperatures, heavy precipitation from October to May, and dry summers. The mean annual temperature is approximately 51°F. Typical temperatures for the region are

Summer Maximum	70 to 80°F
Summer Minimum	45 to 55°F
Winter Maximum	35 to 45°F
Winter Minimum	10 to 20°F

Annual precipitation around the lower Columbia River is characterized by an intermittent dry season in the summer followed by a wet winter season. Precipitation increases inland with the rise in elevation from the

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coast range then decreases in the valley between the coast range and the Cascade Mountain range. Precipitation increases again going up the western slopes of the Cascade Mountains. Average annual rainfall in the Vancouver-Portland metropolitan area is approximately 42 inches.

Winds along the coast at the mouth of the Columbia River are steady onshore winds that shift from a summer northwesterly direction to a southwesterly direction in the winter. Further inland along the Columbia River, the summer winds are typically from the northwest with some diurnal variations in direction. During the winter months, the prevailing flow is from the east as the colder air drains out of the inland basin of eastern Washington. Wind with steady velocities 15 to 20 miles per hour are not uncommon. Maximum wind velocities have been recorded at 50 to 60 miles per hour.

A summary of the local climatic and hydrographic conditions are provided in **Figure 6.12**.

### 6.3.3 Birds

Marine birds and shorebirds are the primary wildlife concern in the area. Many species are either residents or seasonal visitors of this area. Seabird and waterfowl nesting areas are scattered throughout the region, particularly concentrated in marsh and wetland areas. Bald eagles nest within the area and feed at the mouth of the Willamette during the winter months.

In addition to supporting a wide variety of resident birds, the lower Columbia River is an important waterfowl wintering area on the Pacific flyway for waterfowl.

Most of the migrating bird species follow the coast during their southward movement; many species winter around local bays, while others stop briefly to rest and feed before continuing their migration to Southern California, Mexico, Central America, or South America. During fall and spring migration, as well as winter, large populations of shorebirds and waterfowl inhabit nearshore areas in the vicinity of the lower Columbia and adjacent coastal areas. Consequently, in the event of a spill, certain protective measures may be required to minimize the impact on waterfowl. During a spill response, initial efforts should attempt to repel birds from the site with equipment, such as bird canons. Depending on the species involved some repelling devices will successfully deter individuals from the affected area, while others will be ineffective.

Subsequent efforts can be reorganized on the basis of these results. The degree of effectiveness decreases as birds become accustomed to the sound system; this process is referred to as habitation. Activities, such as people, boats, and machinery, usually are the most effective deterrents.

### 6.3.4 Marine Mammals

Common species of whales and dolphins found in the coastal Oregon and Washington areas include gray whale, orca, Dall's porpoise, and harbor porpoise. In addition, the harbor seal is a permanent resident of local coastal areas. Three additional species occur as regular seasonal residents or migrants: the Steller sea lion, California sea lion, and northern elephant seal. The Columbia River provides suitable foraging habitat for Steller sea lion. This region also supports a large population of river otters.

### 6.3.5 Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) publishes a list of Priority Habitats and Species (PHS) and Species of Concern to catalog the habitats and species considered to be priorities for conservation and management.

Priority species include endangered, threatened, sensitive, and candidate species; animal aggregations considered vulnerable; and those species of recreational, commercial, or tribal importance that are vulnerable. Priority habitats are those habitat types or elements with unique or significant value to a

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diverse assemblage of species. These species and habitats should be given special consideration and protection during a spill response, to minimize impacts to these critical areas and organisms.

Updated information on PHS data is available through the WDFW.

### 6.3.6 Inlets, Intakes, Harbors, and Marinas

Inlets, intakes, harbors, and marinas are inhabited by a variety of fish, invertebrates, and waterfowl that would be at risk if an oil spill occurs near any of these facilities. Marinas have a great potential for public exposure to hazards and damage claims and should be boomed to exclude oil. Intakes for commercial, industrial and municipal water usage areas are subject to impact due to safety hazards, loss of use and damage claims. Protective measures could include exclusionary booming to prevent or exclude oil from entering these areas. Many of the entrances or channels have tidal currents exceeding 1 knot or surf breaking in the opening.

In these cases, booms should be deployed landward from the entrance in quiescent areas. Booms should be placed at an angle to the current to guide oil to an area where it can be recovered.

The deployment of a second boom behind the first may be desirable to contain any oil that escaped under the primary boom.

Publicly accessible recreation areas generally have good water/shoreline access for logistical purposes.

### 6.3.7 Sole Source Aquifers

The Facility is located within the limits of the EPA-designated Troutdale Sole Source Aquifer. **Figure 6.3** shows the boundaries of this aquifer, with identification of the Facility's location.

The types and geographic extent of the substrate associated with the Troutdale Sole Source Aquifer is described in the 2006 EPA Final Support Document for Sole Source Aquifer Designation of the Troutdale Aquifer System, which cites Columbia et al, 2005. The description is summarized below.

"The upper sedimentary subsystem consists of the unconsolidated sedimentary aquifer and the Troutdale Gravel aquifer. This subsystem is the primary source of drinking water in the aquifer service area. The unconsolidated sedimentary aquifer consists primarily of flood deposits of late Pleistocene age varying from bouldery gravel to silt. It includes flood plain and terrace deposits along major tributaries and glacial outwash in some areas. The top of the unit is land surface, and its thickness is mostly between 50 and 100 feet although deposits range up to 300 feet thick in some areas. Wells completed in these deposits have maximum yields between 1,000 and 6,000 gallons per minute near Washougal, Camas, and Vancouver, Washington, and up to 10,000 gallons per minute north of Blue Lake in Oregon.

The Troutdale Gravel consists of principally of sandy gravel, silty sand, sand, and clay. The altitude of the top of the unit ranges from about 700 feet in the Prune Hill area in Camas to minus 600 feet northwest of Gresham in Oregon. The maximum thickness of this unit is about 800 feet and well yields are as large as 3,000 gallons per minute in some areas.

The lower sedimentary subsystem consists of two confining units, the Troutdale Sandstone, and sand and gravel beds within the Sandy River Mudstone geologic unit. Swanson et al (1993) identify portions of this subsystem as the Undifferentiated Fine-Grained Unit where data were not available to differentiate the units. In the aquifer service area the confining units and the Troutdale Sandstone unit are mapped as overlying each other. They extend from Camas up to Meadow glade and west to the Orchards area.

The upper confining unit (identified as Confining Unit 1) is a grayish olive-green clay and silt with lenses of silt and fine-to-medium-grained sand. The altitude of the unit ranges from about 900 feet in the area

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south of the City of Sandy to about minus 300 feet near the center of the basin. The thickness is generally less than about 200 feet.

The lower confining unit (identified as Confining Unit 2) is lithologically similar to Confining Unit 1. The altitude of the top of the unit ranges from about 900 feet in the Tickle Creek area to about minus 500 feet toward the center of the basin. The thickness of the unit ranges from about 200 feet in the southeastern part of the basin to about 800 feet toward the center of the basin.

The Troutdale sandstone aquifer consists of coarse sandstone and conglomerate with lenses and beds of fine-to-medium sand and silt. The altitude of the top of the aquifer is about 1,000 feet in the area east of the Sandy River and dips westward to about minus 400 feet near downtown Portland. The thickness of the aquifer ranges from 100 to 200 feet but is about 400 feet in the southeastern part of the basin. Wells completed in this unit yield up to 2,500 gallons per minute.

The consolidated gravel aquifer is composed of a poorly to moderately cemented sandy conglomerate and includes local accumulations of lavas and a mantling soil horizon. This unit is mapped as only extending into the aquifer service area near Camas. However, it has recently been investigated as a groundwater source in the western part of the service area where Swanson et al (1993) were apparently not able to differentiate it from other units. Its elevation appears to be lower than in the southern part of the basin as described in the following sentences taken from McFarland and Morgan (1996B). The altitude of the top of the unit is about 1,400 feet east of the Sandy River; however, the top of the unit is between altitudes of 100 and 200 feet throughout most of the basin, and its thickness ranges from 100 to 400 feet in most of the area. Wells completed in this unit can yield about 1,000 gallons per minute.

The undifferentiated fine-grained sediments are lithologically similar to Confining Units 1 and 2. This unit includes all the sediments overlying the older rocks and underlying the consolidated gravel aquifer wherever individual units cannot be discerned either because the individual units are not present or because information is insufficient to map them. Altitude of top of the unit ranges from about 1,200 feet east of Sandy, Oregon, to minus 300 feet near the center of the basin, where its thickness is about 1,200. The unit is generally a poor water-bearing formation.

The older rocks unit includes generally low permeability, Miocene and older volcanic and marine sedimentary rock that underlie and bound the basin-filling sediments. The altitude of the top of the unit ranges from land surface in the exposed areas to minus 1,600 feet beneath Vancouver, Washington. This unit bounds the service area on the east and much of the north.

U.S. Geological Survey describes the hydraulic conductivities of the aquifers as follows: The four sedimentary aquifers in the basin have the highest median hydraulic conductivities. The unconsolidated sedimentary aquifer has the highest median value of hydraulic conductivity (200 feet per day) and also the greatest variation in values (0.03 to 70,000 feet per day). It is the most permeable aquifer, as well as the most heterogeneous unit. The Troutdale gravel aquifer, Troutdale sandstone aquifer, and the sand and gravel aquifer all have similar median values of about 7 to 16 feet per day. The Troutdale sandstone and the sand and gravel aquifer have low variation in hydraulic conductivity relative to some of the other units. The Troutdale gravel aquifer, however, has values of conductivity ranging over six orders of magnitude.”

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Figure 6.3. Troutdale Sole Source Aquifer Boundary



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## 6.4 Vulnerability Analysis

A vulnerability analysis was performed to address the potential effects of an oil spill on the following areas.

- Water intakes
- Schools
- Medical facilities
- Residential areas
- Businesses
- Wetlands or other sensitive environments
- Fish and wildlife
- Lake and streams
- Endangered flora and fauna
- Recreational areas
- Transportation routes (air, land, water)
- Utilities
- Other applicable areas

Vulnerabilities located in the area were identified and are described below.

### 6.4.1 Water Intakes

A discharge from the Facility would not threaten a public drinking water intake. The closest downstream public drinking water intake from the Columbia River is located in Rainier, Oregon.

### 6.4.2 Schools, Medical Facilities, Residential, and Business Areas

The Facility is located within 1-1/2 miles of residential neighborhoods; however, a release from the Facility would not likely travel in such a direction as to threaten a residential area.

The Facility is located in the Port in an area zoned for heavy industrial use. A release from the Facility would threaten adjacent businesses, which include other terminals and industrial uses.

The Clark County Jail Work Center is located between the elements of the Facility. The jail work center is a 224-bed minimum security setting facility. A release from the Facility may have the potential to impact the Jail Work Center.

There are several schools located within a 5-mile radius of the Facility; however, a release would not likely travel in a direction to threaten any schools. There are no medical facilities within a vulnerable area.

### 6.4.3 Sensitive Environments and Wetlands

#### Willamette River

- Multnomah Channel/Sturgeon Lake – waterfowl, eagle winter feeding area, shorebirds, cranes, sensitive marshes
- Sauvie Island/Smith and Bybee Lakes – critical wetland area

#### Columbia River

- Caterpillar Island/Dairy Creek – wetland habitat and waterfowl concentrations
- Willow Bar Islands and Post Office Lake – wetland habitat
- Hathaway Lake– waterfowl
- Bachelor Island Slough – sandhill crane wintering, great blue heron spring nesting
- Shillapoo Wildlife Area
- Vancouver Lake Wildlife area
- Columbia River Wetland Mitigation Bank

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In addition, two shoreside wetland complexes are located adjacent to or near Facility elements:

- Port of Vancouver Parcel 1A wetland mitigation site
- Port of Vancouver Parcel 2 wetland mitigation site

### 6.4.4 Economically Important Resources

Recreational and economically important areas in the lower Columbia River area, which may require special protection in the event of an oil spill, include fishing areas, lakes and streams, and other recreational areas and marinas.

#### Marinas in the area include

- Hayden Island
- Boat ramps and marinas upstream to the Interstate 205 bridge on both sides of the river.
- Kadow's Marina

#### Recreational areas include

- Vancouver Lake and Shillapoo wildlife areas
- Caterpillar Island
- Cedar Creek – Pigeon Springs
- Two Forks Access Point

#### Commercial Fishing areas include

- Big Creek – Salmon
- Westport Slough/Clatskanie River – Salmon
- Altoona – Salmon
- Germany Creek – Salmon
- Abernathy Creek – Salmon
- Globe/Tide Creeks – Salmon

Additional information, as well as protection and response strategies, are available in the Northwest ACP and through WDFW.

### 6.4.5 Endangered Flora and Fauna

The following state and federally listed endangered and threatened species are located in the vicinity of the Facility and may be impacted by a release.

Species	Listing Designation	
	Federal	State
Sandhill Crane ( <i>Grus canadensis</i> )		Endangered
Streaked Horned Lark ( <i>Eremophila alpestris strigata</i> )	Threatened	Endangered
Oregon Spotted Frog ( <i>Rana pretiosa</i> )	Threatened	Endangered
Western Pond Turtle ( <i>Actinemys marmorata</i> )	Species of Concern	Endangered
Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )	Threatened/Endangered	Concern
Steelhead ( <i>Oncorhynchus mykiss</i> )	Threatened/Endangered	Concern
Chum Salmon ( <i>Oncorhynchus keta</i> )	Threatened	Concern
Coho Salmon ( <i>Oncorhynchus kisutch</i> )	Threatened	
Sockeye Salmon ( <i>Oncorhynchus nerka</i> )	Endangered	Concern
Bull Trout ( <i>Salvelinus confluentus</i> )	Threatened	Concern
Pacific Eulachon (Smelt) ( <i>Thaleichthys pacificus</i> )	Threatened	Concern

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Species	Listing Designation	
	Federal	State
North American Green Sturgeon ( <i>Acipenser medirostris</i> )	Threatened	
Columbian White-tailed Deer ( <i>Odocoileus virginianus leucurus</i> )	Endangered	Endangered
Stellar Sea Lion ( <i>Eumetopias jubatus</i> )		Threatened

Note: Evolutionary Significant Units (ESU) of Chinook salmon and steelhead have different federal listing stating. This table does not distinguish by ESU as all ESUs have migratory corridors within the Columbia River at the project site.

The bald eagle is listed as a state sensitive species, a priority species, and a Species of Greatest Conservation Need by WDFW. The species was removed from the federal endangered species list in 2007. However, it remains under the protection of the federal Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act.

### 6.4.6 Utilities

Various submerged pipelines, elevated power lines, and other utilities cross the Willamette and Columbia rivers. These utilities are not expected to be impacted by a spill, but their presence may need to be considered during spill response.

### 6.4.7 Transportation Routes

The Willamette and Columbia rivers are key shipping corridors. There are several automobile and rail transportation bridges that cross these rivers. The Interstate 5 bridge and the Columbia River rail bridge cross both rivers within a 5-mile radius of the facility and might be impacted by a spill.

## 6.5 Sensitive Area Protection

The information necessary to identify, prioritize, and protect sensitive areas is as follows.

- Implementation sequence for protection of sensitive areas
- Different ecologically and culturally/economically sensitive areas
- Various coastal marine habitats presented in order of their relative sensitivity to oil spills based on the ESI system used by NOAA
- Methods for protecting these sensitive resources
- Guidelines for selecting the appropriate protection methods for each resource
- Prioritization schemes for determining the order for protecting the resources
- Booming strategies for specific areas within the spill envelope of the evaluated spills

**Figure 6.4** provides a list of proposed booming and collection strategies contained on the Northwest ACP for areas within the overall spill envelope for the Company. The information in the updated Lower Columbia River GRPs would be used to develop response priorities. The GRPs include the following.

- Site descriptions;
- Resources of concern and seasonal concerns;
- Suggested protection strategies, resources and collection points; and
- Access to areas.

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Figure 6.4. Environmental Response Map Index

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LOWER COLUMBIA RIVER GRP

4.2.1 Lower Columbia River Priority Tables

Map # 1 - Ilwaco	
Priority	Strategy Number
1	LCR-7.1
2	LCR-6.8
3	LCR-7.5
4	LCR-4.0
5	LCR-3.3
6	LCR-1.8
7	LCR-1.6

Map # 4 - Cathlamet	
Priority	Strategy Number
1	LCR-37.9
2	LCR-37.2
3	LCR-36.0
4	LCR-35.0
5	LCR-34.6
6	LCR-34.7
7	LCR-34.4
8	LCR-33.3
9	LCR-32.2
10	LCR-38.8
11	LCR-38.5

Map # 2 - Astoria	
Priority	Strategy Number
1	LCR-17.7
2	LCR-14.1
3	LCR-13.0
4	LCR-10.8
5	LCR-14.6
6	LCR-14.8
7	LCR-14.3
8	LCR-12.9
9	LCR-12.6
10	LCR-12.3

Map # 5 - Crims Island	
Priority	Strategy Number
1	LCR-55.5
2	LCR-54.4
3	LCR-55.9
4	LCR-55.7
5	LCR-54.2
6	LCR-53.9
7	LCR-49.1
8	LCR-48.1
9	LCR-55.6
10	LCR-55.4
11	LCR-48.8
12	LCR-48.6
13	LCR-49.4

Map # 3 - Grays Bay	
Priority	Strategy Number
1	LCR-26.4
2	LCR-24.1
3	LCR-22.4
4	LCR-22.3
5	LCR-23.6
6	LCR-17.8
7	LCR-27.5
8	LCR-27.2
9	LCR-20.3
10	LCR-20.0
11	LCR-19.9
12	LCR-19.3

Map # 6 - Longview	
Priority	Strategy Number
1	LCR-64.0
2	LCR-71.4
3	LCR-70.0
4	LCR-58.7
5	LCR-58.9
6	LCR-60.2

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Figure 6.4 – Environmental Response Map Index (continued)

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LOWER COLUMBIA RIVER GRP

4.2.1 Lower Columbia River Priority Tables

Map # 7 – Kalama	
Priority	Strategy Number
1	LCR-81.2
2	LCR-81.0
3	LCR-81.8
4	LCR-82.4
5	LCR-79.5
6	LCR-79.8
7	LCR-76.0
8	LCR-73.7

Map # 11 – Government Island	
Priority	Strategy Number
1	LCR-114.8
2	LCR-113.3

Map # 12 – Camas	
Priority	Strategy Number
1	LCR-120.6
2	LCR-122.6
3	LCR-120.7
4	LCR-119.1

Map # 8 – St. Helens	
Priority	Strategy Number
1	LCR-94.3
2	LCR-92.3
3	LCR-91.0
4	LCR-87.6
5	LCR-94.5
6	LCR-87.3

Map # 14 – Bonneville	
Priority	Strategy Number
1	LCR-142.8
2	LCR-141.4
3	LCR-137.0
4	LCR-143.1
5	LCR-142.4

Map # 9 – Portland	
Priority	Strategy Number
1	LCR-100.8
2	LCR-98.6
3	LCR-97.5
4	WR-0.9

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## 6.6 Oiled Wildlife Care

In the event of a spill, wildlife may come into contact with oil especially on the surface of water or along shorelines. The numbers and types of animals affected will depend on a number of factors, such as size of the spill, weather, wind and currents, habitats affected, and time of year the spill occurs. Birds are the most likely wildlife to be affected during on-water spills, although aquatic or marine mammals may also be affected. Terrestrial mammals are more likely to be secondarily affected when they scavenge other animals that are stressed or have died.

Operations and Wildlife Branch personnel should refer to the Northwest Wildlife Response Plan and Policy, as found in Chapters 3000 and 9000 of the Northwest ACP, regarding wildlife response operations, which are incorporated into this OSCP by reference.

### 6.6.1 Notifications

Any observations of oiled wildlife made prior to the establishment of an ICS, will be reported to the Washington Emergency Management Division (800-258-5990).

Once an ICS has been established, all observations of oiled wildlife must be reported to the Operations Section, Wildlife Branch Director (or their designee) and to the Planning Section, Environmental Unit Leader (or their designee).

The MSRC will be notified when oiling of wildlife is eminent or has been reported. The Washington State regulatory planning requirement for wildlife rescue and rehabilitation will be met by MSRC who will be responsible, through contracts, for the operational setup and accommodations of oiled wildlife recovery and treatment.

Once an ICS has been established, the U.S. Fish and Wildlife Service (USFWS) Response Coordinator in Lacey, Washington, will be contacted to initiate the process of obtaining spill-specific authorizations related to oiled wildlife activities (see Migratory Bird Treaty Act below). The main office phone number is 360-753-9440. A 24-hour pager number (360-971-6000) is available for after business hours and weekends.

Private oiled wildlife care contractors (listed below) will be notified as required depending on the number and types of species affected. These contractors have varying abilities to provide service and personnel during response activities.

- Focus Wildlife, 310-386-5965 or 800-578-3048, <http://www.focuswildlife.net/>
- International Bird Rescue Research Center, 503-338-7490 or 888-447-1743, <http://www.ibrrc.org/index.html>
- Oiled Wildlife Care Network, 530-979-7561 or 800-645-1911 (oil spill) or 877-823-6926 (oiled animal), <http://www.vetmed.ucdavis.edu/owcn/>
- Progressive Animal Welfare Society (PAWS), 425-412-4040 or 425-787-2500 ext. 815, <http://www.paws.org/find-rehab.html>
- Tri-State Bird Rescue, 302-737-7241, <http://www.tristatebird.org/>

The following organizations have mobile wildlife rehabilitation trailers capable of being on site within 24 hours - as required under WAC 173-182-540 and may be contacted 24/7.

- Clean Rivers Cooperative (Portland, OR), 503-220-2040, <http://www.cleanriverscooperative.com/>
- Marine Spill Response Corporation, 800 645 7745 or 800 259 6772 (off hours), <http://www.msrg.org/>
- Washington Department of Fish and Wildlife (Olympia, WA), 360-534-8233 (pager) or 360-902-8124 (office number)

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## 6.6.2 Permits

All oiled wildlife activities conducted during a spill response will be conducted in compliance with applicable state and federal regulations. The purpose of this section is to identify the state and federal permits required for activities related to the collection and care of affected wildlife.

**Migratory Bird Treaty Act (Federal)** – Oiled bird activities conducted during a spill response will be conducted in compliance with the Migratory Bird Permit requirement and spill specific authorizations. This act makes it illegal for anyone to take or possess any migratory bird except under the terms of a valid Migratory Bird Permit. As authorized by the Migratory Bird Treaty Act, USFWS issues Migratory Bird Permits to qualified applicants to recovery, temporarily possess, transport, and rehabilitate oiled migratory birds.

A rehabilitator must secure two separate *spill-specific* authorizations (in association with their Migratory Bird Rehabilitation Permit) in order to work with oiled birds during a response. The first authorization permits the rehabilitator (or their designee) to recover and rehabilitate oiled (live) birds during the specific event. The second authorization permits the rehabilitator (or their designee) to collect and store dead oiled birds. The purpose of this second authorization is to ensure that the dead birds are handled, documented, and stored as "evidence" for later use. Spill-specific authorizations for Western Washington may be requested from the USFWS Response Coordinator in Lacey. The main office phone number is 360-753-9440. A 24-hour pager number (360-971-6000) is available for after business hours and weekends.

**Endangered Species Act (Federal)** – Oiled animal activities conducted during a spill response will be conducted in compliance with the Endangered Species Act (ESA) requirements. 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. In the event of an oil spill or hazardous substance release, the Endangered Species Act (ESA) must be considered in the development of federal response activities and actions during an oil spill response (Section 4314 of Northwest ACP).

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 Planning and Response Activities Under the Federal Water Pollution Control Acts National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act (ESA MOA)*. The Environmental Unit will address ESA Section 7 Consultation requirements, as outlined in the ESA MOA.

**Marine Mammal Protection Act (Federal)** – Oiled marine mammal activities conducted during a spill response will be conducted in compliance with the Marine Mammal Protection Act (MMPA). Under the MMPA (16 USC 1361-1407), federal, state, and local government officials, or designees of the relevant Secretaries of the departments of the Interior and Commerce, may take marine mammals during the course of official response duties if such taking is for the protection or welfare of the mammal, the protection of public health and welfare, or the nonlethal removal of nuisance animals (16 USC 1379 Section 109(h)(1)).

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 if the Wildlife Branch Director is authorized pursuant to Section 109(h) of the MMPA and implementing regulations (USFWS, NOAA National Marine Fisheries Service [NMFS], state wildlife agency, or is designated by the NOAA Regional Administrator under 16 USC 1382 Section 112(c)). "Take" is considered appropriate for the purposes of recovery and transport of marine mammals (live or dead) to a designated location, rehabilitation by an authorized facility, return to the wild, or for the collection of evidence.

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If oiled wildlife spill response field personnel are contract employees of a nongovernment agency and not otherwise authorized pursuant to Section 109(h) or 112(c) of the MMPA, authorization to take oiled marine mammals during spill response activities must be obtained directly from the appropriate federal trustee (USFWS or NOAA NMFS). Likewise, if the Wildlife Branch is not activated, authorization to take oiled marine mammals must be obtained directly from the appropriate federal trustee (USFWS or NOAA NMSF) pursuant to 16 USC 1382 Section 112(c).

**Washington State Rehabilitation Permit (Washington State)** – Oiled animal operations and facilities used during a spill response will be in compliance with Washington State Rehabilitators Permit requirements (WAC 232-12-175). WAC 232-12-175 states that it shall be unlawful for any person to possess wildlife for the purpose of rehabilitation unless they have a valid wildlife rehabilitation permit or they are working under the supervision of a person who has a valid wildlife rehabilitation permit. The permit is valid so long as the information in the permit remains current, the permit holder continues to meet the conditions and requirements of the permit, and provisions of the rule are followed.

### 6.6.3 Wildlife Branch

The Wildlife Branch is contained within the Operations Section of the ICS and its organizational chart may be found within the Northwest ACP.

It is the policy of the Northwest Area Committee that representatives of USFWS will assume the positions of Director and Deputy Director of the Wildlife Branch. WDFW representatives will assume these positions if a USFWS representative is not available, or if designated by a USFWS representative. Appointment of other parties, including Responsible Parties representatives, to one or both of these positions may be made by a USFWS 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, the Wildlife Branch Director position will be delegated to WDFW for spills that occur in Washington State. Delegation of the position may change during a spill of extended duration. The Wildlife Branch Director is responsible for overseeing all activities related to oiled wildlife recovery and rehabilitation during a response.

Currently, private wildlife contractors are typically used to provide the care for affected wildlife. *All* persons who will serve as part of the rehabilitation or field crews, however, must be trained in accordance with the site-safety plan established for the incident and should be familiar with generally accepted published guidelines for collecting, cleaning, and rehabilitating oiled birds.

### 6.6.4 Oiled Wildlife Care Procedures

Federal (USFWS) policy requires that spill responders comply with the care standards outlined in *Best Practices for Migratory Bird Care During Oil Spill Response*, which is incorporated by reference as a requirement of the Northwest ACP. Additional information may be obtained in *Protocols for the Care of Oil-Affected Birds*.

- Best Practices for Migratory Bird Care During Oil Spill Response. U.S. Fish and Wildlife Service. 2002
- *Protocols for the Care of Oil-Affected Birds*. Oiled Wildlife Care Network (UC Davis). 2000.

### 6.6.5 Oiled Wildlife Facilities, Equipment, and Personnel

The Northwest ACP has established four response levels with regards to oiled bird operations: Level 4 (up to 15 animals), Level 3 (up to 100 animals), Level 2 (up to 500 animals), and Level 1 (more than 500 animals). The equipment and facility infrastructure for oiled wildlife operations will be made available as needed during a spill response as established by Ecology in WAC 173-182-540.

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Specific oiled bird rehabilitation facility requirements associated with space, water, and ventilation, have been established by WDFW in WAC 232-12-275. Current planning standards require that the equipment and facility infrastructure for Level 4 and Level 3 responses be capable of being on site within 24 hours of spill awareness. The space, equipment, and personnel needs identified for these response levels are listed in the table at the end of this section.

One or more of the regional Mobile Rehabilitation Units (MRUs) currently under development by the Mobile Facility Workgroup for use by regional PRCs will be used to meet the space and equipment requirements listed in the table. The personnel requirements listed in the table will be met through the use of the oiled wildlife care contractors listed in **Section 6.6.1**.

In the event of a spill originating from the Facility resulting in impacted wildlife, one or more MRUs (as necessary) will likely be established at a designated staging area. Additional support and staging space will be made available as necessary. This may include buildings, trailers, or tents.

Electrical power will be provided by one or more stand-alone diesel powered generators. Freshwater will be supplied through hoses connected to a water source inside the Bioremediation Building or the nearby fire hydrant.

Wastewater generated by the cleaning operations will likely contain surfactants and oils and may not be suitable for discharge into the on-site sanitary sewer system. Therefore, wastewater will be stored in temporary storage tanks delivered to the site. Based upon the results of sampling and analysis, the wastewater will be disposed of on site or transported to an off-site disposal facility. This determination will be made by the Disposal Group Supervisor and approved by Ecology.

**Figure 6.5** shows MRU operational requirements. **Figure 6.6** is a Data Sheet for Collection of Live Contaminated Wildlife. **Figure 6.7** is a Data Sheet for Collection of Dead Contaminated Wildlife.

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**Figure 6.5. MRU Operational Requirements**

<b>Infrastructure/Personnel</b>	<b>15 Birds (NWACP Level 4)</b>	<b>100 Birds (NWACP Level 3)</b>
Ventilated and heated interior space (total sqft)	800	2400
Interior personnel support space (total sqft) <sup>1</sup>	400	2500
Exterior space for pools (total sqft) <sup>2</sup>	300	1800
Search and collection space (total sqft)	280	280
Number of pens (combined pre-wash and drying, 4'x8'each)	5	10
Number of wash/rinse stations	1	2
Number of 12' diameter pools	1	6
Maximum daily volume of conditioned fresh water (wash stations) required (gallons) <sup>3</sup>	900	6,000
Maximum daily volume of unconditioned fresh water (pools) required (gallons) <sup>4</sup>	14,450	86,700
Number of management level personnel	4 <sup>5</sup>	9 <sup>6</sup>

- 1 This space is required for administrative activities, volunteer/workforce support and coordination, and laundry services associated with a response but is not required to be on the same site as the rehabilitation facility.
- 2 This space required for the pools and their associated surrounding workspace (at least 4 feet).
- 3 Conditioned water refers to water that has been adjusted to a hardness of 2 to 3 grains (if needed) and is maintained at a temperature of 104°F to 106°F, with a pressure 40 to 60 psi, and a flow rate of 4 gallons per minute.
- 4 Each pool is required to have an exchange rate of 4.25 x per day to eliminate oil and waste products. The volumes of water listed assume that no filtration and recirculation systems will be used. It is anticipated that required water volumes could be decreased substantially (>90 percent) if appropriate filtration, oil-separation, and recirculation systems were used.
- 5 One each, Wildlife Branch Director, Wildlife Veterinarian, Bird Recovery and Transportation Unit leader, and Rehabilitation Unit leader. Additional management functions to be performed by these staff: Deputy Wildlife Branch Director, Bird Recovery and Rehabilitation Group Supervisor, Wildlife Reconnaissance Group Supervisor, Hazing Unit leader, and Volunteer Unit leader.
- 6 One each, Wildlife Branch Director, Deputy Wildlife Branch Director, Wildlife Veterinarian, Bird Recovery and Rehabilitation Group Supervisor, Wildlife Reconnaissance Group Supervisor, Volunteer Unit leader, Hazing Unit leader, Bird Recovery and Transportation Unit Leader, and Bird Rehabilitation Unit leader.

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**Figure 6.6. Data Sheet for Collection of Live Contaminated Wildlife**

Date: \_\_\_\_\_ Oil Spill Incident: \_\_\_\_\_

Rehabilitation Identification Number: \_\_\_\_\_

Specific Capture Location: \_\_\_\_\_

Specimen Common Name: \_\_\_\_\_

Species Found: \_\_\_\_\_

Was Specimen Obviously Oiled? Yes \_\_\_\_\_ No \_\_\_\_\_

Extent of Oiling (check one):

Completely covered  Discrete spots  
 Ventral or dorsal surface only  No obvious oil

Date of Arrival at Treatment Center: \_\_\_\_\_

Date Cleaned: \_\_\_\_\_ Date Released: \_\_\_\_\_

Location of Release: \_\_\_\_\_ Date Died: \_\_\_\_\_

Collected By:

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Telephone #: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

Relinquished To:

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Telephone #: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

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**Figure 6.7. Data Sheet for Collection of Dead Contaminated Wildlife**

Date: \_\_\_\_\_ Oil Spill Incident: \_\_\_\_\_

Specific Capture Location: \_\_\_\_\_

Specimen Common Name: \_\_\_\_\_

Species Found: \_\_\_\_\_

Was Specimen Obviously Oiled? Yes \_\_\_\_\_ No \_\_\_\_\_

Was Specimen Scavenged? Yes \_\_\_\_\_ No \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Collected By:

Printed Name: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Telephone #: \_\_\_\_\_  
Affiliation: \_\_\_\_\_  
Address: \_\_\_\_\_

Relinquished To:

Printed Name: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Telephone #: \_\_\_\_\_  
Affiliation: \_\_\_\_\_  
Address: \_\_\_\_\_

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## 6.7 Protection/Response Strategies

The current GRP for the lower Columbia River will be used for location of sensitive areas and response strategies. Those strategies to protect and respond to sensitive areas immediately around the terminal are provided in the following locations.

- **Figure 6.7** contains proposed booming and collection strategies for the Columbia River in areas near the terminal.
- **Figure 6.10** identifies the GRP booming strategies included in this OSCP and summarizes the length of boom required to carry out each strategy.
- **Figure 6.11** identifies locations along the Columbia and Willamette rivers, near the facility, where boom has been pre-staged to support the GRP strategies in those locations.

## 6.8 Spills to Ground

Immediate assessment of ground spills are addressed in the Facility's spill prevention, control, and countermeasure plan.

### 6.8.1 Reportable Spills to Ground

Spills to ground greater than 42 gallons shall be reported immediately using the contact information in **Section 3**. If the spilled quantity is unknown, or the release is ongoing, a report shall be made. The form in **Figure 6.4** can be used to document the decision process for spills to ground notification and includes factors, such as whether the spill is ongoing, whether it is in an area with environmental conditions that make groundwater impact more likely.

A spill is considered to have not impacted ground if it occurs on a paved surface, such as asphalt or concrete. A spill to dirt or gravel is considered to have impacted ground and is reportable. Surface waters inside the Facility are collected and routed to the effluent plant, where water is separated from oil and treated before being pumped out. This helps to prevent oil from reaching surface water or groundwater of the state during rain events.

All spills are considered reportable spills except spills that are known to be less than 42 gallons that do not impact surface or groundwater.

- Comprehensive Environmental Response, Compensation and Liability Act of 1980 releases
- On-facility air releases to the atmosphere only
- Releases from underground storage tanks regulated under Chapter 173-360 WAC
- Preexisting sources of releases identified as Resource Conservation and Recovery Act (of 1976) solid waste management units
- Spills contained within areas controlled by National Pollutant Discharge Elimination System
- Permitted systems that are not likely to threaten groundwater and do not exceed applicable federal reportable quantities

**Spills to ground will be assessed as soon as practicable using the following procedures.**

All spills involving a reportable quantity (RQ) of a hazardous substance will be immediately reported following the notification process detailed in **Section 3**. In the event that a release is known or suspected of impacting soil and/or groundwater notification will be made to the Ecology Toxics Cleanup Program within 90 days in accordance with the Model Toxics Cleanup Act (WAC 173-340). As soon as practicable, a groundwater spill assessment will be performed. The goals of the assessment will be to determine the nature and extent of the impact, the gradient and flow direction of groundwater in the vicinity of the release, identify down-gradient sensitive receptors that may require protection, and identify potential preferential pathways that may be in proximity to the release location. The following paragraphs describe the general methods to fulfill the goals of the groundwater spill assessment.

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- Groundwater assessment will be performed using existing wells if they are in the vicinity of the release, and with additional grab sampling via direct-push or other intrusive techniques if the impact is known or suspected of extending beyond the existing monitoring well network.
- If existing wells are not present, then assessment will be performed using grab samples collected via direct-push drill rig or other intrusive methods. Wells will be installed as appropriate to supplement data from grab samples and to collect data to evaluate groundwater flow direction and gradient. Wells will be installed by a well driller licensed in Washington State and installed according to Ecology regulations.

Samples selected for chemical analysis will be submitted to an analytical laboratory licensed by Ecology. Chemical analysis methods will include methods approved by Ecology or the EPA.

- A sensitive receptor survey will be performed to evaluate the location of municipal water supply wells, wetlands, surface water bodies, and/or other sensitive receptors that may be adversely impacted by the release. Sensitive receptor surveys may include, but not necessarily be limited to: reviewing appropriate maps, reviewing Ecology well records, and visual reconnaissance.
- Where groundwater discharges or is suspected to discharge to surface water, visual inspection of surface water and/or surface water sampling and analysis will be performed to evaluate the groundwater to surface water pathway.
- If underground utilities, pipelines, or other buried infrastructure are located in proximity to the spill, their locations will be confirmed and their potential to act as preferential pathways will be evaluated.

The Facility maintains a contract with Pacific Groundwater Group (PGG) for the management of spill response involving releases to groundwater. Pacific Groundwater Group is also the Facility’s contractor for ongoing soil and groundwater remediation projects.

Spills to a paved surface are not considered to have impacted ground. Spills to gravel or dirt surfaces are considered to have impacted ground.

### 6.8.2 Spills to Ground of Unknown Volume

When a spill is of an unknown volume, best professional judgment may be used to determine whether the spill is reportable due to its volume, and such judgment should also include the following considerations.

- Is the spill ongoing?
- Is the spill located adjacent to waters of the state, or where a pathway to waters of the state exists?
- What are the environmental conditions that might determine whether the waters of the state could be impacted (rain events, known shallow groundwater).

Immediate assessment of groundwater spills is addressed in the Facility’s spill prevention, control, and countermeasures plan, as required by 40 CRF 112.

### 6.8.3 Procedure for Reporting Spills to Ground

Reportable spills to ground, as defined in **Section 6.8.1**, shall require the notification procedures summarized in **Section 3**. The decision process for determining when to report spills to ground is summarized in **Figure 6.8**.

**Figure 6.8. Decision Process for Spills to Ground Notification**

Yes	No	Potential Notification Triggers	Notes:
		The source of the spill is unknown.	
		The volume of the spill is uncertain.	
		The volume of the spill is greater than 42 gallons and is not entirely contained on an asphalt or concrete surface that drains to an oily water sewer.	
		The spill is uncontained.	



Yes	No	Potential Notification Triggers	Notes:
		The spill is located in an area where there is a pathway to waters of the state, and environmental conditions, such as rain events, make an impact to state surface or ground water likely.	
		The spill has the potential to impact groundwater.	

If any of the boxes are marked yes, WDEM must be notified immediately, see Section 3.

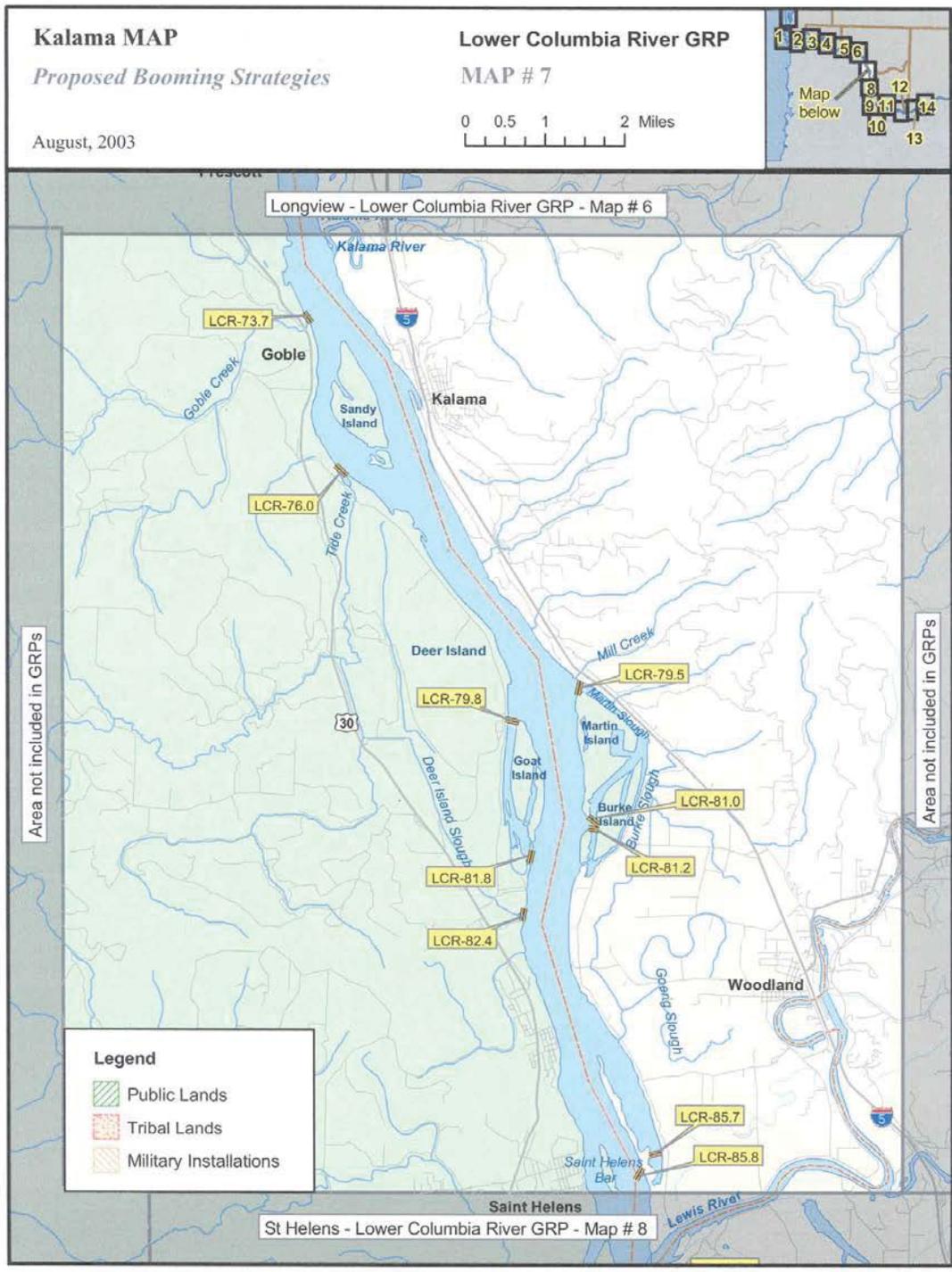
### 6.8.4 Impacted Groundwater Mitigation Protocol

Upon discovery or imminent threat of impacts to groundwater at or around the Facility, several proactive steps are taken to ensure that any actual impacts are minimized and cleaned up in a cost-effective manner. The following steps are implemented to respond to an actual or suspected threat to groundwater:

- Facility contacts one of several pre-approved groundwater remediation consulting firms, provides an overview of the site situation and characteristics of the material potentially released. This information transfer may occur via providing an ICS 201 Form briefing or by means of other discussions.
- Facility and groundwater consultant review site-specific subsurface conditions, including geology and regional groundwater flow direction.
- Groundwater consultant prepares a Phase 1 work plan to assess area around suspected groundwater impact. Approach is site specific but in general, involves several direct push borings and collection of soil and groundwater samples.
- Groundwater samples are analyzed for suspected site-specific contaminants of concern.
- Data are evaluated to determine nature, extent and severity of suspected impact.
- Based on data review, additional direct-push borings and/or permanent groundwater monitoring wells are installed to delineate and quantify impact. Depending on depth to groundwater, this step may also include excavation of soil in attempt to control/minimize the contaminants of concern source.
- Once impact area and media are defined, data are used to evaluate/select/design potential site-specific remediation alternatives.
- Remediation alternative of choice is pilot tested to determine suitability for full-scale application at the site.
- Remediation system is expanded to full-scale system, procured, installed and started up.
- Remediation system is operated and monitored to determine effectiveness of system with respect to site cleanup. Data are provided to Regulatory Agency with oversight responsibility.
- Remediation system is operated, monitored, and optimized during project to expedite cleanup. Cleanup is achieved to oversight agency standards. System is decommissioned, wells plugged, and abandoned (if present), site is restored to pre-release conditions.

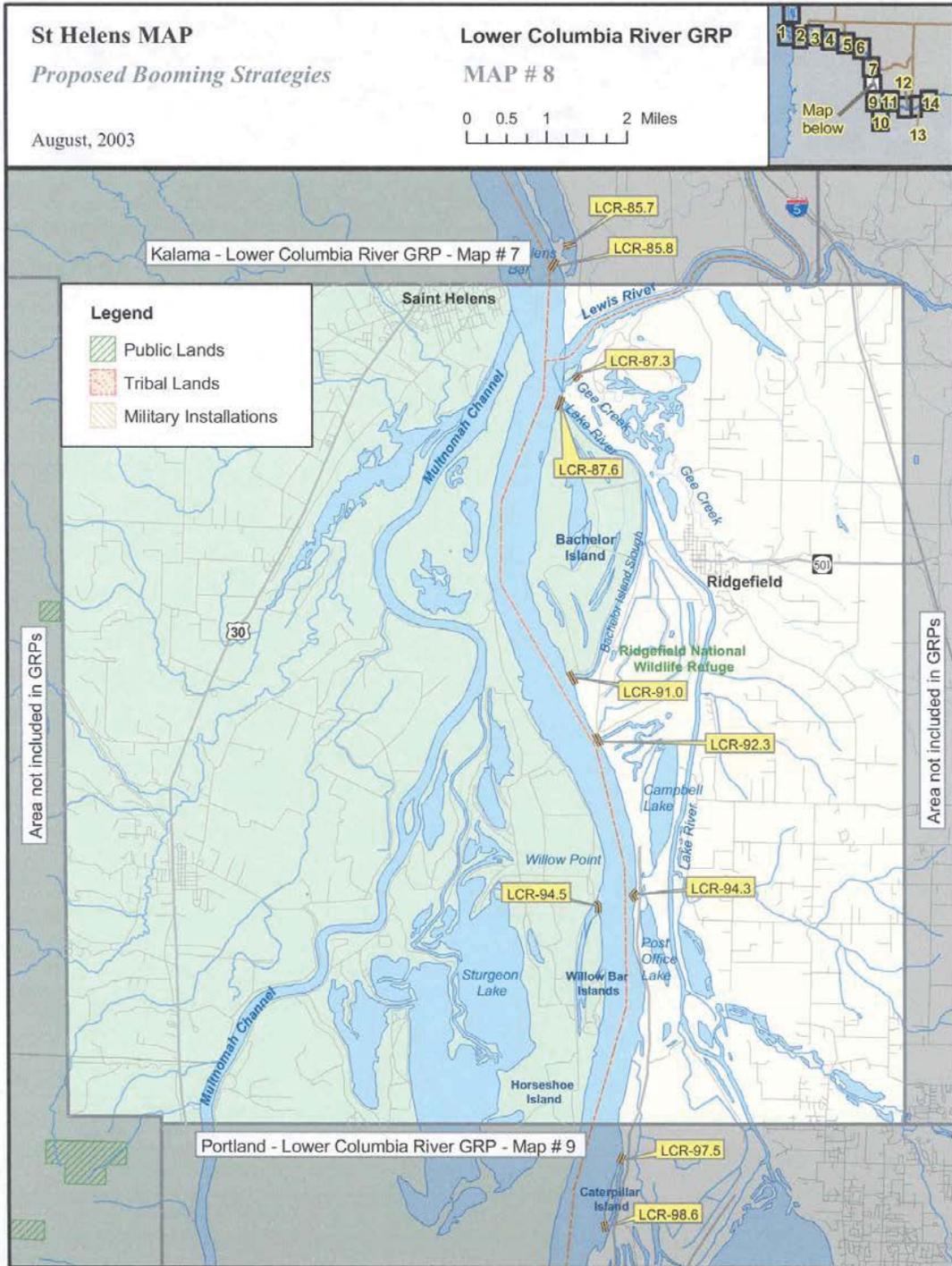
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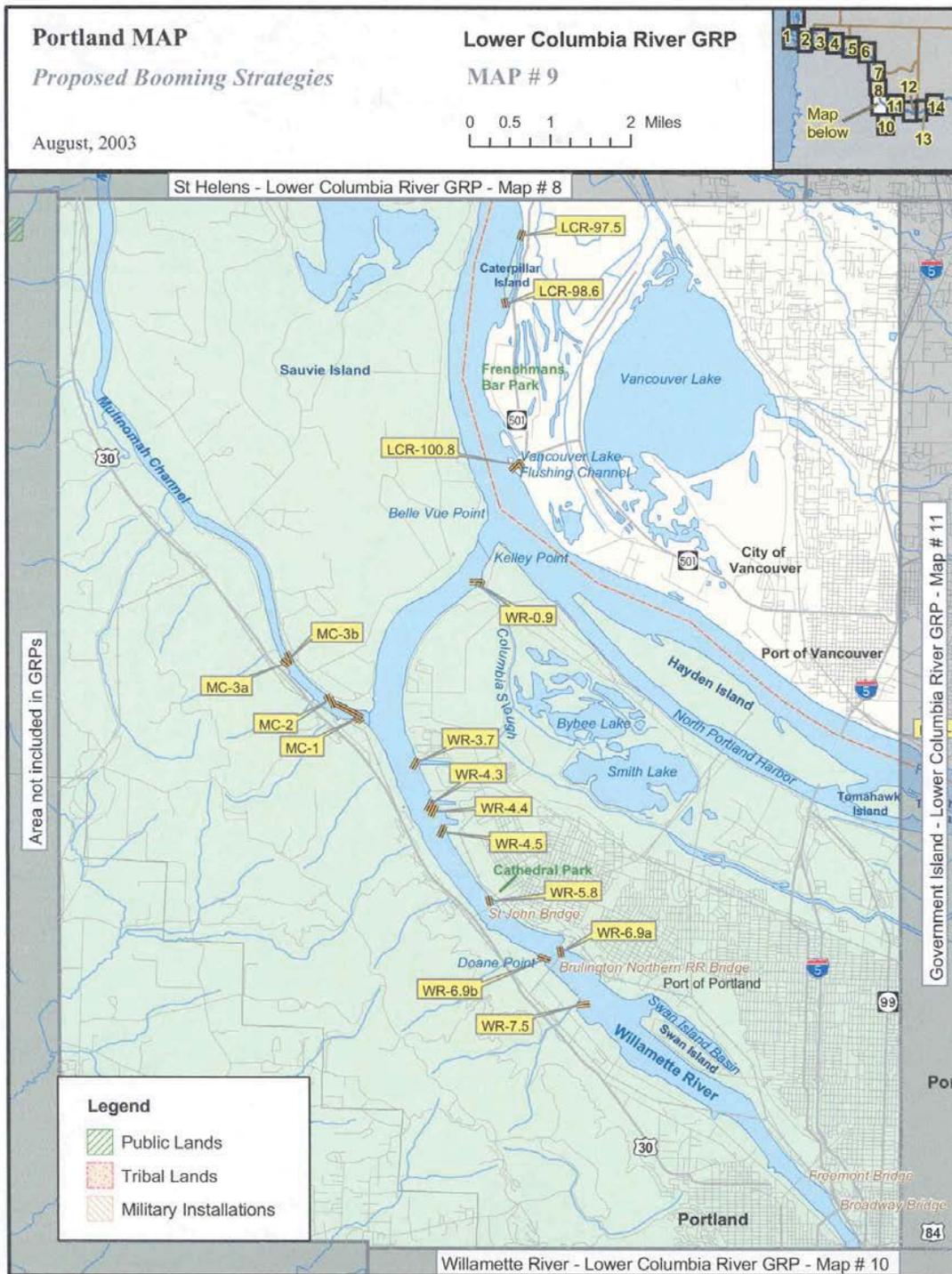


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Figure 6.10. Proposed Booming and Collection Strategies – Lower Columbia River

LOWER COLUMBIA RIVER GRP

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices									
Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-64.0	Field visit; date unknown	Lord Island - east end (OR) 46°-07.310'N 122°-59.890'W	Exclusion - Prevent oil from moving through the channel between Lord Island and Slaughters Dike.	Low flow	1,400'	Deploy boom across the opening between Lord Island and Slaughters Dike.	Stage from the Willow Grove County Park.	Boat access only. Ramp at Willow Grove Park.	Waterfowl use area, wetland habitat.
LCR-66.2	Field visit; date unknown	Port of Longview (WA) 46°-06.435'N 122°-57.378'W	Collection - Prevent oil from moving down stream.	Low flow	3,000'	Deploy 1,000' lengths of boom from the Port of Longview to contain/collect oil under docks. May need tug to assist in deployment. This is a major natural collection site, and the last good chance to prevent oil from moving down stream. <i>Note - Longview Fibre has developed a number of additional strategies in this vicinity to address the unique hazards of a toluene spill; consult their response plan for more information.</i>	Port of Longview.	Vehicle access from Longview to the port docks. Boat access from the Ramp at Willow Grove Park or Rainier.	Downstream resources.
LCR-70.0	Field visit; date unknown	Cottonwood Island - east side slough (WA) 46°-04.915'N 122°-52.540'W	Exclusion - Keep oil out of slough.	Any flow	500'	Close off mouth to the slough on east side of Cottonwood Island.	Stage from the Willow Grove County Park or Kalama.	Boat access only. Use ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat.
LCR-71.4	No field visit/ test	Carroll's Channel south end (WA) 46°-03.510'N 122°-52.040'W	Exclusion - Keep oil out of small inlet at the south end of the channel (east side).	Any flow	1000'	Close off mouth of the small inlet at the south end of Carroll's Channel (on the east side).	Stage from the Willow Grove County Park or Kalama.	Boat access only. Use ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat.

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LOWER COLUMBIA RIVER GRP

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices									
Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-71.5	New strategy 3/03	Carrol's Channel south end (WA) 46°-03.365'N 122°-52.333'W	Collection/ Exclusion - Natural collection area, prevent oil from moving up the channel.	Any flow	1200'	Deploy boom across the south end of Carrol's Channel to direct collected oil to the east shore, and to prevent oil from moving through Carrol's Channel. Current may be too strong to deploy boom across channel. If so, deploy as much boom as possible to divert oil to the east shore for collection.	Stage from the Willow Grove County Park or Kalama.	Vehicle access from east shore. Boat access from ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat.
LCR-71.6	New strategy 3/03	Carrol's Channel south end (WA) 46°-03.345'N 122°-52.540'W	Collection - Enhance natural collection into south end of Carrol's Channel.	Low flow	500'	Deploy boom from the south end of Cottonwood Island to enhance natural collection.	Stage from the Willow Grove County Park or Kalama.	Boat access only. Use ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat.
LCR-73.7	No field visit/ test	Goble Creek (OR) 46°-01.250'N 122°-52.522'W	Exclusion - Keep oil out of the creek.	Any flow	100'	Deploy boom across creek mouth.	Stage from the Willow Grove County Park or Kalama.	Possible vehicle access from Highway 30. Boat access from ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Salmonid concentrations and habitat (peak times are Sep-Oct, Apr-May).
LCR-76.0	No field visit/ test	Tide Creek (OR) 45°-59.660'N 122°-51.920'W	Exclusion - Keep oil out of the slough and creek.	Any flow	1000'	Deploy boom across small slough at the creek mouth.	Stage from the Willow Grove County Park or Kalama.	Boat access only. Use ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat, salmonid concentrations and habitat (peak times are Sep-Oct, Apr-May).
LCR-79.5	No field visit/test	Martin Island - north end (WA) 45°-57.375'N 122°-47.985'W	Exclusion - Keep oil out of Martin Slough.	Any flow	600'	Deploy boom across the north end of Martin Slough.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).

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LOWER COLUMBIA RIVER GRP

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-79.8	New strategy 3/03	Goat Island - north end (OR) 45°-56.945'N 122°-49.168'W	Exclusion - Keep oil out of slough behind Goat Island.	Any flow	600'	Deploy boom across the north end of the slough behind Goat Island.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-81.0	No field visit/test	Martin Island - south end (WA) 45°-56.065'N 122°-47.850'W	Exclusion - Keep oil out of Martin Slough.	Any flow	600'	Deploy boom across the south end of Martin Slough.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-81.2	No field visit/test	Burke Island - south end (WA) 45°-55.863'N 122°-47.823'W	Exclusion - Keep oil out of Burke Slough.	Any flow	300'	Deploy boom across the south end of Burke Slough.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-81.8	New strategy 3/03	Goat Island - south end (OR) 45°-55.518'N 122°-48.865'W	Exclusion - Keep oil out of slough behind Goat Island.	Any flow	500'	Deploy boom across the south end of the slough behind Goat Island.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-82.4	No field visit/test	Deer Island Slough (OR) 45°-54.860'N 122°-48.965'W	Exclusion - Keep oil out of slough.	Any flow	300'	Deploy boom across the mouth of the slough on the south end. Ensure tide gates are closed at each end.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Creek; freshwater clams; wetland habitat.
LCR-85.7	No field visit/test	Goerig Slough - collection (WA) 45°-52.400'N 122°-46.725'W	Collection - Prevent oil from moving down stream.	Low flow	1000'	Deploy boom from the southeast corner of the islands off Goerig Slough to the mainland shore for collection with a skimmer or vacuum truck.	Stage from St. Helens.	Possible vehicle access from Dike Road. Boat access from ramp at St Helens.	Downstream resources.
LCR-85.8	No field visit/test	Goerig Slough - diversion (WA) 45°-52.200'N 122°-46.905'W	Diversion - Prevent oil from moving down stream.	Low flow	700'	Deploy boom at an angle from the southwest corner of the islands off Goerig Slough, up-stream into the main channel of the river to divert oil into the area behind the islands for collection.	Stage from St. Helens.	Boat access only. Use ramp at St Helens.	Downstream resources.

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LOWER COLUMBIA RIVER GRP

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices									
Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-87.3	New strategy 3/03	Gee Creek (WA) 45°-50.895'N 122°-46.560'W	Exclusion - Keep oil out of the creek and slough up-stream.	Any flow	100'	Deploy boom across the mouth of the creek. Will likely require a shallow-draft boat.	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Wetlands habitat.
LCR-87.6	Field test 4/97	Ridgefield NWR/ Bachelor Island Slough - north entrance (WA) 45°-50.540'N 122°-46.685'W	Exclusion - Keep oil out of slough	Any flow	600'	Deploy boom across the down-river (north) end of Bachelor Island Slough. Note - oil may collect here naturally. Minimize disturbance of shoreline and back-beach areas. Use established roads only for vehicle access.	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Waterfowl, sand hill crane wintering, great blue heron spring nesting, bald eagle nests, wetlands habitat. Sensitive shoreline and back-beach.
LCR-91.0	Field test 4/97	Ridgefield NWR/ Bachelor Island Slough - south entrance (WA) 45°-47.625'N 122°-46.385'W	Exclusion - Keep oil out of slough	Any flow	600'	Deploy boom across the up-river (south) end of Bachelor Island Slough. Note - oil may collect here naturally. <i>Contact the USFWS to have 3 input pumps shut off - pager, 360-971-6000.</i>	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Waterfowl, sand hill crane wintering, great blue heron spring nesting, bald eagle nests, wetlands habitat. Sensitive shoreline and back-beach.
LCR-92.3	Field test 4/97	Campbell Lake (WA) 45°-46.972'N 122°-46.083'W	Exclusion - Keep oil out of the lake.	High flow	300'	Deploy boom across the entrance to Campbell Lake.	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Sandhill crane roost area, waterfowl, wetlands habitat.

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LOWER COLUMBIA RIVER GRP

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices									
Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
L.C.R.-94.3	Field visit 6/03	Post Office Lake (WA) 45°-45.275'N 122°-45.303'W	Exclusion - Keep oil out of slough adjacent to lake.	High flow	200'	Deploy boom in a chevron configuration to enclose the entrance to the culvert that connects the river to the lake. The culvert entrance on the river side is a grated concrete structure about 20-30 feet from shore that is nearly flush with the river bottom. <i>The entrance on the lake side has stop-logs, contact the USFWS at 360-971-6000 (pager) to have someone install the stop-logs.</i>	Stage from the boat ramp at Caterpillar Island, the Ridgefield Marina or St. Helens.	Vehicle access from the Lower River Road. Boat access from the ramp at Caterpillar Island, the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Waterfowl, wetlands habitat.
L.C.R.-94.5	No field visit/test	Willow Bar Islands (OR) 45°-45.140'N 122°-46.060'W	Exclusion or Collection - Keep oil out of slough behind Willow Bar Islands or use for collection.	Any flow	800'	Deploy boom in a chevron configuration by placing one section from the north tip of the primary Willow Bar Island to the small island to the north, and then continuing northwest to Sauvie Island. If no waterfowl are present in the slough, deploy 600' of boom to divert oil into the north end of the slough for collection; deploy 200' of boom across the slough to prevent oil from moving into the south end of the slough.	Stage from the boat ramp at Caterpillar Island, the Ridgefield Marina or St. Helens.	Vehicle access from Brown Road on Sauvie Island. Boat access from the ramp at Caterpillar Island, the Ridgefield Marina or St Helens.	Wetland habitat.
L.C.R.-97.5	Field test 11/97	Caterpillar Island - north end (WA) 45°-42.565'N 122°-45.555'W	Exclusion - Keep oil out of slough behind island.	High flow	500'	Deploy boom from the north tip of Caterpillar Island to the mainland shore.	Stage from the boat ramp at Caterpillar Island.	Boat access only from ramps at Caterpillar Island, Vancouver, or Portland.	Wetland habitat.

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LOWER COLUMBIA RIVER GRP

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-98.6	Field test 11/97	Caterpillar Island - south end (WA) 45°-41.660'N 122°-45.815'W	Exclusion - Keep oil out of slough behind island.	High flow	500'	Deploy boom from the south tip of Caterpillar Island to the mainland shore. Angle a 400' section SW into the river to deflect oil into a collection site in channel. Double boom channel with two 200' sections to protect Vancouver Lake. If necessary, valves can be closed at River Road to prevent oil from entering Vancouver Lake. This strategy is most effective with a south wind at slack water or when oil is moving along the north (east) shore. Sand bars at the mouth of the channel are dynamic and may require modification of the strategy.	Stage from the boat ramp at Caterpillar Island.	Boat access only from ramps at Caperpillar Island, Vancouver, or Portland.	Wetland habitat.
LCR-100.8	Field test 10/01	Vancouver Lake/ Flushing Channel (WA) 45°-39.947'N 122°-45.528'W	Deflection/ Collection - Deflect oil into Flushing Channel for collection.	Low flow	800'		Stage from Vancouver, Portland, or the parking area at the west end of the flushing channel.	Vehicle access from Lower River Road. Boat access from Vancouver or Portland.	Vancouver Lake; down river resources.
LCR-108.4	Field visit 9/94	Marine Park Boat Ramp - upriver from Ryan Point (WA) 45°-36.747'N 122°-38.022'W	Collection - Collect oil in small cove.	Low flow	500'	Angle boom off boat ramp into river; divert oil to collection site.	Stage from Vancouver, Portland, or the boat ramp parking area.	Marine Park Boat Ramp access via Marine Parkway; good command post area.	Down river resources.
LCR-109.6	Field visit 9/94	Wintler Park (WA) 45°-36.667'N 122°-36.652'W	Collection - Divert oil to collection sites.	Low flow	500'	Angle boom upstream, off point just down river of Wintler Park (note - may not need full 500').	Stage from Vancouver, Portland, or the boat ramp parking area.	Boat access from the ramp near Lieser Point. Vehicle access off of Highway 14.	Resources down river (may be osprey nests in the area).

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**Figure 6.11. Clean Rivers Co-op Boom Site List**

Environmental Resources	Columbia River Mile	Pre-staged Boom Available at	Boom Function and Estimated Length Required (feet)
Columbia Slough	0.9 (Willamette River)	RES Portland	400' deflection & 500' containment
Multnomah Channel	3.0 (Willamette River)	RES Portland	3,000' deflection & containment
Vancouver Lake Channel	101	RES Portland	400' containment
Hathaway Lake Entrance	92.3	St. Helens	300' protection
Bachelor Island Slough	91.5 & 87.6	St. Helens	1,200' deflection & containment
West Side of Lewis River	84.0 – 87.0	St. Helens	800' containment, 1,300' protection
Deer Island Slough	82.4	St. Helens	300' containment
Burke Island/Martin Island	81.0 – 81.3	St. Helens	1,600' deflection & containment
Kalama River	73.0	Rainier	500' protection
Carroll's Channel	71.5	Rainier	400' deflection & 800' containment
Longview Dock	67.5	Rainier	3,000' containment
Slaughters Dike Entrance	66.0	Rainier	400' containment
Cottonwood Island	70.0 – 72.0	Rainier	400' containment
Brix Marina	67.8	Rainier	800' protection
Fisher Island	60.4 – 60.0	Stella	800' deflection
Coal Creek, East	57.0	Stella	1,000' containment
Coal Creek, West	57.0	Stella	600' containment
Crims Island	57.0	Stella	1,200' deflection & 1,700' containment
Wallace Island	50.0	Stella	1,000' containment & protection
Cathlamet Channel	47.0	Cathlamet	2,000' deflection & 3,000' containment
Elochman Slough	37.0	Skamokawa	200' containment
Westport Slough	43.3	Wauna	1,000' deflection & containment
Wauna Channel	42.0	Wauna	1,000' containment
Puget Island	46.0	Wauna	1,600' containment
Steamboat Slough	35.0	Skamokawa	600' deflection & 600' containment
Brooks Slough	33.0	Skamokawa	300' containment
Skamokawa Marine	33.0	Skamokawa	1,000' containment
Big Creek Entrance	28.0	Tongue Point	200' containment
Karlson Island	27.0	Tongue Point	200' containment
Miller Sands Lagoon	24.0	Tongue Point	2,000 containment
Crooked Creek	23.0	Tongue Point	100' containment
Grays River	22.5	Tongue Point	1,000; protection
Deep River	21.0	Tongue Point	500' containment
Brix Bay Marsh	20.0	Tongue Point	500' containment
Portuguese Pt. Marsh	19.0	Tongue Point	3,00' containment
John Day River Entrance	18.0	Tongue Point	600' containment

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Environmental Resources	Columbia River Mile	Pre-staged Boom Available at	Boom Function and Estimated Length Required (feet)
Clifton Channel	36.0	Astoria	2,000' deflection & 3,00' containment
West Basin Seal Haulout	15.0	Astoria	1,200' protection
West Basin Marina	13.0	Astoria	200' protection
Lewis & Clark River	13.0	Astoria	1,000' containment
Skipanon Waterway	11.0	Astoria	600' containment
Tansy Point	10.0	Astoria	600' deflection
Hammond Marina	8.0	Astoria	600' containment
Swash Lake Entrance	7.0	Astoria	600' containment
Youngs River	7.0	Astoria	700' containment
Ilwaco Marina	3.0	Astoria	400' containment, 4,100' sorbent & 1,000' deflection

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Figure 6.12. Climatic Information Lower Columbia River Region

Parameter	Unit	Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr
Temp <sup>1</sup>	°F	Mean Daily Max	44	50	55	60	67	73	80	79	74	64	52	46	62
Visibility <sup>1</sup>	°F	Mean Daily Min	34	36	37	41	46	52	56	56	51	45	39	35	44
		Heavy Fog Visibility (1/2 mile or less)	4.2	3.7	2.3	1.1	0.1	0.1	0.1	0.1	0.2	2.8	7.6	6.1	4.9
Precipitation <sup>1</sup>	Inches	Mean	6.16	3.93	3.61	2.31	2.08	1.47	0.46	1.13	1.61	3.05	5.17	6.41	37.39
Wind <sup>1</sup>	MPH	Mean Speed	9.9	9.1	8.3	7.3	7.1	7.2	7.6	7.1	6.5	6.5	8.6	9.5	7.9
		Prevailing Direction	ESE	ESE	ESE	NW	NW	NW	NE	NE	NW	NW	ESE	ESE	ESE
Daylight <sup>2</sup>	Average Time	Sunrise	07:50	07:15	06:25	06:25	05:39	05:20	05:35	06:11	06:49	07:28	07:12	07:47	
		Sunset	16:53	17:38	18:17	19:59	20:37	21:04	20:59	20:21	19:23	18:26	16:40	16:26	
Current <sup>3</sup>	Average	Speed (kt)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9	0.9
		Direction	343°E												

1 – Source: 1990 Local Climatological Data Annual Summary with Comparative Data, National Oceanic and Atmospheric Administration

2 – Source: Tide and Current Prediction Software, 1994, Micronautics.

3 – Average current speed measured at Kalama, WA 1994.

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## 7. Vancouver Sustained Response Actions

### 7.1 Response Resources

#### 7.1.1 Firefighting Equipment

Firefighting equipment is installed and maintained throughout the Facility to allow control of fires should they occur. Fire suppression equipment and systems are designed to National Fire Protection Association and API requirements, the more stringent Factory Mutual Global insurance requirements, and state and local regulations, and include automatic and engineered controls. Buildings are fireproofed, and emergency egress is provided in accordance with applicable fire and building codes. All fire suppression systems are designed to activate automatically and will be equipped with manual trip stations. The design of fire suppression systems for specific proposed project elements is discussed below.

**Area 200 – Unloading and Office.** The railcar unloading area is served with single interlock, pre-action 3 percent foam/water sprinkler systems designed to activate, as necessary, in five segments of the building. Design density is 0.30 gallon per minute/4,000 square feet with a hose allowance of 500 gallons per minute. The system includes linear heat detectors, gas detectors, temperature monitors, pump monitors, automatic exterior alarm horns and strobes, manual alarm stations, automatic and manual foam release systems, and tamper-resistant systems. Fire hydrants are located along the south side of the building at 300-foot intervals. All systems interface with the railcar unloading building control room.

The office and support buildings are equipped with extinguishers.

**Area 300 – Storage.** The storage tank area is served by six foam water sprinkler zones, one per storage tank. Each foam water sprinkler zone is designed to discharge into the inside of the storage tank it protects. The system includes linear heat detectors and warning horns and strobes, as well as manual alarm and foam release stations. A fire water loop is provided with hydrants and monitors spaced at a maximum of 300 feet and configured so that each tank can be reached by two hose streams. Each tank is protected by a fixed 3 percent foam/water suppression system on the seal area surface. All systems interface with the tank area control room. The storage building in Area 300 is served by adjacent hydrants. Smoke detectors, automatic and manual alarms, and hand held fire extinguishers are located as appropriate inside and outside the boiler building as required by local fire code. Based on the construction type and occupancy classification, sprinkler systems are not necessary for fire control in the east boiler building.

**Area 400 – Marine Terminal.** Two elevated fire monitors are installed at the marine loading dock, with hydrants connected to the existing on-site water supply. This system is primarily for fires on the berth, but can be used to assist in the event of a vessel fire.

The vessels berthing at the Marine Terminal are required to have onboard systems, as well as contracts with commercial marine firefighting companies, to respond in the event of a shipboard fire. Vessels will also have access to fire water from the dock via an international shore connection.

**Area 500 – Transfer Pipelines.** The pipeline area is served by existing and new (as constructed to serve specific Facility areas) hydrants in the vicinity of the pipeline alignment.

**Area 600 – West Boiler.** The boiler building and area is served by adjacent hydrants. Smoke detectors, automatic and manual alarms, and hand held fire extinguishers are located as appropriate inside and outside the boiler building as required by local fire code. Based on the construction type and occupancy classification, sprinkler systems are not necessary for fire control in the Area 600 boiler building.

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**Rail Infrastructure.** The location of rail infrastructure improvements is served by existing and new (as constructed to serve specific Facility areas) hydrants in the vicinity of the rail loop alignment.

### 7.1.2 Facility Response Equipment

The Facility and Company maintain an inventory of equipment, which will be immediately available for a spill response. Contracted oil spill response equipment can also be made available almost immediately. A list of equipment at the facility is provided in **Figure 7.1**. A summary of equipment availability is provided in **Figure 7.3**.

On-site response equipment is inspected on a monthly basis by Facility/Company employees. The operability of this equipment is confirmed at least annually through testing and drills (see **Section 7.2**). Any inventory discrepancy or inoperable equipment is replaced or repaired when detected. Facility/Company-owned response equipment is maintained according to manufacturer specifications. The inspection checklist and maintenance schedule can be found in the Facility office. Facility/Company operations is responsible for retaining information on the operational status of all equipment for a minimum of five years and is responsible for ensuring that the following response equipment and testing procedures are implemented.

- **Containment Boom.** During semi-annual boom deployment exercises, boom will be inspected for signs of wear or structural deficiencies. If tears in the fabric or rotting are observed, the boom will be repaired or replaced.

In addition, end connectors will be inspected for evidence of corrosion. If severe corrosion is detected, equipment will be repaired or replaced.

- **Response Boats.** Primary response boats are deployed at least bimonthly. If any mechanical problems are detected, they will be repaired in a timely manner.
- **Miscellaneous Equipment.** Other response equipment identified in this OSCP will be inventoried and inspected to ensure that the stated quantities are in inventory and in proper working order. The equipment inspection and deployment exercises are recorded in a Response Equipment Log and maintained by the Terminal Manager. A blank form is provided in **Appendix A**.

Deployment of Facility equipment listed in **Figure 7.1** will begin almost immediately upon discovery of a spill while making all considerations for response personnel safety (i.e., inclement weather and water conditions). Equipment deployment guidelines and time frames are illustrated in **Appendix D**.

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**Figure 7.1. On-Site Oil Spill Response Equipment**

Type	QTY	Date Purchased	Location	Operational Status	Equipment Design
<b>CONTAINMENT</b>					
Harbor Boom	TBD	TBD	Marine Terminal	In Operation	TBD
Containment Boom	TBD	TBD	Marine Terminal	In Operation	TBD
Sorbent Boom	TBD	TBD	Marine Terminal	In Operation	TBD
<b>RECOVERY</b>					
Sorbent pads	# bundles TBD	TBD	Marine Terminal	In Operation	TBD
Skimmers	TBD	TBD	Marine Terminal	TBD	TBD
<b>ANCHORS</b>					
Anchor systems	TBD		Marine Terminal	In Operation	N/A
Tow bridals	TBD	TBD	Marine Terminal	In Operation	N/A
<b>TRANSPORTATION</b>					
Aluminum Boat	TBD	TBD	Marine Terminal	In Operation	TBD
<b>FIREFIGHTING</b>					
Fire Foam System	TBD	TBD	Marine Terminal	In Operation	TBD
Fire Foam System	TBD	TBD	Storage Area	In Operation	TBD
Fire Foam System	TBD	TBD	Rail Unloading Area	In Operation	TBD
Fire extinguishers	TBD	TBD	Various	In Operation	20 lbs
<b>COMMUNICATIONS</b>					
Handheld radios	TBD	TBD	Office	In Operation	TBD
Radios	TBD	TBD	Office	In Operation - compatible with Clean Rivers Radio System	TBD
<b>MISCELLANEOUS</b>					
Rain gear	# Sets TBD	Unknown	Various	In Operation	N/A
Gloves	# Sets TBD	Unknown	Various	In Operation	N/A
Boots	# Sets TBD	Unknown	Various	In Operation	N/A

NOTE: Boom containment area will depend upon boom configuration, weather, tide and current conditions. Absorption capacity of sorbent boom and pads will vary depending upon recovery conditions, application, weather, etc. Facility/Company uses sorbents from several different manufacturers. Absorption capacities can be located in the International Spill Response Equipment Catalog.

### 7.1.3 Contractor Equipment and Manpower

Facility/Company’s primary response contractors and telephone numbers for the Facility are noted in **Section 3**. Facility and Company have ensured by contract the availability of private personnel and equipment necessary to respond, to the maximum extent practicable, to the worst case discharge or the substantial threat of such discharge.

**Section 3** also contains a list of additional contractors in the area who provide equipment and services that may be needed during a spill response operation. **Appendix B** describes equipment owned by these contractors. Where available, the response equipment lists contain the following equipment categories.

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- Skimmer/pumps
- Boom
- Sorbents
- Tools and miscellaneous equipment
- Communication equipment
- Firefighting equipment and PPE
- Other heavy equipment and boats
- Chemicals stored and dispersant dispensing equipment

Where applicable and available, the following parameters are provided for response equipment.

- Skimmer/Pumps
- Operational Status
- Type, Model, and Year
- Number
- Capacity
- Daily Recovery Rate
- Storage Location

Evidence of Contracts with these response contractors are located in **Appendix B**.

Contractor’s general roles and responsibilities are as follows.

- Providing booms, skimmers, temporary storage tanks, vacuum trucks, construction equipment, and other equipment necessary for containment and recovery of an oil spill.
- Providing trained personnel to operate the aforementioned equipment, and supervising response personnel.
- Interfacing with company Field Supervisors to implement tactical orders relating to the spill response.
- Providing appropriate safety equipment and ensuring personnel are operating according to the Company’s safety guidelines and applicable federal, state, and local regulations.
- Providing transportation for necessary contractor personnel and equipment.

#### 7.1.4 Marine Spill Response Corporation

Company is a member of MSRC, a “W3” category oil spill response organization. MSRC is a mutual benefit corporation with regional response centers and various propositioned equipment sites. MSRC is the Company’s primary response contractor for containment and cleanup equipment and personnel. As an Ecology-approved PRC, CRC and MSRC have the equipment and resources available to meet the (most stringent) planning standard for WAC 173-182-420 Vancouver. Evidence of membership will be provided in **Appendix B**.

The planning standard webpage may be found

at: <http://www.ecy.wa.gov/programs/spills/preparedness/PlanningStandards/planningstandards.html>.

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The planning standard spreadsheet is include as **Figure 7.4**.

In order to build a more effective oil spill response system with greater accountability, MSRC and the Marine Fire and Safety Association (MFSA) have divided the Columbia River System into three geographic coverage zones.

- Astoria Zone - 3 miles across and beyond the Columbia River mouth to RM 90
- Longview Zone - Columbia RM 18 to RM 90
- Portland Zone - Columbia RM 80 to RM 120 and the Willamette River from its mouth

### 7.1.5 Clean Rivers Cooperative

Company is a member of CRC, a “W3” category Oil Spill Response Organization, and an approved primary response contractor with the state of Washington. CRC has a 2-hour response time to the Facility. Equipment list, contact information, and letter of intent to respond can be found in **Figure 7.2** and in **Appendix B**.

### 7.1.6 NRC Environmental Services

NRC Environmental Services (NRCES) is one of the primary response action contractors for members of CRC and MFSA. NRCES is an approved spill response contractor with the state of Washington.

The Company, as a member of CRC, will be able to use NRCES for response to spills from the Facility. Call out of NRCES will normally be conducted via CRC. Contracts and current inventories of CRC and NRCES spill response equipment and 24-hour contact information is provided in **Appendix B**.

Equipment and personnel maintained by NRCES may be used by CRC or MFSA members for response to spills from member vessels or facilities.

CRC and MFSA have awarded contracts to NRCES for the Portland, Astoria, and Longview coverage zones.

### 7.1.7 Other Resources

The USCG and the U.S. Navy also have stockpiles of equipment available to the private sector. The Facility and Company do not maintain contracts with these entities; however, these resources may be contracted if private contractor stockpiles are exhausted. The USCG stores material in Mobile, Alabama; Fort Dix, New Jersey; and Hamilton Field, California, while the Navy maintains equipment in Stockton, California, and Williamsburg, Virginia. The Navy also has salvage equipment. Requests for federal equipment can be expedited when made through USCG’s OSC.

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### 7.1.8 Oil Spill Response Equipment

For the purposes of a worst-case spill scenario, the Facility’s largest tank has a capacity of 380,000 barrels of crude oil. <sup>1</sup> Pursuant to the Vancouver Planning Standard, WAC 173-182-420, the Company must have oil spill response capability, including boom, oil recovery systems, and storage capacity, available to meet the following milestones.

- 2 hours 1,000 feet of boom
- 3 hours 2,000 feet of boom
- 6 hours 6,000 feet of additional boom
  - 12,000 barrels per day derated recovery capacity
  - 1 x Effective daily recovery capacity (12,000 barrels storage)
- 12 hours 20,000 feet of additional boom
  - 36,000 barrels per day derated recovery capacity
  - 1.5 x Effective daily recovery capacity (54,000 barrels storage)
- 24 hours 20,000 feet of additional boom
  - 48,000 barrels per day derated recovery capacity
  - 2 x Effective daily recovery capacity (96,000 barrels storage)
- 48 hours Additional boom as necessary
  - 60,000 barrels per day derated recovery capacity
  - Additional storage as necessary

The largest vessel for the Facility is 899 feet long. Therefore, the terminal must have the capability to initiate the deployment of four times the largest vessel (4 x 900 = 326,800 feet) or 2,000 feet of boom, whichever is less, within 3 hours. Facility has 3,000 feet (verify; see **Figure 7.2**) of containment boom and a boat stored at the vessel dock, which can be deployed by the Facility Operators within the mandated time frame.

As summarized in **Figure 7.2**, the availability of additional response equipment exceeds the requirements of WAC 173-182-420, the EPA and USCG.

**Section 6, Appendices D and F**, or the Northwest Area Committee GRP, may be consulted as planning guidelines for meeting these requirements. If the vessels identified in the OSCP are unavailable for response in which a substantial change in the ability to respond may be impacted, the Facility/Company will notify Ecology.

See **Appendix D** for Response Planning Standards calculation based on USCG, EPA, and Ecology criteria. Also see **Figure 7.4**.

Maintenance and inspection requirements for the response equipment is described in **Appendix G**.

<sup>1</sup> The shell capacity of approximately 380,000 barrels each; however, the maximum amount of product stored in each tank will be approximately 360,000 barrels, to take into account the presence of the internal floating roof and the additional headspace required to allow product movement in the event of seismic conditions.

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**Figure 7.2. Equipment Availability Summary**

Response Goal	Equipment	Equipment Location	Derated Skimmer Capacity	Feet of Boom	Accumulated Derated Skimmers	Accumulated Boom	Accumulated Interim Storage Capacity
<b>1 hr Response</b>	18' Response Vessel 8" X 12" Kepner Sea Boom 20" Boom	Tesoro Dock, Vancouver		3,000 ft		3,000 feet	
<b>2 hr Response</b>	Fast Response Vessel with Skimming system and storage capacity 2 X 5,000 bbl Barge	C.R.C., Portland C.R.C., Portland	275 bbbls/day	1,000 ft	275 bbbls/day	5,600 feet	10,000 bbbls
<b>6 hr Response</b>	Co-op Skimmers 8" X 12" Harbor Boom 14 X 500 bbl Storage Tanks 2 "X 100 bbl Barge	C.R.C., Portland C.R.C., Portland C.R.C., Portland C.R.C., Portland	26,380 bbbls/day	6,300 ft	26,380 bbbls/day	11,900 feet	17,200 bbbls
<b>12 hr Response</b>	Co-op Skimmers 8" X 12" Harbor Boom 8" X 12" Harbor Boom 8" X 12" Harbor Boom 8" X 12" Harbor Boom 2" X 100 bbl Barge	C.R.C., Longview C.R.C., St. Helens C.R.C., Longview C.R.C., Beaver C.R.C., Cathlamet C.R.C., Longview	11,047 bbbls/day	4,500 ft 6,300 ft 6,300 ft 4,200 ft	37,427 bbbls/day	33,200 feet	17,400 bbbls
<b>24 hr Response</b>	Co-op Skimmers Co-op Skimmers 8" X 12" Harbor Boom 8" X 12" Harbor Boom 8" X 12" Harbor Boom 8" X 12" Harbor Boom 8" X 12" Harbor Boom 12" X 18" Ocean Boom Storage Tank (120,000 bbbls)	C.R.C., Cathlamet C.R.C., Astoria C.R.C., Cathlamet C.R.C., Wauna C.R.C., Skamokawa C.R.C., Tongue Point C.R.C., Astoria C.R.C., Tongue Point Portland (POP)	275 bbbls/day 13,599 bbbls/day	1,000 ft 3,600 ft 2,500 ft 4,100 ft 7,700 ft 2,000 ft		54,100 feet	137,400 bbbls
<b>48 hr Response</b>	MSRC Oregon Responder MSRC Barge 404	Astoria, Oregon	10,560 bbbls/day	MA	68,687 bbbls/day	54,100 feet	137,400 bbbls

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### 7.1.9 Non-Dedicated Workboats and Operators

The facility has contracted with MSRC to provide spill response support with non-dedicated workboats and operators to deploy GRPs, enhance skimming operations, and provide logistical support during a spill. Documentation of this contractual relationship is contained in **Appendix B**.

### 7.1.10 Communications Equipment

#### Initial Spill Communications

The Facility Manager is responsible for initially setting up communications and issuing radios during a spill response. Communications with Ecology, the EPA, and USCG will be initiated and maintained by telephone. The following telephone connections are available at the Facility:

<b>Telephone</b>	<b>TBD</b>	<b>Fax</b>	<b>TBD</b>
<b>Telephone</b>	<b>TBD</b>	<b>Cellular</b>	<b>TBD</b>
<b>Telephone</b>	<b>TBD</b>		

#### Terminal Communications Equipment

The Facility maintains nine portable radios. They are stored in the terminal office and are used in daily operations at the terminal.

- 6 each Motorola hand-held FM radios
- 3 each Motorola MT 2000 hand-held VHF radios – one truck mounted (compatible with CRC Communication System)

#### Field Spill Communication Systems

Communications between field operations and the command post will primarily use compatible portable radio systems that have been purchased by CRC members and the CRC response vessels. CRC also maintains an inventory of radios available to members.

Several members have equipped their boats with marine radios that can communicate with hand-held radios using Working Channel 81 (157.1000). CRC has response vehicles and boats in the Portland area equipped with VHF-FM transceivers capable of operating on several frequencies. CRC and MFSA pre-assigned radio frequencies are on file at the Terminal and are available through CRC.

The MFSA and CRC radio system is believed to have an adequate range to fully support the early phases of spill response. Through MFSA, CRC has access to four radio repeaters for extended spill communications coverage.

The Facility and Company may supplement the radio communications system through the use of cellular telephones purchased within 24 hours of initiation of the spill response.

## 7.2 Site Security Measures

Site security and control is necessary to provide safeguards needed to

- Protect personnel and property from loss or damage.
- Ensure that the general public does not interfere with the spill cleanup operation.
- Ensure adequate access for personnel and equipment to the access/staging areas and command centers.

Guidelines for site security during an oil spill are listed below.

Security personnel should be prepared to

- Establish a perimeter (zone of safety) around the spill.

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- Establish a system for controlled access to the spill site (within the safety zone) for key spill response personnel and equipment.
- Establish a relationship with the general public, to
  - Ensure that public safety is a priority.
  - Eliminate potential interference to spill cleanup operations.
  - Ensure that all response equipment is safeguarded.
  - Develop a site security plan.

An effective spill site security operation should include a coordinated effort with local and state law enforcement agencies, as well as the USCG (dependent on the size and location of the spill).

The USCG may assist in security efforts by controlling water traffic in the spill zone, and by acting as a liaison with the Federal Aviation Administration to restrict air space over the safety zone. It may be necessary to restrict air traffic over the spill zone due to air traffic from aerial spill site surveillance, response, and news-media coverage. Rescue activities will be undertaken by qualified local police, fire, ambulance and rescue crews as dispatched through 911 emergency.

Request assistance from the Port or local law enforcement agencies, or in the event that traffic control is required, contact the Washington Highway Patrol to

- Set up roadblocks and/or beach closures where necessary to secure the safety zone.
- Provide access for spill cleanup equipment and personnel.

Consider the following spill site security measures

- Use barricades to establish a spill-site safety zone.
- Contract for additional security personnel or utilize local law enforcement agencies.
- Establish a pass system and distribute pre-prepared security passes to all spill-related personnel.
- Maintain a liaison with local and state police, as well as the EPA.
- Maintain a log that documents all security-related incidents and observations made at the spill site.

In addition, maintain strict control of all personnel and vehicular traffic entering the spill site by

- Positioning security personnel to effectively control non-responder access to the spill site.
- Barricading lesser traveled points with appropriate warnings against entry.
- Establishing periodic and regular checks at barricaded points to verify that site security is not compromised.
- Procuring additional security personnel when needed.

The Facility Manager is initially responsible for overseeing security matters, handling the media, and answering outside calls until the arrival of the Security Officer and Public Affairs Officer.

Security services would need to be provided at the following locations.

- Terminal
- Dock
- Spill site
- Field operations sites
- Command post(s)
- Staging areas
- Warehouses

When an emergency occurs at the Facility, all roads should be cleared and traffic carefully regulated and monitored to

- ensure that emergency crew vehicles have clear access to all critical areas;
- prevent unauthorized and excessive traffic at the facility; and
- direct personnel and resources to the desired locations.

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Frequent communication between security and management enhances the effectiveness of on-site security efforts.

There is adequate facility lighting to conduct all necessary operations on a 24-hour basis. Facility operations are described in **Appendix C**.

Site security and control during an oil spill incident at the Facility is the responsibility of the Security Officer. Guidelines for monitoring site security and control are included in the job description for the Security Officer located in **Figure 4.4**.

## 7.3 Alternative Response Strategies

Non-mechanical methods for cleanup operations could involve bioremediation and natural recovery. Through contractual arrangement with MSRC, the Company's PRC, the Company has access to dedicated aircraft, vessels, associated equipment, and resources to meet the applicable planning standards provided in WAC 173-182-325 and 173-182-330.

### 7.3.1 Dispersants

The Facility is located in an area that is not under pre-approval for dispersant use and Company does not intend to use dispersants unless directed by the Unified Command.

### 7.3.2 In-situ Burning

The Facility is located in an area that is not under pre-approval for in-situ burning and Company does not intend to use in-situ burning unless directed by the Unified Command.

### 7.3.3 Storage

The Facility's contract with MSRC includes provisions for meeting the requirements for storage under WAC 172-183-335, such as on water and shoreside storage facilities, and portable shoreside storage facilities. This contractual commitment is provided in **Appendix B**.

### 7.3.4 Group 5 Oils

The Facility does not handle Group 5 oils.

### 7.3.5 Bioremediation

Bioremediation is the process of stimulating the growth and activity of microorganisms, such as bacteria and fungi, which naturally feed on hydrocarbons. Bioremediation is conducted as a means of accelerating the natural biodegradation rates of stranded or floating oil. Biodegradation is a natural process by which the above microorganism, in the presence of nutrients and oxygen, chemically breakdown hydrocarbons and other substances and produce by-products including carbon dioxide, water, biomass, and partially oxidized products.

Biodegradation, together with physical processes such as evaporation and dispersion, are the primary natural mechanisms for the removal of hydrocarbons (oil spills) from the environment. This process generally occurs at a very low rate but can often be enhanced by the application of nutrients, such as nitrogen, phosphorus, and potassium.

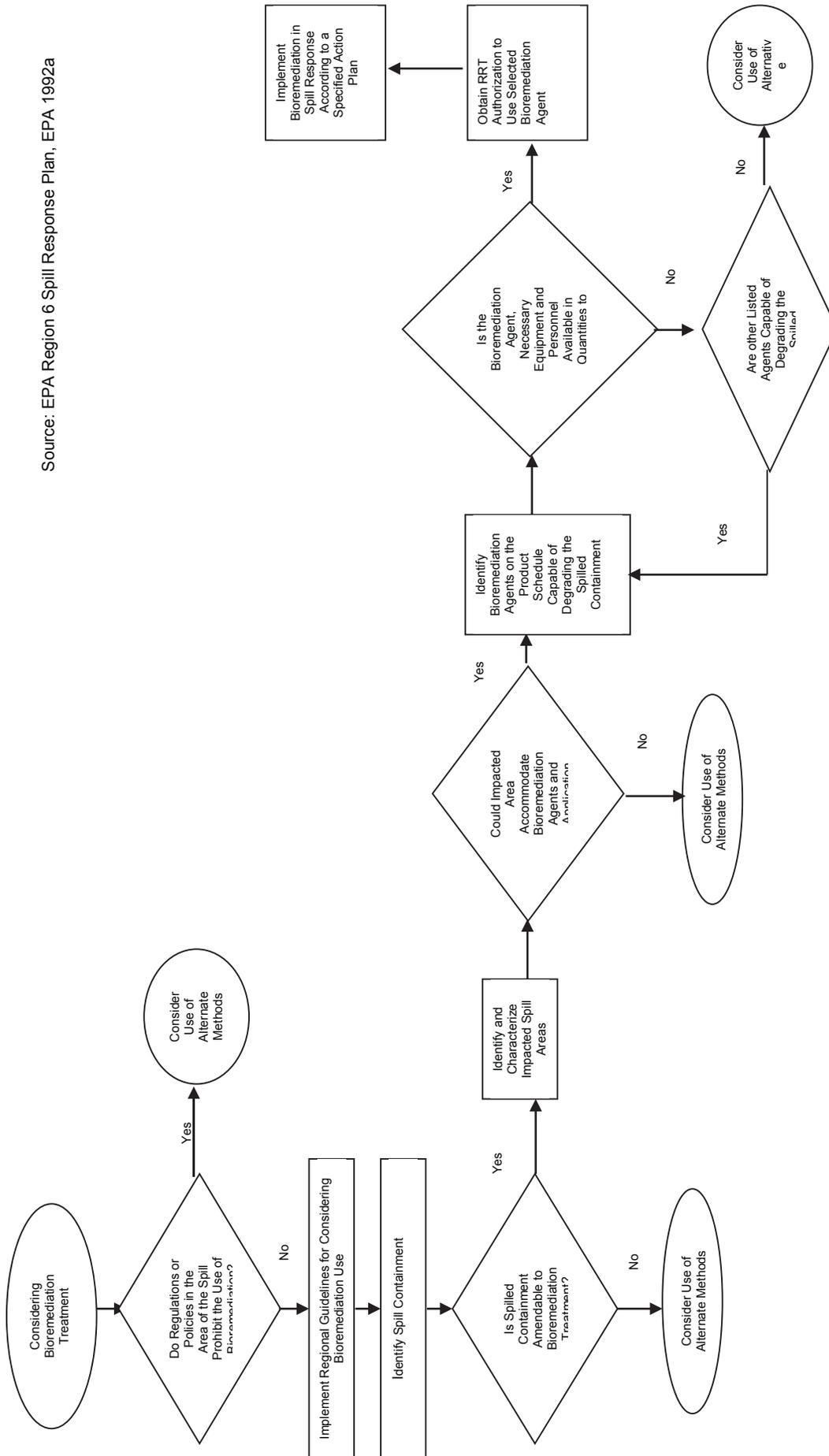
Bioremediation may be a viable response option and should be considered for use where standard recovery or cleanup techniques are not practical or will result in additional environmental impact.

**Figure 7.3** provides a federal decision guide for bioremediation consideration. A Bioremediation Checklist is provided in **Section 5.4**.

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Figure 7.3. Decision Guide for the Federal Bioremediation Approval Process



Source: EPA Region 6 Spill Response Plan, EPA 1992a

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## 7.4 Decontamination

One or more decontamination areas would be set up during response operations. These areas are to be used only for decontamination at the work site; they are not to be used as a substitute for personal hygiene at home.

Decontamination areas are designed to protect the worker's health and to prevent the spread of contamination into "clean" areas. In the field, it is not possible for a worker to remove all contaminated clothes each time they take a break from work. It is essential, however, that a worker clean hands and face to avoid ingesting oil or spreading oil to otherwise protected body parts. In the field, a worker will be provided with

- Soap, water, paper towels, waterless hand cleaner, and/or other materials for washing their hands and face,
- An impermeable surface to sit on,
- Refuse containers, and
- An eyewash station.

Particular attention should be paid to personal hygiene prior to eating, drinking, or smoking.

At the end of a daily shift, the worker will be required to go through full decontamination. Normally, the worker will report to a "dirty" zone where they will remove all soiled protective clothing. The worker should do this carefully to avoid contaminating clean clothing. Next, the worker will move to the "transition" zone where they will remove their work clothes and clean themselves to remove all traces of oil. Finally, the worker will proceed to the "clean" zone to put on clean clothing and leave for home. If work clothes are contaminated, they should be left at the site for cleaning. If they cannot be properly cleaned; they will be disposed of. Therefore, it is important that the worker bring an extra set of clean work clothes to the site. The worker should not wear clothes that will be missed if they cannot be cleaned.

Decontamination facilities should be positioned prior to employee/contractor entrance to areas where potential for exposure to contamination exists. A separate emergency decontamination area should be established to allow for decontamination of personnel requiring lifesaving medical attention. The appropriate material safety data sheets should be stored in this area at all times to aid health professionals treating the injured parties.

Decontamination facilities should be designed to prevent further contamination of the environment and should have a temporary storage area for items that will be reused in the contaminated area.

## 7.5 Oil Handling, Storage, and Disposal

Strict rules designed to ensure safe and secure handling of waste materials govern the Company's waste disposal activities. To ensure proper disposal of recovered oil and oiled debris, the following guidelines should be followed.

- In the event of a spill at the Facility, CRC will respond within 2 hours to begin on-water recovery operations.
- It is recognized that both shoreside and on-water storage capability is necessary. Immediate on-water storage will include a 10,000-barrel Tidewater barge adjacent to the Facility. Several 100-barrel SWBs and 8,000 gallons of bladder storage from CRC. MSRC can provide over 40,000 barrels of floating storage. For shoreside storage, the terminal capacities will vary and dedicated CRC member storage will be used as available.

The Facility/Company will use only licensed transporters and approved (or permitted) treatment and disposal facilities for waste handling and disposition, unless otherwise directed by Ecology.

Permanent disposal of oil recovered and oily waste generated during response and cleanup operations will be conducted in accordance to guidelines provided in the Northwest ACP, Washington State Disposal Guidance, Section 9620.

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Incident specific disposal plans will be developed in accordance with the Northwest ACP, Washington State Disposal Guidance, Section 9620 and follow the “Sample Disposal Plan” format provided in **Section 5.6**.

The Disposal/Waste Management Specialist will coordinate activities and obtain necessary permits to ensure proper disposal or recycling of recovered product and debris. Key issues to be addressed during a spill to ensure proper handling and effective disposal of recovered product and debris are included as checklist items in the Disposal/Waste Management Specialist checklist.

Recovered oil and oily wastes will be accounted for within the first 24 hours of the spill. Management and quantification will be accomplished by adhering to the Recovered Oil and Water Management Plan found in **Section 5.7** and the Recovered Oil Quantification Plan in **Section 5.8**.

Upon request, waste recovery and disposal records will be made available to Ecology.

A spill from the Facility could involve crude oil. For a spill on land, it is anticipated that crude oil would be recoverable. Recovered crude oil would either be returned to tanks at the Facility or stored in bulk tank trucks, railcars, or vessels until the crude oil can be recycled. Waste materials associated with a spill on land will include contaminated absorbent materials, PPE, and soil.

For a spill on water, it is anticipated that crude oil and significant amounts of contaminated water will be recovered.

The largest crude oil tank at the terminal may contain up to 360,000 barrels of product. For planning purposes, it will be assumed that 100 percent of this tank spills into the Columbia River.

For planning purposes, it will further be assumed that 10 percent, or approximately 36,000 barrels of crude, is actually recovered along with an additional 78,000 barrels of contaminated water. Ten percent recovery was chosen based on typical spill recovery data. The remaining crude oil will evaporate or disperse into the river.

The amount of contaminated sorbents and personal protective equipment that will be generated is unknown, but will be significant. For planning purposes, an estimated 1,000 cubic yards of contaminated solid debris may be generated. Contamination of shoreline materials will also occur, but it is likely that these materials will be treated or cleaned in place.

### 7.5.1 Model Disposal Plan

The Northwest ACP establishes oily waste disposal guidelines. The Company will work closely with Ecology to develop a plan for the disposal of oily waste. Recovered oil and oily debris will be recycled and reused to the extent feasible to reduce the amount of oily waste that must be incinerated or taken to landfill.

A “Model Disposal Plan for Oil Spills in Washington State” was included in the Northwest ACP. That model has been modified and adopted by the Company. The waste disposal plan is included in **Section 5.6**. This model plan can be used to speed the waste disposal approval procedure during a spill response.

### 7.5.2 Recovered Oil and Water Storage

CRC has a limited amount of storage available for their initial oil spill response. Additional temporary storage capacity of approximately 150,000 barrels has been identified by CRC for its member companies. **Appendix B** contains a summary of CRC’s storage resources.

The Facility/Company will seek to supplement storage capacity (if necessary) with available oil barges, tank trucks, railcars, and tankage from the Facility. Oil barges are frequently the most readily available

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asset for storage of recovered liquids. NRCES has access to five 10,000- to 12,000-barrel oil barges routinely in service on the Columbia River. Facility/Company will seek these and any other barges that may be available at the time of the spill to contain recovered liquids. Recovered oil and water will be trucked to the Facility or the liquid oil recycling facilities identified in the Northwest ACP for separation and recycling. Excluding the largest tank volume, the Facility has a storage capacity of 1,850,000 barrels.

### 7.5.3 Contaminated Solids Storage Area

Tesoro has a truck turnaround area that could be used as a short-term contaminated solids storage area. This land is cleared and level. A series of temporary solid waste holding sites could be constructed by laying 4- to 6-inch-thick sand pads, 10 feet wide and 100 feet long, and surrounding them with 2-foot-high berms. Two layers of seamless visqueen, each a minimum of 6 mils thick could be placed on top of the sand pads and covered with an additional layer of 4 to 6 inches of sand to protect the visqueen from damage. Each of these units could contain 300 to 500 cubic yards of oily debris. Once a pad was filled with oily debris it could be covered with another layer of visqueen to keep rain from flooding the storage area.

Facility/Company will seek approval for the construction of these temporary oily debris storage sites from Ecology, the EPA, and the Port, as required.

### 7.5.4 Temporary Storage and Ultimate Disposal of Contaminated Debris

Contaminated debris will consist primarily of oiled absorbents and used PPE. It will be segregated into oily and non-oily debris, then placed into plastic bags for storage. Once the bags are filled, they will be transported by truck to the Facility or other approved location for temporary storage.

The oily solids will be sampled and tested to determine if they are hazardous as determined by provisions of WAC 173-303-070 and the EPA Toxicity Characteristic Leaching Procedure. They will then be disposed of within 90 days as permissible by state and federal regulations. If testing indicates the material is not a hazardous waste, it may be disposed of under the Solid Waste Management Act, RCW 70.95. If the waste is designated as a hazardous waste, it must be disposed of under the provisions of the Hazardous Waste Management Act, RCW 70.015.

### 7.5.5 Decanting

Separation or "decanting" of water from recovered oil and return of excess water into the response area allows for maximum use of limited storage capacity, thereby increasing recovery operations. Decanting is currently recognized as a necessary and routine part of response operations and is appropriately addressed in ACPs (see National Contingency Plan Revisions, 59 F.R. 47401, 15 September 1994).

#### **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 to hold recovered oil/water mixtures. In addition, the longer oil remains on or in the water, the more it emulsifies. Emulsifications may contain as much as 70 percent water and 30 percent oil, thus consuming significant 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.

Decanting should be considered and authorized as appropriate by the federal OSC and/or state OSC in cases where the discharged water will be less harmful to the environment than allowing the oil to remain on the water and be subject to spreading and weathering.

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During a response, it will likely be necessary to request authority to decant from the federal and/or state OSC so that response operations do not cease or become impaired. An Oil Spill Decanting Authorization Form is provided in **Section 5.7**. Expedient review and approval, as appropriate, of such requests is necessary to ensure a rapid and efficient recovery operation.

The FOSC and SOSCs will consider each request for decanting on a case-by-case basis. Prior to approving decanting, the OSCs should evaluate the potential effects of weather, including the wind and wave conditions, the quantity and type of oil spilled as well as available storage capacity. The OSCs should also take into account that recovery operations enhanced by decanting will reduce the quantity of pollutants in a more timely and effective manner.

The following criteria should be considered by the FOSC and/or SOSC 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 vehicles, 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 FOSC and/or SOSC 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 will be maintained so that discharge of oil in the decanted water is detected promptly.
- Decanting in areas where vacuum trucks, portable tanks or other collection systems used for shore cleanup will be subject to the same rules as vessels.

The Company will seek approval from the FOSC and/or SOSC prior to decanting by presenting the Unified Command 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. The FOSC and/or SOSC will review such requests promptly and render a decision as quickly as possible. FOSC authorization is required in all cases and SOSC authorization is also required for decanting in state waters. **Section 5.7** provides guidance on developing a decanting plan.

## 7.6 Public Affairs

Properly handling media relations is an important facet of Company operation at all times. During normal operations, this function will be handled by the Supervisor of Contingency Planning or designee. During emergency situations, media relations become more complex and a number of other personnel become involved. The Company will use the Washington Joint Information Center Manual as a guideline to media relations.

## 7.7 Drill and Equipment Verification Program

The Facility participates in the National Preparedness for Response Exercise Program (NPREP) in order to satisfy the exercise requirements of the EPA and USCG (see Appendix A). Additionally, the Facility is committed to Ecology’s drill program as outlined in WAC 173-182-700 & 710. The Company is committed to provide Ecology an opportunity to help design and evaluate all tabletop and deployment drills for which drill credit is desired. This commitment will follow the scheduling guidelines referenced in **Figure A.2**. The Facility meets all applicable drill components established in the Spill Drill Evaluation Checklist in the Ecology’s Publication 12-08-002/March 2012. If plan deficiencies are identified in the Ecology written evaluation, the Company may be required to make specific amendments to the plan, or conduct additional trainings to address the deficiencies. During each triennial cycle, all components of the Plan

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must be exercised at least once. The 15 core components listed in **Figure A.1** are the types of components that must be exercised.

## 7.8 Shoreline Cleanup

The Facility has contracted with MSRC for any necessary shoreline cleanup operations (see **Appendix B** for contract confirmation and contact information). Global Environmental will also support shoreline cleanup operations, as needed.

## 7.9 Groundwater Spills

The Facility has a contractual relationship with Pacific Groundwater Group (PGG) for management of spill response involving releases to groundwater. PGG is also the Company's contractor for ongoing soil and groundwater remediation projects.

## 7.10 Compliance with Planning Standards

Planning standard spreadsheets for the Facility are included as **Figure 7.4**.

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**Figure 7.4. DRAFT Ecology Planning Standard Calculations**

[Placeholder for new Ecology spreadsheet]

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## 8. Demobilization/Post-Incident Review

This section provides checklists and guidelines for demobilization and post-incident reviews.

### 8.1 Equipment Demobilization

Facility can reduce response costs considerably by developing demobilization plans. Therefore, emphasis must be placed on establishing efficient demobilization procedures. A demobilization checklist and plan is contained in **Figure 8.1**.

**Figure 8.1. Demobilization Plan**

<b>Incident Name:</b> _____	<b>Plan Location:</b> _____
<b>Effective Date of Plan:</b> _____	<b>Effective Time Period of Plan:</b> _____
<b>Spill Location:</b> _____	<b>Plan Prepared By:</b> _____
<b>Demobilization Procedures</b>	

- Operations Section will determine which resources are ready for release from a specific collection site. The Planning Section will provide guidance on release priorities and demobilization recommendations. Information maintained by the Planning Section will be used to assist in the prioritization.
- Each collection site will require a decontamination area. Decontaminated equipment will be returned to appropriate staging area for release or redeployment. Transports for equipment will be required if remote from staging area.
- The Planning Section will document all demobilization and decontamination activities.
- Equipment designated for reassignment will be mobilized to the appropriate staging area.
- The Operations Section Chief will maintain a log documenting that proper decontamination procedures were performed for each piece of equipment.
- The Operations Section Chief will ensure that redeployed personnel receive proper rest prior to return to duty. The Planning Section Chief will monitor personnel redeployment activities to ensure number of hours worked is within acceptable guidelines.
- The Operations Section Chief must approve demobilization plans prior to decontamination, release, or redeployment of any resources.

### 8.2 Post Incident Debriefing and Critique

Facility will schedule a post spill review session within two weeks of completing the response to an oil spill. Representatives of the USCG, EPA, Ecology, and other agencies who participated in the response will be invited to attend. Representatives of any spill response contractors that worked on the spill, such as responders from NRCES, MSRC, and Global Environmental, will also be invited. The purpose of this meeting is to review the response and identify ways to improve Facility's spill prevention policies, spill response plans, and this OSCP.

It is anticipated that topics to be discussed will include

- Cause of the spill and prevention measures that could be used to prevent the reoccurrence of a similar spill.
- Discussion of post-incident critique (**Section 8.3**).
- Recommendations for modifications to the Facility OSCP.

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A Post Incident Critique (PIC) is designed to evaluate Company emergency response actions, not the cause of the incident. A Post Incident Critique form is provided in **Figure 8.2**. A post-spill review is also designed to identify potential deficiencies in the plan and determine the changes required to correct the deficiencies. The post-spill review is also intended to identify which response procedures, equipment, and techniques were effective and which were not and the reason(s) why. Response plans can then be revised to eliminate or modify those response procedures that are less effective and emphasize those that are highly effective. This process should also be used to evaluate exercises.

### 8.3 Post Spill Critique Outline

The following items should be examined by a team composed of outside people knowledgeable in oil spill response and key members of the response teams. These questions are intended as guidelines only; many other questions are likely to be appropriate at each stage of a critique.

#### **Detection**

- Was the spill detected promptly?
- How was it detected? By whom?
- Could it have been detected earlier? How?
- Are any instruments or procedures available to consider which might aid in spill detection?

#### **Notification**

- Were proper procedures followed in notifying government agencies?
- Were notifications prompt?
- Was management notified promptly?
- Was management response appropriate?
- Was the Company notified properly? If so, why, how, and who? If not, why not?

#### **Assessment/Evaluation**

- Was the magnitude of the problem assessed correctly at the start?
- What means were used for this assessment?
- Are any guides or aids needed to assist spill evaluation?
- What sources of wind and water currents information were available?
- Is our information adequate?
- Was this information useful (and used) for spill trajectory forecasts?
- Were such forecasts realistic?
- Was adequate information available on oil properties?
- Was additional information needed on changes of oil properties with time, i.e., as a result of weathering and other processes?

#### **Mobilization**

- What steps were taken to mobilize oil spill countermeasures?
- What resources were used?
- Was mobilization prompt?
- Could it have been speeded up or should it have been?
- What about mobilization of manpower resources?
- Was the local oil spill cooperative used appropriately?
- How could this be improved?
- Was it appropriate to mobilize Company resources and was this promptly initiated?
- What other corporate resources are available and have they been identified and used adequately?

#### **Response – Strategy**

- Is there an adequate spill response plan for the location?
- Is it flexible enough to cope with unexpected spill events?
- Does the plan include clear understanding of local environmental sensitivities?

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- What was the initial strategy for response to this spill?
- Is this strategy defined in the spill plan?
- How did the strategy evolve and change during this spill and how were these changes implemented?
- What caused such changes?
- Are there improvements needed? More training?

**Response – Resources Used**

- What resources were mobilized?
- How were they mobilized?
- How did resource utilization change with time? Why?
- Were resources used effectively?
  - Contractors
  - Government Agencies
  - Company resources
  - Cooperatives
  - Volunteers
  - Consultants
  - Other (e.g., bird rescue centers)
- What changes would have been useful?
- Do we have adequate knowledge of resource availability?

**Response – Effectiveness**

- Was containment effective and prompt?
- How could it have been improved?
- Should the location or the local cooperative have additional resources for containment?
- Was recovery effective and prompt?
- How could it have been improved?
- Should the location or the local cooperative have additional resources for recovery of spilled oil?

**Command Structure**

- Who was initially in charge of spill response?
- What sort of organization was initially set up?
- How did this change with time? Why?
- What changes would have been useful?
- Was there adequate surveillance?
- Should there be any changes?
- Were communications adequate?
- What improvements are needed? Hardware, procedures, etc.
- Was support from financial services adequate? Prompt?
- Should there be any changes?
- Is more planning needed?
- Should financial procedures be developed to handle such incidents?

**Measurement**

- Was there adequate measurement or estimation of the volume of oil spilled?
- Was there adequate measurement or estimation of the volume of oil recovered?
- Should better measurement procedures be developed for either phase of operations?
- If so, what would be appropriate and acceptable?

**Government Relations**

- What are the roles and effects of the various government agencies that were involved?
- Was there a single focal point among the government agencies for contact?
- Should there have been better focus of communications to the agencies?

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- Were government agencies adequately informed at all stages?
- Were too many agencies involved?
- Are any changes needed in procedures to manage government relations?
- Examples of affected U.S. agencies (there may be others):
  - U.S. Coast Guard
  - U.S. Environmental Protection Agency
  - National Oceanographic Atmospheric Administration
  - Department of Fish and Wildlife
  - State Parks
  - Harbors and Marinas
  - States
  - Cities
  - Counties
- Was there an adequate agreement with the government agencies on criteria for cleanup?
- How was this agreement developed?
- Were we too agreeable with the agencies in accepting their requests for specific action items (e.g., degree of cleanup)?
- Should there be advance planning of criteria for cleanup, aimed at specific local environmentally sensitive areas? (Such criteria should probably also be designed for different types of oils).

**Public Relations**

- How were relations with the media handled?
- What problems were encountered?
- Are improvements needed?
- How could public outcry have been reduced? Was it serious?
- Would it be useful to undertake a public information effort to “educate” reporters about oil and its effects if spilled?

These areas should be investigated shortly after the incident to assure that actions taken are fresh in peoples’ minds.

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**Figure 8.2. Post Incident Critique (PIC) Form**

The purpose of the PIC is to review overall incident response not a fault finding session.

**General Information:**

Date: (Incident)
Location:
Type of Incident: (fire, rescue, medical, hazmat)
Cause of Incident: (mechanical, electrical, human)

**Incident Command System** (personnel who filled the following functions):

Incident Commander:
Safety Officer:
Team Captain(s):
Mutual Aid/Outside Agencies:

**Incident Command ('Command'):**

Did 'Command' announce over the radio "Who was in charge." (YES/NO)
If no, explain.
Did 'Command' announce Command Post location? (YES/NO)
If no, explain.



**Figure 8.2. Post Incident Critique (PIC) Form (continued)**

Location of Incident Command Post: (include scene map or drawing)
Did 'Command' and other officers don command vests? (YES/NO)
If no, explain.
Action Items:
Recommended Corrective Action:

**Evacuation:**

What areas were evacuated?
Were buses used: (YES/NO)
Were all personnel accounted for: (YES/NO)
If yes, How?
If no, explain.
Action Items:
Recommended Corrective Action:



**Figure 8.2. Post Incident Critique (PIC) Form (continued)**

**Response Activation:**

How was the system activated: (radio emergency channel, radio emergency button, phone, other)
Who was the reporting party?
Who performed initial dispatch?
Action Items:
Recommended Corrective Action:

**Safety:**

Were PPE requirements clearly identified: (YES/NO)
If yes, How?
If no, explain.
If PPE was required and not used, Why not?
Was HOT, WARM, COLD Zones marked by flagging and/or landmarks: (YES/NO)
If yes, How?
If no, explain.
Was area monitoring performed: (YES/NO)
If yes, what kind?
If no, explain.
Action Items:
Recommended Corrective Actions:



**Figure 8.2. Post Incident Critique (PIC) Form (continued)**

**Initial Response:**

How was the initial incident handled by incipient responders? (incipient firefighting, fixed systems, hazard control, first aid)
Action Items:
Recommended Corrective Actions:

**Communications:**

What radio channels were used?
Were radio communications clear and concise: (YES/NO)
If yes, How?
If no, explain.
Did communications follow a clear command path: (YES/NO)
If yes, How?
If no, explain.
Action Items:
Recommended Corrective Action:

**Equipment:**

List equipment used: (company, contractor, etc.)
Was there enough equipment: (YES/NO)



**Figure 8.2. Post Incident Critique (PIC) Form (continued)**

If yes, How?
If no, explain.
Did the equipment work correctly: (YES/NO)
If yes, How?
If no, explain.
Did equipment operators use equipment correctly: (YES/NO)
If yes, How?
If no, explain.
Action Items:
Recommended Corrective Action:
<b>Injuries:</b>
Did incident cause any injuries: (YES/NO) <span style="float: right;"># of injured:</span>
Who provided initial care?
Were paramedics (911) activated: (YES/NO)
Were injured transported: (YES/NO)
Where were injured transported:
Action Items:
Recommended Corrective Action:





**Figure 8.2. Post Incident Critique (PIC) Form (continued)**

**PIC Attendees:**

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

This critique is to be completed within two weeks of the incident and submitted to the \_\_\_\_\_  
\_\_\_\_\_.

The PIC was held on the \_\_\_\_\_ day of \_\_\_\_\_ in 20 \_\_\_\_\_. The PIC was completed  
by \_\_\_\_\_.

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## 8.4 Final Spill Cleanup Report

A final, comprehensive report for internal use should be prepared by the Incident Commander or his designee after completion of spill cleanup activities. The report should be written in narrative form and should include information listed below, as appropriate.

1. Time, location, and date of discharge.
2. Type of material discharged.
3. Quantity discharged (indicate volume, color, length and width of slick, and rate of release if continuous).
4. Source of spill (tank, flowline, etc.) in which the oil was originally contained, and discharge path.
5. Detailed description of what caused the discharge and actions taken to control or stop the discharge.
6. Description of damage to the environment.
7. Steps taken to clean up the spilled oil, and dates and times steps were taken.
8. The equipment used to remove the spilled oil, dates, and number of hours the equipment was used.
9. The number of persons employed in the removal of oil from each location, including their identity, employer, and the number of hours worked at that location.
10. Actions by the Company or contractors to mitigate damage to the environment.
11. Measures taken by the Company or contractors to prevent future spills.
12. The federal and state agencies to which the Company or contractors reported the discharge. Show the agency, its location, the date and time of notification, and the official contacted.
13. Description of the effectiveness of equipment and cleanup techniques and recommendations for improvement.
14. The names, addresses, and titles of people who played a major response role.
15. A section identifying problems and deficiencies noted during the response. A follow-up section should include recommendations for more effective and efficient response procedures.
16. All other relative information.
17. A final signature as follows:

The above information is true to the best of my knowledge and belief.

Name:

Title:

Signature:

Date:

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Appendix A  
Training and Exercises

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**APPENDIX A  
TRAINING AND EXERCISES**

**A.1 EXERCISE REQUIREMENTS AND SCHEDULES**

The Vancouver Energy (Facility) and Tesoro participate in the National Preparedness for Response Exercise Program (PREP) in order to satisfy the exercise requirements of the EPA and USCG. Additionally, the Facility and Tesoro are committed to Ecology’s drill program, as outlined in WAC 173-180-700 & 710. The facility meets all applicable drill components established in the Spill Drill Evaluation Checklist in Ecology’s Publication #98–251/June 1998. During each triennial cycle, all components of the Plan must be exercised at least once. The 15 core components listed in **FIGURE A.1** are the types of components that must be exercised.

**Response exercise will be designed to:**

1. Provide an opportunity for SMT personnel to practice responding to a spill.
2. Test FRP for shortcomings or errors.
3. Improve Company personnel’s spill response expertise in specified ICS positions.
4. Comply with PREP guidelines.

Facility/Tesoro supplies the IRT and SMT with initial 8-hour spill response training and annual refresher training, including review of ICS/US, ICS Forms, with emphasis placed on the greatest exposure for a given group.

Training is accomplished through video, written and oral presentation as well as hands on. Annual refresher training is intended to be approximately 8 hours.

Training in the NIMS ICS used by Facility/Tesoro is given to all team members during an initial training session designed to cover ICS positions and ICS Forms.

Review of the NWACP and Area GRP location and use are included in annual ICS refresher training.

Individuals with no previous experience with the SMT will receive 8 hours of ICS training prior to being assigned to a position. Newly assigned individuals will normally have a coach working with them.

SMT positions are assigned and will only be filled by the experienced individuals. It’s recognized that IC and Section Persons assigned into these roles will receive 8 hours initial ICS training and 8-hours refresher training, and will be expected to complete an additional 16 hours of position-specific training prior to being permanently assigned. Additional training may include off-site workshops, actual drill or spill exposure, job-related experience, or other relevant training specific to the position.

The Supervisor of Contingency Planning is responsible for scheduling, maintaining records, implementing and evaluating this drill program, and ensuring that post-drill evaluation improvements are implemented. Descriptions of these exercises are listed in **FIGURE A.2**.

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**Figure A.1 – Prep Response Plan Core Components**

Core Components	Description
1. Notifications	Test the notifications procedures identified in the Area Contingency Plan and the associated Responsible Party Response Plan.
2. Staff Mobilization	Demonstrate the ability to assemble the spill response organization identified in the Area Contingency Plan and the associated Responsible Party Response Plan.
3. Ability to Operate Within the Response Management System Described in the Plan:	
Unified Command	Demonstrate the ability of the spill response organization to work within a unified command.
Response Management System	Demonstrate the ability of the response organization to operate within the framework of the response management system identified in their respective plans.
4. Discharge Control	Demonstrate the ability of the spill response organization to control and stop the discharge at the source.
5. Assessment	Demonstrate the ability of the response organization to provide initial assessment of the discharge and provide continuing assessments of the effectiveness of the tactical operations.
6. Containment	Demonstrate the ability of the spill response organization to contain the discharge at the source or in various locations for recovery operations.
7. Recovery	Demonstrate the ability of the spill response organization to recover the discharged product.
8. Protection	Demonstrate the ability of the spill response team organization to protect the environmentally and economically sensitive areas identified in the Area Contingency Plan and the respective industry response plan.
9. Disposal	Demonstrate the ability of the spill response organization to dispose of the recovered material and contaminated debris.
10. Communications	Demonstrate the ability to establish an effective communications system for the spill response organization.
11. Transportation	Demonstrate the ability to establish multi-mode transportation both for execution of the discharge and support functions.
12. Personnel Support	Demonstrate the ability to provide the necessary support of all personnel associated with response.
13. Equipment Maintenance and Support	Demonstrate the ability to maintain and support all equipment associated with the response.
14. Procurement	Demonstrate the ability to establish an effective procurement system.
15. Documentation	Demonstrate the ability of the spill response organization to document all operational and support aspects of the response and provide detailed records of decisions and actions taken.

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Figure A.2 – Exercise Requirements

Exercise Type	Exercise Characteristics
Facility/QI Notification	<ul style="list-style-type: none"> <li>• Conducted quarterly</li> <li>• Facility initiates mock spill notification to QI</li> <li>• Terminal Manager documents time/date of notification, name and phone number of individual contacted</li> <li>• Document in accordance with form in <b>FIGURE A.3</b></li> </ul>
Equipment Deployment	<ul style="list-style-type: none"> <li>• Conducted semiannually</li> <li>• Response contractors listed in FRP must participate in annual deployment exercise</li> <li>• Document in accordance with form in <b>FIGURE A.3</b></li> </ul>
SMT Tabletop	<ul style="list-style-type: none"> <li>• Conducted annually</li> <li>• Tests SMT's response activities/responsibilities</li> <li>• Documents plan's effectiveness</li> <li>• Must exercise worst case discharge scenario once every three years</li> <li>• Must test all plan components at least once every three years</li> <li>• Document in accordance with form in <b>FIGURE A.3</b></li> </ul>
Unannounced	<ul style="list-style-type: none"> <li>• Company will either participate in unannounced tabletop exercise or Facility equipment deployment exercise on an annual basis, if selected</li> <li>• Company may take credit for participation in government initiated unannounced drill in lieu of drill required by PREP guidelines</li> <li>• Plan holders who have participated in a PREP government-initiated unannounced exercise will not be required to participate in another one for a least 36 months from the date of the exercise.</li> <li>• If equipment is deployed during this exercise, it may be counted as one of the "semi-annual" deployment drills.</li> </ul>
Area	<ul style="list-style-type: none"> <li>• Company will participate in a minimum of one area exercise per six-year period</li> </ul>
<b>Other Exercise Considerations</b>	
Drill Program Evaluation Procedures	<ul style="list-style-type: none"> <li>• Company conducts post-exercise meetings to discuss positive items, areas for improvement and to develop action item checklist to be implemented later</li> </ul>
Records of Drills	<ul style="list-style-type: none"> <li>• Company will maintain exercise records for five years following completion of each exercise</li> <li>• Records will be made available to WDOE, EPA, USCG and other applicable agencies upon request</li> <li>• Company will verify appropriate records are kept for each spill response contractor listed in Plan as required by PREP guidelines (annual equipment deployment drill, triennial unannounced drill, etc.)</li> </ul>

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Figure A.3 – Preparedness for Readiness Exercise Form

<b>PREPAREDNESS FOR READINESS EXERCISE PROGRAM</b> <b>VANCOUVER ENERGY/TESORO EXERCISE DOCUMENTATION FORM</b>		 <b>TESORO</b>
Vessel/Facility Name: _____	Exercise Year: _____	
<b>First Quarter: Qualified Individual Notification Exercise</b>		
<input type="checkbox"/> Announced <input type="checkbox"/> Unannounced		
A. Name of Qualified Individual: _____	Title: _____	
B. Is Qualified Individual identified in Contingency Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
C. Notification method: <input type="checkbox"/> Telephone <input type="checkbox"/> Pager <input type="checkbox"/> In Person	<input type="checkbox"/> Radio	<input type="checkbox"/> Other
D. Did notification procedure follow C-Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
E. Comments: _____		
F. Self-Certification: Name: _____ Title: _____		
<b>Second Quarter: Qualified Individual Notification Exercise</b>		
<input type="checkbox"/> Announced <input type="checkbox"/> Unannounced		
A. Name of Qualified Individual: _____	Title: _____	
B. Is Qualified Individual identified in Contingency Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
C. Notification method: <input type="checkbox"/> Telephone <input type="checkbox"/> Pager <input type="checkbox"/> In Person	<input type="checkbox"/> Radio	<input type="checkbox"/> Other
D. Did notification procedure follow C-Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
E. Comments: _____		
F. Self-Certification: Name: _____ Title: _____		
<b>Third Quarter: Qualified Individual Notification Exercise</b>		
<input type="checkbox"/> Announced <input type="checkbox"/> Unannounced		
A. Name of Qualified Individual: _____	Title: _____	
B. Is Qualified Individual identified in Contingency Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
C. Notification method: <input type="checkbox"/> Telephone <input type="checkbox"/> Pager <input type="checkbox"/> In Person	<input type="checkbox"/> Radio	<input type="checkbox"/> Other
D. Did notification procedure follow C-Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
E. Comments: _____		
F. Self-Certification: Name: _____ Title: _____		
<b>Fourth Quarter: Qualified Individual Notification Exercise</b>		
<input type="checkbox"/> Announced <input type="checkbox"/> Unannounced		
A. Name of Qualified Individual: _____	Title: _____	
B. Is Qualified Individual identified in Contingency Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
C. Notification method: <input type="checkbox"/> Telephone <input type="checkbox"/> Pager <input type="checkbox"/> In Person	<input type="checkbox"/> Radio	<input type="checkbox"/> Other
D. Did notification procedure follow C-Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
E. Comments: _____		
F. Self-Certification: Name: _____ Title: _____		

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Figure A.3 – Preparedness for Readiness Exercise Form (Continued)

Date: \_\_\_\_\_  Announced  Unannounced

**First: Emergency Procedures Exercise**

A. Emergency Procedures Tested: \_\_\_\_\_

B. Drill Location on site: \_\_\_\_\_

C. List Personnel Participating: \_\_\_\_\_

D. Describe objectives and how they were exercised: \_\_\_\_\_

E. Descriptions of lessons learned: \_\_\_\_\_

F. Self-Certification: Name: \_\_\_\_\_ Title: \_\_\_\_\_

\* Note: Emergency Procedure Exercises are optional for facilities

**Second: Emergency Procedures Exercise**

Date: \_\_\_\_\_  Announced  Unannounced

A. Emergency Procedures Tested: \_\_\_\_\_

B. Drill Location on site: \_\_\_\_\_

C. List Personnel Participating: \_\_\_\_\_

D. Describe objectives and how they were exercised: \_\_\_\_\_

E. Descriptions of lessons learned: \_\_\_\_\_

F. Self-Certification: Name: \_\_\_\_\_ Title: \_\_\_\_\_

\* Note: Emergency Procedure Exercises are optional for facilities

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Figure A.3 – Preparedness for Readiness Exercise Form (Continued)

First: Equipment Deployment Exercise			
Date: _____		<input type="checkbox"/> Announced	<input type="checkbox"/>
Unannounced			
A. Equipment Ownership:	Facility <input type="checkbox"/>	OSRO <input type="checkbox"/>	Both <input type="checkbox"/>
B. Provide attachment listing Equipment and Personnel			
C. Was equipment deployed in its intended operating environment?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
D. Describe objectives and how they were exercised: _____			
E. Descriptions of lessons learned: _____			
F. Is Spill Response Equipment in a Preventative Maintenance Program? Yes <input type="checkbox"/> No <input type="checkbox"/>			
G. Self-Certification:	Name: _____	Title: _____	
Second: Equipment Deployment Exercise			
Date: _____		<input type="checkbox"/> Announced	<input type="checkbox"/> Unannounced
A. Equipment Ownership:	Facility <input type="checkbox"/>	OSRO <input type="checkbox"/>	Both <input type="checkbox"/>
B. Provide attachment listing Equipment and Personnel			
C. Was equipment deployed in its intended operating environment?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
D. Describe objectives and how they were exercised: _____			
E. Descriptions of lessons learned: _____			
F. Is Spill Response Equipment in a Preventative Maintenance Program? Yes <input type="checkbox"/> No <input type="checkbox"/>			
G. Self-Certification:	Name: _____	Title: _____	

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Figure A.3 – Preparedness for Readiness Exercise Form (Continued)

## Spill Management Team Tabletop Exercise

### RESPONSE CATEGORY

- Announced
- Unannounced
- Average Most Probable Discharge
- Maximum Most Probable Discharge
- Worst Case Discharge
- Simulated       Real \_\_\_\_\_ bbls

### PREP CORE REQUIREMENTS COMPLETED THIS CALENDAR YEAR

- Notifications
- Assessment
- Protection of Sensitive Areas
- Staff Mobilization
- Containment
- Personnel Support
- Response Management System
- Recovery
- Equipment Maintenance
- Unified Command
- Disposal
- Procurement
- SMT Operations
- Communications
- Documentation
- Discharge Control
- Transportation

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**A.2. TRAINING PROGRAM**

The Facility Manager and Facility Supervisor are trained to the following level:

1. 40 hour HAZWOPER;
2. 8 hour ICS;
3. 16 hour Specialized ICS;
4. 8 hour oil spill response;
5. 40 hour Coastal Oil Spill Control Course at Texas A&M.

The Supervisor, Contingency Planning is designated as the Training Supervisor. The Training Supervisor prepares and conducts a spill prevention training session in conjunction with safety meetings. **FIGURE A.4** lists training requirements for spill responders. **FIGURE A.8** is a form for documenting a safety meeting.

At a minimum, all Facility Operators will receive training adequate to satisfy HAZWOPER level 3 (24-hour) requirements.

The Facility will comply with the requirements of WAC 173-180(C), Ecology's Facility Personnel Oil-Handling Training and Certification Program and WAC 296-62-3112. Tesoro's Training manual and documentation were approved by the Department of Ecology on June 15, 1995 and recertified in June 2000.

The objectives of the training program are to prevent oil spills caused by human error, promote job competency and environmental awareness, and certify the competency of all terminal personnel. The training program is on file at the Facility. The training program elements include:

1. a training topic core program,
2. a trainer qualification section,
3. a competency-based training program,
4. a training and certification program, and
5. a training manual and materials section. Recertification of the training program is required every 3 years.

Daily, weekly, monthly and annual inspection and maintenance routines and examples of record keeping and inspection forms for the Facility are presented in **Appendix G**.

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Figure A.4 – Training Elements

Training Type	Training Characteristics
Training in Use of Oil Spill Plan	<ul style="list-style-type: none"> <li>• All terminal personnel will be trained to properly report/monitor spills</li> <li>• Plan will be reviewed annually with all employees and contract personnel</li> <li>• The Personnel Response Training Log is provided in <b>FIGURE A.6</b>.</li> </ul>
OSHA Training Requirements	<ul style="list-style-type: none"> <li>• All Company responders designated in Plan must have 24 hours of initial spill response training               <ul style="list-style-type: none"> <li>– Laborers having potential for minimal exposure must have 24 hours of initial oil spill response instruction and 8 hours of actual field experience</li> <li>– Spill responders having potential exposure to hazardous substances at levels exceeding permissible exposure limits must have 40 hours of initial training offsite and 24 hours of actual field experience</li> <li>– On-site management/supervisors required to receive same training as equipment operators/general laborers plus 8 hours of specialized hazardous waste management training</li> <li>– Managers/employees require 8 hours of annual refresher training</li> </ul> </li> </ul>
Spill Management Team Personnel Training	<ul style="list-style-type: none"> <li>• See recommended PREP Training Matrix (<b>FIGURE A.5</b>)</li> </ul>
Training for Casual Laborers or Volunteers	<ul style="list-style-type: none"> <li>• Company will not use casual laborers/volunteers for operations requiring HAZWOPER training</li> </ul>
Wildlife	<ul style="list-style-type: none"> <li>• Only trained personnel approved by USFWS and appropriate state agency will be used to treat oiled wildlife</li> </ul>
Training Documentation and Record Maintenance	<ul style="list-style-type: none"> <li>• Training activity records will be retained five years for all personnel following completion of training</li> <li>• Company will retain training records indefinitely for individuals assigned specific duties in Plan</li> <li>• Training records will be retained at the Terminal. Training Supervisor will document all applicable training. <b>FIGURE A.9</b> is a training activity report to be used to document training completed at the Facility.</li> </ul>

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**Figure A.5 – Training Program Matrix**  
 (Based upon the Training Reference for Oil Spill Response-USCG, RSPA, EPA, MMS, 1994)

TRAINING ELEMENT	QUALIFIED INDIVIDUAL (QI)	SPILL MANAGEMENT TEAM (SMT)	FACILITY RESPONDERS
Captain of the Port (COTP) Zones or Environmental Protection Agency (EPA) regions in which the facility is located.	X	X	X
Notification procedures and requirements for facility owners or operators; internal response organizations; federal and state agencies; and contracted oil spill removal organizations (OSRO's) and the information required for those organizations.	X	X	X
Communication system used for the notifications.	X	X	X
Information on the products, stored, used, or transferred, by the facility, including familiarity with the material safety data sheets, special handling procedures, health and safety hazards, spill and firefighting procedures.	X	X	X
Procedures the facility personnel may use to mitigate or prevent any discharge or a substantial threat of a discharge of oil resulting from facility operational activities associated with internal or external cargo transfers, storage, or use.	X		
Facility personnel responsibilities and procedures for use of facility equipment which may be available to mitigate or prevent an oil discharge.	X	X	X
Operational capabilities of the contracted OSRO's to respond to the following: <input type="checkbox"/> Average most probable discharge (small discharge); <input type="checkbox"/> Maximum most probable discharge (medium discharge); and <input type="checkbox"/> Worst-case discharge.	X	X	X
Responsibilities and authority of the Qualified Individual as described in the facility response plan and company response organization.	X	X	X

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**Figure A.5 – Training Program Matrix (Continued)**  
 (Based on the Training Reference for Oil Spill Response - USCG, RSPA, EPA, MMS, 1994)

TRAINING ELEMENT	QUALIFIED INDIVIDUAL (qi)	SPILL MANAGEMENT TEAM (SMT)	FACILITY RESPONDERS
The organizational structure that will be used to manage the response actions including: <input type="checkbox"/> Command and control; <input type="checkbox"/> Public information; <input type="checkbox"/> Safety; <input type="checkbox"/> Liaison with government agencies; <input type="checkbox"/> Spill response operations; <input type="checkbox"/> Planning; <input type="checkbox"/> Logistics support; and <input type="checkbox"/> Finance.	X	X	X
The responsibilities and duties of each oil spill management team within the organizational structure.	X	X	
The drill and exercise program to meet federal and state regulations as required under OPA.	X	X	X
The role of the Qualified Individual in the post discharge review of the plan to evaluate and validate its effectiveness.	X		
The Area Contingency Plan (ACP) for the area in which the facility is located.	X	X	X
The National Contingency Plan (NCP).	X	X	X
Roles and responsibilities of federal and state agencies in pollution response.	X	X	X
Available response resources identified in response plan.	X	X	
Contracting and ordering procedures to acquire oil spill removal organization resources identified in the response plan.	X	X	
OSHA requirements for worker health and safety (29 CFR 1910.120).	x	x	x
Incident Command System/Unified Command System.	x	x	

Applicable to designated job responsibilities.

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**Figure A.5 – Training Program Matrix (Continued)**  
 (Based upon the Training Reference for Oil Spill Response - USCG, RSPA, EPA, MMS, 1994)

TRAINING ELEMENT	QUALIFIED INDIVIDUAL (qi)	SPILL MANAGEMENT TEAM (SMT)	FACILITY RESPONDERS
Public Affairs.	X	X	
Crisis management.	X	X	
Procedures for obtaining approval for dispersant use or in-situ burning of the spill.	X		
Oil spill trajectory analyses.	X		
Sensitive biological areas.	X	X	
This training procedure as described in the response plan for members of the spill management team		X	
Procedures for the post discharge review of the plan to evaluate and validate its effectiveness. <b>FIGURE A.7</b> is a form to document a discharge prevention meeting.		X	
Basic information on spill operations and oil spill clean-up technology including: <input type="checkbox"/> Oil containment; <input type="checkbox"/> Oil recovery methods and devices; <input type="checkbox"/> Equipment limitations and uses; <input type="checkbox"/> Shoreline clean-up and protection; <input type="checkbox"/> Spill trajectory analysis; <input type="checkbox"/> Use of dispersants, in-situ burning, bioremediation; and <input type="checkbox"/> Waste storage and disposal considerations.		X	
Hazard recognition and evaluation.		X	
Site safety and security procedures.		X	
Personnel management, as applicable to designated job responsibilities.		X	
Procedures for directing the deployment and use of spill response equipment, as applicable to designated job responsibilities.			

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**Figure A.5 – Training Program Matrix (Continued)**  
 (Based upon the Training Reference for Oil Spill Response - USCG, RSPA, EPA, MMS, 1994)

TRAINING ELEMENT	QUALIFIED INDIVIDUAL (qi)	SPILL MANAGEMENT TEAM (SMT)	FACILITY RESPONDERS
Specific procedures to shut down affected operations.			x
Procedures to follow in the event of discharge, potential discharge, or emergency involving the following equipment or scenarios:  <input type="checkbox"/> Tank overfill; <input type="checkbox"/> Tank rupture; <input type="checkbox"/> Piping or pipeline rupture; <input type="checkbox"/> Piping or pipeline leak, both under pressure or not under pressure, if applicable; <input type="checkbox"/> Explosion or fire; <input type="checkbox"/> Equipment failure; and <input type="checkbox"/> Failure of secondary containment system.			x
Name of the Qualified Individual and how to contact him or her.			x

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**Figure A.7 – Discharge Prevention Meeting Log**

Date: _____	
Subject / Issue Identified: _____ _____ _____	
Required Action Item Identified:	
1. _____	
2. _____	
3. _____	
4. _____	
Date of Implementation of Action Items:	WO # Issued
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
Meeting Attendee Name/Dept:	
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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**Figure A.9 – Vancouver Energy Spill Prevention and Response  
Training Activity Report**

DATE OF TRAINING: \_\_\_\_\_

LOCATION: \_\_\_\_\_

INSTRUCTOR/COMPANY: \_\_\_\_\_

COURSE/TOPICS/HOURS: \_\_\_\_\_

\_\_\_\_\_

SOURCE/TYPE OF TRAINING MATERIALS \_\_\_\_\_

\_\_\_\_\_

NAME OF PARTICIPANTS

LAST NAME

FIRST NAME

SIGNATURE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*This form shall be completed for all spill prevention and response related training except for monthly safety/prevention meetings, which are documented on a separate form.*

*OPA 90 "PREP" training shall be recorded on this form and on the documentation form provided by the Coast Guard.*

*To comply with State requirements, annual training will include a practice exercise on spill prevention during abnormal operations.*

*This form shall be maintained at the Terminal for a period of five years.*

Tesoro Savage Vancouver Energy Distribution Terminal  
5501 NW Lower River Road  
Vancouver, Washington 98660

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Appendix B  
Vancouver Energy Contractor Response Equipment

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## APPENDIX B VANCOUVER ENERGY CONTRACTOR RESPONSE EQUIPMENT

### B.1 COOPERATIVES AND CONTRACTORS

Spill response contractors and their equipment are available to support the Facility's response team, as needed. Primary Response Contractors (PRCs) are private companies or cooperatives that are in partnership with plan holders to act as required response support teams. The PRCs have equipment and crews that are trained and equipped to mitigate leaks and spills when they occur. PRCs that will support the Facility's response team are listed in **Figure B.1**. Proof of a contractual relationship is provided in **Figure B.2**. Maps that show the types and locations of equipment available are provided in **Figure B.3**.

#### B.1.1 Clean Rivers Cooperative

The Facility and Tesoro are members of the Clean Rivers Cooperative, Inc. (CRC). As a member of CRC, Vancouver Energy/Tesoro may also have access to equipment and personnel resources from NRC.

- CRC is classified as a "W3" OSRO by USCG. The response organization for Clean Rivers and their relationship with the Company and with subcontractors, NRCES, described in **Section 7.1.4**.
- Ecology has approved CRC as a Primary Response Contractor (PRC). CRC's response time to the Facility is 1 hour. CRC's Equipment Map can be found in **Figure B.3**.

CRC's contact information is as follows:

Clean Rivers Cooperative, Inc.  
Address: 9420 NW St. Helens Rd.  
Portland, Oregon 97231  
24-hour hotline: (503) 220-2040  
Office: (503) 735-1687

- CRC is classified by the USCG as a category W3 OSRO for the inland/nearshore operating area in the Columbia River Captain of the Port (COTP). An OSRO Classification process was developed by the USCG to evaluate an OSRO's potential to respond to and recover oil spills. Plan holders who arrange for USCG classified OSRO services do not have to list their response resources in their plans.

#### B.1.2 Other Oil Spill Response Organizations

- Facility and Tesoro are also members of Marine Spill Response Corporation (MSRC). A letter confirming this membership and a copy of the MSRC contract with Tesoro can be found in **Figure B.2**.
- The Company has also obtained permission from Global Diving & Salvage Inc., a PRC in the State of Washington, to list its response resources for the Washington facilities. **Figure B.1** summarizes contractor contact information. **Figure B.2** contains evidence of contracts **Figure B.3** contains response contractor equipment maps.

### B.2 NON-DEDICATED VESSELS

- Through contractual agreement with CRC, non-dedicated work boats and operators will be available to deploy geographic response plans, enhance skimming, provide platforms as vessel of opportunity skimming systems, logistical support, or other uses during a spill. Such resources could arrive on scene beginning at 48 hours.
- In addition to CRC, MSRC may also provide non-dedicated vessels to support spill response.

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Figure B.1 – Facility Response Action Contractors

CONTRACTOR AND POINT OF CONTACT	ADDRESS	PHONE/FAX NUMBERS	CONTRACTOR CERTIFICATION	CONTRACT IN PLACE WITH FACILITY?	RESPONSE TIME
Clean Rivers Cooperative Inc. Ernie Quesada	200 SW Market Street, Suite 190 Portland, OR 97201	(503) 220-2040 (24 hr.) (503) 295-3660 (fax)	<ul style="list-style-type: none"> <li>USCG classification W3, River/Canal, Inland and Oceans</li> <li>State of Washington approved primary response contractor</li> </ul>	YES	2 hours
Marine Spill Response Corporation	455 Spring Park Place Suite 200 Herndon, VA 20170	(703) 326-5600 (Office) (703) 326-5660 (Fax) (800) 645-7745 (24 hr.) (425) 252-1300 (Everett)	<ul style="list-style-type: none"> <li>USCG classification W3, River/Canal, Inland and Oceans</li> <li>State of Washington approved primary response contractor</li> </ul>	YES	2 hours
Global Diving & Salvage, Inc.	3840 W Marginal Way SW Seattle, WA 98106	(206) 623-0621 (Office) (206) 932-9036 (Fax)	<ul style="list-style-type: none"> <li>TBD</li> </ul>	TBD	TBD

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**FIGURE B.2 – EVIDENCE OF CONTRACTS**

<b>EVIDENCE OF CONTRACTS</b>
MARINE SPILL RESPONSE CORPORATION
CLEAN RIVERS COOPERATIVE INC. - Pending

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Judith A. Roos  
Vice President  
Marketing, Customer Services & Corporate Relations  
(703) 326-5617

April 30, 2015

Mr. Eric Haugstad  
Tesoro Corporation Inc.  
5501 NW Lower River Road  
Vancouver, WA 98660

Re: Letter of Intent

Dear Mr. Haugstad:

This letter certifies that Tesoro Corporation has entered into an Agreement with the Marine Spill Response Corporation (MSRC). Pursuant to this Agreement the Tesoro Vancouver Energy facility and its accompanying facilities are (1) entitled by contract to MSRC response services, and (2) have the right to cite the capability of MSRC in its Facility Response Plan, in accordance with the terms and conditions of the Standard Form MSRC Service Agreement.

The enclosed Execution Instrument to the MSRC Service Agreement dated February 18, 2013 between Tesoro Corporation and MSRC is proof that such a contract exists. In addition, MSRC's contract is an evergreen contract and continues automatically until such time that Tesoro Corporation ceases to be a member of the Marine Preservation Association (MPA).

Please let me know if I may provide further assistance to you in the future.

Sincerely,

Enclosure

220 Spring Street | Suite 500 | Herndon, VA 20170 | Telephone 703.326.5600 | Fax 703.326.5660

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MARINE SPILL RESPONSE CORPORATION  
SERVICE AGREEMENT

EXECUTION INSTRUMENT

The MSRC SERVICE AGREEMENT attached hereto (together with this execution instrument, the "Agreement"), a standard form of agreement amended and restated as of September 27, 1996, as amended, is hereby entered into by and between

Tesoro Corporation  
\_\_\_\_\_  
[Name of COMPANY]  
a Delaware Corporation  
\_\_\_\_\_  
[Type of entity and place of organization]

with its principal offices located at 19100 Ridgewood Parkway, San Antonio, TX 78259  
(the "COMPANY"), and MARINE SPILL RESPONSE CORPORATION, a nonprofit corporation organized under the laws of Tennessee ("MSRC"), and shall be identified as

SERVICE AGREEMENT No. LMPA 346 [This is to be provided by MSRC.]

IN WITNESS WHEREOF, the parties hereto each have caused this Agreement to be duly executed and effective as of Feb. 18, 2013

Tesoro Corporaiton [COMPANY]  
\_\_\_\_\_  
By: [Signature] [signature] *KC*  
Daniel R. Romasko [print name]  
Title: Executive Vice President, Operations  
\_\_\_\_\_  
Address: 19100 Ridgewood Parkway  
San Antonio, TX 78259  
Telephone: 210/626-6881 Fax: 210/626-4051

MARINE SPILL RESPONSE CORPORATION:

By: [Signature]  
Judith A. Roos  
Vice President  
Marketing, Customer Services & Corporate Relations  
220 Spring Street, Suite 500  
Herndon, VA 20170  
(703) 326-5617; Fax: (703) 326-5660

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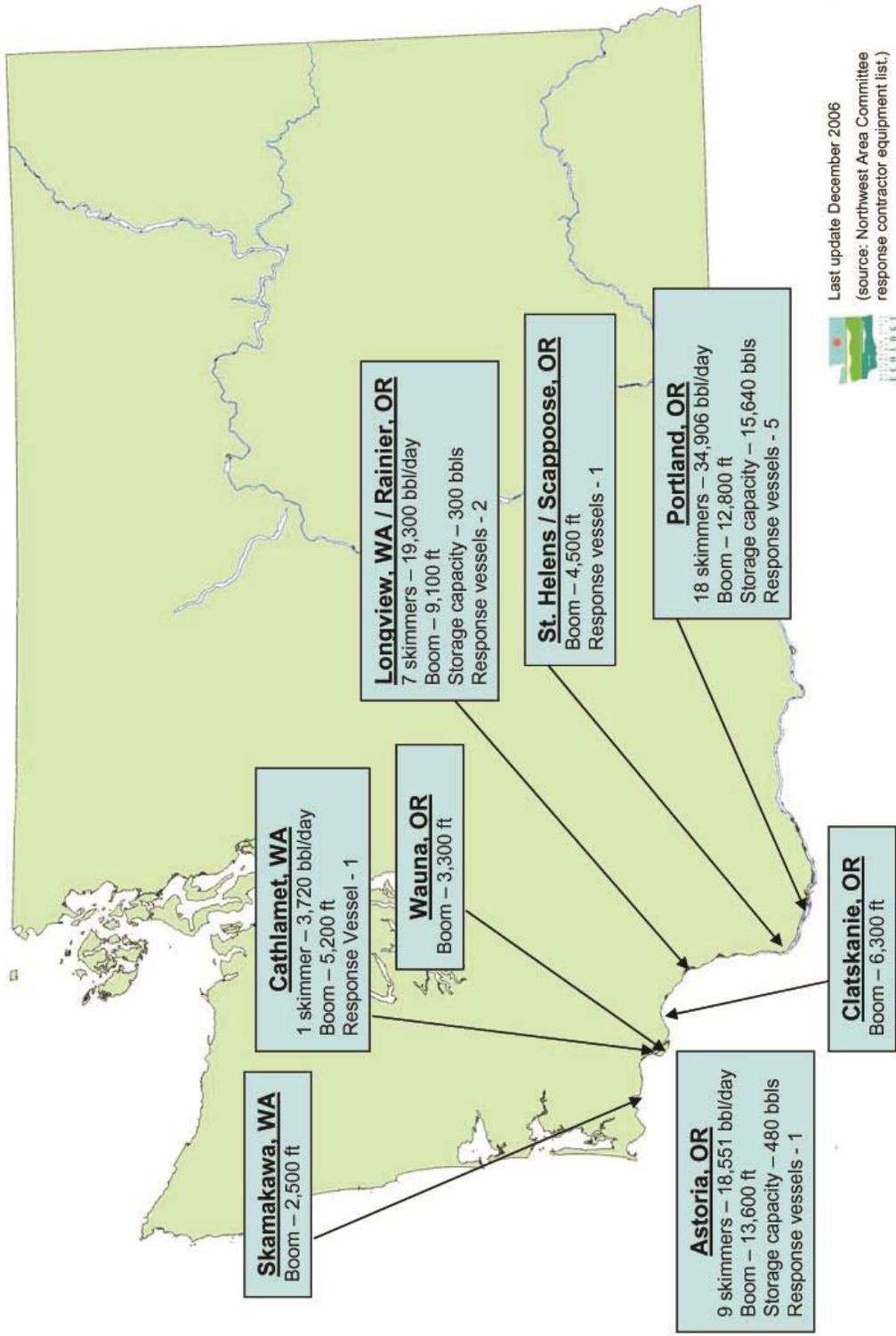
Figure B.3 Equipment Maps

EQUIPMENT MAPS
CLEAN RIVERS COOPERATIVE INC.
MARINE SPILL RESPONSE CORPORATION
NATIONAL RESPONSE CORPORATION (Equipment available through Clean Rivers' Contract with NRC)

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# Clean Rivers Cooperative

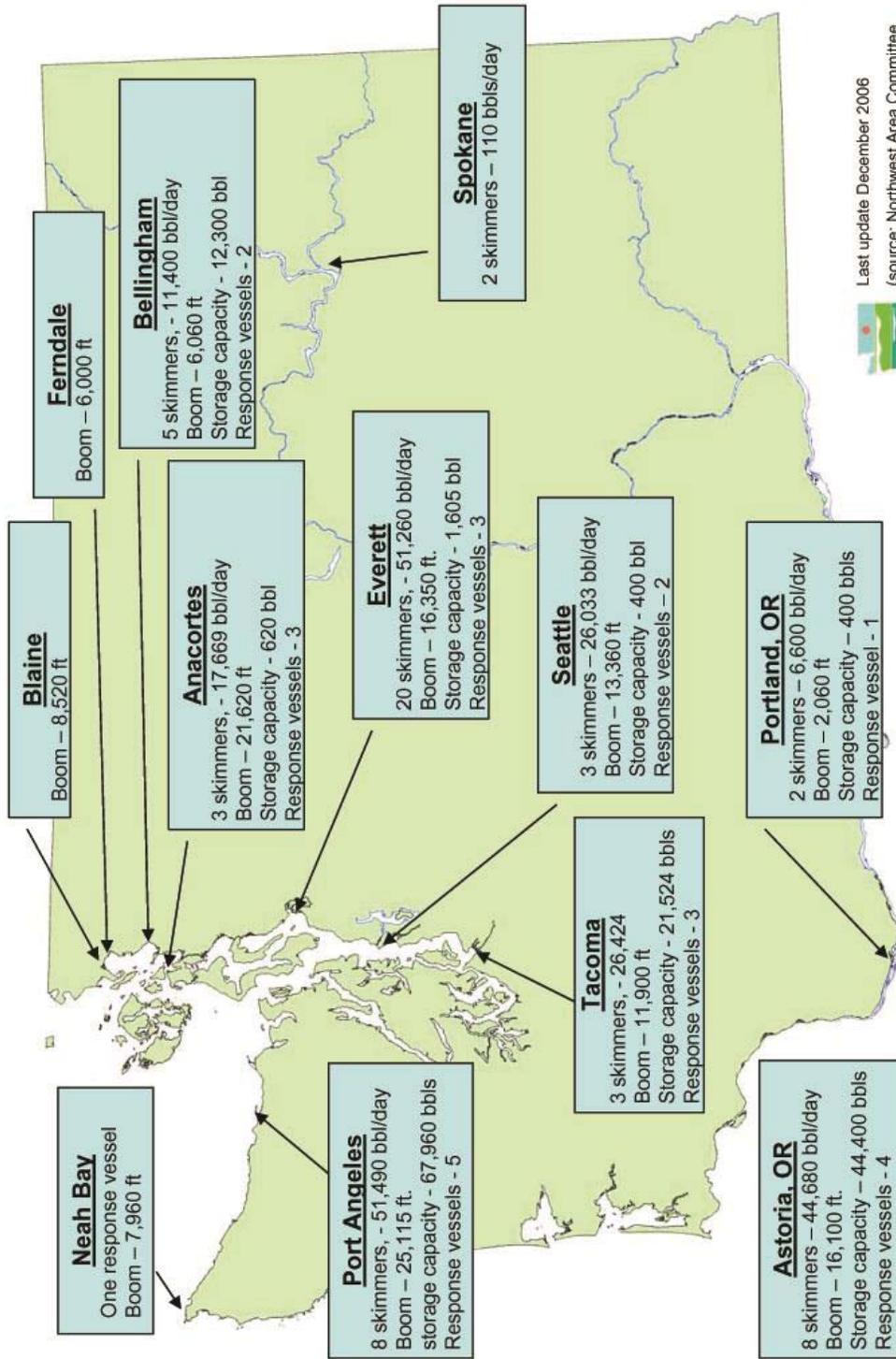


Last update December 2006  
(source: Northwest Area Committee response contractor equipment list.)



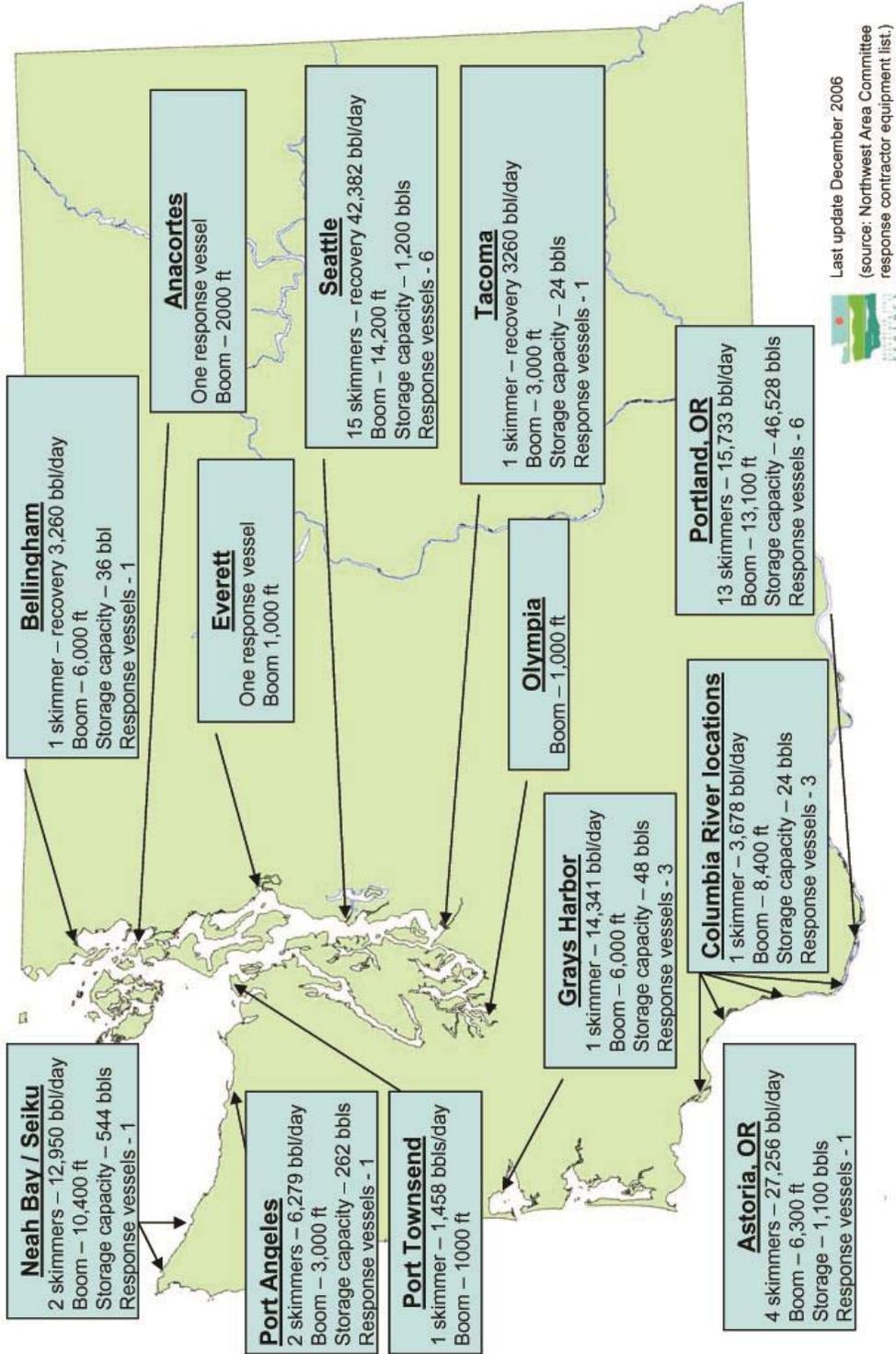
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# Marine Spill Response Corporation



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# National Response Corporation



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Appendix C  
Vancouver Energy Facility Operations

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**APPENDIX C  
VANCOUVER ENERGY FACILITY OPERATIONS**

**C.1 OVERVIEW**

The Facility in the Port of Vancouver USA, Washington, is located in different “areas” of the Port. **Figure C-1** presents a Facility Site Plan. The site address is 5501 NW Lower River Road, Vancouver, Washington 98660. The marine dock is located at Terminal 4, on the north side of the Columbia River, at River Mile 103.5, approximately 2.5 miles downriver of the Interstate 5 bridge. The facility is located at latitude 45° 39’ 6” N and longitude 122° 43’ 52” W.

**C.2 DESIGN AND OPERATIONS**

**C.2.1 General Operations Description**

The Facility receives crude oil by rail, stores it on site, and loads it on vessels for shipment. Unit trains arrive at the Facility and are stationed on the Facility rail loops. The trains are “indexed” through the unloading area (Area 200), where the crude oil is gravity-drained into the transfer pipeline system (Area 500). The crude oil is pumped through the transfer pipelines to the crude oil storage tanks (Area 300) where it is held until the marine vessel loading operation. Marine vessels arrive and moor at the dock (Area 400) where they are preboomed. Crude oil is pumped from the storage tanks to the loading area, and loaded to the marine vessels.

Physical properties of these products are provided in **Figure C.2**. Material Safety Data Sheets (MSDSs) are on file in the Facility office.

**C.2.2 Physical Description**

The Facility occupies approximately 47.4 acres located in different areas within the Port. The terrain is mostly flat, but drops off toward the south. Facility drainage outside of the various containment areas flows to existing surface water conveyance and treatment systems prior to the eventual release of water to the Columbia River. All of the downstream outfalls are permitted and regulated by the Washington Department of Ecology. There are three separate conveyance systems in which surface discharges are released from the Facility to eventual aquatic discharges.

- Terminal 5 stormwater system
- Terminal 4 stormwater system
- Combined Marine Terminal and Subaru lot treatment swales

A portion of the Facility lease boundary is located within areas determined by the Port to be within its general use area, which the Port defines as areas in which it is not feasible that individual tenants collect and treat their own stormwater discharges. Areas in this Facility that fall under that designation are limited to rail improvements located within the master plan rail corridor, transfer pipeline alignment, and non-pollution-generating rail yard area on the north side of the rail unloading building.

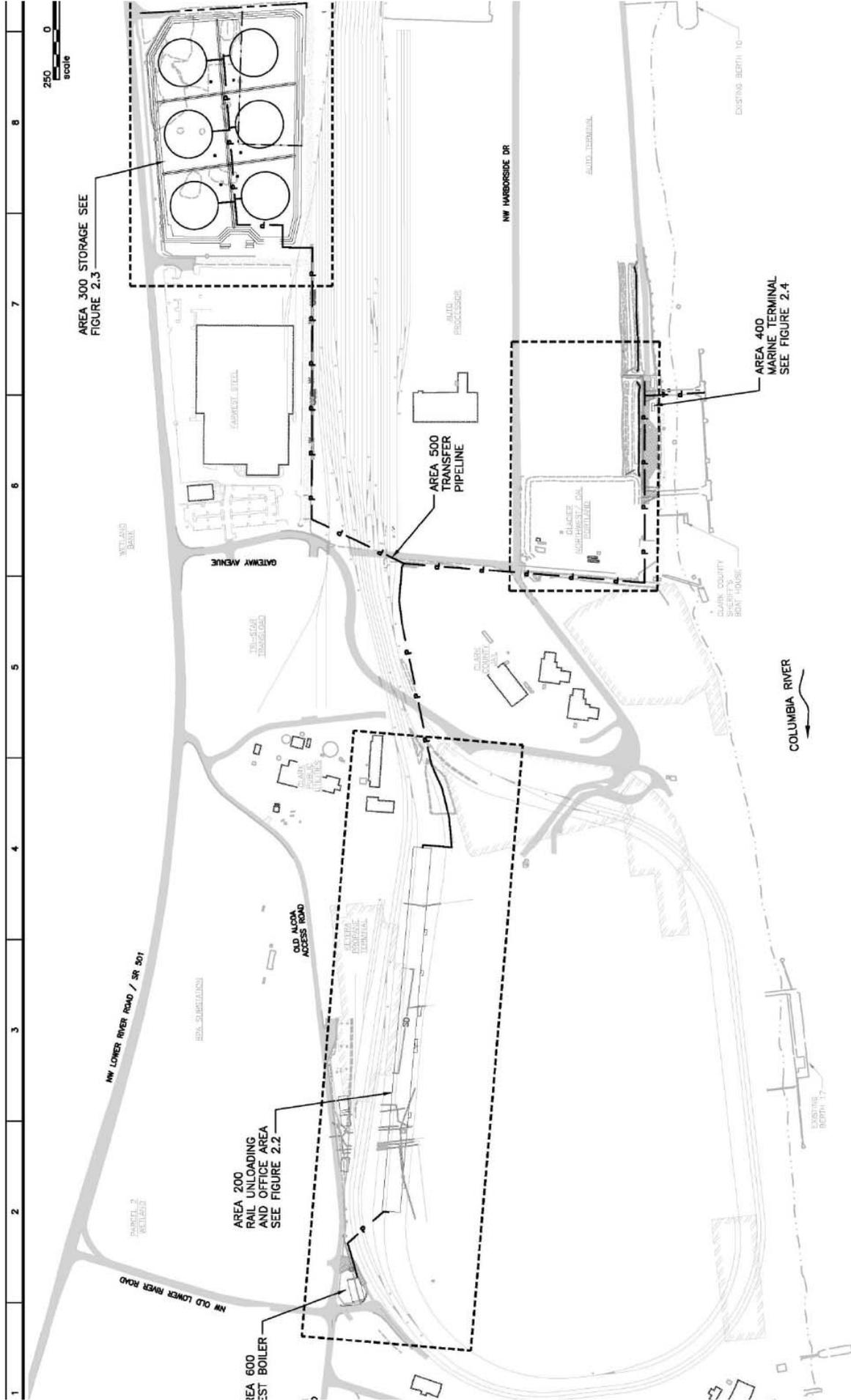
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EX-0001-002781-PCE

<p>700 NE Multnomah Street, Suite 900 Portland, Oregon 97232-4189 (503) 872-4100 FAX: (503) 872-4101</p>				<p>PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL PORT OF VANCOUVER, WASHINGTON</p> <p>DESCRIPTION: PRELIMINARY OIL SPILL CONTINGENCY PLAN SITE PLAN</p>		<p>DESIGNER: DRS</p> <p>DRAWN: TNP</p> <p>CHECKED: SA</p> <p>APPROVED:</p>	<p>START DATE: 1/22/17</p> <p>PRINT DATE: 1/22/17</p> <p>DRAWING NUMBER:</p>
<p>REVISION</p>		<p>BY: [ ]</p>		<p>DATE: [ ]</p>		<p>FIGURE C.1</p>	
<p>2</p>		<p>3</p>		<p>4</p>		<p>5</p>	
<p>6</p>		<p>7</p>		<p>8</p>		<p>9</p>	



The following discussion summarizes the project site areas.

**Area 200 – Administrative/Support and Rail Unloading**

Area 200 is located at 5501 NW Lower River Road in Vancouver. The following Facility elements are located in Area 200: administrative and support buildings, parking, rail access to the rail unloading facility, and the rail unloading facility. Area 200 is accessible from an unnamed private road owned and maintained by the Port.

**Area 300 – Product Storage**

Area 300 is located at the Port’s Parcel 1A on the south side of NW Lower River Road just east of the existing Farwest Steel facility. The following Facility elements are located in Area 300: product storage tanks and associated secondary containment, the Area 300 Boiler Building, and associated control and ancillary systems. Area 300 is accessible from NW Gateway Avenue and NW Lower River Road via a shared private drive.

**Area 400 – Marine Terminal**

Area 400 is located at existing Port berths 13 and 14 on the Columbia River south of the current Subaru facility. The following Facility elements are located in Area 400: product conveyance and loading facilities located on the dock, the marine vapor combustion units (MVCUs), emergency containment and response equipment, and control and ancillary facilities associated with vessel loading. This area is accessed from Gateway Avenue and Harborside Drive by a driveway to be constructed with the project.

**Area 500 – Transfer Pipelines**

Area 500 consists of a non-exclusive easement located within Terminal 5, Parcel 1A, berths 13 and 14, and corridors adjacent to existing private port roads. Area 500 includes the corridors for the approximately 26,400 = 5 miles lineal feet of transfer pipelines that will connect the Unloading (Area 200), Storage (Area 300), and Marine Terminal (Area 400) portions of the project. These transfer pipelines include

- (1) A 36-inch marine transfer pipeline that extends approximately 4,600 feet from the product storage tanks to the marine terminal.
- (2) Three 24-inch transfer pipelines that extend approximately 4,500 feet from the rail unloading area to the product storage tanks.
- (3) A 6- to 12-inch return line/pressure release.

All transfer pipelines are pressure tested annually. Pipelines are tested according to API RP 1110, ASME B31.4 or B31.3 as appropriate. Test dates and results are recorded and maintained at the Facility.

**Area 600 – West Boiler**

Area 600 is located at the northwest corner of Terminal 5, and is composed of the Area 600 Boiler Building and its associated parking.

Area 600 is accessed from Old Lower River Road and a private road owned and maintained by the Port.

**Rail Facilities**

The project uses up to three main rail loops (Tracks 4105, 4106, and 4107) at Terminal 5, and associated bad order car and departure tracks.

**Hours of Operation**

The Facility is planned to operate 24 hours a day, 7 days a week. Marine terminal operations are scheduled on a 24-hour, 7-day-a-week basis, as required by a particular vessel's schedule.

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**Figure C.2. Properties of Petroleum Products Handled**

Product	Boiling Point (°F)	Specific Gravity (H <sub>2</sub> O=1)	Density	API	Oil Group	Sulfur Content	Construction Type
Crude Oil	94 to 1330	0.8 to < 1.0	0.8 to < 1.0	10-45	2, 3, 4	Trace to 5%	Welded steel

MSDSs on products listed are located in the Facility office and are available 24 hours per day.

**C.2.3 Drip and Discharge Collection**

A minimum three-barrel capacity collection pan is located below the transfer header at the hose crane at the marine terminal. The collection pan is covered with openings to allow drips and incidental discharges to drain into the pan. Additional drip pans are located at all fittings, connection points, and at hose ends.

**C.2.4 Secondary Containment**

All crude oil storage tanks are surrounded by compacted earthen dikes that meet EPA volumetric guidelines. Secondary containment capacity is sufficient to contain 110 percent of largest tank volume plus a 100-year rainfall event and freeboard.

All crude oil storage tanks are equipped with automatic gauging systems and high level alarms. **Figure C.3** provides a summary of tanks at the facility.

**C.2.5 Emergency Shutdown System**

While unloading rail cars and pumping oil to the Storage Facility, operators can manually stop the process by pressing an emergency shutdown (ESD) push button. When pressed, automated valves will close at each of the rail offload stations, isolating the crude inside the rail cars from the pump header, shut down the rail transfer pumps, and close the 24-inch valves at the beginning of the rail transfer lines, isolating the rail area process from the transfer pipe line.

When an ESD push button has been pressed, the control room will receive an alert stating which stations' push button has been pressed and an alarm will sound throughout the rail unloading area with horns and beacons.

Within the tank storage area the ESD system will be manually activated by pressing an ESD push button. When an ESD is pressed, all automated valves on the storage tanks will close isolating the crude in the tanks, the marine vessel loading pumps will shut down, and the control rooms will receive an alert stating which push button has been pressed and that an ESD occurrence has taken place.

While loading a Marine Vessel at the berth, operators may manually stop the process by pressing one of the ESD push buttons on the dock. When pressed, the Marine Vessel loading pumps will shut down, the automated valve near the dock will close and an alert will be sent to the control rooms stating which ESD button has been pressed.

If a facility-wide emergency is necessary, there will be a facility wide button to press at each of the control rooms. When a facility-wide ESD is necessary, all operations will be stopped as outlined above for all areas of the facility.

**C.2.6 Monitoring Devices**

Monitoring devices as described in 33 CFR 154.525 are not required at the Facility dock or terminal.

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**§ 154.525 Monitoring devices.**

The COTP may require the facility to install monitoring devices if the installation of monitoring devices at the facility would significantly limit the size of a discharge of oil or hazardous material and either:

- (a) The environmental sensitivity of the area requires added protection;
- (b) The products transferred at the facility pose a significant threat to the environment; or
- (c) The size or complexity of the transfer operation poses a significant potential for a discharge of oil or hazardous material.

[CGD 75–124, 45 FR 7172, Jan. 31, 1980, as amended by CGD 86–034, 55 FR 36253, Sept. 4, 1990]

**C.2.7 Relief Valve Setting**

For transferring product from the rail unloading area (Area 200) to the storage area (Area 300), a predetermined PLC set point from a pressure transmitter signal will automatically power off the facility pump at approximately 100 psi. The pressure transmitter is located on the 10-inch pump discharge pipeline at the pump basin. In addition to the pump shutdown, the system has a pressure relief valve downstream of each pump that will recirculate the crude in the event that the pump discharge piping is blocked and the pressure transmitter fails. This pressure relief valve is set at approximately 110 psi. The system also has thermal pressure relief valves relieving thermal expansion in blocked portions of the piping between the rail unloading area (Area 200) and the storage area (Area 300). These valves are set at varying pressures depending on their location in the piping system. For transferring product from the storage area (Area 300) to the marine terminal area (Area 400), a predetermined PLC set point from a pressure transmitter signal will automatically power off the facility pump at approximately 100 psi. The pressure transmitter is located on the 36-inch pump discharge pipeline at the pump basin. In addition to the pump shutdown, the system has a pressure relief valve on the pump discharge header that will recirculate the crude in the event that the pump discharge piping is blocked and the pressure transmitter fails. This pressure relief valve is set at approximately 110 psi. The system also has thermal pressure relief valves relieving thermal expansion in blocked portions of the piping between the storage area (Area 300) and the marine terminal are (Area 300). These valves are set at varying pressures depending on their location in the piping system.

**Figure C.3. Oil Storage Tank Information**

Tank	Product	Volume (bbl)	Built	API 653 Inspection	Major Type of Failure/Cause	Cathodic Protection
0300-TK-001	Non-heated Crude Oil	380,000	TBD	Upon Construction Completion	Leak/Rupture	Yes
0300-TK-002	Non-heated Crude Oil	380,000	TBD	Upon Construction Completion	Leak/Rupture	Yes
0300-TK-003	Non-heated Crude Oil	380,000	TBD	Upon Construction Completion	Leak/Rupture	Yes
0300-TK-004	Non-heated Crude Oil	380,000	TBD	Upon Construction Completion	Leak/Rupture	Yes
0300-TK-005	Heated Crude Oil	380,000	TBD	Upon Construction Completion	Leak/Rupture	Yes
0300-TK-006	Heated Crude Oil	380,000	TBD	Upon Construction Completion	Leak/Rupture	Yes

Total Terminal Storage Shell Capacity = 2,280,000 bbl (six tanks at shell capacity of 380,000 bbl each)

Total Terminal Storage Capacity = 2,160,000 bbl (fill capacity of the six tanks is 360,000 bbl each)

Total Secondary Containment Volume = 606,020 bbl. (157% of largest tank volume)

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**C.3 Transfer Procedures**

There are loading arms located at the marine terminal. Transfers are from manifold to vessel via hose connections using the crane and loading arms.

Product can be transferred at the terminal by two different methods:

- 1. Railcar (receive only).
- 2. Vessel (dispense only).

Product receiving and completion of product pumping procedures are described for each of these methods below.

**C.3.1 Vessel Transfers**

Upon confirmation of product delivery/receipt involving either barge or ship, the following procedures are followed.

- 1. Notify the Port of the scheduled transfer in advance. Verify availability of dock space.
- 2. Notify USCG and state of Washington via the Ecology website:

- Name of ship/barge company
- Barge number or ship name
- Product type and volume
- Date of transfer
- Estimated start and finish times

This information is then logged in the terminal log book, along with the initials of the employees making the call, initials of person receiving the call, and the date and time this information was transmitted.

- 3. Physical inventory is then collected on the receiving or dispensing tank involved. Hand gauging will occur. Beginning meter readings are taken, as well as temperature of the product and the level of condensate water on the bottom of the tank. This information is recorded in the terminal log book. Hourly gauges are logged as in a pipeline receipt.
- 4. The Tesoro employee on dock duty will be responsible for:
  - a. Preparing and checking the transfer site.
    - (1) The dock and surrounding area are inspected for oil slicks, debris, and proper condition of the dolphins.
    - (2) The pipeline, valves and hose are inspected. Any oil slicks, damage, leaks, etc. must be reported to the Terminal Manager.
    - (3) The valve in the shoreline (which is located at the northeast corner of the building just north of the dock) is then opened. The by-pass valves to the shoreline valve are closed.
  - b. Inspecting the vessel for proper alignment with the hose header, holding a face-to-face Pre-Transfer Conference with the Vessel Person in Charge, following directions outlined on the Declaration of Inspection<sup>1</sup>, signing the Declaration of Inspection and checking for hazardous conditions that might exist.
  - c. Ensuring that when the hose is passed to the vessel that the end of the hose is capped.

<sup>1</sup> An explanation of Declaration of Inspection Procedures and a blank Declaration of Inspection Form are contained in Appendix F.

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- d. Begin transfer by opening valves to start the flow to the vessel. Starting with low flow and checking for proper connections, valve alignments and leaks. After a thorough system check, slowly bringing the flow rate to a normal operating rate.
  - e. During the transfer operation the operator will monitor the transfer operation continuously. Checking transfer pressure and adjusting as necessary. Checking valves, fittings and connections for leaks and checking the water surface for signs of oil in the water.
  - f. Transfer operation will be stopped should any of the following occur:
    - (1) Oil is spilled outside of the containment onto the ground or into the water.
    - (2) Communications or power is lost.
    - (3) Lighting becomes inadequate.
    - (4) Weather turn bad (such as during an electrical storm).
  - g. Upon completion of product transfer, the terminal dock operator assists vessel personnel in draining the hose, disconnecting the hose and capping the end of the hose prior to the hose being passed over water for storage.
  - h. The terminal dock operator closes all valves and secures the main valves with a chain and lock.
5. The plant operator, upon completion of the transfer, will ensure hand gauging is conducted on the receiving/shipping tank. A bill of lading (BOL) is then prepared.
  6. Rack delivery tickets from all previous transactions are kept isolated. Product dispensed through the rack while the dock transfer is occurring is noted.
  7. For dispensing product, it is necessary to open the proper valves in the pumping station manifold. The valve to the cargo pump and the valve into the shoreline are opened.
  8. All tanks on the vessel (whether it is being loaded or unloaded) are to be gauged to determine the amount of product capacity.

**C.3.2 Railcar Transfers**

The facility receives railcars on three rail loops located at Terminal 5. Up to three unit trains of 100 to 120 cars each can be simultaneously accommodated on the rail loops at full operation of the Rail Unloading Area. Unit trains are indexed 30 cars at a time through the unloading building. There is one unloading header at each railcar position. Rail cars are gravity drained. Each railcar position is protected by a spill containment system.

During railcar unloading, the following procedures are followed:

1. The railroad will provide at least one-day notice of a railcar delivery. The railroad will spot the railcar, block its wheels and set the brakes.
2. At least one terminal operator is required to monitor railcar-unloading operations.
3. Operators wear protective clothing, including hard hats, goggles, rubber gloves and appropriate outerwear.
4. Before unloading, the grounding cable to the railcar is connected.
5. The contents of the railcar are verified by reviewing the bill of lading.
6. The railcar, transfer equipment and surrounding area is inspected to assure that everything is in normal operating conditions.
7. Bolts on the railcar dome covers are slowly loosened to relieve possible pressure build-up.
8. Each product compartment is inspected for debris or foreign matter.
9. Volume is verified by BOL. The tank that is to receive the product is also gauged.

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10. The product is sampled. The product is then verified by visual inspection and testing for specific gravity.
11. The railcar's bottom outlet cap is removed and the terminal's transfer hose camlock is connected to the railcar fitting.
12. The railcar valve and the pipeline valve are then opened, followed by the railcar manifold. The transfer pump is then activated.
13. Upon completion of transfer, the pump is turned off, valves are turned off, the hose is removed, the railcar dome hatch is re-bolted, and the railcar bottom outlet cap is closed and tightened.
14. The amount of product on the bill of lading from the railcar is verified against the inventory change in the receiving tank.
15. Finally, the railroad is notified that the railcar unloading has been completed.

**C.4 EMERGENCY SHUT DOWN PROCEDURES**

The Facility uses the international recognized signals for emergencies. If an emergency occurs on the marine terminal, the ship will be notified by portable radio or voice.

**IN ALL EMERGENCY SITUATIONS, SHUTDOWN ALL PRODUCT TRANSFERS IMMEDIATELY AND SECURE VALVES**

If any abnormal situation is detected during a product transfer, stop all activities. Shut the associated pump down immediately. Close all valves on the railcar, pump, pipeline, or tank. Transfer operations are not resumed until the system has been inspected and repaired, and the Facility Manager has deemed the system fit for continued operations.

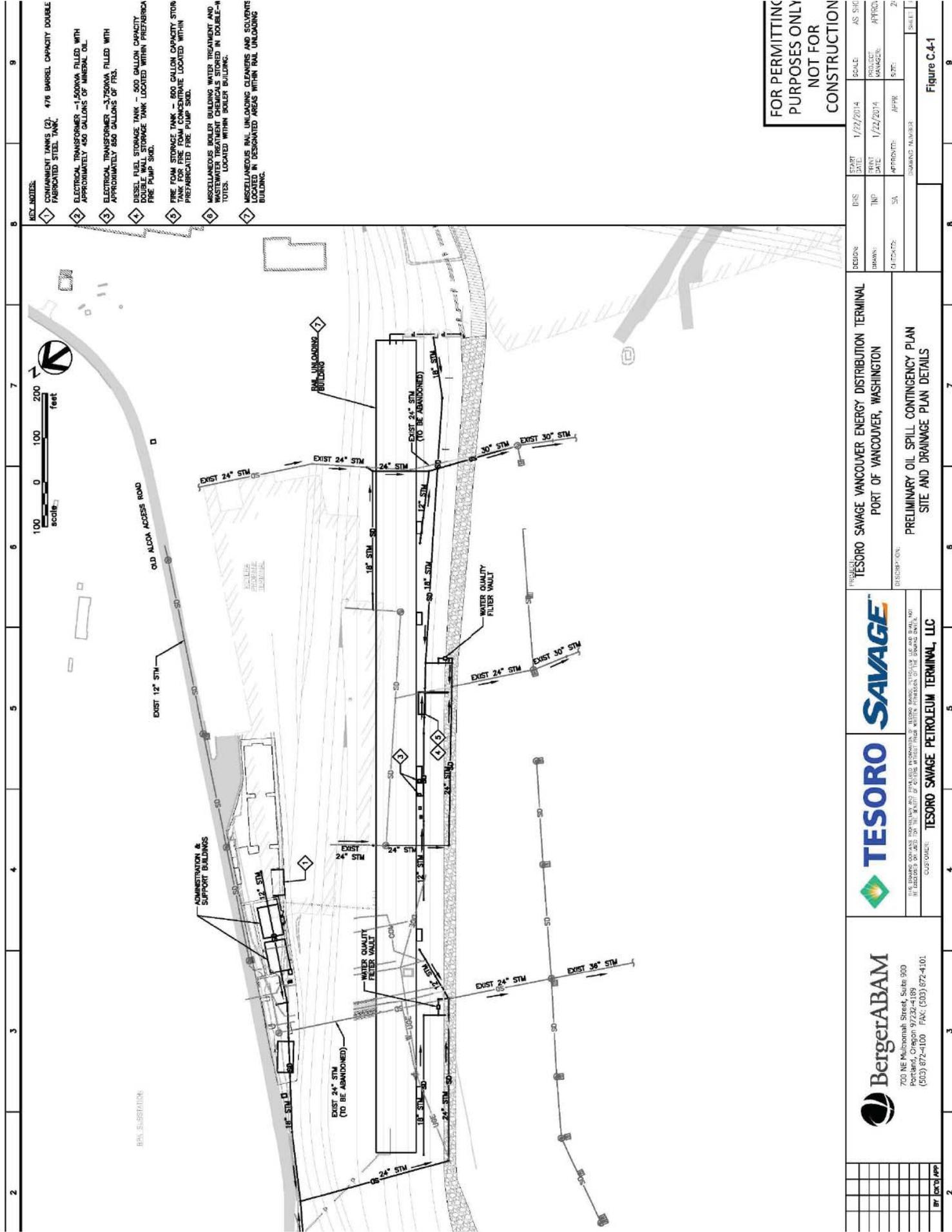
If leakage or uncontrolled discharge is detected, the transfer is immediately terminated or not initiated. A safety perimeter is established. When the Facility Manager has deemed conditions are safe, necessary and practical remediation actions are initiated. The first available qualified individual, the emergency response contractor, and appropriate agencies and organizations as described in **Section 2** and **Section 3** are alerted. If necessary, the Tesoro response away-team is alerted.

Product transfer will not resume until the oil is cleaned up, removed from the deck of the vessel and/or from the surface of the water (if possible) and damage is repaired and no further danger exists.

Emergency shutdown systems are described in **Appendix C.2.5**.

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PURPOSES ONLY  
NOT FOR  
CONSTRUCTION

- KEY NOTES:**
- 1 CONTAINMENT TANKS (2) - 476 BARREL CAPACITY DOUBLE FABRICATED STEEL TANK.
  - 2 ELECTRICAL TRANSFORMERS - 4 500KVA FILLED WITH APPROXIMATELY 450 GALLONS OF MINERAL OIL.
  - 3 ELECTRICAL TRANSFORMER - 3 750KVA FILLED WITH APPROXIMATELY 650 GALLONS OF TR3.
  - 4 DIESEL FUEL STORAGE TANK - 500 GALLON CAPACITY DOUBLE WALL STORAGE TANK LOCATED WITHIN PREFABRICA FIRE PUMP SKID.
  - 5 FIRE FOAM STORAGE TANK - 600 GALLON CAPACITY STORAGE TANK FOR FIRE FOAM CONCENTRATE LOCATED WITHIN PREFABRICA FIRE PUMP SKID.
  - 6 MISCELLANEOUS BOILER BUILDING WATER TREATMENT AND WASTEWATER TREATMENT CHEMICALS STORED IN DOUBLE-W TOTES. LOCATED WITHIN BOILER BUILDING.
  - 7 MISCELLANEOUS RAIL UNLOADING CLEANERS AND SOLVENTS LOCATED IN DESIGNATED AREAS WITHIN RAIL UNLOADING BUILDING.

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CHECKED:	SA:	APPROVED:	APPR:	21
DRAWING NUMBER:		SHEET:		

PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL  
 PORT OF VANCOUVER, WASHINGTON

DESCRIPTION: PRELIMINARY OIL SPILL CONTINGENCY PLAN  
 SITE AND DRAINAGE PLAN DETAILS

**TESORO SAVAGE**

Customer: TESORO SAVAGE PETROLEUM TERMINAL, LLC

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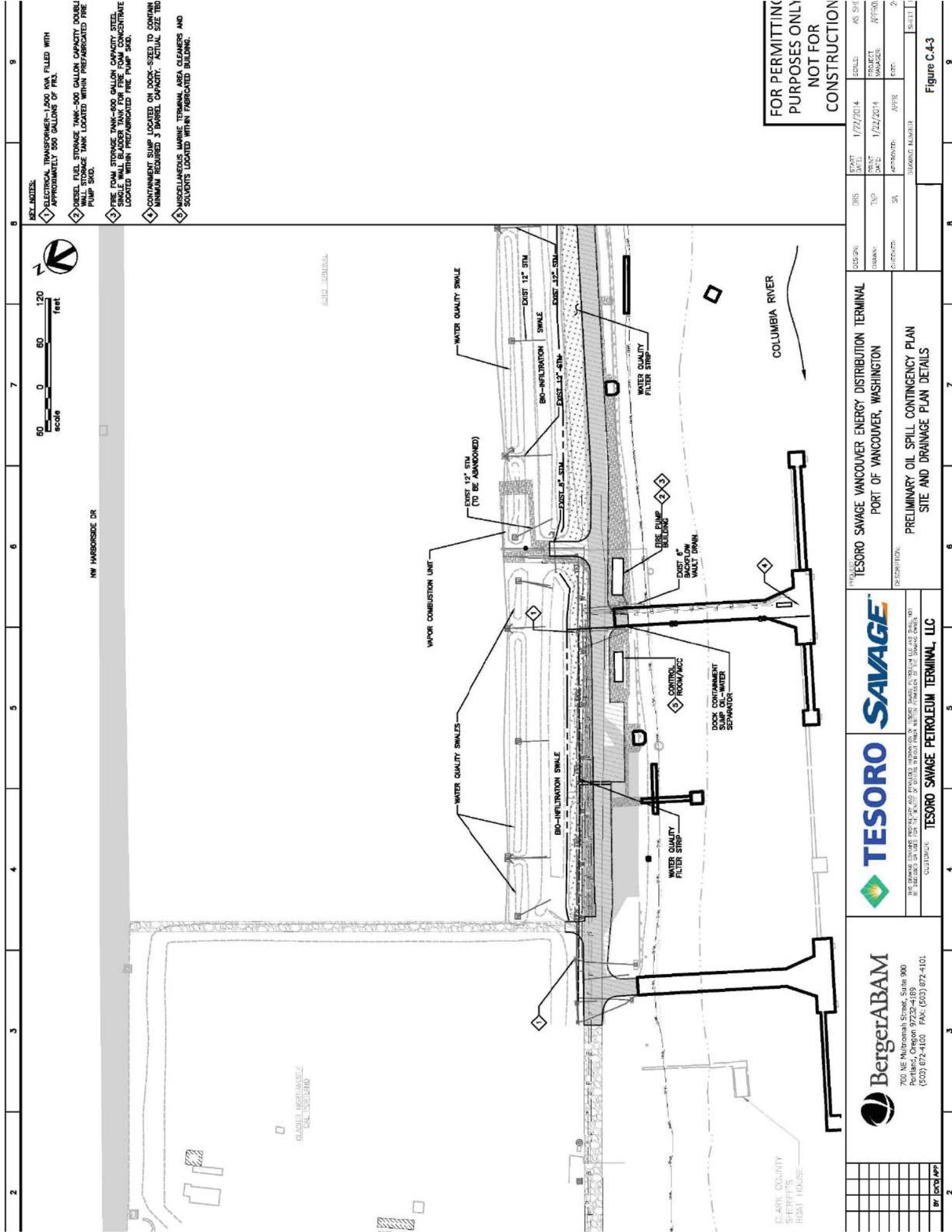
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**KEY NOTES:**

- 1 ELECTRICAL TRANSFORMER-1 500 KVA FILLED WITH APPROXIMATELY 500 GALLONS OF FLU.
- 2 DIESEL FUEL STORAGE TANK-500 GALLON CAPACITY DOUBLE WALL STORAGE TANK LOCATED WITHIN PREFABRICATED FIRE PUMP SKID.
- 3 FIRE FOAM STORAGE TANK-600 GALLON CAPACITY STEEL SINGLE WALL BLADDER TANK FOR FIRE FOAM CONCENTRATE LOCATED WITHIN PREFABRICATED FIRE PUMP SKID.
- 4 CONTAMINANT SUMP LOCATED ON DOCK-SIZED TO CONTAIN MINIMUM REQUIRED 3 BARREL CAPACITY. ACTUAL SEE T&E
- 5 MISCELLANEOUS MARINE TERMINAL AREA CLEANERS AND SOLVENTS LOCATED WITHIN FABRICATED BUILDING.

DESIGN NO.	005296	DATE	1/22/2014	SCALE	AS SHOWN
PROJECT NO.	TNP	PRINT DATE	1/22/2014	PROJECT MANAGER	APF500
CLIENT	SA	APPROVED BY	APF500	DATE	2
DRAWING NUMBER		SHEET			

PROJECT: TESORO SAVAGE VANCOUVER ENERGY DISTRIBUTION TERMINAL  
 PORT OF VANCOUVER, WASHINGTON  
 DESIGN TITLE: PRELIMINARY OIL SPILL CONTINGENCY PLAN SITE AND DRAINAGE PLAN DETAILS

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Operations Facility Oil Spill Contingency Plan  
EFSEC Application for Site Certification No. 2013-01  
Docket No. EF131590



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Appendix D  
Hazard Evaluation/Risk Analysis

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**APPENDIX D  
HAZARD EVALUATION/RISK ANALYSIS**

**D.1 INTRODUCTION**

An evaluation of the major components of the oil transfer and storage system at the terminal has been completed for the purpose of identifying the potential risk of oil spills associated with each component. The analysis is focused on identifying the components or areas that pose the greatest overall risk of spills.

The spill prevention measures for any components/areas identified as having a significant spill risk were then evaluated to ensure that the best achievable technologies are in place based on industry standards. In the unlikely event that additional protection measures should be taken, recommendations will be made for additional measures.

**D.2 FACILITY OIL SPILL RISK ANALYSIS**

**D.2.1 Scope**

The oil spill risk analysis identifies potential oil spill risks and evaluates the frequency and severity of such risks. For the purposes of the risk analysis, the storage and transfer facilities are grouped into the following areas.

- Area 200 Rail transfer facilities
- Area 300 Storage tanks and their containment
- Area 400 Marine transfer facilities
- Area 500 Transfer pipeline leak outside of secondary containment

All of these facilities are operated in an integrated fashion by the Certificate Holder. Therefore, any risks that transcend the artificial boundaries established by the above grouping were an integral part of the analysis.

The risk analysis was primarily intended to identify hazards that could lead to oil spills that could reach the waters of the State. Small spills on land that cannot impact the waters of the State were not to be analyzed in detail.

The preceding sections of this plan discuss the measures taken to prevent oil spills from the facility. In many cases, these measures are not repeated in this section.

**D.2.2 Method**

Hazard identification was done using the checklists in Ecology’s Facility Risk Analysis Guidelines as the starting point. The checklists were made site-specific by adding items that have resulted in past spills at other facilities, items that are discussed in the prevention plan, and other items that could present potential oil spill risks.

From the oil spill hazards identified by the checklist review, oil spill scenarios that could conceivably lead to oil reaching the river were developed. The frequency and severity of these spill scenarios were identified qualitatively. This identification was based primarily on the operating history of the facility and a detailed knowledge of the operating procedures, inspection program and results, and maintenance schedules of the oil storage and transfer facilities. A “Frequency-Severity Matrix” similar to the one shown in Ecology’s guidelines was used to identify the risk category into which each scenario fell.

**D.2.3 Analysis of Past Spills**

The Facility is not yet constructed and therefore there are no past spills to evaluate.

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#### D.2.4 Risk Estimation and Scenario Development

Risks from the hazards identified in completing the checklists were addressed by developing spill scenarios that contained one or more of the identified hazards. Low probability spills with high potential severities also were addressed.

Scenarios were not developed for every possible combination of events or hazards. The following guidelines were used in developing the scenarios:

Cover the range of hazards identified, even the ones viewed as unlikely.

For a group of related scenarios, use the one representing the worst combination of frequency and severity, yet still plausible.

As determined using the Hazard Identification Checklist (**Figure D.1**) and this risk analysis, a risk of a significant discharge exists in the terminal tank yard, at the truck and rail transfer areas, from pipelines, and at the marine header/dock.

The possibility of a catastrophic discharge impacting state or navigable waters is extremely low due to the location of the terminal and strict adherence to established operating and maintenance procedures. The terminal is located approximately 1,800 feet inland from the Columbia River. There is limited direct drainage from the terminal to the river, and several roads and naturally occurring impoundments are located between the terminal and river which should provide containment and collection sites.

The single marine transfer pipeline that extends from the Storage Area to the Marine Terminal is equipped with three valves that are closed and locked when transfers are not in progress. The total volume of the pipeline from the Storage Area to the Marine Terminal is approximately 5,505 barrels. The total volume of the pipeline from the Rail Unloading Area to the Marine Terminal is approximately 3,802 barrels. The volume between the dock header valve and first inline valve is approximately 314 barrels. All marine transfers are continuously monitored by trained and qualified personnel. A Tesoro Operator is positioned on the dock and maintains radio contact with the vessel and the Storage Area. Marine transfers can be terminated within 60 seconds of notice, and valves closed immediately thereafter.

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Figure D.1. Hazard Identification Checklist

<b>STATE OF WASHINGTON DEPARTMENT OF ECOLOGY</b> <b>OIL SPILL PREVENTION PLAN</b> <b>FACILITY OIL SPILL RISK ANALYSIS</b> <b>HAZARD IDENTIFICATION CHECK LIST</b>					
FACILITY: <u>Vancouver Energy</u> DATE: _____		Spill Potential Ratings: High (H)    Medium (M)    Low (L)			
<b>“No” answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.</b>					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
<b>A. MARINE LOADING/UNLOADING AREA</b>					
Fire Related Spill Hazards					
1. Is the fire extinguishing system adequate?	X				
2. Are sufficient fire extinguishers nearby?	X				
3. Are block valves, check valves, pumps, filters, etc... made of steel?	X				
4. Are pipe supports fire proofed?		X		Pipeline supports are constructed of steel and concrete	
5. Have flammable material ignition sources been eliminated?	X				
6. Does all electrical equipment meet explosion proof requirements?		X		Where required by NEC, API, and NFPA electrical equipment is explosion proof	

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Figure D.1. Hazard Identification Checklist (continued)

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY OIL SPILL PREVENTION PLAN FACILITY OIL SPILL RISK ANALYSIS HAZARD IDENTIFICATION CHECK LIST					
FACILITY: <u>Vancouver Energy</u> DATE: _____			Spill Potential Ratings: High (H)    Medium (M)    Low (L)		
"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
<b>Material Handling Related Spill Hazards</b>					
7. Are remotely operated controls installed for emergency shutdown?	X				
8. Are barricades and/or shields installed to protect equipment?	X				
9. Are unloading lines equipped with check valves allowing one way flow?	X				
10. Are hoses in good repair and pressure tested on a regular basis?	X				
11. Is the over-pressure prevention system adequate?	X				
12. Are there spill collection facilities?	X				

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Figure D.1. Hazard Identification Checklist (continued)

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FACILITY: <u>Vancouver Energy</u> DATE: _____		Spill Potential Ratings: High (H) Medium (M) Low (L)			
<b>“No” answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.</b>					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
13. Is oil spill containment equipment on hand and adequate?	X				
14. Is there an oil spill response plan?	X				
15. Are vessel overfill devices and/or procedures adequate?	X				
<b>B. DOCK TRANSFER PIPELINES</b>					
<b>Material Handling Related Spill Hazards</b>					
1. Is the corrosion protection and inspection program adequate?	X				
2. Are external coatings used and in good condition?	X				
3. Is right-of-way clear and patrolled on a regular basis? Is it effective?	X X				
4. Are pipelines protected from impact damage (Barricades/depth of cover)?		X	L	Pipelines where adjacent to traffic have barricades. DOT standards have been used to determine barricade placement based on road configuration and permitted vehicle speeds.	
5. Are surge and fatigue loadings acceptable?	X				

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Figure D.1.1. Hazard Identification Checklist (continued)

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FACILITY: <u>Vancouver Energy</u> DATE: _____		Spill Potential Ratings: High (H) Medium (M) Low (L)			
<b>“No” answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.</b>					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
6. Is there an effective leak detection system?	X				
7. Are pipelines susceptible to soil movement? (Landslides, washouts, etc.)	X			Pipelines are designed for soil movements resulting from static settlement and liquefaction.	
8. Have lines been hydrostatically tested? What level and frequency?	X			Dock lines are hydrostatically tested prior to start-up and annually thereafter in accordance with USCG requirements 33 CFR 154 and WAC 173-180-420.	
<b>C. BULK STORAGE TANK FARM</b>					
<b>Fire Related Spill Hazards</b>					
1. Is fire protection adequate? Does system meet industry codes and A.P.I. standards?	X				
2. Is there adequate fire water?	X				
3. Are tank valves made of steel?	X				
4. Are pipe supports fire proofed?		X		Pipeline supports are constructed of steel and concrete	
5. Are firewalls (dykes) in place and sized to meet industry standards?	X				

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Figure D.1. Hazard Identification Checklist (continued)

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FACILITY: <u>Vancouver Energy</u> DATE: _____		Spill Potential Ratings: High (H) Medium (M) Low (L)			
"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
6. Do oil lines inside fire walls have welded joints?	X				
<b>Material Handling Related Spill Hazards</b>					
7. Do tanks have high level alarms?	X				
8. Is there an automatic shutdown system on high level?	X				
9. Are there ground level or remote fill level gauges?	X				
10. Do pipelines penetrate dykes and fire walls?		X		Pipelines do not penetrate dikes or fire walls.	
<b>Containment/Control Related Spill Hazard</b>					
11. Is tank farm lot impervious to oil spill penetration?	X				
12. Is there a spill collection system inside tank lot?	X				
13. Are containment dykes sized to meet codes?	X				

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Figure D.1. Hazard Identification Checklist (continued)

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FACILITY: <u>Vancouver Energy</u> DATE: _____						
"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.						
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE	
<b>D. PUMP STATION</b>						
<b>Fire Related Spill Hazards</b>						
1. Are pumps, valves and other vessels fire rated?	X					
2. Is fire protection system adequate?	X					
3. Are all ignition sources eliminated?	X					
<b>Material Handling Related Spill Hazards</b>						
4. Is over-pressure system adequate?	X					
5. Is there an emergency shutdown system?	X					
6. Is there a spill collection system (pump slab, dykes, collection drains, sump tank, etc..)?	X					
<b>E. TRUCK/RAIL LOADING/UNLOADING</b>						
<b>Fire Related Spill Hazards</b>						
1. Is fire protection adequate?	X					
2. Is there adequate fire water? Does it meet codes and industry standards?	X					

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FACILITY: <u>Vancouver Energy</u>		DATE: _____		Spill Potential Ratings: High (H) Medium (M) Low (L)	
"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
3. Are block valves fire rated?	X				
4. Does electrical equipment meet explosion proof requirements?	X				
<b>Material Handling Related Spill Hazards</b>					
5. Is system manual or automatic?				BOTH	
6. Do trucks/rail cars have overfill protection?				Not Applicable	
7. Is there an emergency shutdown system?	X				
8. Are there pressure relief devices on system?	X				
9. Are block valves secure and safe from the public?	X				
10. Are public access areas fenced and lighted?	X				
<b>Containment/Control Related</b>					
11. Is there a spill collection system around loading/unloading areas?	X				

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Figure D.1. Hazard Identification Checklist (continued)

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FACILITY: <u>Vancouver Energy</u> DATE: _____		Spill Potential Ratings: High (H) Medium (M) Low (L)			
"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.					
F. PROCEDURES	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
1. Does facility have an up-to-date operating procedures manual?	X				
2. Does facility have an oil spill response plan and procedures?	X				
3. Is there a system to ensure compliance with applicable codes?	X				
4. Is there a quality management system in place to ensure compliance with above procedures and programs?	X				
5. Is there a program for monitoring/controlling third party activities?	X				
G. GENERAL					
1. Is there a fitness for purpose testing program in place for critical oil movement lines (hydrostatic pressure testing, internal inspection, external inspection, coating inspection, etc.)?	X				
2. Have natural hazards been investigated and monitored (landslides, slope instability, bed scouring on flowing water, soil subsidence, etc.)?	X				

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Figure D.1. Hazard Identification Checklist (continued)

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FACILITY: <u>Vancouver Energy</u> DATE: _____		Spill Potential Ratings: High (H) Medium (M) Low (L)			
<b>“No” answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.</b>					
	YES	NO	SPILL POTENTIAL	COMMENTS	RESPONSE
3. Are leak detection surveys conducted and records maintained for two years min? Is a material balance maintained for the facility?	X X				
4. Are changes to equipment critical set points controlled adequately?	X				
5. Are pipeline crossings by third parties controlled? Are crossing agreements in use?	X				
6. Is there a training program for employees on safe operation and maintenance of all oil movement systems?	X				

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**D.3 HAZARD EVALUATION AND IDENTIFICATION**

A completed Ecology’s Hazard Identification Check List is provided in **Figure D.1**. None of the "no" answers on the checklist contribute to high or medium spill risk, therefore the following qualitative discharge risk analysis is provided:

**D.3.1 Storage Tank Leak or Failure**

All storage tanks are constructed to API 650 and Uniform Fire Code specifications. The tank yard and surrounding area is cathodically protected. The entire area is visually inspected daily. Future tank inspections will be made in compliance with API 653 guidelines.

The maximum quantity of crude oil which could be discharged is based on the capacity of the largest single tank which is 360,000 barrels. The rate of flow would be variable depending on the size and location of the leak or failure. The total quantity of crude oil which could be discharged would not exceed 360,000 barrels.

Spilled crude oil would be contained in the tank yard impoundment area. The impoundment area is fully diked and provides storage volume in excess of the capacity of the largest tank.

**D.3.2 Tank Overflow**

During crude oil receipt there is potential for tank overflow due to operator error or equipment failure. Tanks are equipped with high level audible alarms which are set at approximately 95 percent of capacity. A redundant high level emergency shutdown level alarm is additionally included. Due to the large storage capacity, tanks are seldom “topped-off,” and normally are filled to only 70 percent of capacity.

During all bulk transfers to or from the crude oil storage tanks operators are on duty. Continuous communication is maintained between the receiving and delivering operator. At a minimum at least one operator will be monitoring operations at the storage area and another operator at either the rail unloading operation when loading the tanks, or at the dock when unloading the tanks.

The total quantity of crude oil that could be discharged is proportional to the length of time the tank is overflowing. It is estimated that 250 barrels could be discharged based on transfer monitoring procedures, delivery rates, and shutdown procedures.

Spilled crude oil would be contained in the storage area impoundment area.

**D.3.3 Rail Unloading Rack**

At the rail unloading area there is potential for discharge due to operator error or equipment failure. The area is attended during all transfers activities. The rack is equipped with automatic and manual shutdown capability. Emergency shutdown switches are located every 6 unloading stations.

Each rail unloading station is capable of unloading 8.33 barrels per minute of crude. The maximum capacity of all 90 unloading stations is 750 barrels per minute.

The total quantity of crude oil that could be discharged is variable. The worst case discharge is based on the capacity of an entire rail car which is approximately 700 barrels.

Spilled crude oil would flow into the containment collection system which consists of continuous drip pans and collection piping that flows into surge tanks and pumped into aboveground containment tanks that have a minimum capacity of 770 barrels.

**D.3.4 Marine Transfer Pipeline**

A 36-inch transfer pipeline extends approximately 4,600 feet from the storage area marine terminal. A spill could result from a pipeline fracture or leak. The pipeline is constructed of welded

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steel and cathodically protected. Where underground the pipeline includes secondary containment consisting of either double walled pipe or located within casings. It is hydrostatically pressured tested annually in accordance with API standards. The pipeline is equipped with three isolation valves which are closed and locked when transfers are not in progress.

Maximum rate of flow is 36,000 barrels per hour.

Total volume that could be discharged would be variable depending upon the location and nature of the leak or fracture. The volume between the dock valves and first inline valve is approximately 314 barrels. The total capacity of the pipeline is approximately 5,505 barrels.

Direction of flow from a pipeline discharge would be dependent upon the location of the failure. The pipeline alignment is sloped to direct spills and drainage to storm drain inlets designed to separate and retain oil.

### **D.3.5 Rail Unloading Transfer Pipeline**

Three 24-inch transfer pipelines extend approximately 4,500 feet from the rail unloading area to the storage area. A spill could result from a pipeline fracture or leak. The pipeline is constructed of welded steel and cathodically protected. Where underground the pipeline includes secondary containment consisting of either double walled pipe or located within casings. It is hydrostatically pressured tested annually in accordance with API standards. The pipelines is equipped with three isolation valves each which are closed and locked when transfers are not in progress.

Maximum rate of flow is 11,000 barrels per hour.

Total volume that could be discharged would be variable depending upon the location and nature of the leak or fracture. The total capacity of each pipeline is approximately 2,458 barrels.

Direction of flow from a pipeline discharge would be dependent upon the location of the failure. The pipeline alignment is sloped to direct spills and drainage to storm drain inlets designed to separate and retain oil.

### **D.3.6 Marine Terminal**

A discharge may result from operator error and/or hose or piping failure during marine transfers. All marine transfer personnel are trained and qualified to USCG standards. All transfer equipment is visually inspected, a pre-transfer conference is conducted, and a Declaration of Inspection is completed prior to transfer.

Marine transfer equipment is maintained to USCG requirements (33 CFR Part 154, 155, 156). During marine transfer, a Tesoro Terminal Operator is stationed adjacent to the transfer hose header. He maintains radio communication with the vessel and terminal.

It is estimated that less than 100 barrels could be discharged at the dock based upon operating procedures and the close proximity of shutdown valves.

Drip pans are positioned beneath the header and hose connections to contain leaks and drips. In the event of a spill to water, the movement of crude oil which enters the Columbia River would be determined by the prevailing currents and weather. Containment boom and sorbents, which are maintained at the head of the dock would be deployed within one hour.

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**Figure D.2. Facility Spill History**

Date:	
Release Description/Cause/Location:	
Material:	
Quantity (spilled/recovered) in barrels:	
Amount Reaching Navigable Water:	
Effectiveness and Capacity of Secondary Containment:	
Clean-up actions taken:	
Steps taken to reduce possibility or reoccurrence:	
Total oil storage capacity of tank(s) or impoundment(s) from which material discharged:	
Enforcement actions:	
Effectiveness of monitoring equipment (describe):	
Spill detection:	

NOTE: The facility has had no spills or releases to date.

**D.4 POTENTIAL ROUTES OF DISCHARGE**

A spill from the Facility will probably originate in one of three areas. Each has been discussed above.

***Rail Unloading Area Spill***

Terrain directly adjacent to the Rail Unloading Area is flat and generally slopes to the south. Spilled oil within the rail unloading structure would be captured by the containment system and remain on-site.

***Storage Area Spill***

Terrain directly adjacent to the Storage Area is flat and generally slopes to the south. Spilled oil within the Storage Area would be retained within the perimeter secondary containment dike.

***Transfer Pipeline Spill***

A total of 9,100 feet of transfer pipeline alignment exists on site connecting the rail unloading area, storage area, and marine terminal. A rupture of this pipeline where buried would be contained within the casing annular space and receiving vaults at either end. Monitoring is provided to detect any leaks in the below ground portions of the pipeline. A rupture of the pipeline where the pipeline runs above ground would be detected by calibrated flow meters and observations by on-site personnel. A sudden drop of pressure or discrepancy between flow meter data will cause a shutdown of pumping operations and valves will close within 30 seconds. The pipeline alignment is sloped to direct spills and drainage to storm drain inlets designed to separate and retain oil. Oil traps are installed on all drainage inlets and supplemented by downstream water quality vaults that also contain oil/water separating baffles.

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### **Marine Terminal Spill**

Crude oil storage tanks at the Facility are connected to the marine terminal by the 36-inch pipeline. In accordance with EPA and USCG contingency planning requirements, a worst-case scenario must be considered for response planning purposes. While highly unlikely, the required worst-case scenario to consider is the loss of the full contents of the largest tank into the Columbia River. Once oil is in the river, it would be transported downstream at a speed that, on a reasonable basis, varies between 1 and 6 knots. For planning purposes, it will be assumed that the average speed of oil moving downstream on the Columbia River is 2 knots.

#### **D.5 PLANNING DISTANCE CALCULATIONS**

The planning distance method for tidally-influenced navigable waters is based on worst case discharges of persistent and non-persistent oils.

Planning distance calculations are based on the following factors and guidelines in accordance with 40 CFR 112, Attachment C-III, 4.2:

##### **Persistent oils**

Planning distance is 5 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 5 miles, whichever is less, during flood tide.

Tesoro will plan to respond to a spill for distance from 5 miles upstream and downstream to the mouth to the Columbia River.

#### **D.6 DISCHARGE SCENARIOS**

The equipment and manpower to respond to a spill are available from several sources and are listed with the equipment and contractors in **Section 7** and **Appendix B**.

##### **D.6.1 Average Most Probable Discharge/Major Inland Discharge**

###### **Incident**

At Time 0 the Facility is transferring crude oil across the dock to a vessel. The crude oil pumping rate is 36,000 barrels per hour. The Tesoro Operator at the dock observes a leak develop at the flange which connects the transfer hose to the dock. The flange separates and oil is pumped into the water. The Terminal Operator, who is standing by in the control room of the Marine Terminal shuts down the transfer pumps and secures all transfer valves. The Vessel Operator closes the valves on the vessel to minimize continued crude oil loss. The Terminal Operator's estimates based on shutdown time and transfer rates that approximately 100 barrels of crude oil were spilled. For the purpose of a small/average scenario, it is assumed that some of the oil was caught in the catch basin on the dock, but 50 barrels (2,100 gallons) flowed into the Columbia River. For the purpose of a medium (major) spill scenario, it is assumed that 100 barrels (4,200 gallons) flowed into the Columbia River.

###### **Conditions**

**Weather:** Light rain, temperature 57 degrees, winds from the north at 10 knots.

**Water:** Maximum daily current of 2.0 knots with favorable wave conditions for skimming.

**Forecast:** Cloudy, high temperature of 59 degrees, continued winds from the north at 10 to 15 knots with persistent light rain throughout the day.

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### **Immediate Response**

A response to an average/small spill would be much the same as to a medium spill.

The Operator at the Facility Marine Terminal and the Vessel Operator immediately stopped the flow of crude oil from the vessel by shutting down the pump and closing the transfer valves. The Terminal Operator radios the other Facility Operator and Terminal Manager and notifies them of the problem, provides spill assessment information, and requests an on-water response. Initial site characterization will take place to ensure appropriate PPE is used by initial responders either from the vessel or dock crew. The Vessel Operator is directed to spread absorbent pads on areas of the spill on the dock or barge which are not covered by a containment basin to minimize the spill volume which will flow into the Columbia River. Once that task is done, the Vessel Operator is instructed to remain clear of the area and to monitor the vessel to ensure safety of the vessel.

The Facility Manager directs Facility personnel to secure the transfer valves in the tank storage area, and then to drive to the dock to prepare the Facility boat and boom for launching. The Facility Terminal Manager becomes the Facility Incident Commander. He uses the checklist provided in SECTION 2 and FIGURE 3.4 of this plan and notifies the National Response Center, Washington Emergency Management Division, Oregon Emergency Response System, USCG, MSRC, CRCI, and the Vancouver Police and Fire departments at 911. Notification takes approximately 30 minutes.

The Facility and Tesoro operators are familiar with the properties of crude oil and recognize that it presents little danger of fire and a low health risk for clean-up workers or the community. Both Facility/Tesoro operators meet at the Facility boat house within 15 minutes, don appropriate personal protective equipment and use the boat to initiate deployment of 1,000 feet of boom to begin to contain any crude oil which may still be dripping from the dock. At Time = 1 hour, the leading edge of the spill has moved approximately 2 miles downstream.

The Vessel Operator has the free oil on the dock covered with absorbent pads. The used absorbent will be placed in plastic garbage bags and then into 55 gallon drums.

### **Containment and Cleanup**

At Time = .30 hours CRCI arrives on scene. CRCI's focus will be on recovery and shoreline cleanup operations. Additional contractor personnel arrive with two response vessels, 2 Douglas Skimpack 4200 (Derated Capacity of 275 bbls/day each), 2 - 2" portable pumps, an additional 2,000 feet of boom, and 2-2500-gallon storage bladders.

Small boats with Viscous Sweep are deployed by CRCI along the shoreline. Men with small skimmers and booms also are placed along the shoreline in preparation for oil recovery. Vacuum trucks are ordered by CRCI and will arrive on scene within 30 minutes after notification to begin shoreline recovery operations. NRCES resources are used for additional boom, sorbents, drums, and manpower. Equipment will arrive based on the schedules provided in **Section 7**.

Additional Viscous Sweep is deployed to sweep oil from the surface of the water are removed and placed in drums. Sweeping the spill with Viscous Sweep, skimming operations, and adjustments to the containment boom continue until the oil is contained and recovered or evaporated. Spent sorbents, and viscous sweep are disposed of by CRCI after appropriate testing and the recovered oil/water mixture from skimmer and vacuum trucks is returned to the terminal for storage.

### **Wildlife Protection**

The small spill size, volatility of the crude oil, and immediate response prevented wildlife from being impact by the spill. Some shoreline clean-up may be required. Permits will be sought as necessary.

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### **Command and Control**

The Facility Terminal Manager is the Incident Commander and uses CRCI to manage clean-up operations. Planning, Logistics, and Financial Units are not independently activated. Additional Tesoro resources are not required. Tesoro, USCG and Ecology are on-site and set up a Unified Command with all Sections. The Vancouver Police and Fire departments are released from the spill after their initial response to the scene due to the low danger of fire or explosion.

### **Post Spill Review and Reporting**

The Incident Commander convenes a meeting the next day between the Clean Rivers Co-op Manager, USCG Representative, and Ecology Representative to review the cause of the spill and the response. A report is drafted and submitted to the Ecology and USCG.

## **D.6.2 Worst-Case Discharge**

### **Incident**

At midnight on a Friday night before a three-day weekend, an earthquake strikes Vancouver causing TK-001 to spill 360,000 barrels of crude oil, into the Columbia River.

This is a highly unlikely set of circumstances, but there is no other route in which 100 percent of the Worst-Case Discharge (WCD) from the Facility will discharge into the Columbia River. Methods to stop the tank from draining will not be used in this scenario, even though numerous options are available to stop the loss of crude oil from this tank if the event were real.

### **Conditions**

**Weather:** The sky is overcast, the temperature is 60 degrees F, and the winds variable at 10 miles per hour.

**Water:** The average current is 2 knots with wave conditions not favorable for skimming.

**Forecast:** Cloudy with showers. Continued variable winds.

### **Response**

This spill is not discovered for 2 hours until an evening fisherman smells crude oil and sees it floating down the river. He immediately notifies the Vancouver Police Department. The Police Department notifies the Vancouver Fire Department. They discover the source of the crude oil, take immediate action to initiate an area evacuation, and immediately notify the Tesoro Terminal Manager.

The Tesoro Terminal Manager is alerted by the Vancouver Police Department at Time = 3 hours. Once he understands the circumstances, he calls the terminal operators and requests them to go to the terminal to attempt to stop the oil flow. He also makes immediate notification to CRCI and MSRC requesting standby assistance in deploying oil spill equipment downstream of the dock for protection of sensitive areas.

He then notifies the agencies, and responders listed in Incident Commander checklist (**Figure 2.1**). He makes a call to the Facility Qualified Individual requesting activation of the West Coast Away Team. Notification takes approximately 30 minutes.

At Time = 4 hours the Facility Manager arrives at the Facility. The Chief of the Vancouver Fire Department indicates he will be the Incident Commander who is in control of all emergency actions to protect life and property. The Federal On-Scene Coordinator, State On-Scene Coordinator, and Facility Incident Commander will not be allowed to respond as long as there is danger of fire. The USCG is asked to close the river to all traffic and emergency actions are taken

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by the police and fire departments to continue to evacuate a corridor on and near the river as the crude oil drifts downstream.

The Unified Command will be allowed to set protective boom sufficiently ahead of the crude oil to attempt to divert it away from sensitive areas. They will not be allowed to attend the boom beginning 4 hours ahead of when the crude oil is expected to reach the boom site. Facility authorizes CRCI to use the equipment and people listed in **Section 7**, and **Appendix B** of this plan. Boom will be set to protect the sensitive areas identified in **Section 6** of this plan unless the Natural Resource Damage Assessment Team proposes alternative strategies.

The Facility Manager working with CRCI personnel prepare a health and safety plan following the format provided in **Section 5**. A Material Safety Data Sheet for crude oil is available at the Facility office.

CRCI has identified 46 potential boom sites, which will require a total of 57,800 feet of boom. A summary of these sites is included in **Section 6**. Assuming a team of four men using two boats can set 1,000 feet of boom an hour, it can be calculated that it would take 60 team-hours to boom all of the sites. Facility requests that CRCI supply six booming teams using a total of twenty-four 40-hour HAZWOPER-trained responders and 12 small boats. Their goal is to boom all sensitive areas that have not already been impacted. Booming is initiated at Time = 5 hours near the confluence of the Lewis and Columbia Rivers (River Mile 86). The booming teams, under the direction of the CRCI Operations Chief, work their way downstream remaining a minimum of 4 hours ahead of the oil.

The entire team (some will arrive within a couple of hours) will arrive on scene at Time = 8 hours. CRCI is asked to establish a command post at their Portland office or nearer location sufficient to house the West Coast Regional Response Team and additional personnel.

Initial site safety is completed before it is determined that the crude oil spill cleanup can begin.

The Tesoro Supervisor of Contingency Planning has access to NOAA's "ADIOS" computer model that is used to calculate evaporation and dispersion rates of oils spills. Several runs are made with this program at Time + 5 hours based on the following assumptions:

A continuous spill of 360,000 barrels of crude oil over 24 hours (15,000 bbls/hr)

Average current is 2 knots

Wind speed is 10 knots

Water temperature is 60 degrees F

The ADIOS Model will predict the percent evaporation and emulsification of the crude oil. Based on this data responders will determine when it is safe to approach the spill to begin skimming oil. This assumption will be tested using flammable gas and benzene meters when actually approaching the crude oil.

CRCI and MSRC will be directed by Tesoro to transport equipment and personnel by truck to St. Helens, Oregon where it should be safe to begin recovery operations. A convenient recovery site will be selected near the boat ramp at St Helens, preferably upstream of the island located at River Mile 86. The ADIOS Model will provide an estimate of volume of oil and oily water that will be available for recovery. Initially skimmed oil will be contained in tankage available from CRCI and co-op members (**Appendix B**). Tesoro Marine Department will charter in any additional on-water tankage. Tesoro would arrange to have up to 20,000 barrels of combined storage available to designated staging and/or deployment areas.

An overflight is made at Time = 6 hours (at first light) to determine the extent of the crude oil distribution. Booming operations will be directed based on frequent aerial observations.

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The booming and skimming operations are successful and the weathered crude oil is recovered as it approaches St. Helens. Shoreline impacts have traveled approximately 30 miles downstream from the facility. Recovered oil is recycled for fuel, as described in **Section 7** of this plan. Oil does not escape downstream.

A shoreline damage assessment is made after Tank TK-001 is empty at Time = 24 hours. Injured wildlife are recovered and treated under the direction of the National Marine Fisheries Service and the Washington Department of Wildlife. Permission for access and permits are obtained and the shoreline is cleaned as appropriate.

Treatment will probably include oily debris collection and cold water flushing. Oily debris will be returned to the Facility as discussed in **Section 7** for temporary storage, testing, recycling, and disposal.

A post-spill meeting is held with Savage, Tesoro, CRCI, USCG, EPA, Ecology, and other interested agencies and response contractors. A final report is written by the Certificate Holder and submitted to the agencies.

**D.7 RESPONSE PLANNING STANDARD CALCULATIONS**

**D.7.1 Washington Department of Ecology Worst-Case Discharge**

Ecology requires that the facility plan for the WCD, which is defined as the capacity of the largest above ground storage tank, complicated by adverse weather. Tank 0300-TK-001 may store up to 360,000 barrels of crude oil. Ecology regulations require that it must be assumed that 100 percent of this volume reaches the Columbia River.

The largest vessel for the Tesoro Vancouver Terminal is 900 feet long. Therefore, the terminal must have capability to initiate the deployment of four times the largest vessel (4x900=3,600 feet) or 2,000 feet of boom, whichever is less, within 3 hours. Tesoro has access to 7,000 feet of boom and a boat stored at the vessel dock, which can be deployed by the three Terminal Operators within the mandated time frame.

Ecology planning milestones include

- 2 hours 1,000 feet of boom
- 3 hours 2,000 feet of boom
- 6 hours 6,000 feet of additional boom
  - 12,000 bbls/day derated recovery capacity
  - 1 x Effective daily recovery capacity (12,000 barrels storage)
- 12-hours 20,000 feet of additional boom
  - 36,000 bbls/day derated recovery capacity
  - 1.5 x Effective daily recovery capacity (54,000 barrels storage)
- 24-hours 20,000 feet of additional boom
  - 48,000 bbls/day derated recovery capacity
  - 2 x Effective daily recovery capacity (96,000 barrels storage)
- 48-hours Additional boom as necessary
  - 60,000 bbls/day derated recovery capacity
  - Additional storage as necessary

**D.7.2 USCG Planning Standards**

When calculating the WCD for the portion of a facility under USCG jurisdiction (i.e., from the dock to the first valves inside secondary containment), the facility must assume that all dock pipelines that could be in service simultaneously are in service and are pumping at their maximum rates.

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They must also assume that all lines, in service or not, are severed at the same time and that once the pipelines are shut down and isolated, the entire contents of each line drains out into the water.

The scenario that would result in the largest WCD volume involves vessel loading of crude oil from the Facility Marine Terminal. In this case the assumptions are as follows.

Maximum Pumping rate = 36,000 barrels per hour  
 Draindown volume = 314 barrels  
 5 minutes for detection, transfer shutdown, and onshore valve closure

Therefore the **WCD** is:

$$36,000 \text{ bph} \times 1\text{hr}/60\text{min} \times 5\text{min} + 314 \text{ bbls line vol.} = \mathbf{3314 \text{ bbls}}$$

The **WCD inland on-water planning volume** (Group 1 through 4 oil) is:

$$3,314 \text{ bbls} \times 1.0 \text{ (emulsification)} \times 0.2 \text{ (removal)} = \mathbf{663 \text{ bbls}}$$

Planning volume calculations are provided in Figure D.3.

**Figure D.3. USCG Planning Volume Calculations**

Calculation	Groups 2 – 4 Oil (Persistent)	
<b>Areas Impacted:</b> Nearshore and Inland		
<b>Pipeline Contents:</b>	Crude Oil (Group II, III, & IV)	
<b>Total Pumping Rate:</b> (bbl/hr)	36,000	
<b>Total Pumping Loss:</b> (L = Pumping rate x 5 min.) (bbl/hr)	3000	
<b>Total Static Pipe Volume:</b> (V = Pipe volume between dock and 1 <sup>st</sup> non-MTR valve) (bbl)	314	
<b>Adjustment Factor:</b> (AF)	1.0	
<b>Worst Case Discharge:</b> (WCD = V x AF + L) (bbl)	3314	
<b>Average Most Probable:</b> (AMP = Lesser of 1% WCD or 50 bbl) (bbl)	50	
<b>Maximum Most Probable Discharge:</b> (MMP = Lesser of 10% WCD or 1,200 bbl) (bbl)	331 bbls	
<b>On-Water Recovery Factor (OWRF)</b>	0.2	
<b>On-Shore Recovery Volume (OSRF)</b>	0.1	
<b>Emulsification Factor (EF)</b>	1.0	
<b>On-Water Clean-Up Planning Volume (OWRV = WCD x OWRF x EF) (bbl/day)</b>	663	
<b>Shoreline Clean-Up Planning Volume (OSRV = WCD x OSRF x EF) (bbl/day)</b>	331	
<b>On-Water Recovery Capacity (OWRC = OSRV x Resource Mobilization Factor) (bbl/day)</b>	Tier 1	235 x 0.15 = 35
	Tier 2	235 x 0.25 = 59
	Tier 3	235 x 0.40 = 94
<b>On-water Recovery Response Caps (OWRRC) (bbl/day)</b>	Tier 1	10,000
	Tier 2	20,000
	Tier 3	40,000
<b>Amount needed to be identified, but not contracted for (OWRC – OWRRC) (bbl/day)</b>	Tier 1	< 0
	Tier 2	< 0
	Tier 3	< 0

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### D.7.3 EPA Planning Standards

The EPA worst-case discharge standard is 100% of the volume of the largest tank at the facility. The EPA planning standard for Tank TK-001 is 360,000 bbls of crude oil, which is Persistent Oil.<sup>1</sup> Based on OPA 90 criteria, response equipment must be available assuming the following:

- 80 percent of the worst case volume naturally disperses
- 20 percent of the worst case volume remains floating
- 10 percent of the worst case volume impacts the shoreline

Based on these assumptions, the following volumes are used to calculate the initial planning standards:

- On-water recovery (360,000 bbls) (0.20) = 72,000 bbls
- Shoreline recovery (360,000 bbls) (0.10) = 36,000 bbls.

The initial EPA planning standards for this terminal can then be modified by using the following EPA calculation factors:

- Emulsification Factor: 1.0
- Tier 1 Factor: 0.15 (Response resources to arrive in 12 hrs.)
- Tier 2 Factor: 0.25 (Response resources to arrive in 36 hrs.)
- Tier 3 Factor: 0.40 (Response resources to arrive in 60 hrs.)

Using these factors the final calculations to determine oil recovery rates become:

- Tier 1: (72,000) (1.0) (0.15) = 10,800 bbls/day
- Tier 2: (72,000) (1.0) (0.25) = 18,000 bbls/day
- Tier 3: (72,000) (1.0) (0.40) = 289,800 bbls/day
- Shoreline: (36,000) (1.0) = 36,000 bbls/day.

## D.8 OFF-SITE CONSEQUENCES/RESOURCES AT RISK

### D.8.1 Oil Movement

Oil moves across the surface of the water as a result of wind and current; therefore, it is important to have knowledge of tides, currents, prevailing winds, and other factors, which will permit the prediction of how and where a slick will move.

### D.8.2 Site Conditions

The Facility and Dock are situated in the Port of Vancouver.

The Marine Terminal is located adjacent to the Columbia River.

The lower Columbia River currents will be a determining factor in oil movement.

The area surrounding the facility is highly industrial and densely populated. A plot plan of the facility is shown in **Figure 1.5**. Response maps which cover the area may be found in the Northwest ACP.

<sup>1</sup> The shell capacity of approximately 380,000 barrels each; however, the maximum amount of product stored in each tank will be approximately 360,000 barrels, to take into account the presence of the internal floating roof and the additional headspace required to allow product movement in the event of seismic conditions.

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### D.8.3 Climatic Conditions

The prevailing climatic conditions at the time of a spill can influence a variety of response factors and should be quantified to the extent practical and as soon as possible following the discovery of a spill. In general the climatic conditions in the Vancouver area include:

Typically mild temperatures and prevailing summer northwesterly winds and winter southwesterly winds.

Seasonal rains occur during the fall and winter months (October – March), with the summer months being considerably drier.

Local wind speed and direction information can generally be obtained by calling the National Weather Service (**Figure 3.3**) or by using a wind sock or portable anemometer.

If access to these sources is not available, grass or fine sediments can be thrown into the air to estimate wind direction, but wind speed estimates are typically very qualitative.

The key climatic conditions and the response factors that may be affected are:

**Wind speed and direction** – Evacuation, vapor plume dispersions, worker safety, techniques effectiveness, aircraft safety, and others.

**Visibility** – Spill surveillance, worker safety, site security, and aircraft safety.

**Temperature** – Spill volatility, worker productivity and safety, equipment effectiveness, and others.

Visibility is determined by visual estimates concerning both the horizontal and vertical distances within which objects are clearly visible. The vertical visibility, or ceiling, is typically limited by low cloud cover or overcast conditions, but can also be dramatically reduced by heavy fog. Lateral visibility is influenced by fog or heavy rain. In general, normal aircraft operations are restricted to ceilings greater than 500 feet and horizontal visibility in excess of 0.5 mile.

Temperature can be determined using an outdoor thermometer or by calling the weather service or airport. The phone number for the National Weather Service is provided in **Figure 3.3**. Only temperatures below freezing or above 80 to 90 degrees are of concern to oil spill response operations. Temperatures above or below that range can adversely affect productivity and the health and safety of response personnel.

Both the Lower Columbia and Willamette Rivers are tidally influenced. The rise and fall of these tides can create a tidal current, which can create a reversal in the downstream current during low river flow conditions.

A detailed discussion of Lower Columbia River hydrography is provided in **Section 6**.

### D.8.4 Geographic Boundaries

The location where oil may be expected to impact during the first day of a spill from the Facility are developed based on:

Past experience with oil spills in the Lower Columbia River.

An average flow rate of 2 knots.

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### D.8.5 Trajectory Analysis

Oil slicks move as a result of wind and water currents. For the terminal, river flow, tidal currents, and winds are all contributing factors, with river current or flow rate as the predominant factor.

#### **Assumptions**

1. Oil moves with the wind at approximately 3 to 4 percent of the wind velocity.
2. When wind velocity is low or wind is absent, oil will tend to move in the same direction as the current at about the same velocity.
3. When the wind is present, oil movement is affected by both water and wind currents.
4. When the wind direction is opposite to the current, the wind may reduce or possibly reverse the oil slick velocity at the surface.

Due to the complex currents of the Lower Columbia River and the many variables involved, it is difficult to accurately predict direction and speed of an oil slick before a spill occurs. This plan addresses response to spills within these geographic boundaries. Booming strategies have been developed for different wind and/or tidal current directions (**Section 6**). These booming strategies identify priorities and lengths of boom required. Additional boom is available if needed.

Although a computer model may be used to estimate oil spill movements, aerial surveillance provides the most effective means of determining spill size, location, and movement.

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Docket No. EF131590



Appendix E  
Cross Reference/OPA 90 Requirements

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**APPENDIX E  
CROSS REFERENCE/OPA 90 REQUIREMENTS**

**Figure E.1. Cross Reference to Ecology Plan Requirements  
(per WAC Cross Reference — 173-182 WAC)**

**This table to be updated after all information has been added to the document and a full cross reference can be completed.**

Item	Section/Figure
<b>SECTION A – General Planning, Information, and Timing</b>	
<b>Plan Maintenance and Reporting Obligations (WAC 173-182-140, 142, 145, 150)</b>	
Plan maintenance and update procedures: 173-182-140. Annual review – review the entire plan for accuracy and either: (1) Update and distribute amended pages to ecology, or (2) Send letter confirming existing plan is accurate	Section 1.3
173-182-142. Notify Ecology of significant changes	Section 1.3
173-182-145. Plan implementation procedures	Section 1.1 & 1.3
173-182-150. Post spill review and documentation: Conduct post spill review procedures to confirm effectiveness of plan and make plan improvements	Section 8.0
<b>SECTION B – Contingency Plan Format and Content</b>	
<b>Contingency Plan Format Requirements (WAC 173-182-210)</b>	
(1). Formatted for maximum usefulness during a spill (includes job aids, diagrams, checklists)	Addressed
(2). Formatted with tabbed chapters, sections and annexes/appendices. Includes detailed TOC based on chapter, section, annex and titles, tables and figures.	Addressed
(3). Format allows replacement of revised pages.	Addressed
<b>Binding Agreement Statement (WAC 173-182-220)</b>	
Signed by plan holder, and owner or operator or designee with authority to bind the owners and operators of the facilities or vessels covered by the plan. Name, address, phone number, email and website of submitting party. Verification of commitment to immediate response to spills. Commit to having an Incident Commander in the state within 6 hours after notification of a spill. Commit to implementation and use of plan during a spill and substantial threat of a spill, and to training of personnel to implement plan. Verify authority and capability of plan holder to make necessary and appropriate expenditures to implement plan provisions. Commit to working in unified command within the incident command system to ensure that all personnel and equipment resources necessary to the response will be called out to clean up the spill safely and to the maximum extent practicable.	Preface
<b>Contingency Plan Content (WAC 173-182-230)</b>	
(2). Plan refers to and is consistent with the NWACP.	Addressed
(3)(a). States federal and state requirements intended to be met by plan.	Section 1.2
(3)(b). Plan states size of worst-case spill. (i). For transmission pipelines – more than one worst case spill volume for different line sections may be submitted. (ii). For vessel umbrella plans that enroll both tank vessels and nontank covered vessels and that rely on supplemental resources for approval, the worst case discharge volume and product type for both tank and nontank covered vessels for each port covered by the contingency plan for each port of operation may be submitted to ecology (if operations of enrolled vessels differ by port). (iii). For multiple facilities using a single plan, separate worst case spill volumes are required for each facility.	Section 1.1
(3)(c). Revision Log to record revisions and updates (identify section amended, date of amendment, verification that ecology notified, authorized person making change). A description of the amendment and its purpose shall also be included in the log sheet, or filed as an amendment letter to be inserted in the plan immediately after the log sheet.	Page vi
(3)(d). Cross reference table reflecting locations in the plan of each component required.	Figure E.1

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Item	Section/Figure
(3)(e). Name, phone number, address, 24 hour contact number of PRC.	Appendix B
(i). Contract or letter summarizing terms of contract signed by the PRC.	Figure B.2
(ii). If contract not submitted make available for inspection upon request.	N/A
(iii). Copy of mutual aid agreements and description of terms of that document.	Appendix B
(iv). Specify in writing if plan holder relies on a PRC or other contractor to staff ICS positions for spill management team.	N/A
(v). If the entire contract for additional spill management team support is not included in the plan, that document shall be made available for inspection if requested.	N/A
(3)(f). Procedures to track and account for the entire volume of oil recovered and oily wastes generated and disposed of during spills. The responsible party must provide these records to Ecology upon request.	Sections 5.7 & 5.9
(4). Facility plan content:	
(a). Facility name, location, address	Figure 1.4
(b). Starting date of operations.	Figure 1.4
(c). Description of operations covered by plan.	
(i). List oil handling operations that occur at the facility	Figure 1.4
(ii). Inventory all tanks and list the tank capacity	Figure 1.3
(iii). All oil(s) or product(s) handled by name and include: density, gravity, API, oil group number, and sulfur content (sweet/sour).	
(iv). Written description and map indicating site topography, stormwater and other drainage systems, mooring areas, pipelines, tanks, and other oil processing, storage, and transfer sites and operations. (CB, need figure with topo)	Figures 1.5, 1.6, & 1.7
(v). Describe geographic area that could be impacted from a spill at the location based on a 48-hour worst-case spill trajectory analysis.	Section 1.5
(5) For vessel plans	N/A
(6). Plans covering multiple vessels with different owners shall also include:	N/A
(7). Umbrella plans shall list the name of the entities that provide supplemental equipment.	Appendix B
(8). Plan provides concise procedures to establish a process to manage oil spill liability claims of damages to persons or property, public or private, for which a responsible party may be liable.	Section 5.2
<b>Requirements for vessel umbrella plans maintaining additional agreements for supplemental resources (WAC 173-182-232)</b>	N/A
<b>Field Document (WAC 173-182-240)</b>	
(1). Field document listing time critical information for the initial emergency phase of the spill and a substantial threat of a spill. The owner or operator of the covered vessel or facility shall make the field document available to personnel who participate in oil handling operations and shall keep the field document in key locations at facilities, docks, on vessels and in the plan. The locations where field documents are kept must be listed in the plan, provided that plan holders covering multiple persons shall not be subject to enforcement if the owner or operator of an enrolled vessel fails to keep the field documents in the location specified in the plan. Plans covering multiple persons shall include procedures to ensure each vessel covered by the plan is provided the field document prior to entering Washington waters. This can include by electronic means.	Sections 1 to 3
(2). At a minimum, the field document shall contain:	
(a). A list of the procedures to detect, assess and document the presence and size of a spill.	Section 2
(b). Spill notification procedures and a call out list that meets the requirements in WAC <a href="#">173-182-260</a> and <a href="#">173-182-262</a> or <a href="#">173-182-264</a> as applicable; and	Section 3
(c). A checklist that identifies significant steps used to respond to a spill, listed in a logical progression of response activities.	Figure 2.3
<b>Additional requirements for vessel plan holders with access to the emergency response system at Neah Bay (WAC 173-182-242)</b>	N/A
<b>Initial Response Actions (WAC 173-182-250)</b>	
(1). Initial Spill Action Forms shall be included in the plan and used to document their initial spill actions.	Figure 5.1
(2). Describe equipment to be used to conduct initial spill assessment - including equipment effective in darkness and low visibility (e.g., visual methods, tracking buoys, trajectory modeling, aerial overflights, thermal and infrared)	Section 2.4
(3). Safety Assessment (including initial air monitoring) for all types of spills, including spills to groundwater	Section 5

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Item	Section/Figure
(4). Procedures to confirm the occurrence and estimate the quantity and nature of the spill, including updated reports if the initially reported quantity or the area extent of the contamination changes significantly.	Section 2.5
<b>Notification and call-out procedures (WAC 173-182-260)</b>	
(1). Procedures to immediately notify appropriate parties <ul style="list-style-type: none"> <li>Identify central reporting office or individuals responsible for implementing the notification procedure</li> </ul>	Section 3
(2). List name and phone numbers of required notifications to government agencies, response contractors, spill management team members (internal call down information need not be included but should be available for review)	
(3). Identify clear order of priority for immediate notification.	
<b>Vessel notification requirements for a discharge or substantial threat of a discharge (WAC 173-182-262)</b>	N/A
<b>Notification requirements for facility spills to ground or containment that threaten waters of the state (WAC 173-182-264)</b>	
(1). Facility plans shall contain procedures for notifications for spills to ground and to permeable secondary containment that threaten to impact waters of the state.	Figure 3.4
(2). Plan holders must also include procedures in their plan to address spills of an unknown volume.	Section 6.8
<b>Maintenance records for response equipment (WAC 173-182-270)</b>	
(1). Response equipment maintained in a state of readiness and in accordance with manufacturer specifications	Section 7 & Appendix G
(2). Schedules, methods, and procedures for equipment maintenance. (maintenance records for at least 5 years available upon request)	
<b>Spill Management Teams (WAC 173-182-280)</b>	
(1). Personnel available to manage oil spill (including contract personnel)	Figure 4.2
(a). An organizational diagram depicting the chain of command for the spill management team for a worst case spill.	Figure 4.3
(b). For the purpose of ensuring depth of the spill management team, an organization list of one primary and one alternate person to lead each ICS spill management position down to the section chief and command staff level as depicted in the NWACP standard ICS organizational chart (made available to ecology upon request). If a response contractor is used to fill positions, they must agree in writing to staff the positions. The capacity and depth of spill management teams will be evaluated in drills and spills.	Figure 4.2
(c). A job description for each spill management position (if consistent with NWACP may reference)	Figure 4.4
(d). A detailed description of the planning process which will be used to manage a spill (if consistent with NWACP may reference)	Section 4
(2). Type and frequency of training for each position. Training program to include at a minimum ICS, NWACP policies, use and location of GRPs, contents of plan, worker health and safety. Training program also to include participation in announced and unannounced exercises, and participation should approximate the actual roles and responsibilities of the individual specified in the plan. New employees shall complete the training program prior to being assigned job responsibilities which require participation in emergency response situations.	Section 4.7
(3). The plan shall identify a primary and alternate incident commander's representative that can form unified command at the initial command post, and if located out-of-state, a primary and alternate incident commander that could arrive at the initial command post within six hours. The plan shall include estimated time frames for arrival of the remainder of the spill management team to the spill site, or at the incident command post as appropriate.	Figure 4.2
(4). The plan shall list a process for orderly transitions of initial response staff to incoming local, regional or away team personnel, including transitions between shift changes.	Section 4.3
(5). Covered vessel umbrella plans	N/A
<b>SECTION C – Planning Standards</b>	
<b>Planning Standards (WAC 173-182-310)</b>	
(1). Ecology shall apply planning standard when determining ability of plan holder to meet regulations (to be verified at drills/spills). In an actual spill event, initial deployment shall be guided by safety considerations. RP must address entire volume of actual spill regardless of planning standards.	
(2). Planning standards do not constitute cleanup standards.	

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Item	Section/Figure
<b>Vancouver Planning Standard (WAC 173-182-420)</b> See WAC 173-182-420 for boom assessment, minimum oil recovery rate, and storage planning standards for covered vessel and facility plan holders that transit or operate on the Columbia River between statute mile 99 and 107.	Section 7.1.8
<b>Washington Coast Planning Standard (WAC 173-182-450)</b> Capable of sustaining a worst case spill response and shall develop an addendum specific to Washington's coast, including: (1). Capability, if applicable, for in situ burning, dispersant use, and mechanical recovery (2). Surveillance equipment (including fixed wing helicopters and low visibility equipment) to provide for aerial assessment of spill within 6 hours of spill awareness (3). Time frames and mechanisms to cascade in equipment and other resources for up to 72 hours (4). 10,000 feet of boom appropriate for shoreline protection, containment and/or ten thousand feet of open water boom for enhanced skimming, containment or other use to arrive within twelve hours (5). 20,000 feet of boom appropriate for containment, protection or recovery to arrive within twenty four hours	Section 2.4.1 & 7.1.8
<b>SECTION D – Response and Protection Strategies for Sensitive Areas</b>	
<b>Requirements for response and protections strategies (WAC 173-182-510)</b>	
(1). Methods to track and contain spilled oil and enhance recovery and removal operations described in the plan	Section 2.4
(2). Describe how environmental protection will be achieved: (a). Protection of sensitive shoreline and island habitat by diverting or blocking oil movement (b). Description of sensitive areas and strategies to protect resources (including info on natural resources, coastal and aquatic habitat types and sensitivity by season, breeding sites, presence of state or federally endangered or threatened species, commercial and recreational species, geographic features, isolation areas beach types, geological characteristics (c). Identify public resources (public beaches, water intakes, drinking water supplies, marinas) (d). Identify shellfish resources and methods to protect (e). Identify significant economic resources to be protected in area covered by plan (f). For facilities with potential to impact "sole source" aquifer/public drinking water supply identify type of substrate and geologic extent of sensitive sites	Section 6 & Appendix F
(3). Refer to NWACP for GRP's developed to meet requirements. If approved GRP's do not exist in the NWACP, work with ecology to determine alternative sensitive areas to protect.	Section 6.7
(4). Identify potential initial command post locations	Section 4.4
<b>Planning standards for shoreline cleanup (WAC 173-182-520)</b> Identify and ensure availability of response resources necessary to perform shoreline cleanup operations.	Appendix F
<b>Covered vessel planning standards for shoreline cleanup (WAC 173-182-522)</b>	N/A
<b>Planning standards for ground water spills (WAC 173-182-530)</b>	
(1). Describe methods used to immediately assess ground water spills.	Section 6.8.4
(2). Contact information for resources typically used to investigate, contain, and remediate/recover spills to ground water.	Section 7.9
<b>Planning standards for wildlife rescue and rehabilitation (WAC 173-182-540)</b> Identify applicable federal, state, and NWACP requirements for wildlife rescue and rehabilitation, and describe equipment, personnel, resource and strategies for compliance with the requirements. Resources are capable of arriving on scene within 24 hours of spill awareness.	Section 6.6

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**Figure E.2. EPA OPA 90 Cross Reference**

<b>EPA OPA 90 REQUIREMENTS (40 CFR 112)</b>		<b>LOCATION IN THIS PLAN</b>
Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
1.0	Response Plan Cover Sheet (EPA Sec. 2.0)	Figure 1.4
	a. General Information (Sec. 2.1)	Figure 1.4
	b. Applicability of Substantial Harm Criteria (Sec. 2.2)	Figure 1.4
	c. Certification (Sec. 2.3)	Figure 1.4
2.0	Emergency Response Action Plan (ERAP) (Sec. 1.1)	
	a. Qualified Individual (QI) Information (Sec. 1.2)	Figure 3.1, Section 4.6
	b. Emergency Notification List (Sec. 1.3.1)	Figure 3.1, Figure 3.3, Figure 3.4
	c. Spill Response Notification Form (Sec. 1.3.1)	Figure 3.2
	d. Response Equipment List and Location (Sec. 1.3.2)	Section 7
	e. Response Equipment Testing and Deployment (Sec. 1.3.4)	Section 7
	f. Facility Response Team List (Sec. 1.3.4)	Section 4
	g. Evacuation Plan (Sec. 1.3.5)	Figures 2.1 - 2.2
	h. Immediate Actions (Sec. 1.7.1)	Figure 2.7
	i. Facility Diagrams (Sec. 1.9)	Figures 1.6 - 1.7
*The sections above should be extracted from the more detailed corresponding sections of the plan.		
3.0	Facility Information (Sec. 1.2)	Figure 1.4
	a. Facility name (Sec. 1.2.1)	Figure 1.4
	b. Street address	Figure 1.4
	c. City, State, Zip	Figure 1.4
	d. County	Figure 1.4
	e. Phone number	Figure 1.4
	f. Latitude/Longitude (Sec. 1.2.2)	Figure 1.4
	g. Wellhead protection area (Sec. 1.2.3)	Figure 1.4
	h. Owner/operator (both names included, if different) (Sec. 1.2.4)	Figure 1.4
	i. QI Information (Sec. 1.2.5) (Name, position, street address, phone numbers)	Figure 1.4

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**Figure E.2. EPA OPA 90 Cross Reference (continued)**

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
j.	Description of specific response training experience	Figure 1.4, Section 4.6, Appendix A.2
k.	Oil storage start-up date (Sec. 1.2.6)	Figure 1.3
l.	Facility operations description (Sec. 1.2.7)	Figure 1.3
m.	Standard Industrial Classification code	Figure 1.3
n.	Dates and types of substantial expansion (Sec. 1.2.8)	Figure 1.3
4.0	Emergency Response Information (Sec. 1.3)	
	Notification (Sec. 1.3.1)	Figure 3.3, Section 3
a.	Emergency Notification Phone list	Figure 3.3, Section 3
1.	National Response Center phone number	Figure 3.3, Section 3
2.	QI (day and evening) phone numbers	Figure 3.3, Section 3
3.	Company response team (day and evening) phone numbers	Figure 3.3, Section 3
4.	Federal On-Scene Coordinator (OSC) and/or Regional response center (day and evening) phone numbers	Figure 3.3, Section 3
5.	Local response team phone numbers (Fire Department/Cooperatives)	Figure 3.3, Section 3
6.	Fire marshal (day and evening) phone numbers	Figure 3.3, Section 3
7.	SERC (day and evening) phone numbers	Figure 3.3, Section 3
8.	State police phone number	Figure 3.3, Section 3
9.	LEPC phone number	Figure 3.3, Section 3
10.	Wastewater treatment facility (s) name and phone number (recommended)	Figure 3.3, Section 3
11.	Local water supply system (day and evening) phone numbers	Figure 3.3, Section 3
12.	Weather report phone number	Figure 3.3, Section 3
13.	Local TV/radio phone number(s) for evacuation notification	Figure 3.3, Section 3
14.	Hospital phone number	Figure 3.3, Section 3
b.	Spill Response Notification Form	Figures 3.2 - 3.3

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
5.0	Response Equipment List (Sec. 1.3.2)	
a.	Skimmer Pumps	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type, Model, and Year	Section 7, Appendix B
3.	Number	Section 7, Appendix B
4.	Capacity	Section 7, Appendix B
5.	Daily Effective Recovery Rate	Section 7, Appendix B
6.	Storage Location(s)	Section 7, Appendix B
7.	Date Fuel Last Changed	Section 7, Appendix B
b.	Boom	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type, Model, and Year	Section 7, Appendix B
3.	Number	Section 7, Appendix B
4.	Size (length)	Section 7, Appendix B
5.	Containment Area	Section 7, Appendix B
6.	Storage Location	Section 7, Appendix B
c.	Chemicals Stored	Section 7, Appendix B
1.	Date Authorized	Section 7, Appendix B
d.	Dispersant Dispensing Equipment	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type and Year	Section 7, Appendix B
3.	Capacity	Section 7, Appendix B
4.	Storage Location	Section 7, Appendix B
5.	Response Time	Section 7, Appendix B
e.	Sorbents	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B

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**Figure E.2. EPA OPA 90 Cross Reference (continued)**

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
2.	Type and Year Purchased	Section 7, Appendix B
3.	Amount	Section 7, Appendix B
4.	Absorption Capacity	Section 7, Appendix B
5.	Storage Location(s)	Section 7, Appendix B
f.	Hand Tools	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type and Year	Section 7, Appendix B
3.	Quantity	Section 7, Appendix B
4.	Storage Location	Section 7, Appendix B
g.	Communication Equipment	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type and Year	Section 7, Appendix B
3.	Quantity	Section 7, Appendix B
4.	Storage Location/Number	Section 7, Appendix B
h.	Fire Fighting and Personnel Protective Equipment	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type and Year	Section 7, Appendix B
3.	Quantity	Section 7, Appendix B
4.	Storage Location	Section 7, Appendix B
i.	Other (e.g. Heavy Equipment, Boats, and Motors)	Section 7, Appendix B
1.	Operational Status	Section 7, Appendix B
2.	Type and Year	Section 7, Appendix B
3.	Quantity	Section 7, Appendix B
4.	Storage Location	Section 7, Appendix B
6.0	Response Equipment Testing and Deployment Drill Log (Sec. 1.3.3)	
a.	Date of Last Inspection or Equipment Test	Section 7, Appendix B

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<b>EPA OPA 90 REQUIREMENTS (40 CFR 112)</b>		<b>LOCATION IN THIS PLAN</b>
Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
b.	Inspection Frequency	Section 7, Appendix B
c.	Date of Last Deployment Drill	Section 7, Appendix B
d.	Deployment Frequency	Section 7, Appendix B
e.	OSRO Certification	Section 7, Appendix B
7.0	Personnel (Sec. 1.3.4)	
a.	Emergency Response Personnel Information	Section 4
1.	Name	Figures 3.3 & 4.2
2.	Phone numbers	Figures 3.3 & 4.2, Section 4
3.	Response time	Section 4
4.	Responsibility	Figure 4.4
5.	Type and date of response training	Appendix A
b.	Emergency Response Contractor Information	
1.	Name	Appendix B
2.	Phone numbers	Appendix B
3.	Response time	Appendix B
4.	Evidence of contractual agreement	Appendix B
c.	Facility Response Team Information	Section 4
1.	Job title/position of emergency response personnel	Figure 4.2, Section 4
1.1	Response Time	Figure 4.2, Section 4
1.2	Phone/pager	Figure 4.2, Section 4
2.	Name of emergency response contractor (Contractors providing facility response team services may be different than contractors providing oil spill response services)	N/A
2.1.	Response time	N/A
2.2	Phone/pager	N/A
8.0	Evacuation Plan (Sec. 1.3.5)	Figures 2.1 – 2.2
a.	Facility Evacuation Plan (Sec. 1.3.5.1)	Figure 2.2

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
1.	Location of stored materials	Figure 2.1
2.	Hazard imposed by spilled materials	Figure 2.1
3.	Spill flow direction	Figure 2.1
4.	Prevailing wind directions and speed	Figure 2.1
5.	Water currents, tides, or wave conditions (if applicable)	Figure 2.1
6.	Arrival route of emergency response personnel and response equipment	Figure 2.1
7.	Evacuation routes	Figures 2.1 – 2.2
8.	Alternative routes of evacuation	Figures 2.1 – 2.2
9.	Transportation of injured personnel to nearest emergency medical facility	Figure 2.1
10.	Location of alarm/notification systems	Figure 2.1
11.	Centralized check-in area for roll call	Figure 2.1
12.	Mitigation command center location	Figure 2.1
13.	Location of shelter at facility	Figures 2.1 – 2.2
b.	Community Evacuation Plans referenced (Sec. 1.3.5.3)	Figure 2.1
9.0	Description of Qualified Individual 's Duties (Sec. 1.3.5)	Section 4.6
a.	Activate internal alarms and hazard communication systems	Section 4.6
b.	Notify response personnel	Section 4.6
c.	Identify character, exact source, amount, and extent of the release	Section 4.6
d.	Notify and provide information to appropriate Federal, State and Local authorities	Section 4.6
e.	Assess interaction of spilled substance with water and/or other substances stored at facility and notify on-scene response personnel of assessment	Section 4.6
f.	Assess possible hazards to human health and the environment	Section 4.6
g.	Assess and implement prompt removal actions	Section 4.6
h.	Coordinate rescue and response actions	Section 4.6
i.	Access company funding to initiate cleanup activities	Section 4.6

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EPA OPA 90 REQUIREMENTS (40 CFR 112)		LOCATION IN THIS PLAN
Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
j.	Direct cleanup activities	Section 4.6
10.0	Hazard Evaluation (Sec. 1.4)	Appendix D
a.	Hazard Identification (Sec. 1.4.1)	Appendix D
1.	Tank and Surface Impoundment Forms	Figure C.3
1.1	Tanks	Figure C.3
a.	Tanks Number(s)	Figure C.3
b.	Substance(s) Stored	Figure C.3
c.	Quantity(s) Stored	Figure C.3
d.	Tank Type(s)/Year(s)	Figure C.3
e.	Maximum Capacity(s)	Figure C.3
f.	Failure(s)/Cause(s)	Figure C.3
1.2	Surface Impoundments (SI)	N/A
a.	SI Number(s)	N/A
b.	Substance(s) Stored	N/A
c.	Quantity(s) Stored	N/A
d.	Surface Area(s)/Year(s)	N/A
e.	Maximum Capacity(s)	N/A
f.	Failure(s)/Cause(s)	N/A
2.	Labeled schematic drawing	Figures 1.6 & and C.4
3.	Description of transfers (loading and unloading) and volume of material	Section C.3, Section D.3
4.	Description of daily operations	Figure 1.3, Section C.2, Section D.3
5.	Secondary containment volume	Section C.2
6.	Normal daily throughput of the facility	Figure 1.4
11.0	Vulnerability Analysis (Sec. 1.4.2) (see Appendix A - Calculation of the Planning Distance)	Section 6.4
a.	Analysis of potential effects of an oil spill on vulnerable areas	Section 6.4

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
1.	Water Intake	Section 6.4
2.	Schools	Section 6.4
3.	Medical facilities	Section 6.4
4.	Residential areas	Section 6.4
5.	Businesses	Section 6.4
6.	Wetlands or other sensitive environments	Section 6.4
7.	Fish and wildlife	Section 6.4
8.	Lake and streams	Section 6.4
9.	Endangered flora and fauna	Section 6.4
10.	Recreational areas	Section 6.4
11.	Transportation routes (air, land, and water)	Section 6.4
12.	Utilities	Section 6.4
13.	Other applicable areas	Section 6.4
12.0	Analysis of the Potential for an Oil Spill (Sec. 1.4.3)	Appendix D.2
1.	Description of likelihood of release occurring	Appendix D.2
a.	Oil spill history for the life of the facility	Appendix D.2
b.	Horizontal range of potential spill	Appendix D.5
c.	Vulnerability to natural disaster	Appendix D.2
d.	Tank age	Appendix D.2
e.	Other factors (e.g., unstable soils, earthquake zones, Karst topography, etc.)	Appendix D.2
13.0	Facility Reportable Oil Spill History Description (Sec. 1.4.4)	Figure D.2
a.	Date of discharge(s)	Figure D.2
b.	List of discharge causes	Figure D.2
c.	Material(s) discharged	Figure D.2
d.	Amount of discharges in gallons	Figure D.2
e.	Amount that reached navigable waters (if applicable)	Figure D.2

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
f.	Effectiveness and capacity of secondary containment	Figure D.2
g.	Clean-up actions taken	Figure D.2
h.	Steps taken to reduce possibility of reoccurrence	Figure D.2
i.	Total oil storage capacity of tank(s) or impoundment(s) from which material discharged	Figure D.2
j.	Enforcement actions	Figure D.2
k.	Effectiveness of monitoring equipment	Figure D.2
l.	Spill detection	Figure D.2
14.0	Discharge Scenario (Sec. 1.5)	Appendix D.6
	Small Discharges (Sec. 1.5.1)	Appendix D.6
a.	Description of small discharge scenario addressing facility operations and components (Sec. 1.5.1.1)	Appendix D.6
1.	Loading and unloading operations	Appendix D.6
2.	Facility maintenance operations	Appendix D.6
3.	Facility piping	Appendix D.6
4.	Pumping stations and sumps	Appendix D.6
5.	Oil storage tanks	Appendix D.6
6.	Vehicle refueling operations	Appendix D.6
7.	Age and condition of facility and components	Appendix D.6
b.	Description of factors affecting response efforts (Sec. 1.5.1.2)	Appendix D.6
1.	Size of spill	Appendix D.6
2.	Proximity to down gradient water	Appendix D.6
3.	Proximity to fish and wildlife and sensitive environments	Appendix D.6
4.	Likelihood that discharge will travel offsite	Appendix D.6
5.	Location of material spilled (i.e., on concrete pad or soil)	Appendix D.6
6.	Material discharged	Appendix D.6
7.	Weather or aquatic conditions	Appendix D.6

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
8.	Available remediation equipment	Appendix D.6
9.	Probability of a chain reaction or failures	Appendix D.6
10.	Direction of spill pathway	Appendix D.6
Medium Discharge (Sec. 1.5.1)		Appendix D.6
c.	Description of medium discharge scenario addressing facility operations and components (Sec. 1.5.1.1)	Appendix D.6
1.	Loading and unloading operations	Appendix D.6
2.	Facility maintenance operations	Appendix D.6
3.	Facility piping	Appendix D.6
4.	Pumping stations and sumps	Appendix D.6
5.	Oil storage tanks	Appendix D.6
6.	Vehicle refueling operations	Appendix D.6
7.	Age and condition of facility and components	Appendix D.6
d.	Description of factors affecting response efforts (Sec. 1.5.1.2)	Appendix D.6
1.	Size of spill	Appendix D.6
2.	Proximity to down gradient water	Appendix D.6
3.	Proximity to fish and wildlife and sensitive environments	Appendix D.6
4.	Likelihood that discharge will travel offsite	Appendix D.6
5.	Likelihood of material spilled (i.e., on concrete pad or soil)	Appendix D.6
6.	Material discharge	Appendix D.6
7.	Weather or aquatic conditions	Appendix D.6
8.	Available remediation equipment	Appendix D.6
9.	Probability of a chain reaction or failures	Appendix D.6
10.	Direction of spill pathway	Appendix D.6
15.0	Worst Case Discharge (Sec. 1.5.2) (See Appendix A)	Appendix D.6
a.	Correct Worst Case Discharge calculation for specific type of facility	Appendix D.6

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
b.	Description of worst case discharge scenario	Appendix D.6
1.	Loading and unloading operations	Appendix D.6
2.	Facility maintenance operations	Appendix D.6
3.	Facility piping	Appendix D.6
4.	Pumping stations and sumps	Appendix D.6
5.	Oil storage tanks	Appendix D.6
6.	Vehicle refueling operations	Appendix D.6
7.	Age and condition of facility and components	Appendix D.6
c.	Description of factors affecting response efforts (Sec. 1.5.1.2)	Appendix D.6
1.	Size of spill	Appendix D.6
2.	Proximity to down gradient water	Appendix D.6
3.	Proximity to fish and wildlife and sensitive environments	Appendix D.6
4.	Likelihood that discharge will travel offsite	Appendix D.6
5.	Location of material spilled (i.e., on concrete pad or soil)	Appendix D.6
6.	Material discharged	Appendix D.6
7.	Weather or aquatic conditions	Appendix D.6
8.	Available remediation equipment	Appendix D.6
9.	Probability of a chain reaction or failures	Appendix D.6
10.	Direction of spill pathway	Appendix D.6
16.0	Discharge Detection Systems (Sec. 1.6)	Operations Spill Prevention, Control and Countermeasures Plan
	Discharge Detection by Personnel (Sec. 1.6.1)	Appendix C.2, Appendix G
a.	Description of procedures and personnel for spill detection	Appendix C.2, Appendix G
b.	Description of facility inspections	Appendix G
c.	Description of initial response actions	Appendix G
d.	Emergency Response Information (referenced)	Appendix G
17.0	Automated Discharge Detection (Sec. 1.5.2)	Operations Spill Prevention, Control and Countermeasures Plan

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
a.	Description of automatic spill detection equipment, including overfill alarms and secondary containment sensors	Operations Spill Prevention, Control and Countermeasures Plan
b.	Description of alarm verification procedures and subsequent actions	Appendix G
18.0	Plan Implementation (Sec 1.7)	
a.	Identification of response resources for small, medium, and worst case spills (Sec. 1.7.1)	Appendix D.6
b.	Description of response actions	Appendix D.6
1.	Emergency plans for spill response	Throughout Plan
2.	Additional response training	Section 7
3.	Additional contracted help	Section 7
4.	Access to additional response equipment/experts	Section 7
5.	Ability to implement plan. Including response training and practice drills.	Section 4.7 & 7
19.0	Disposal Plan (Sec. 1.7.2)	Section 5.7, Section 7.5
a.	Description of procedures for recovering, reusing, decontaminating or disposing of materials	Section 5.7, Section 7.5
b.	Materials addressed in Disposal Plan (Recovered product, contaminated soil, contaminated equipment and materials, personnel protective equipment, decontamination solutions, absorbents, spent chemicals)	Section 5.7, Section 7.5
c.	Plan prepared in accordance with any Federal, State, and/or Local regulations	Section 5.7, Section 7.5
d.	Plan addresses permits required to transport or disposal of recovered materials	Section 5.7, Section 7.5
20.0	Containment and Drainage Planning (Sec. 1.7.3)	Appendix C
a.	Description of containing/controlling a spill through drainage.	Appendix C
1.	Containment volume	Appendix C.2
2.	Drainage route from oil storage and transfer areas	Figure 1.7
3.	Construction materials in drainage troughs	Appendix C.2
4.	Type and number of valves and separators in drainage system	Appendix C.2

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
5.	Sump pump capacities	Appendix C.2
6.	Containment capacities of weirs and booms and their location	Figure 6.11 & 7.1, Appendix C.2
7.	Other clean up materials	Section 7, Appendix C.2
21.0	Self-Inspection, Training, and Meeting Logs (Sec. 1.8)	
	Facility Self-Inspection (Sec. 1.8.1)	Appendix G
a.	Records of tank inspections contained or cross referenced in plan or maintained electronically	Appendix G
b.	Records of secondary containment inspections contained or cross referenced in plan or maintained electronically	Appendix G
c.	Equipment Inspection Checklist	Appendix G
d.	Response Equipment Checklist (Sec. 1.8.1.2)	Appendix G
1.	Inventory (item and quantity)	Appendix G
2.	Storage location	Appendix G
3.	Accessibility (time to access and respond)	Appendix G
4.	Operational status/condition	Appendix G
5.	Actual use/testing (last test date and frequency of testing)	Appendix G
6.	Shelf life (present age, expected replacement date)	Appendix G
e.	Response Equipment Inspection Log	Appendix G
1.	Inspection records maintained for 5 years	Appendix G
22.0	Facility Drills/Exercise (Sec. 1.8.2)	Appendix A
a.	Description of drill/exercise program based on PREP guidelines or other comparable program	Appendix A
1.	QI notification drill	Appendix A
2.	Spill management team tabletop exercise	Appendix A
3.	Equipment deployment exercise	Appendix A
4.	Unannounced exercise	Appendix A
5.	Area exercise	Appendix A

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
b.	Description of evaluation procedures for drill program	Appendix A
c.	Qualified Individual Notification Drill Log (Sec. 1.8.2.1) (Date, company, qualified individual, emergency scenario, evaluation)	Appendix A
d.	Spill Management Team Tabletop Drill Log (Sec. 1.8.2.2) (Date, company, qualified individual, emergency scenario, evaluation, changes to be implemented, time table for implementation)	Appendix A
23.0	Response Training (Sec. 1.8.3)	Appendix A
a.	Description of Response Training program (including topics)	Appendix A
b.	Personnel Response Training Logs (Name, response training date/and number of hours; prevention training date/and number of hours)	Appendix A
24.0	Diagrams (Sec. 1.9)	
	Site Plan Diagram	Figure 1.6
a.	Entire facility to scale	Figure 1.6
b.	Above and below-ground storage tanks	Figure 1.6
c.	Contents and capacities of bulk oil storage tanks and drum oil storage areas	Figure 1.6
d.	Process buildings	Figure 1.6
e.	Transfer areas	Figure 1.6
f.	Location and capacity of secondary containment systems	Figure 1.6
g.	Location of hazardous materials	Figure 1.6
h.	Location of communications and emergency response equipment	Figure 1.6
i.	Location of electrical equipment that might contain oil	Figure 1.6
25.0	Site Drainage Plan Diagram	
a.	Major sanitary and storm sewers, manholes, and drains	Figure 1.7
b.	Weirs and shut-off valves	Figure 1.7
c.	Surface water receiving streams	Figure 1.7
d.	Firefighting water sources	Figure 1.7

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Note: Section numbers indicated below correspond to sections in the model response plan in Appendix F of the Facility Response Plan (FRP) rule.		
e.	Other utilities	Figure 1.7
g.	Response equipment transportation routes	Figure 2.2
h.	Direction of spill flow from discharge points	N/A
26.0	Site Evacuation Plan Diagram	Figure 2.2
a.	Evacuation routes	Figure 2.2
b.	Location of regrouping areas	Figure 2.2
27.0	Site Security (Sec. 1.10)	Section 7.2
a.	Description of facility security (Emergency cut-off locations, enclosures, guards and their duties, lighting, valve and pump locks, pipeline connection caps)	Section 7.2
28.0	Acronyms and References	Appendix I

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Figure E.3. USCG OPA 90 Cross Reference

USCG OPA 90 REQUIREMENTS (33 CFR 154.1035)	LOCATION IN PLAN
<b>a) Introduction and Plan Content</b>	
1. Facility Name and Location address, city, county, state, zip, phone number, fax number.	Fig. 1.4
2. Facility Directions (including but not limited to maps, landmarks and river mile that could aid a responder and reviewer).	Section 1.4; Figure 1.6
3. Name, address and procedures for contacting the facility's owner or operator on a 24 hour basis.	Figure 1.4
4. Table of contents.	Preface
5. Period when submitted plan does not have to conform to the subpart, a cross index, if appropriate.	Appendix E
6. Record of change(s) to record information on plan updates.	Page vi
<b>b) Emergency Response Action Plan</b>	
1. Notification procedures	Section 3
• Prioritized list of facility response personnel.	
• Federal, State, or local agencies, as required.	Section 3, Figure 3.1 & 3.3
• Notification of the National Response Center.	Figure 3.1, 3.3 & 3.4
• Spill response notification forms to Federal, State, local agencies. Form must state that initial notification must not be delayed by collection of data.	Figure 3.2
2. Facility's spill mitigation procedures	Appendix D
(i) Describe volume and oil groups that would be involved in the following:	
• Average, maximum and worse discharge from the MTR facility.	
• Where applicable, the worst case discharge from the non-transportation-related facility.	Appendix D.6
(ii) Prioritized list of procedures and facility personnel (identified by job title). Procedures must address actions to be taken in the event of a discharge, potential discharge, or emergency involving the following equipment and scenarios:	Sections 2 & 4; Appendix D
• Transfer equipment	
• Tank overfill or failure	
• Piping rupture, leak both under pressure and not under pressure	
• Explosion or fire	
• Equipment failure	
(iii) Listing of equipment and the responsibilities of facility personnel to mitigate an average most probable discharge	Section 7.0
3. Facility's response activities	
(i) Responsibilities of facility personnel to initiate a response and supervise response resources pending arrival of qualified individuals.	Figures 4.3 & 4.4
• Responsibilities and authority of the qualified individual and	
• Alternate as required in § 154.1026.	Section 4.6

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Figure E.3. USCG OPA 90 Cross Reference (continued)

USCG OPA 90 REQUIREMENTS (33 CFR 154.1035)	LOCATION IN PLAN
	Vancouver
(iii) Apply the following organizational structure to manage response actions: <ul style="list-style-type: none"> <li>• Command and control</li> <li>• Public information</li> <li>• Safety</li> <li>• Liaison with government agencies</li> <li>• Spill operations</li> <li>• Planning</li> <li>• Logistics support</li> <li>• Finance</li> </ul>	Figures 4.1 & 4.3
(iv) Identify oil spill removal organizations and the spill management teams to be capable of providing the following response resources: <ul style="list-style-type: none"> <li>• Equipment &amp; supplies to meet § 154.1045, 154.1047, as appropriate</li> <li>• Trained personnel for response to be on hand for the first 7 days of the response</li> <li>• Job descriptions for each spill management team member within the organizational structure in a response action.</li> </ul>	Section 7.1
	Figure 4.4
(v) For mobile facilities in more than one COTP zone, oil spill removal organizations and the spill management teams must be identified from paragraph (3)(iv) and included in each COTP zone.	N/A
4. Sensitive areas	
(i) Identify areas of economic importance and environmental sensitivities as identified in the ACP, which are potentially impacted by a worst case discharge.	Section 6.2 – 6.4
(ii) For a worst case discharge the plan must address the following: <ul style="list-style-type: none"> <li>• List all sensitive elements identified in ACP that are potentially impacted by a discharge</li> <li>• Describe all response actions anticipated to protect sensitive elements</li> <li>• Contain map or chart that depicts each response action anticipated.</li> </ul>	Section 6.3 – 6.4
	Section 6.5 - 6.8, Figures 6.7, 6.10 & 6.11
(iii) Identify appropriate equipment and personnel as described in §154.1028 to protect sensitive elements by one of the following calculations: <ul style="list-style-type: none"> <li>• Persistent oils and non-petroleum oils discharged into non-tidal waters, the distance from the facility reached in 48 hours at maximum current. (Not applicable)</li> <li>• Persistent and non-petroleum oils discharged into tidal waters, 15 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 15 miles, whichever is less, during flood tide.</li> <li>• Non-persistent oils discharged into non-tidal waters, the distance from the facility reached in 24 hours at maximum current. (Not applicable)</li> <li>• Non-persistent oils discharged into tidal waters, 5 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 5 miles, whichever is less, during flood tide.</li> <li>• Spill trajectory or model may be substituted if acceptable to COTP.</li> <li>• Procedures contained in the Environmental Protection’s Agency’s regulations on oil pollution prevention may be substituted for non-tidal and tidal waters.</li> <li>• COTP may require additional sensitive elements to be protected depending on trajectory.</li> </ul>	N/A
	Section
	N/A
	Section 7
	Appendix D & Appendix H

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Figure E.3. USCG OPA 90 Cross Reference (continued)

USCG OPA 90 REQUIREMENTS (33 CFR 154.1035)	LOCATION IN PLAN
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5. Disposal plan This subsection must describe any actions to be taken or procedures to be used to ensure that all recovered oil and oil contained debris produced as a result of any discharge are disposed according to federal, state, or local requirements.	
<b>c) Training and Exercises</b>	
1. Training procedures of the facility owner or operator must meet requirements of §154.1050.	Appendix A
2. Drill procedures of the facility owner or operator must meet requirements of §154.1055.	Appendix A
<b>d) Plan Review and Update Procedures</b> Plan review and update procedures of the facility owner or operator must meet requirements of §154.1065 and any post-discharge review of the plan to evaluate and validate its effectiveness.	Page vi and Section 1.3
<b>e) Appendices</b>	
1. Facility-specific information – principal characteristics	
i) Physical description of the facility must include mooring areas, transfer locations, control stations, locations of safety equipment and location and capacities of all piping storage tanks.	Sections C.1 – C.2, Figure C.3
ii) Identify sizes, types and number of vessels the facility can transfer oil to or from simultaneously.	Section C.2, p. C-3
iii) Identify the first valve(s) on piping separating transportation-related and non-transportation-related areas. If piping serves tank vessels from a manifold it is considered the first valve.	Appendix C, Figure 1.7
iv) The oil(s) and hazardous material handled, stored or transported in bulk must be documented and include the following: <ul style="list-style-type: none"> <li>• Generic/chemical name</li> <li>• Description of appearance and odor</li> <li>• Hazards involved with handling or discharge</li> <li>• Firefighting procedures and extinguishing agents for oil/hazardous materials</li> </ul>	Appendix D, Section 7.1
2. List of contacts must include primary and alternate personnel, personnel from paragraph (b) (3) (iv), and Federal, state and local officials.	Figure 3.3
3. Equipment list and records must include the following: <ul style="list-style-type: none"> <li>• List of equipment and facility personnel required to respond to an average most probable discharge, as defined by §154.1020</li> </ul>	Appendix D
<ul style="list-style-type: none"> <li>• List of equipment belonging to an oil spill removal organization as described in §154.1028; unless the organization has been classified by the Coast Guard to equal or exceed the response capability needed by the facility</li> </ul>	Figures 7.1 & 7.3, Appendix B
<ul style="list-style-type: none"> <li>• When it is necessary for the appendix to contain a listing of response equipment, it shall include the following: skimmers; booms; dispersant application; in-situ burning; bioremediation equipment and supplies, and other equipment used to apply other chemical agents on the NCP Product Schedule; communications, firefighting, and beach cleaning equipment; boats and motors; and heavy equipment</li> </ul>	Section 7.1

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Figure E.3. USCG OPA 90 Cross Reference (continued)

USCG OPA 90 REQUIREMENTS (33 CFR 154.1035)	LOCATION IN PLAN
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<ul style="list-style-type: none"> <li>• This list must also include specifications for each piece of equipment as follows:               <ol style="list-style-type: none"> <li>1) type, make, model, and year of manufacture,</li> <li>2) for oil recovery devices, the effective daily recovery rate,</li> <li>3) for containment boom, the overall boom height and type of end connectors,</li> <li>4) spill scenario in which the equipment will be used,</li> <li>total daily capacity for storage and disposal of recovered daily oil,</li> <li>6) for communication equipment, the type and amount of equipment intended for use during response activities,</li> <li>7) location of equipment, and</li> <li>8) date of last inspection.</li> </ol> </li> </ul>	Section 7
4. Communications plan must describe the primary and alternate method of communication during discharges, including communications at the facility and at remote locations.	Section 7.1.10
5. Site specific safety and health plan must describe the safety and health plan to be implemented. This appendix may reference another existing plan requiring under 29 CFR 1910.120	Section 2.7
6. List of acronyms and definitions must include all definitions that are critical to understanding the response plan.	Appendix I

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Docket No. EF131590



Appendix F  
Response Techniques and Guidelines

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## APPENDIX F RESPONSE TECHNIQUES AND GUIDELINES

### F.1 SHORELINE PROTECTION GUIDANCE

Shoreline protection procedures are conducted to prevent oil impact to shoreline and reduce the impact on wildlife. Mechanical methods, such as use of boom and skimmers are the preferred methods. These methods can be used to control or contain floating oil slicks on the water away from marshes. Sorbents are effective on mudflats when placed on the shoreline before oil contacts the shore. A description of shoreline types is presented in **Figure F.1**. Specific shoreline protection and cleanup measures, for areas possibly impacted by a potential spill from the Facility, are discussed in this subsection. Additional information may be obtained from the *Northwest Area Contingency Plan*. The Vancouver Energy recognizes CRCI as their primary response contractor and will defer to their expertise in assessment, clean-up methodology, and provision of trained personnel.

### F.2 SHORELINE AND TERRESTRIAL CLEANUP

#### F.2.1 General

In the event that terrestrial areas do become oiled, cleanup operations should be undertaken to minimize the environmental effects of the oil. Before terrestrial and shoreline cleanup plans are implemented they require Unified Command approval. Assessment teams comprised of personnel from the appropriate agencies, Company personnel, and consultants can be utilized to determine the most appropriate cleanup method.

In most instances, cleanup efforts are not subject to the same time constraints as containment, recovery, and protection operations. As a result, better planning and greater attention to detail are possible. The exception is where there is a high probability of stranded oil becoming mobilized again and migrating to previously unaffected areas. In this case, implement cleanup operations as soon as possible. If time does permit, consider the following items in detail.

- Documentation of the location, degree, and/or extent of oil conditions
- Evaluation of all environmental, cultural, economic, and political factors
- Selection of optional cleanup technique
- Mitigation of physical/environmental damage associated with cleanup operations
- Cost-effectiveness
- Net environmental benefit assessment

The shoreline or terrestrial oil conditions can range from those which require immediate and thorough cleanup to lightly oiled areas where no cleanup may be the most environmentally sound option. Factors that influence technique selection and whether or not cleanup will be required include:

- Oil type and amount
- Sensitivity
- Substrate or shoreline type
- Intrusive nature of the candidate techniques
- Shoreline accessibility
- Exposure

Therefore, before initiating cleanup activities, an assessment of the net environmental benefits of a proposed cleanup operation should be performed for all affected shorelines.

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## F.2.2 Cleanup Technique Selection

### *Shoreline*

In the event the techniques recommended above do not apply to a particular spill situation at the Facility, other techniques should be considered for implementation. The other techniques that may be applicable are generally dependent on the following.

- Oil type
- Oiling conditions/degree of impact
- Environmental, safety, and political considerations
- Unusual circumstances that may be present at the time of the spill

Therefore, the following guidelines can be used to identify the most appropriate cleanup technique(s) for that situation.

The selection of an appropriate shoreline cleanup technique is primarily dependent on the following factors:

- **Substrate type** – Finer grained sediments typically require different techniques than coarse grained sediments and sediment type can affect trafficability (i.e., ability to traverse the area without losing traction) for heavy equipment.
- **Oil conditions** – Heavier oil conditions and larger areas may require more intrusive or mechanical methods, whereas lighter conditions may not require any form of cleanup.
- **Slope** – Heavy equipment use may not be appropriate on steeper or unstable banks.
- **Shoreline sensitivity** – Intrusive techniques may create a greater impact than the oil itself.
- **Penetration depth** – Significant penetration can reduce the effectiveness of several techniques.

**FIGURE F.2** includes a shoreline cleanup technique selection guide.

These figures should only be used as a guide to identify the most appropriate techniques based on a limited number of factors and not a definitive list of techniques that can be used for selected situations.

A number of other factors can influence technique selection and result in techniques other than those identified in the figures as the most appropriate for a given situation. Final selection of cleanup techniques should be conducted in consultation with the state and federal OSCs, the appropriate natural resource trustees, if applicable, and the particular landowner(s) or manager(s) prior to implementation.

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Figure F.1. Description of Shoreline Types

TYPES	ESI #	DESCRIPTION	PREDICTED OIL IMPACT	RECOMMENDED CLEANUP ACTIVITY
Exposed Rocky Cliffs	1A	<ul style="list-style-type: none"> <li>The intertidal zone is steep (greater than a 30° slope), with very little width.</li> <li>Sediment accumulations are uncommon and usually ephemeral, since waves remove the debris that has slumped from the eroding cliffs.</li> <li>They are often found interspersed with other shoreline types.</li> <li>There is a strong vertical zonation of intertidal biological communities.</li> </ul>	<ul style="list-style-type: none"> <li>Oil is held offshore by waves reflecting off the steep cliff.</li> <li>Any oil that is deposited is rapidly removed from exposed faces.</li> <li>The most resistant oil would remain as a patchy band at or above the high-tide line.</li> <li>Impacts to intertidal communities are expected to be of short duration.</li> <li>An exception would be where heavy concentrations of light refined product (e.g. No. 2 fuel oil) came ashore very quickly.</li> </ul>	<ul style="list-style-type: none"> <li>Cleanup is not usually required</li> <li>Access can be difficult and dangerous.</li> </ul>
Exposed Sea Walls and Piers	1B	<ul style="list-style-type: none"> <li>Seawalls and piers are particularly common in developed areas, providing protection to residential and industrial developments.</li> <li>They are also common along inlets, urbanized areas, and developed beachfront sites.</li> <li>They are composed of concrete and stone, wooden, or metal bulkheads and wooden pilings.</li> </ul>	<ul style="list-style-type: none"> <li>Oil would percolate between the joints of the structures.</li> <li>Oil would coat the intertidal areas of solid structures.</li> <li>Biota would be damaged or killed under heavy accumulations.</li> </ul>	<ul style="list-style-type: none"> <li>High-pressure spraying may be required in order to:                             <ul style="list-style-type: none"> <li>Remove oil;</li> <li>Prepare substrate for recolonization of barnacle and oyster communities;</li> <li>Minimize aesthetic damage;</li> <li>Prevent the chronic leaching of oil from the structure.</li> </ul> </li> </ul>
Exposed Wave-Cut Platforms	2	<ul style="list-style-type: none"> <li>The intertidal zone consists of a flat rock bench of highly variable width.</li> <li>The shoreline may be backed by a steep scarp or low bluff.</li> <li>There may be a narrow, perched beach of gravel- to boulder-sized sediments at the base of the scarp.</li> <li>The platform surface is irregular and tidal pools are common.</li> <li>Small accumulations of gravel can be found in the tidal pools and crevices in the platform.</li> <li>Pockets of sandy "tidal flats" can occur on the platform in less exposed settings.</li> <li>These habitats can support large populations of encrusting animals and plants, with rich tidal pool communities.</li> </ul>	<ul style="list-style-type: none"> <li>Oil will not adhere to the rock platform, but rather be transported across the platform and accumulate along the high-tide line.</li> <li>Oil can penetrate and persist in the beach sediments, if present.</li> <li>Persistence of oiled sediments is usually short term, except in wave shadows or larger sediment accumulations.</li> </ul>	<ul style="list-style-type: none"> <li>Cleanup is usually not required.</li> <li>Where the high-tide areas is accessible, it may be feasible to remove heavy oil accumulations and oiled debris.</li> </ul>

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Figure F.1. Description of Shoreline Types (continued)

TYPES	ESI #	DESCRIPTION	PREDICTED OIL IMPACT	RECOMMENDED CLEANUP ACTIVITY
Fine/Medium-Grained Sandy Beaches	3	<ul style="list-style-type: none"> <li>• These beaches are generally flat, wide, and hard-packed.</li> <li>• They are commonly backed by dunes or seawalls along exposed outer coasts.</li> <li>• Along sheltered bays, they are narrower, often fronted by tidal flats.</li> <li>• Upper beach fauna are scarce.</li> </ul>	<ul style="list-style-type: none"> <li>• Light oil accumulations will be deposited as oily swashes or bands along the upper intertidal zone.</li> <li>• Heavy oil accumulations will cover the entire beach surface, although the oil will be lifted off the lower beach with the rising tide.</li> <li>• Maximum penetration of oil into fine-grained sand will be 10 centimeters (cm).</li> <li>• Burial of oiled layers by clean sand within the first few weeks will be less than 30 cm along the upper beach face.</li> <li>• Organisms living in the beach sands may be killed either by smothering or by lethal oil concentrations in the interstitial water.</li> <li>• Shorebirds may be killed if oiled, though they may shift to clean sites.</li> </ul>	<ul style="list-style-type: none"> <li>• These beaches are among the easiest beach types to clean.</li> <li>• Cleanup should concentrate on the removal of oil from the upper swash zone after all oil has come ashore.</li> <li>• Removal of sand from the beach should be minimal to avoid erosion problems; special caution is necessary in areas backed by seawalls.</li> <li>• Activity through oiled and dune areas should be severely limited, to prevent contamination of clean areas.</li> <li>• 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.</li> <li>• All efforts should focus on preventing the mixture of oil being pushed deeper into the sediments by vehicle and foot traffic.</li> </ul>
Coarse-Grained Sand/Gravel Beaches	4	<ul style="list-style-type: none"> <li>• These beaches are moderate-to-steep, of variable width, and have soft sediments.</li> <li>• They are commonly backed by dunes seawalls along exposed outer coasts.</li> <li>• Generally species density and diversity is low.</li> </ul>	<ul style="list-style-type: none"> <li>• Light oil will be deposited primarily as a band along the high-tide line.</li> <li>• 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.</li> <li>• Penetration of oil into coarse-grained sand can reach 25 cm.</li> <li>• Burial of oil layers by clean sand can be rapid, and up to 60 cm or more.</li> <li>• Burial over one meter is possible if the oil comes ashore at the start of the disposition period.</li> <li>• Biological impacts include temporary declines in faunal populations, which can also affect feeding shorebirds.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove oil primarily from the upper swash lines.</li> <li>• Removal of sediment should be limited to avoid erosion problems.</li> <li>• Mechanical reworking of the sediment into the surf zone may be used to release the oil without removal.</li> <li>• Activity in the oiled sand should be limited to prevent mixing oil deeper into the beach.</li> <li>• Use of heavy equipment for oil/sand removal may result in the removal of excessive amounts of sand; manual cleanup may be more effective.</li> </ul>

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Figure F.1. Description of Shoreline Types (continued)

TYPES	ESI #	DESCRIPTION	PREDICTED OIL IMPACT	RECOMMENDED CLEANUP ACTIVITY
Mixed Sand and Gravel Beaches	5	<ul style="list-style-type: none"> <li>Moderately sloping beach composed of a mixture of sand (greater than 20%) and gravel (greater than 25%).</li> <li>The high-tide berm area is usually composed of sand or fine gravel (pebbles to cobbles), whereas the lower part of the beach is coarser, with cobbles to boulders.</li> <li>Because of the mixed sediment sizes, there may be zones of sand, pebbles, or cobbles.</li> <li>Because of the sediment mobility and desiccation of exposed beaches, there are low densities of attached animals and plants.</li> <li>The presence of attached algae, mussels, and barnacles indicated beaches that are relatively sheltered, with the more stable substrate supporting a richer biota.</li> </ul>	<ul style="list-style-type: none"> <li>During small spills, oil will be deposited along and above the high-tide swath.</li> <li>Large spills will spread across the entire intertidal area.</li> <li>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%.</li> <li>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.</li> <li>On sheltered beaches, extensive pavements of asphalted sediments can form if there is no removal of heavy oil accumulations, because most of the oil remains on the surface.</li> <li>Once formed, pavements are very stable and can persist for many years.</li> <li>Oil can be stranded in the coarse sediments on the lower part of the beach, particularly if the oil is weathered or emulsified.</li> </ul>	<ul style="list-style-type: none"> <li>Remove heavy accumulations of pooled oil from the upper beach face.</li> <li>All oiled debris should be removed.</li> <li>Sediment removal should be limited as much as possible.</li> <li>Low-pressure flushing can be used to float oil away from the sediments for recovery by skimmers or sorbents. High-pressure spraying should be avoided because of potential for transporting the finer sediments (sand) to the lower intertidal or subtidal zones.</li> <li>Mechanical reworking of oiled sediments from the high-tide zone to the upper intertidal zone can be effective in areas regularly exposed to wave activity (as evidence by storm berms). However, oiled sediments should not be relocated below the mid-tide zone.</li> <li>In-place tilling may be used to reach deeply buried oil layers in the mid-beach on exposed beaches.</li> </ul>
Gravel Beaches	6A	<ul style="list-style-type: none"> <li>Gravel beaches are composed of sediments ranging in size from pebbles to boulders.</li> <li>They can be very steep, with multiple wave-built berms forming the upper beach.</li> <li>Attached animals and plants are usually restricted to the lowest parts of the beach, where sediments are less mobile.</li> </ul>	<ul style="list-style-type: none"> <li>Deep penetration and rapid burial of stranded oil is likely on exposed beaches.</li> <li>On exposed beaches, oil can be pushed over the high-tide and storm berms, pooling and persisting above the normal zone of wave wash.</li> <li>Long-term persistence will be controlled by the depth of penetration versus the depth of routine reworking by storm waves.</li> <li>On relatively sheltered beaches, formation of asphalt pavements is likely where accumulations are heavy.</li> </ul>	<ul style="list-style-type: none"> <li>Heavy accumulations of pooled oil should be quickly removed from the upper beach.</li> <li>All oiled debris should be removed.</li> <li>Sediment removal should be limited as much as possible.</li> <li>Low- to high-pressure flushing can be used to float oil away from the sediments for recovery by skimmers or sorbents.</li> <li>Mechanical reworking of oiled sediments from the high-tide zone to the upper intertidal zone can be effective in areas regularly exposed to wave activity (as evidence by storm berms). However, oiled sediments should not be relocated below the mid-tide zone.</li> <li>In-place tilling may be used to reach deeply buried oil layers in the mid-beach on exposed beaches.</li> </ul>

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Figure F.1. Description of Shoreline Types (continued)

TYPES	ESI #	DESCRIPTION	PREDICTED OIL IMPACT	RECOMMENDED CLEANUP ACTIVITY
Exposed Tidal Flats	6B  7	<ul style="list-style-type: none"> <li>Riprap structures are composed of cobble to boulder-size rocks.</li> <li>Riprap structures are placed for shoreline protection and inlet stabilization.</li> <li>Biota on the riprap may be plentiful and varied.</li> <li>They are composed primarily of sand and mud.</li> <li>The presence of sand indicates that tidal or wind-driven currents and waves are strong enough to mobilize the sediments.</li> <li>They are always associated with another shoreline type on the landward side of the flat.</li> <li>The sediments are water-saturated, with only the topographically higher ridges drying out during low tide.</li> <li>Biological utilization can be very high, with large numbers of infauna and heavy use by birds for roosting and foraging.</li> </ul>	<ul style="list-style-type: none"> <li>On riprap structures, deep penetration of oil between boulders is likely.</li> <li>If oil is left uncleaned, it may become asphalted.</li> <li>Resident fauna and flora may be killed by the oil.</li> <li>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.</li> <li>Deposition of oil on the flat may occur on a falling tide if concentrations are heavy.</li> <li>Oil does not penetrate the water-saturated sediments.</li> <li>Biological damage may be severe, primarily to infauna, thereby reducing food sources for birds and other predators.</li> </ul>	<ul style="list-style-type: none"> <li>It may be necessary to remove heavily oiled riprap and replace it.</li> <li>Currents and waves can be very effective in natural removal of oil.</li> <li>Cleanup is very difficult (and possible only during low tides).</li> <li>The use of heavy machinery should be restricted to prevent mixing of oil into the sediments.</li> <li>On sand flats, oil will be removed naturally from the flat and deposited on the adjacent beaches where cleanup is more feasible.</li> </ul>
Sheltered Rocky Shores	8A	<ul style="list-style-type: none"> <li>They consist of bedrock shores of variable slope (from vertical cliffs to wide, rocky ledges) that are sheltered from exposure to most wave and tidal energy.</li> <li>The wider shores may have some surface sediments, but the bedrock is the dominant substrate type.</li> <li>Species density and diversity vary greatly, but barnacles, snails, mussels, clams, periwinkles, amphipods, polychaetes, rockweed, and crabs are often very abundant.</li> </ul>	<ul style="list-style-type: none"> <li>On rocky shores, oil will adhere readily to the rough rocky surface, particularly along the high-tide line, formed a distinct oil band.</li> <li>Fractures in the bedrock will be sites of pooling and oil persistence.</li> <li>Even on wide ledges, the lower intertidal zones usually stays wet (particularly when algae covered), preventing oil from adhering to the rock surface.</li> <li>Heavy and weathered oils can cover the upper zone with little impacts to the rich biological communities of the lower zone.</li> <li>Where surface sediments are abundant, oil will penetrate into the crevices formed by the surface rubble and pool at the contact of the sediments and the surface.</li> <li>Where the rubble is loosely packed, oil will penetrate deeply, causing long-term contamination of the subsurface sediments.</li> <li>Fresh oil and light refined products have high acute toxicities that can affect attached organisms after even short exposures.</li> </ul>	<ul style="list-style-type: none"> <li>Low- to high-pressure spraying at ambient water temperatures is most effective when the oil is fresh.</li> <li>Extreme care must be taken not to spray in the biologically rich lower intertidal zone or when the tidal level reaches that zone.</li> <li>Cutting of oiled, attached algae is not recommended; tidal action will eventually float this oil off, so sorbent booms should be deployed.</li> </ul>

Figure F.1. Description of Shoreline Types (continued)

TYPES	ESI #	DESCRIPTION	PREDICTED OIL IMPACT	RECOMMENDED CLEANUP ACTIVITY
Sheltered Tidal Flats	9	<ul style="list-style-type: none"> <li>They are composed primarily of silt and clay.</li> <li>They are present in calm-water habitats, sheltered from major wave activity, and frequently fronted by marshes.</li> <li>Wave energy is very low, although there may be strong tidal currents active on parts of the flat and in channels across the flat.</li> <li>The sediments are very soft and cannot support even light foot traffic.</li> <li>There are usually large populations of clams, worms, and snails.</li> <li>Bird life is seasonably abundant.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Deposition of oil on the flat may occur on a falling tide if concentrations are heavy.</li> <li>Oil will not penetrate the water-saturated sediments at all.</li> <li>In areas of high suspended sediments, sorption of oil can result in contaminated sediments that can be deposited on the flats.</li> <li>Biological damage may be severe.</li> </ul>	<ul style="list-style-type: none"> <li>These are high-priority areas necessitating the use of spill protection devices to limit oil spill impact; deflection or sorbent booms and open water skimmers should be used.</li> <li>Cleanup of the flat surface is very difficult because of the soft substrate and many methods may be restricted.</li> <li>Manual operations and deployment of sorbents from shallow-draft boats may be helpful.</li> </ul>
Fringing and Extensive Salt Marshes	10A	<ul style="list-style-type: none"> <li>Marshes are intertidal wetlands containing emergent, herbaceous vegetation.</li> <li>Width of the marsh can vary widely, from a narrow fringe to extensive.</li> <li>They are relatively sheltered from waves and strong tidal currents.</li> <li>Resident flora and fauna are abundant and consist of numerous species.</li> <li>Marshes provide a nursery ground for numerous fish species.</li> <li>Bird life is seasonably abundant.</li> </ul>	<ul style="list-style-type: none"> <li>Oil adheres readily to marsh vegetation.</li> <li>The band of coating will vary widely, depending upon the tidal stage at the time oil slicks are in the vegetation. There may be multiple bands.</li> <li>Large slicks will persist through multiple tidal cycles and coat the entire stem from the high-tide line to the base.</li> <li>If the heavy vegetation is thick, heavy oil coating will be restricted to the outer fringe, with penetration and lighter oiling to the limit of tidal influence.</li> <li>Medium to heavy oils do not readily adhere or penetrate the fine sediments, but they can pool on the surface and in burrows.</li> <li>Light oils can penetrate the top few centimeters of sediments and deeply into burrows and cracks (up to one meter).</li> </ul>	<ul style="list-style-type: none"> <li>Under light oiling, the best practice is to let the areas recover naturally.</li> <li>Heavy accumulation of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing. During flushing, care must be taken to prevent transporting oil to sensitive areas down slope or along shore.</li> <li>Cleanup activities should be carefully supervised to avoid vegetation damage.</li> <li>Any cleanup activity must not mix the oil deeper into the sediments. Trampling of the roots must be minimized.</li> <li>Cutting of oiled vegetation should only be considered when other resources present are at great risk from leaving the oiled vegetation in place.</li> </ul>

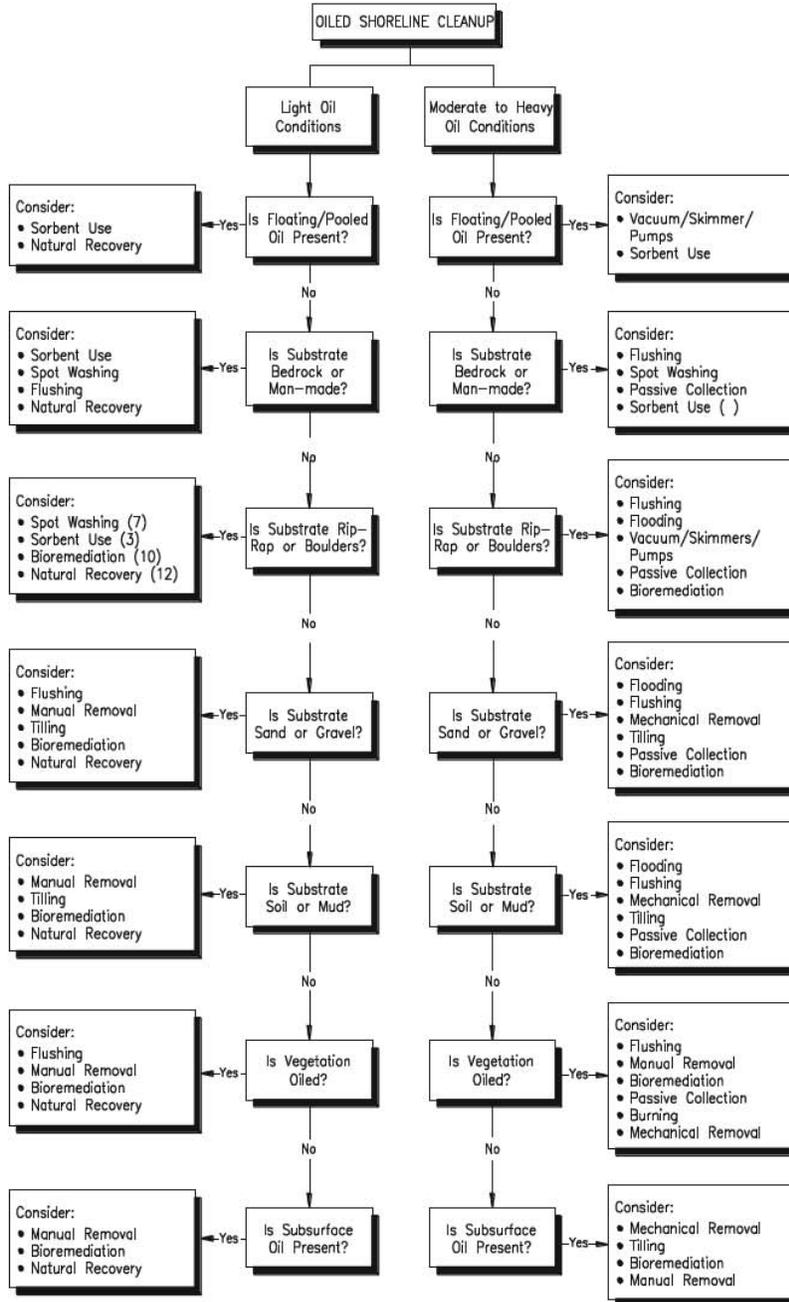
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Figure F.1. Description of Shoreline Types (continued)

TYPES	ESI #	DESCRIPTION	PREDICTED OIL IMPACT	RECOMMENDED CLEANUP ACTIVITY
Mangroves	10B	<ul style="list-style-type: none"> <li>Mangrove forests are composed of salt-tolerant trees that form dense stands with distinct zonation: red mangroves occur on the seaward exterior while black and white mangroves occur on forest interiors.</li> <li>The outer, fringing forests can be exposed to relatively high wave activity and strong currents; forests located in bays and estuaries are well-sheltered.</li> <li>Sediment types range from thin layers of sand and mud to muddy peat to loose gravel on limestone beachrock.</li> <li>Heavy wrack deposits in the storm swash are very common.</li> <li>The topographic profile is generally very flat, and seagrass beds are common in shallow offshore areas.</li> <li>Attached to the prop roots are moderate densities of algae, snails, and crabs.</li> </ul>	<ul style="list-style-type: none"> <li>Fresh spills of light refined products have acute, toxic impacts to both trees and intertidal biota. These products will penetrate deeply into the forests, stopping only at the high-tide line, where sediment contamination may result.</li> <li>No. 2 fuel oil or fresh crude will have great persistence where it penetrates burrows and prop root cavities. Heavier oils tend to coat the intertidal zone, with heaviest concentrations at the high-tide line or storm wrack line.</li> <li>Heavy oils will coat the intertidal section of prop roots, resulting in defoliation and eventual death of the tree if significant coverage occurs.</li> <li>In sheltered areas, oil may persist for many years.</li> </ul>	<ul style="list-style-type: none"> <li>Under light accumulations of any type of oil. No cleanup is recommended.</li> <li>If sheens are present, use sorbent booms to pick up the oil as it is naturally removed, being sure to change booms frequently.</li> <li>The only light refined product that usually required cleanup is No. 2 fuel oil/diesel because of the potential for long-term sediment contamination.</li> <li>Heavy accumulations could 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.</li> <li>Only debris should be removed, taking care not to disturb the substrate.</li> <li>Live vegetation should never be cut or otherwise removed.</li> <li>Sorbents can be used to remove wide heavy oil coatings from prop roots in areas of firm substrate and with close supervision.</li> <li>Under moderate to heavy accumulations of crude or heavy refined products, a detailed, site-specific cleanup plan will be required. The cleanup plan should be prepared by experience personnel and include:             <ul style="list-style-type: none"> <li>General map of entire impacted area and locations of specific areas to be cleaned up.</li> <li>Detailed maps of each specific area showing the oil locations and type of cleanup to be performed at each location.</li> <li>Definition of each type of cleanup allowed.</li> <li>Specific restrictions to prevent further damage for each cleanup location.</li> </ul> </li> </ul>

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Figure F.2. Shoreline Cleanup Technique Selection Guide



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**Figure F.3. Shoreline Protection Methods<sup>2</sup>**

ON-WATER	METHOD	APPLICABILITY
EXCLUSION BOOMING	<ul style="list-style-type: none"> <li>• Deployed across or around oil</li> <li>• Oil removed from water surface</li> </ul>	<ul style="list-style-type: none"> <li>• To protect small bays, harbors, inlets or river mouths</li> <li>• Currents less than 0.5 m/s</li> </ul>
DIVERSION BOOMING	<ul style="list-style-type: none"> <li>• Deployed at an angle to approaching oil</li> <li>• Diverts oil away from sensitive areas</li> </ul>	<ul style="list-style-type: none"> <li>• Where currents are greater than 0.5 m/s</li> </ul>
CONTAINMENT BOOMING	<ul style="list-style-type: none"> <li>• Deployed around oil</li> <li>• Oil removed from water surface</li> </ul>	<ul style="list-style-type: none"> <li>• Current less than 0.5 m/s</li> <li>• Not applicable for large slicks</li> </ul>
SORBENT BOOMING	<ul style="list-style-type: none"> <li>• Deployed across approaching oil</li> <li>• Oil absorbed by boom</li> </ul>	<ul style="list-style-type: none"> <li>• Quiet waters</li> <li>• Can be recycled and reused</li> <li>• Small slicks</li> </ul>
DISPERSION AGENTS	<ul style="list-style-type: none"> <li>• Reduce surface tension of oil by application of chemicals</li> <li>• Oil is then dispersed more rapidly into the water</li> </ul>	<ul style="list-style-type: none"> <li>• Requires permission of regulatory agencies</li> <li>• Increases oil mobility, therefore, stranded oil has greater potential to penetrate beach sediments</li> </ul>
COLLECTION AGENTS	<ul style="list-style-type: none"> <li>• Increase surface tension of oil by application of chemicals</li> <li>• Oil is prevented from spreading</li> </ul>	<ul style="list-style-type: none"> <li>• Decreases oil mobility, therefore, stranded oil has a reduced capacity to penetrate beach sediments</li> </ul>
ONSHORE	METHOD	APPLICABILITY
SORBENTS	<ul style="list-style-type: none"> <li>• Applied manually or mechanically to the beach before oil is stranded</li> <li>• Oil/sorbent is then removed manually or mechanically</li> </ul>	<ul style="list-style-type: none"> <li>• Prevents penetration of oil into substrate</li> <li>• Sorbent pads preferable to loose-fiber materials for ease of collection</li> <li>• Synthetic products have higher absorption capacity than natural materials</li> <li>• Can be recycled and reused</li> <li>• Usually a labor-intensive method</li> </ul>
SURFACE TREATMENT AGENTS	<ul style="list-style-type: none"> <li>• Applied to shore zone before oil is stranded</li> <li>• Prevents oil from adhering to the substrate</li> </ul>	<ul style="list-style-type: none"> <li>• Applicability and effectiveness not yet fully assessed</li> <li>• May be difficult to apply on long sections of shore</li> <li>• Oil must be flushed from the shore and agent removed if it does not degrade naturally</li> </ul>
COLLECTION AGENTS	<ul style="list-style-type: none"> <li>• Applied along water line before oil is stranded</li> <li>• Reduces natural dispersion of oil</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces area of shoreline contamination</li> <li>• Reduces penetration into beach</li> </ul>
DIKES AND/OR DITCHES	<ul style="list-style-type: none"> <li>• Ditch up to 1.0 m deep dug parallel to shore at upper limit of wave action</li> <li>• Sediment removed used to build dike on landward side of the ditch</li> <li>• On pebble-cobble beaches can fill ditch with sorbents to collect oil and prevent oil penetration</li> </ul>	<ul style="list-style-type: none"> <li>• Prevents oil being washed onto the backshore</li> <li>• Can be constructed mechanically along long beach sections</li> <li>• Ditch acts as a collector of oil which can be removed with buckets, hand pumps, or vacuum pumps</li> </ul>
DAMS	<ul style="list-style-type: none"> <li>• Used for shallow streams where booms cannot be deployed</li> </ul>	<ul style="list-style-type: none"> <li>• Acts as a boom for exclusion of oil</li> <li>• Can be constructed to allow water to flow through dam</li> </ul>
VISCOUS	<ul style="list-style-type: none"> <li>• Applied manually to the beach, rock jetties, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent with heavier oils</li> <li>• Can be recycled and reused</li> <li>• Reduces penetration into rocks</li> </ul>

<sup>2</sup>Breuel, A. 1981. Oil Spill Cleanup and Protection Techniques for Shoreline and Marshland and Marshlands. Park Ridge, New Jersey, Noyes.

Figure F.4. Response Options for Oil or Substances with Physical and Chemical Properties Similar to Oil

ENVIRONMENT	PROTECTION				CLEANING/MIXING				REMOVAL/DISPOSAL				ONSHORE DISPERSION					
	DITCHES/DIKES	DISPERSANTS ON WATER	SINKING AGENTS	HERDING/GELLING AGENTS	BOOMS/SKIMMERS	BRACH CLEANING MACHINES	BURNING	MIXING	NATURAL CLEANING	MANUAL REMOVAL	MECHANICAL REMOVAL	VACUUM PUMPING	VEGETATION CROPPING	DISPERSANTS ON CROPPING	HIGH PRESSURE FLUSHING	LOW PRESSURE FLUSHING	SAND BLASTING	STEAM CLEANING
1. SEA GRASS BEDS		x	#	o	+				+	x			x	x	o			
2. MANGROVES		+		o	+		#		o	o	#	x	x	x	+			
3. MARSHES				o	+		#		+	#	o	x	x	o	+			#
4. SHELTERED TIDAL FLATS				o	+			#	+	o	o			x	+			
5. RIVER BANKS	o			o	+		x		+	o	o				o			
6. OYSTER REEFS				o	+				+		o			x	o			#
7. EXPOSED TIDAL FLATS	o	x		o	+				+					x				
8. DREDGE SPOIL BANKS	o			o	+			o	+	o								
9. BAY MARGINS	o			o	+		o	o	+	o	+				o			
10.11. OPEN SAND BEACH	+			o			#	o	+	+	+				o	o		
12. MAN-MADE SHORE				o	+		x		+	o				o	o	o	o	o
13. EROSION SCARPS									+	+	+				x	o		
TIDAL INLETS	o			o	+				+									
LAGOONS BAYS			#	o	+				+	o								

KEY: + PREFERRED      o OPTIONAL      x NOT ADVISABLE      # AVOID

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Figure F.5. Summary of Shoreline and Terrestrial Cleanup Techniques

TECHNIQUE	DESCRIPTION	PRIMARY LOGISTICAL REQUIREMENTS <sup>1</sup>	USE LIMITATIONS <sup>2</sup>	POTENTIAL ENVIRONMENTAL EFFECTS
<b>Removal</b>				
1. Manual Removal	Hand tools (scrapers, wire brushes, shovels, cutting tools, wheel barrows, etc.) are used to scrape oil off surfaces or recover oiled sediments, vegetation, or debris where oil conditions are light or sporadic and/or access is limited.	<u>Equipment</u> Misc. hand tools <u>Personnel</u> 10-20 workers	<ul style="list-style-type: none"> <li>Poor access</li> <li>Highly sensitive areas</li> </ul>	<ul style="list-style-type: none"> <li>Sediment disturbance and erosion potential</li> <li>Trampling of vegetation and organisms</li> <li>Foot traffic can work oil deeper into soft sediments</li> </ul>
2. Mechanical Removal	Mechanical earthmoving equipment is used to remove oiled sediments and debris from heavily impacted areas with suitable access.			
2a. Bulldozer/Front-end Loader	Used to recover moderately to heavily oiled sediments using a bulldozer to push sediments into piles for pickup by front-end loader. Front-end loader may work alone to recover sediments directly.	<u>Equipment</u> 1 bulldozer 2 front-end loaders <u>Personnel</u> 2-4 workers plus equipment operators	<ul style="list-style-type: none"> <li>Very poor trafficability</li> <li>Limited access</li> <li>Highly sensitive areas</li> <li>Light or sporadic oil conditions</li> </ul>	<ul style="list-style-type: none"> <li>Removes upper 2 to 12 inches of sediments</li> <li>Removes shallow organisms but recolonization is typically rapid</li> <li>Excessive sediment removal can cause erosion</li> </ul>
2b. Backhoe	Used to recover surface or subsurface oiled sediments on flat or steeply sloped areas by scooping up sediments and placing directly into dump trucks or in piles for subsequent removal.	<u>Equipment</u> 1-2 backhoes 4-6 dump trucks <u>Personnel</u> 2-4 workers plus equipment operators	<ul style="list-style-type: none"> <li>Limited access</li> <li>Highly sensitive areas</li> <li>Unstable slopes</li> <li>Light or sporadic oil conditions</li> </ul>	<ul style="list-style-type: none"> <li>Removes minimum of 6 to 12 inches of sediments</li> <li>Removes shallow organisms but recolonization is typically rapid</li> <li>Can cause erosion and slope instability</li> </ul>
3. Sorbent Use	Sorbents are applied manually to oil accumulations, coatings, sheens, etc. to remove and recover the oil.	<u>Equipment</u> Misc. hand tools Misc. sorbents <u>Personnel</u> 2-10 workers	<ul style="list-style-type: none"> <li>Poor access</li> <li>Highly sensitive areas</li> <li>Heavy oil conditions</li> </ul>	<ul style="list-style-type: none"> <li>Sediment disturbance and erosion potential</li> <li>Trampling of vegetation and organisms</li> <li>Foot traffic can work oil deeper into soft sediments</li> </ul>

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Figure F.5. Summary of Shoreline and Terrestrial Cleanup Techniques (continued)

TECHNIQUE	DESCRIPTION	PRIMARY LOGISTICAL REQUIREMENTS <sup>1</sup>	USE LIMITATIONS <sup>2</sup>	POTENTIAL ENVIRONMENTAL EFFECTS
4. Vacuums/Pumps/Skimmers	Pumps, vacuum trucks, skimmers are used to remove oil accumulations from land or relatively thick floating layers from the water.	Equipment 1-2 50- to 100-bbl vacuum trucks w/hoses 1-2 nozzle screens or skimmer heads Personnel 2-6 workers plus truck operators	<ul style="list-style-type: none"> <li>Poor access</li> <li>Thin oil accumulations or light sheens</li> <li>Highly sensitive shoreline areas</li> <li>Excessive suction lift required</li> </ul>	<ul style="list-style-type: none"> <li>Typically does not remove all oil</li> <li>Can remove some surface organisms, sediments, and vegetation</li> </ul>
<b>Washing</b>				
5. Flooding	High volumes of water at low pressure are used to flood the oiled area to float oil off and out of sediments and back into the water or to a containment area where it can be recovered. Frequently used with flushing.	Equipment 1-5 100- to 200-gpm pumping systems 1 100-foot perforated header hose per system 1-2 200-foot containment booms per system 1 oil recovery device per system Personnel 6-8 workers per system	<ul style="list-style-type: none"> <li>Highly permeable substrate</li> <li>Highly sensitive areas</li> <li>Poor access</li> <li>Highly weathered oil or thin films or coatings</li> <li>Typically does not remove all oil</li> </ul>	<ul style="list-style-type: none"> <li>Can impact clean downgradient areas</li> <li>Can displace some surface organisms if present</li> <li>Sediments transported into water can affect water quality</li> </ul>
6. Flushing	Water streams at low to moderate pressure, and possibly elevated temperatures, are used to remove oil from surface or near-surface sediments through agitation and direct contact. Oil is flushed back into the water or a collection point for subsequent recovery. May also be used to flush out oil trapped by shoreline or aquatic vegetation.	Equipment 1-5 50- to 100-gpm/100-psi pumping systems with manifold 1-4 100-foot hoses and nozzles per system 1-2 200-foot containment booms per system 1 oil recovery device per system Personnel 8-10 workers per system	<ul style="list-style-type: none"> <li>Highly permeable substrate</li> <li>Highly sensitive areas</li> <li>Poor access</li> <li>Highly weathered oil or thin films or coatings</li> <li>Typically does not remove all oil</li> </ul>	<ul style="list-style-type: none"> <li>Can impact clean downgradient areas</li> <li>Will displace many surface organisms if present</li> <li>Sediments transported into water can affect water quality</li> <li>Hot water can be lethal to many organisms</li> <li>Can increase oil penetration depth</li> </ul>

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Figure F.5. Summary of Shoreline and Terrestrial Cleanup Techniques (continued)

TECHNIQUE	DESCRIPTION	PRIMARY LOGISTICAL REQUIREMENTS <sup>1</sup>	USE LIMITATIONS <sup>2</sup>	POTENTIAL ENVIRONMENTAL EFFECTS
7. Spot (High Pressure) Washing	High pressure water streams are used to remove oil coatings from hard surfaces in small areas where flushing is ineffective. Oil is directed back into water or collection point for subsequent recovery.	Equipment 1-5 1,200- to 4,000-psi units with hose and spray wand 1-2 100-foot containment booms per unit 1 oil recovery device per unit Personnel 2-4 workers per unit	<ul style="list-style-type: none"> <li>Poor access</li> <li>Highly sensitive area</li> <li>Safety hazard from high pressure water stream</li> <li>Relatively soft or unconsolidated substrates</li> </ul>	<ul style="list-style-type: none"> <li>Will remove most organisms if present</li> <li>Can damage surface being cleaned</li> <li>Can affect clean downgradient or nearby areas</li> </ul>
<b>In Situ</b>				
8. Passive Collection	Sorbent/snare booms or other sorbent materials are anchored at the waterline adjacent to heavily oiled areas to contain and recover oil as it leaches from the sediments.	Equipment 1,000-2,000 ft sorbent/snare boom 200-400 stakes or anchor systems Personnel 4-10 workers	<ul style="list-style-type: none"> <li>Poor access</li> <li>High currents/waves</li> <li>Lightly oiled sediments</li> <li>Oil removal process is slow</li> </ul>	<ul style="list-style-type: none"> <li>Significant amounts of oil can remain on the shoreline for extended periods of time</li> </ul>
9. Sediment Tilling	Mechanical equipment or hand tools are used to till light to moderately oiled surface sediments to maximize natural degradation processes.	Equipment 1 tractor fitted with tines, dicer, ripper blades, etc. or 1-4 rototillers or 1 set of hand tools Personnel 2-10 workers	<ul style="list-style-type: none"> <li>Poor access</li> <li>Heavily oiled area</li> <li>Highly sensitive area</li> <li>Oil can be mixed deeper into substrate</li> </ul>	<ul style="list-style-type: none"> <li>Significant amounts of oil can remain on the shoreline for extended periods of time</li> <li>Disturbs surface sediments and organisms</li> </ul>
10. In Situ Bioremediation	Fertilizer is applied to lightly or moderately oiled areas to enhance microbial growth and subsequent biodegradation of oil.	Equipment 1-2 fertilizer applicators 1 tilling device if required Personnel 2-4 workers	<ul style="list-style-type: none"> <li>May cause algal bloom and short-term water quality problems</li> <li>Heavily oiled areas</li> </ul>	<ul style="list-style-type: none"> <li>Significant amounts of oil can remain on the shoreline for extended periods of time</li> <li>Can disturb surface sediments and organisms</li> </ul>

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Figure F.5. Summary of Shoreline and Terrestrial Cleanup Techniques (continued)

TECHNIQUE	DESCRIPTION	PRIMARY LOGISTICAL REQUIREMENTS <sup>1</sup>	USE LIMITATIONS <sup>2</sup>	POTENTIAL ENVIRONMENTAL EFFECTS
11. Log/Debris Burning	Oiled logs, driftwood, vegetation, and debris are burned to minimize material handling and disposal requirements. Material should be stacked in tall piles and fans used to ensure a hot, clean burn.	Equipment 1 set of fire control equipment 2-4 fans 1 supply of combustion promoter <u>Personnel</u> 2-4 workers	<ul style="list-style-type: none"> <li>Local air quality regulations</li> <li>Close proximity to populated areas</li> <li>High wind conditions</li> <li>Heavy precipitation</li> </ul>	<ul style="list-style-type: none"> <li>Heat may impact local near-surface organisms</li> <li>Substantial smoke may be generated</li> <li>Heat may impact adjacent vegetation</li> </ul>
12. Natural Recovery	No action is taken and oil is allowed to degrade naturally.	None required	<ul style="list-style-type: none"> <li>Heavy oil conditions</li> <li>Highly sensitive shorelines</li> <li>High oil remobilization potential</li> </ul>	<ul style="list-style-type: none"> <li>Oil may persist for significant periods of time</li> <li>Remobilized oil or sheens may impact other areas</li> <li>Higher probability of impacting wildlife</li> </ul>

1 - Per 1,000 feet of shoreline or oiled area. Potential sources of equipment are provided in Section 5.0.

2 - In addition to fire and explosion hazard.

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**Figure F.6. Summary of Shoreline Cleanup Techniques by Surface Type**

Note: The appropriate government agencies must be consulted prior to implementing shoreline clean-up techniques.

TYPE OF SURFACE CONTAINING SPILL	RECOMMENDED CLEAN-UP TECHNIQUES	ACTIONS TO AVOID
Sand	Use vacuum skimmer and sorbents to clean up pools of free flowing oil. Use shovels to remove and place oiled sand into plastic bags or 55-gallon drums.	Do not let people or equipment travel over oiled sand. Do not bury oil sand.
Pebble or Gravel	If heavily oiled, use water spray and front-end loader to remove oiled material. If lightly oiled, use water spray and detergents to wash oil films off gravel and pebbles.	Do not place oiled gravel or pebbles in streams or offshore areas.
Snow	Use shovels to place oiled snow in 55-gallon drums.	Do not place oiled snow in wetlands or offshore areas. Make sure that drums do not have holes in them.
Concrete or Asphalt	Use vacuum skimmers and sorbents to clean up oil. Wash surface with water. Remove oil between cracks.	
Wetlands	Consult Ecology, EPA, or other agencies for permits to work on wetlands. If cleanup will cause excessive damage to wetlands, request agency approval to leave oil in place.	Do not operate vehicles or heavy equipment on wetlands. Do not disturb nesting areas.
Marshes	Use booms to control oil movement. Use a low pressure water spray to herd oil to areas where it can be recovered with skimmers and sorbents. Seek agency input as to whether oil should be left in place to prevent environmental damage that could result from clean-up operation.	Do not block entrance to marsh with berms or dams. Do not use heavy equipment.
Harbors and Streams	Use booms to prevent oil from spreading. Use skimmers to clean up oil slicks.	Avoid creating waves which may cause oil to spread. Do not use dispersants or chemicals to remove oil from water surface.

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Docket No. EF131590



Appendix G  
Inspection/Prevention and Maintenance

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## APPENDIX G INSPECTION/PREVENTION AND MAINTENANCE

### G.1 INSPECTION/PREVENTION MEASURES

While many of the more formal inspection procedures are described in the following sections, equipment inspection, problem detection, and incident reporting are part of the daily responsibilities of all operators, maintenance personnel and inspectors.

In carrying out their day-to-day responsibilities, operators, inspectors and other employees are expected to observe the equipment around them and report to their supervisor or other appropriate personnel any leaks, spills, or conditions that could lead to leaks or spills.

The potential for a piping rupture is minimized by the regular inspection of the overall system, including relief valves. The potential for overfilling a tank is minimized by a variety of safety features in the design and operation, including overfill alarms, tank gauge sensors, and proper training of personnel. Catastrophic tank failure is the most severe form of spill event that can be reasonably anticipated. The likelihood of this type of spill event occurring is minimized by routine inspections and proper maintenance of the tank structure. Oil handling procedures are also described in the Facility Oil Handling Operations Manual.

The Vancouver Energy (Facility) conducts self-inspections on all tanks, secondary containment units, and response equipment at the facility. This section describes procedures and checklists that are followed.

#### G.1.1 Daily Inspections

- Tank gauges, temperature and meter readings are recorded daily. Tank levels and product inventory are manually maintained on a continuous basis, and manually reconciled daily, **Figure G.1**.
- Receiving tanks are gauged and valves set prior to receipt of product from Area 200 –Unloading Area. Verbal contact is required to initiate transfer. All transfer information is recorded in the Facility Receipt Log, on file at the terminal office.
- Terminal Operators conduct visual inspection of the tank farm, all pumps and valves, sheds, office, fire protection equipment, oil/water separators, oil spill response equipment, cathodic protection systems, and safety systems and equipment. Specific inspection items are outlined in the inspection log, **Figures G.2, G.3, G.4, G.5, G.6, and G.7**. A complete inspection of dock, pipelines, transfer equipment and tankage is performed prior to marine transfers. A pre-transfer conference and Declaration of Inspection is completed in accordance with 33 CFR Part 156.
- Storm water retained within the tank dikes is inspected and released pursuant to SPCC regulations. Records of all stormwater discharge events are retained on site.
- All tanks are hand gauged daily. Tank gauges and meters are calibrated as needed.

#### G.1.2 Monthly Inspections

- A safety inspection is conducted under direction of the Terminal Manager, using the form in **Figure G.3**.
- Spill response equipment at the dock is inspected and maintained by Tesoro Terminal Operators.
- Recent adoption of API Standard 653 (Tank Inspection, Repair, Alteration, and Reconstruction) initiated new visual and non-destruction testing inspection standards. Future tank inspections will be made in compliance with API 653 Guidelines, using the form in **Figure G.3**.

#### G.1.3 Annual Inspections

- The fire extinguishers are inspected and tested.
- The dock hoses and the marine pipelines to the dock, are pressured tested in accordance with 33 CFR Part 156.
- Additional preventive maintenance conducted on a scheduled basis includes inspection/cleaning/lubing of valves and inspection of tank roofs.

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Tesoro/Vancouver Energy personnel will use the form in **Figure G.2** to record monthly, quarterly, and annual inspections.

#### **G.1.4 Response Equipment Inspection**

Using the Emergency Response Equipment Lists provided in **Section 7**, and **Appendix B** of this Plan, response equipment will be checked for the following in accordance with 40 CFR 112, Appendix F:

1. Inventory (item and quantity);
2. Storage location;
3. Accessibility (time to access and respond);
4. Operational status/condition;
5. Actual use/testing (last test date and frequency of testing); and
6. Shelf life (present age, expected replacement date).

Oil spill cleanup material and emergency response equipment will be inventoried and tested every six months or immediately after a spill. The Response Equipment Inspection is provided in **Figure G.4**.

#### **G.1.5 Secondary Containment Inspection**

Secondary containment units will be evaluated at the same time as tank inspections. During inspection, discrepancies are notes in any of the items and are reported to the proper facility personnel.

#### **G.1.6 Inspection and Preventative Maintenance Records**

Records are kept and maintained by the Terminal Manager. Inspection records for response equipment will be maintained for at least five years, and will be made available to Ecology upon request.

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Figure G.1. Computation of Product Inventory

Vancouver Energy Facility

DATE: \_\_\_\_\_

TANK	VISC	API	FLASH	BS&W	GAUGE	TEMP	GROSS BARRELS	FACT	NET BARRELS	H2S	LEL
0300-TK-001											
0300-TK-002											
0300-TK-003											
0300-TK-004											
0300-TK-005											
0300-TK-006											

LINE	TANK	PRODUCT	COMMENT	SUCTION	SUCTION	PRESSURE RELIEF'S
24"						
24"						
24"						
36"						
8"						

**LAST OIL MOVEMENT**

**COMMENTS:**

\_\_\_\_\_

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Figure G.2. Vancouver Energy Facility  
Monthly, Quarterly, and Yearly Inspection Form

MONTHLY EVENTS YEAR: _____	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Check Cathodic Protection System												
Check Spill Response Equipment												
Check Fire System & Extinguishers												
Check All tank High Level Alarms												
Hold Safety & Spill Prevention Meeting												

QUARTERLY EVENTS	JANUARY	APRIL	JULY	OCTOBER
Grease Valves, Truck & Rail Rack				
Review Oil Spill Contingency Plan				
Inspection Vapor Recovery Unit				
Quarterly Safety Inspection				

YEARLY EVENTS	YEAR
Pressure Test Pipelines and Hoses	
Inspect Cathodic Protection System	
Check Fire Extinguisher and Foam System	
Check Back-Flow Preventer Valve	

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**Figure G.3. Monthly Terminal Inspection**

**ABOVEGROUND STORAGE TANKS/TANK FARM**

	Yes	No
1. Are all <b>tank top walkways and ladders</b> safe to use?	_____	_____
2. Is all <b>tank top lighting</b> in good condition/working order?	_____	_____
3. Are all <b>tank top vents</b> in good working condition?	_____	_____
4. Are all <b>high-level alarms</b> in good working order?	_____	_____
5. Is each <b>tank</b> free of visible leaks, overflow or rupture?	_____	_____
6. Is all <b>leak detection equipment</b> in satisfactory condition?	_____	_____
7. Are all <b>liquid tight connections</b> on all tank openings other than vents functional?	_____	_____
8. Are <b>tank bottom water draw offs</b> locked when not in use?	_____	_____
9. Are all <b>side gauges</b> functional/readings accurate?	_____	_____
10. Are all <b>tank shell surfaces</b> , including any peeling areas, welds, rivets/bolts, and seams visually inspected for areas of rust and other deterioration?	_____	_____
11. Are all <b>tank foundations</b> free from visible deterioration?	_____	_____
12. Is the <b>slope</b> of the ground away from each tank toward the drainage system still maintained at 1 percent or more?	_____	_____
13. Are <b>ground surfaces</b> around tanks, containment structures, and transfer areas free of signs of leakage?	_____	_____
14. Is the <b>containment dike/berm</b> adequate and impervious with no erosion or cracks?	_____	_____
15. Are <b>diked areas</b> free of oil and excess standing water?	_____	_____

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
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- |     |  | Yes   | No    |
|-----|--|-------|-------|
| 16. | Are the <b>dike containment areas/bases of tanks</b> free of high grass, weeds and debris?   | _____ | _____ |
| 17. | Are the <b>dike drain valves</b> in good condition and closed and locked when not in use?  | _____ | _____ |
| 18. | Are all <b>tank and pipeline valves</b> closed when not in use?  | _____ | _____ |
| 19. | Are all <b>tank fill valves</b> locked in closed position when not in use?   | _____ | _____ |
| 20. | Are <b>valves</b> inspected for signs of leakage or deterioration and serviced on a regular basis?   | _____ | _____ |
| 21. | Are these <b>inspection and service</b> kept on record?  | _____ | _____ |
| 22. | Are all <b>valve/flange connections</b> checked for leakage, signs of wear and all bolts in place/tight?   | _____ | _____ |
| 23. | Are the valve and pipeline coupling <b>bolts</b> free of elongation, deterioration, or signs of strain?  | _____ | _____ |
| 24. | <b>Cathodic protection</b> readings adequate?<br>Amps _____ Volts _____  | _____ | _____ |
| 25. | Is <b>fire protection</b> (extinguisher/alarm/foam) adequate, operational, inspected and tagged, with extinguishers turned over once/month? Are hoses free from deterioration? | _____ | _____ |
| 26. | Is <b>ground cable</b> present and secure?   | _____ | _____ |

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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**PIPELINES**

- |   | Yes   | No    |
|---|-------|-------|
| 1. Are pipelines <b>blanked-flanged and marked</b> accordingly when out of service?   | _____ | _____ |
| 2. Are all pipelines <b>marked</b> with their contents?   | _____ | _____ |
| 3. Are all above-ground pipelines <b>painted</b> ?  | _____ | _____ |
| 4. Is each <b>pipe support</b> adequate to minimize abrasion and corrosion yet allow for expansion and contraction?             | _____ | _____ |
| 5. Is each pipeline to tank truck unloading rack provided with a <b>check valve</b> for automatic protection against back flow? | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**OIL/WATER SEPARATOR SYSTEM**

- |  |       |       |
|--|-------|-------|
| 1. Has the daily/weekly <b>separator maintenance</b> been completed? | _____ | _____ |
| 2. Is the separator free of any <b>internal corrosion</b> ?          | _____ | _____ |
| 3. Is the separator free of <b>solids and oil buildup</b> ?          | _____ | _____ |
| 4. Are any <b>cracks</b> evident?                                    | _____ | _____ |
| 5. Are the <b>weirs</b> in good condition and working properly?      | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
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**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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DOCK/DOCK SHACK

	Yes	No
1. Are <b>valves/flanges</b> free of leakage and secured with all bolts?	_____	_____
2. Are <b>valves</b> not in use shut and locked?	_____	_____
3. Are <b>valves</b> properly color-coded?	_____	_____
4. Are pipelines <b>marked with current MAWP</b> ?	_____	_____
5. Are blanked pipelines <b>marked “not in use”</b> ?	_____	_____
6. Are <b>pipe supports</b> adequate and in good condition?	_____	_____
7. Is <b>drip-pan cover</b> free of deterioration and tears?	_____	_____
8. Is <b>drip pan</b> empty?	_____	_____
9. Are <b>pressure gauges</b> in working order?	_____	_____
10. Are <b>first aid and eye wash kits</b> complete and in date?	_____	_____
11. Are <b>ring buoys and lifelines</b> present?	_____	_____
12. Is <b>lighting</b> adequate and working?	_____	_____
13. Is <b>communication equipment</b> working?	_____	_____
14. Are <b>emergency shutdown valves</b> marked and operational?	_____	_____
15. Are <b>loading arms</b> secured and operational, free from leakage?	_____	_____
16. Are <b>grounding devices</b> in good working order?	_____	_____
17. Are <b>emergency signs</b> posted properly and in good shape?	_____	_____
18. Are the <b>planking, pilings and dolphins</b> in good shape?	_____	_____
19. Are <b>chainfalls</b> and safety hook in good order?	_____	_____
20. Is the <b>spill boom</b> stowed in the proper manner and ready for deployment?	_____	_____

**Comments:** \_\_\_\_\_  
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- |  | Yes   | No    |
|--|-------|-------|
| 21. Is the <b>spill boom</b> free of rips and tears?   | _____ | _____ |
| 22. Are all necessary <b>absorbent materials</b> on hand?  | _____ | _____ |
| 23. Is <b>fire protection</b> (extinguisher/alarm/foam) adequate, operational, inspected and tagged, with extinguishers turned over once/month? Are hoses free from deterioration? | _____ | _____ |

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**PUMP AREA**

- |   |       |       |
|---|-------|-------|
| 1. Are pumps free of abnormal <b>leakage/noise/vibration</b> ?  | _____ | _____ |
| 2. Are <b>guards</b> in place?  | _____ | _____ |
| 3. Are pump <b>drip containers</b> kept emptied?  | _____ | _____ |
| 4. Are <b>lubricant levels</b> maintained?  | _____ | _____ |
| 5. Are <b>pressure gauges</b> secure/in proper working order?   | _____ | _____ |
| 6. Are <b>slop drums</b> pumped down when full?   | _____ | _____ |
| 7. Are all electric motor <b>grounds</b> in place?  | _____ | _____ |
| 8. Is <b>fire protection</b> (extinguisher/alarm/foam) adequate, operational, inspected and tagged, with extinguishers turned over once/month? Are hoses free from deterioration? | _____ | _____ |

**Comments:** \_\_\_\_\_  
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**Signature:** \_\_\_\_\_

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**AREA 300 BOILER ROOM**

- |   | Yes   | No    |
|---|-------|-------|
| 1. Is the boiler room <b>floor</b> kept free of debris/trash?             | _____ | _____ |
| 2. Are boiler <b>controls</b> in good working condition?                  | _____ | _____ |
| 3. Are <b>emergency shutdowns</b> in proper working condition?            | _____ | _____ |
| 4. Are <b>chemical levels</b> kept up to requirements?                    | _____ | _____ |
| 5. Are boiler <b>chemical containers</b> properly marked?                 | _____ | _____ |
| 6. Is the <b>inspection</b> current?                                      | _____ | _____ |
| 7. Is <b>fire protection</b> adequate, operational, inspected and tagged? | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**AREA 600 BOILER ROOM**

- |  | Yes   | No    |
|--|-------|-------|
| 8. Is the boiler room <b>floor</b> kept free of debris/trash?              | _____ | _____ |
| 9. Are boiler <b>controls</b> in good working condition?                   | _____ | _____ |
| 10. Are <b>emergency shutdowns</b> in proper working condition?            | _____ | _____ |
| 11. Are <b>chemical levels</b> kept up to requirements?                    | _____ | _____ |
| 12. Are boiler <b>chemical containers</b> properly marked?                 | _____ | _____ |
| 13. Is the <b>inspection</b> current?                                      | _____ | _____ |
| 14. Is <b>fire protection</b> adequate, operational, inspected and tagged? | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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**MOTOR CONTROL/ELECTRICAL ROOM**

- |   | Yes   | No    |
|---|-------|-------|
| 1. Is the <b>floor</b> clean and kept free of trash and debris?   | _____ | _____ |
| 2. Are <b>spare parts and tools</b> stored in orderly manner?   | _____ | _____ |
| 3. Are <b>electrical panel covers</b> in place and secure?  | _____ | _____ |
| 4. Are <b>exits</b> marked, unobstructed, and well lit?   | _____ | _____ |
| 5. Is all electrical <b>wiring and equipment</b> maintained as specified in the city/state electrical code?   | _____ | _____ |
| 6. Is <b>first aid kit</b> complete and in date?  | _____ | _____ |
| 7. Is <b>Lock Out/Tag Out</b> system properly implemented?  | _____ | _____ |
| 8. Is <b>fire protection</b> (extinguisher/alarm/foam) adequate, operational, inspected and tagged, with extinguishers turned over once/month? Are hoses free from deterioration? | _____ | _____ |

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
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**Signature:** \_\_\_\_\_

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**LOADING RACK**

- |   | Yes   | No    |
|---|-------|-------|
| 1. Are <b>piping, valves and flanges</b> free of leaks?   | _____ | _____ |
| 2. Are piping and handrails free of any apparent <b>damage</b> ?  | _____ | _____ |
| 3. Is <b>lighting</b> adequate and in working order?  | _____ | _____ |
| 4. Are “ <b>dead man</b> ” <b>handles</b> operational?  | _____ | _____ |
| 5. Are <b>ground cables</b> present and in good condition?  | _____ | _____ |
| 6. Is <b>fire protection</b> (extinguisher/alarm/foam) adequate, operational, inspected and tagged, with extinguishers turned over once/month? Are hoses free from deterioration? | _____ | _____ |
| 7. Is <b>spill containment</b> adequate and free of cracks?   | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**DRUM RACK**

- |  |       |       |
|--|-------|-------|
| 1. Are <b>spigots</b> threaded properly onto drum fittings, free of cracks or other deterioration, and kept closed tight/no leaks? | _____ | _____ |
| 2. Are drums <b>properly marked</b> with appropriate hazard label affixed to drum?   | _____ | _____ |
| 3. Is <b>spill containment</b> adequate and in place?  | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

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**OFFICE AREA**

- |   | Yes   | No    |
|---|-------|-------|
| 1. Are <b>desks</b> kept neat and clean?                        | _____ | _____ |
| 2. Are <b>floors</b> clean, dry and free of debris?             | _____ | _____ |
| 3. Are <b>aisles</b> unobstructed?                              | _____ | _____ |
| 4. Is <b>lighting</b> adequate and in good working order?       | _____ | _____ |
| 5. Are <b>lunch table, countertop, and sink</b> kept clean?     | _____ | _____ |
| 6. Is <b>kitchen equipment</b> kept clean and in working order? | _____ | _____ |
| 7. Are <b>cabinets</b> kept neat and orderly?                   | _____ | _____ |
| 8. Is <b>smoke alarm</b> operational?                           | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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**LAB**

- |   | Yes   | No    |
|---|-------|-------|
| 1. Is <b>lab equipment</b> clean and in working order?  | _____ | _____ |
| 2. Are lab <b>work tables</b> free of clutter?  | _____ | _____ |
| 3. Are <b>first aid kit and eye wash</b> complete and in date?  | _____ | _____ |
| 4. Are <b>exhaust hoods</b> (lights, fan) operational?  | _____ | _____ |
| 5. Are <b>spill kits</b> present?   | _____ | _____ |
| 6. Is <b>fire protection</b> (extinguisher/alarm/foam) adequate, operational, inspected and tagged, with extinguishers turned over once/month? Are hoses free from deterioration? | _____ | _____ |
| 7. Are <b>lab solvent containers</b> in good condition and properly marked with contents?   | _____ | _____ |
| 8. Are <b>lab liquid waste containers</b> in good condition, properly labeled, kept closed and emptied each day?  | _____ | _____ |
| 9. Is proper <b>PPE</b> available and in good condition?  | _____ | _____ |
| 10. Is <b>sample storage area</b> clean and orderly?  | _____ | _____ |
| 11. Are sample <b>bottles</b> properly labeled, clean, and no apparent leaks?   | _____ | _____ |
| 12. Are <b>retained samples</b> disposed of in a timely manner when no longer needed?   | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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**ROADS/BOUNDARIES**

- |  | Yes   | No    |
|--|-------|-------|
| 1. Is the <b>road</b> in acceptable condition?                               | _____ | _____ |
| 2. Are the <b>gates</b> operating in good condition?                         | _____ | _____ |
| 3. Is the <b>fence</b> in good condition (no bad rust or broken chain link)? | _____ | _____ |
| 4. Is the <b>barbed wire</b> intact?   | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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**VEHICLES**

1.	Record <b>Mileage</b> _____		
2.	Record <b>Fluid levels</b>		
	Gasoline_____		
	Motor Oil_____		
	Transmission Fluid_____		
	Coolant_____		
	Differential_____		
	Brake_____		
		Yes	No
3.	<b>Battery</b>		
	Corrosion - none apparent	_____	_____
	Water level O.K.	_____	_____
4.	<b>Gauge Pack</b> - operational		
	Fuel	_____	_____
	Amps	_____	_____
	Oil Pressure	_____	_____
	Coolant Temperature	_____	_____
5.	<b>Brakes</b> - operational	_____	_____
6.	<b>Lights</b> - operational		
	Headlights	_____	_____
	Signal lights	_____	_____
	Tail lights	_____	_____
	Brake lights	_____	_____
7.	<b>Tires</b> - good condition	_____	_____
8.	<b>Windshield wipers</b> - good condition	_____	_____
9.	<b>Mirrors</b> - present and good condition	_____	_____
10.	<b>Body</b> - good condition (report any damage)	_____	_____
11.	<b>Seat belts</b> - good condition	_____	_____
12.	<b>Fire extinguisher</b> - adequate, operational, inspected and tagged, with extinguisher turned over once/month? Are hoses free from deterioration?	_____	_____
13.	<b>Cleanliness</b>		
	Interior	_____	_____
	Exterior	_____	_____

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

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**SCBAs**

- |    |  | Yes   | No    |
|----|--|-------|-------|
| 1. | Are all air cylinders full?<br>Pressure_____             | _____ | _____ |
| 2. | Are all air cylinders within <b>hydro date</b> ?         | _____ | _____ |
| 3. | Are all <b>masks</b> clean and available?                | _____ | _____ |
| 4. | Are <b>cleaning and disinfecting</b> supplies available? | _____ | _____ |

**H<sub>2</sub>S Personal Alarms**

- |    |   |       |       |
|----|---|-------|-------|
| 1. | Are all personal alarms <b>available and in proper working order</b> ?          | _____ | _____ |
| 2. | Are <b>calibrations</b> up to date?<br>Calibration date_____                    | _____ | _____ |
| 3. | Are <b>test gases/equipment</b> to check alarm set point available and in date? | _____ | _____ |

**Combustible gas detectors/explosimeters**

- |    |   |       |       |
|----|---|-------|-------|
| 1. | Are instruments <b>available and in proper working order</b> ?                  | _____ | _____ |
| 2. | Are <b>calibrations</b> up to date?<br>Calibration date_____                    | _____ | _____ |
| 3. | Are <b>test gases/equipment</b> to check alarm set point available and in date? | _____ | _____ |

**Drager pumps**

- |    |   |       |       |
|----|---|-------|-------|
| 1. | Are pumps <b>available and in proper working order</b> - bellows checked for leakage and deterioration? | _____ | _____ |
| 2. | Is an adequate number of <b>indicator tubes</b> available in proper range and in date?                  | _____ | _____ |

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**NOTES:**

- Answers to all above questions should be YES. If not, corrective action is to be taken immediately.
- Terminal Manager shall retain a signed copy of inspection for three years from date of signature.

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**Figure G.6. Tank Inspection Report**

DATE:

<input type="checkbox"/> EXTERNAL <input type="checkbox"/> INTERNAL		PLANT		TANK NO.	
CODE	ROOF TYPE	PRODUCT	SIZE	BY	
CLEANED BY (CONT'R)			SANDBLASTED (EXTENT)		
ITEM	CONDITION GOOD/*FAIR/*BAD/N/A		ITEM	CONDITION GOOD/*FAIR/*BAD/N/A	
LEAKS			LEGS		
SETTLEMENT			ROOF RAIN		
FOUNDATION			NON-ROTATOR		
DRAINAGE			SHOES		
INSULATION			SEALS		
PAINT			HANGER ASSEMBLY		
VISUAL CORROSION (EXT)			SECONDARY SEAL		
BOTTOM ANGLE			P/V VENT		
VENTS			FLAME ARRESTOR		
WELDS			MANUAL GAUGE		
NOZZLES			AUTOMATIC GAUGE		
PIPING			FOAM SYSTEM		
WATER DRAW VALVES			HIGH LEVEL ALARM		
LADDER/STAIRWAY			INTERNAL COATING		
PLATFORMS			CORROSION (INT)		
HANDRAILS			PITTING		
SUCKLES/BULGES			SUMP		
ROOF ANGLE			ROOF STRUCTURAL		
MANWAYS			FLOATING SUCTION		
HATCHES			GAUGE WELL		
PONTOONS			STRIKING PLATE		
LADDER			MID POINT THERMOMETER		
GROUND			HEATING COILS		

\* Explain reason for fair and bad condition on comments page.

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Figure G.7. Safety Inspection Form

Vancouver Energy Facility  
 5501 NW Lower River Road  
 Vancouver, WA 98660

\_\_\_\_\_  
 TERMINAL MANAGER

\_\_\_\_\_  
 INSPECTION PERFORMED BY

\_\_\_\_\_  
 DATE

(4) Okay      (X) Correction Needed      (N/A) Not applicable

Evaluation	Date Correction to be Completed	Evaluation Item	Comments
		<b>1. Fire Extinguisher and Fire Blankets</b>	
		a. Checked monthly	
		b. Serviced annually	
		c. In designated place	
		d. Properly mounted	
		e. Seals intact	
		f. Refills available	
		g. Blankets in place/in good condition	
		<b>2. Ignition controls</b>	
		• Spills	
		a. Contained	
		b. Promptly cleaned up	
		c. Employees aware of reporting requirements and procedures followed	
		• Cleaning solvents	
		a. Gasoline not used as solvent	
		b. Approved solvents utilized	
		• Smoking, matches and open flames	
		a. Allowed only in designated area	
		b. Signs posted in appropriate locations	
		c. "Strike anywhere" matches and lighters that do not require two actions prohibited	
		• Hot work	
		a. Hot work permits with Terminal Manager's signature required before beginning work	
		b. Work closely supervised	
		c. Fire watch provided	
		d. Fire extinguishing equipment on standby and ready for use	
		• Power equipment	
		a. Internal combustion engines, electrical hand tools, other power equipment not allowed in flammable mixture atmosphere	
		• Heating equipment	
		a. Heating equipment supplied without ignition source	
		b. Properly installed and correct design	
		c. Heater rooms clean and orderly and not utilized for storage	
		• Electrical equipment	
		a. Installed in compliance with NFPA and API recommended practices	
		b. All breakers labeled	

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(4) Okay      (X) Correction Needed      (N/A) Not applicable

Evaluation	Date Correction to be Completed	Evaluation Item	Comments
		<ul style="list-style-type: none"> <li>• Spontaneous combustion and vegetation</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Oily rags, trash and flammable material stored in covered metal containers or isolated</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Grass, weeds, etc., controlled and good housekeeping maintained</li> </ul>	
		<b>3. Fire Control Procedure</b>	
		<ul style="list-style-type: none"> <li>• Written preplanned emergency procedure on hand</li> </ul>	
		<ul style="list-style-type: none"> <li>• All employees familiar with procedure and drills conducted</li> </ul>	
		<ul style="list-style-type: none"> <li>• Local fire department personnel involved and familiar with facility</li> </ul>	
		<b>4. Personnel Safety</b>	
		<ul style="list-style-type: none"> <li>• First Aid</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Fully equipped first aid kit on premises</li> </ul>	
		<ul style="list-style-type: none"> <li>• Falls</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Safe working/work surfaces maintained</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Ladders for access available</li> </ul>	
		<ul style="list-style-type: none"> <li>c. Snow and ice treated or removed as necessary</li> </ul>	
		<ul style="list-style-type: none"> <li>• Hand tools</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Special tools provided (i.e. bung wrenches, drumcarts, trucks, skids)</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Defective tools removed from service</li> </ul>	
		<ul style="list-style-type: none"> <li>c. Tools properly stored for inventory control</li> </ul>	
		<ul style="list-style-type: none"> <li>• Lifting</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Personnel instructed on proper lifting techniques</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Assist devices provided</li> </ul>	
		<ul style="list-style-type: none"> <li>• Contact with petroleum products</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Contaminated clothing removed properly</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Decontamination facilities provided</li> </ul>	
		<ul style="list-style-type: none"> <li>c. Tank entry and cleaning precautions taken</li> </ul>	
		<ul style="list-style-type: none"> <li>d. Inhalation of vapors controlled</li> </ul>	
		<ul style="list-style-type: none"> <li>• Personal protective equipment</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Safety shoes</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Hard hats</li> </ul>	
		<ul style="list-style-type: none"> <li>c. Eye and face protection</li> </ul>	
		<ul style="list-style-type: none"> <li>d. Appropriate work clothing</li> </ul>	
		<b>5. Yard Safety</b>	
		<ul style="list-style-type: none"> <li>• Vehicle parking</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Designated area(s) remote from operating area</li> </ul>	
		<ul style="list-style-type: none"> <li>• Drum storage</li> </ul>	
		<ul style="list-style-type: none"> <li>a. Neatly arranged</li> </ul>	
		<ul style="list-style-type: none"> <li>b. Checked and supported</li> </ul>	
		<ul style="list-style-type: none"> <li>c. Away from bulk tanks</li> </ul>	
		<ul style="list-style-type: none"> <li>d. Secured from unauthorized persons</li> </ul>	
		<ul style="list-style-type: none"> <li>e. Bungs in place on empties</li> </ul>	
		<ul style="list-style-type: none"> <li>f. Leaking drums disposed of</li> </ul>	
		<ul style="list-style-type: none"> <li>• Fences and gates</li> </ul>	
		<ul style="list-style-type: none"> <li>•</li> </ul>	

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(4) Okay      (X) Correction Needed      (N/A) Not applicable

Evaluation	Date Correction to be Completed	Evaluation Item	Comments
		a. Good condition	
		b. Total perimeter protection	
		c. Lock equipped	
		• Drainage	
		a. Adequate drainage	
		b. Ditches and sewers in repair	
		c. Public draining systems and waterways protected	
		• Walkways and Driveways	
		a. Clear and crossovers over pipes and ditches	
		b. Level and free of potholes	
		c. Fixed equipment protected with barriers	
		• General	
		a. Stop signs at highway exits	
		b. Speed limit and one-way signs	
		c. Emergency notice signs	
		d. Signs prohibiting unauthorized vehicles	
		e. "No smoking" signs posted at manifold, rack and tank areas	
		f. Road conditions checked	
		g. Weed control maintained	
		h. Overhead wiring identified	
		i. General housekeeping maintained	
		j. Man holes secured	
		<b>6. Warehouse Safety</b>	
		• Doors, passageways and windows	
		a. Windows and doors in good condition and mechanisms in working order	
		b. Passageways clear	
		c. Fire equipment not blocked	
		d. Exits identified	
		• Floors and stairways	
		a. Free from oil, grease, water, weak flooring and holes	
		b. Support members in good condition and load limits posted	
		• Packaged stocks	
		a. Stacked properly and secured	
		b. Pallets in good condition, empties stored outside	
		c. Drums and packaged goods sealed and spills promptly cleaned up	
		d. Drums containing material with flash points of 100 F or below not stored inside unless local fire codes met	
		• Filling portable containers	
		a. Filling done outside only and ignition sources eliminated	
		b. Drum and container connected to prevent static charge build up	
		<b>7. Garage Safety</b>	
		a. Exhaust vented outside or doors left open	
		b. Flammables stored outside and atmosphere vapor-free	
		c. Proper housekeeping maintained	

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(4) Okay (X) Correction Needed (N/A) Not applicable

Evaluation	Date Correction to be Completed	Evaluation Item	Comments
		<b>8. Pumps and Motors</b>	
		a. Motor controls and pumps identified and remote controls provided	
		b. Ventilation in pumphouse adequate and considered off limits for storage or other purposes	
		c. Ventilators not blocked	
		d. All moving parts guarded	
		e. Free of leaks	
		f. Electrical services maintained and approved for area classifications	
		g. Pressure gauges	
		h. Drain lines and utility piping	
		i. Seals and packing	
		<b>9. Storage Tanks</b>	
		a. Dike stairways, walkways, ladders and handrails provided	
		b. Water draws functional	
		c. Tank shell in good condition and painted	
		d. Proper grounds – tank and pumps	
		e. Leaky valves or piping or tank repaired	
		f. Electrical wiring per code	
		g. Vacuum and relief valves functional	
		h. Hatch seals and emergency vents operational	
		i. Condition of roof checked	
		j. Housekeeping, erosion, weeds and debris checked	
		• High level alarms	
		a. Level switches functional	
		b. Properly set	
		c. Audio	
		d. Visual	
		e. Transmission of signal	
		<b>11. Railroad Tank Cars</b>	
		• General	
		a. Authorized personnel only	

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Evaluation	Date Correction to be Completed	Evaluation Item	Comments
		<ul style="list-style-type: none"> <li>• Spotting cars</li> </ul>	
		a. Car mover tool available	
		b. Brakes set and wheels blocked	
		c. Sign – “Stop – Tank Car Connected” posted on track	
		<ul style="list-style-type: none"> <li>• Opening cars</li> </ul>	
		a. Pressure relieved before opening dome or outlet valve	
		b. Proper tools utilized	
		c. Volume and contents verified	
		<ul style="list-style-type: none"> <li>• Tank delivery</li> </ul>	
		a. Valves properly set	
		b. Checked for leaks and catch container available	
		c. Delivery lines checked for leaks	
		d. System and cars secured after delivery completed	
		<ul style="list-style-type: none"> <li>• Miscellaneous</li> </ul>	
		a. Stairways, walkways and handrails	
		b. Oily rag storage	
		c. Fire extinguishers	
		d. Truck and rack ground wires	
		e. General housekeeping	
		<b>12. Manifold Areas</b>	
		a. Valves and flanges	
		b. Sump covers and alarms	
		c. Electrical wiring and lights	
		d. Separators	
		e. Fire extinguishers	
		f. Housekeeping and cleanliness	
		g. Bleeder valves	
		h. Proper tanks	
		i. Valve operator	
		j. Valve numbered and tagged per line up drawing	
		k. Sample box	
		<b>13. Sample House</b>	
		a. Proper storage of samples – daily samples being pulled	
		b. Outdated samples	
		c. Stored material other than samples	
		d. Identification of building	
		e. No smoking	
		f. Proper ventilation	
		g. Building condition	
		h. Housekeeping	
		<b>14. Laboratory</b>	
		a. Gas connections checked	
		b. Flammables properly stored	
		c. Proper ventilation	
		d. Chemicals properly stored	
		e. Smoking prohibited	
		f. Adequate equipment	
		g. Drains properly set up	
		<b>15. Building</b>	
		a. In good repair	

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(4) Okay (X) Correction Needed (N/A) Not applicable

Evaluation	Date Correction to be Completed	Evaluation Item	Comments
		b. Electrical wiring	
		c. Flues and vents	
		d. Restrooms	
		e. Bulletin board up to date	
		f. Proper disposal of waste	
		g. Lighting	
		<b>16. Office Records</b>	
		a. Administrative procedure guide	
		b. Terminal procedure guide	
		c. Filing system neat and orderly	
		d. General housekeeping	
		e. Storage of files	
		f. Phone numbers posted – emergency numbers	
		g. Operating procedure	
		h. Valve line up charts and drawing	
		i. Emergency procedure	
		j. Loading procedure	
		k. Record of keys	
		l. Loading agreements	
		m. Invoice registers	
		n. Inventory and sales report up to date	
		o. Contingency plan up to date	
		p. Reports filed and current	
		q. Meter vs. tank gauge	
		r. Tickets	
		s. Provings	
		t. Monthly distillation test results	

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Operations Facility Oil Spill Contingency Plan  
EFSEC Application for Site Certification No. 2013-01  
Docket No. EF131590



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Appendix H  
Trajectory Analysis

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# Tesoro Vancouver Terminal Trajectory Planning



Prepared by:  
NJResources   
[www.njr.net](http://www.njr.net)



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**1.0 TRAJECTORY ANALYSIS ..... 1**  
**2.0 DESCRIPTION OF THE GEOGRAPHIC AREA..... 2**  
**3.0 PLANNING AREA MAPS ..... 3**  
**4.0 STREAM VELOCITY ..... 11**



## **1.0 Trajectory Analysis**

This trajectory analysis is intended to comply with WAC 173P182P230(4)(c)(v) which requires a description of the geographic area that could be impacted from a spill at the location based on a forty-eight hour worst case spill trajectory analysis.

The trajectory analysis was conducted using speed/time/distance calculations with stream velocity data obtained from the U.S. Geographic Survey being used as the prime mover.

To select the stream velocity for the trajectory historical data from 2013 was examined and an average velocity of 2 feet per second (1.2 knots) was selected.

No wind was used in determining the trajectory. Wind is likely to result in spilled oil beaching rather than continuing down river.

## **2.0 Description of the Geographic Area**

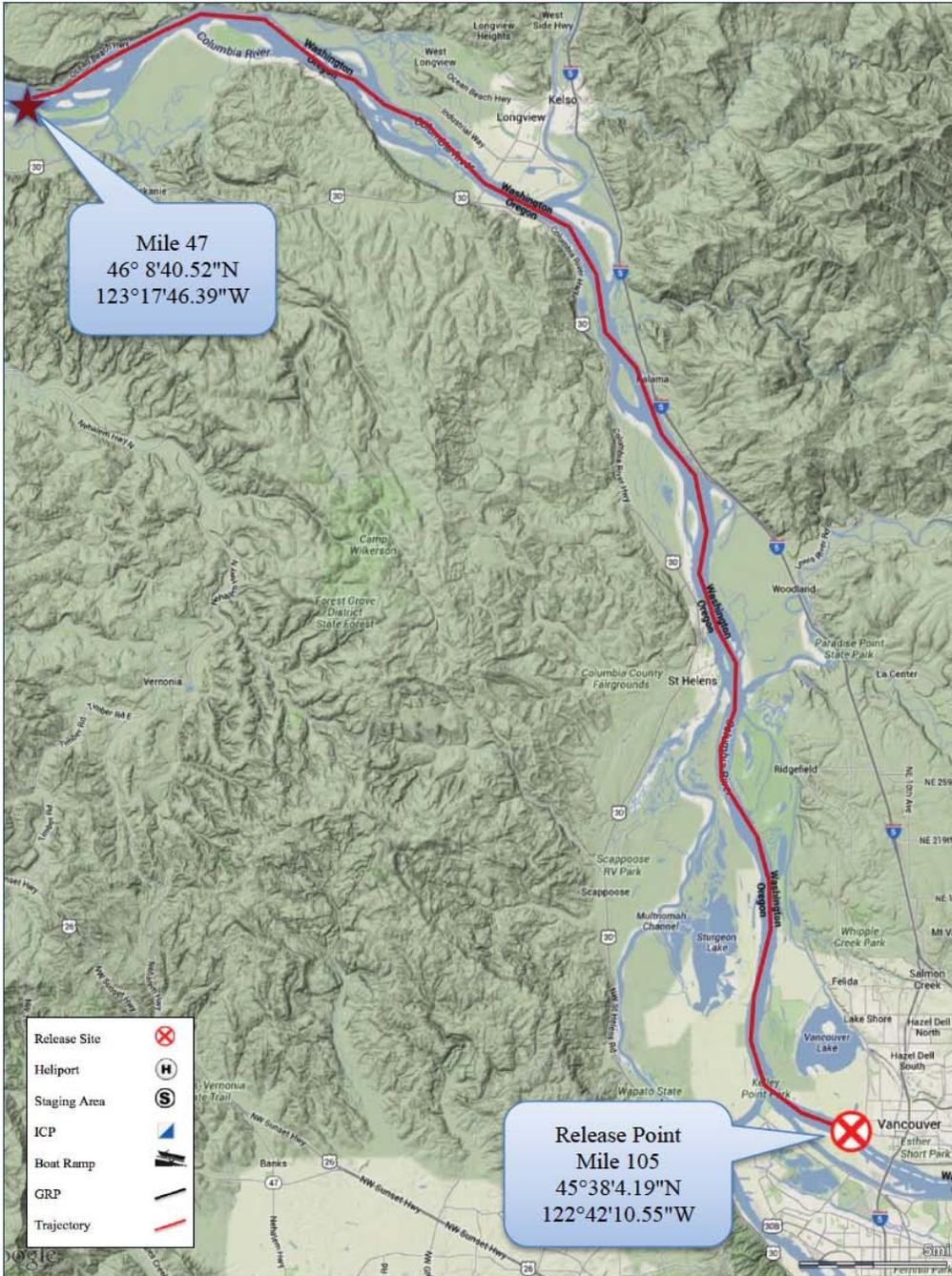
The geographic area of potential impact from an incident originating in Vancouver, Washington within 48 hours of release is the Lower Columbia River from river mile 105 (45°38'4.19"N, 122°42'10.55"W) to river mile 47 (46° 8'40.52"N, 123°17'46.39"W).

### 3.0 Planning Area Maps

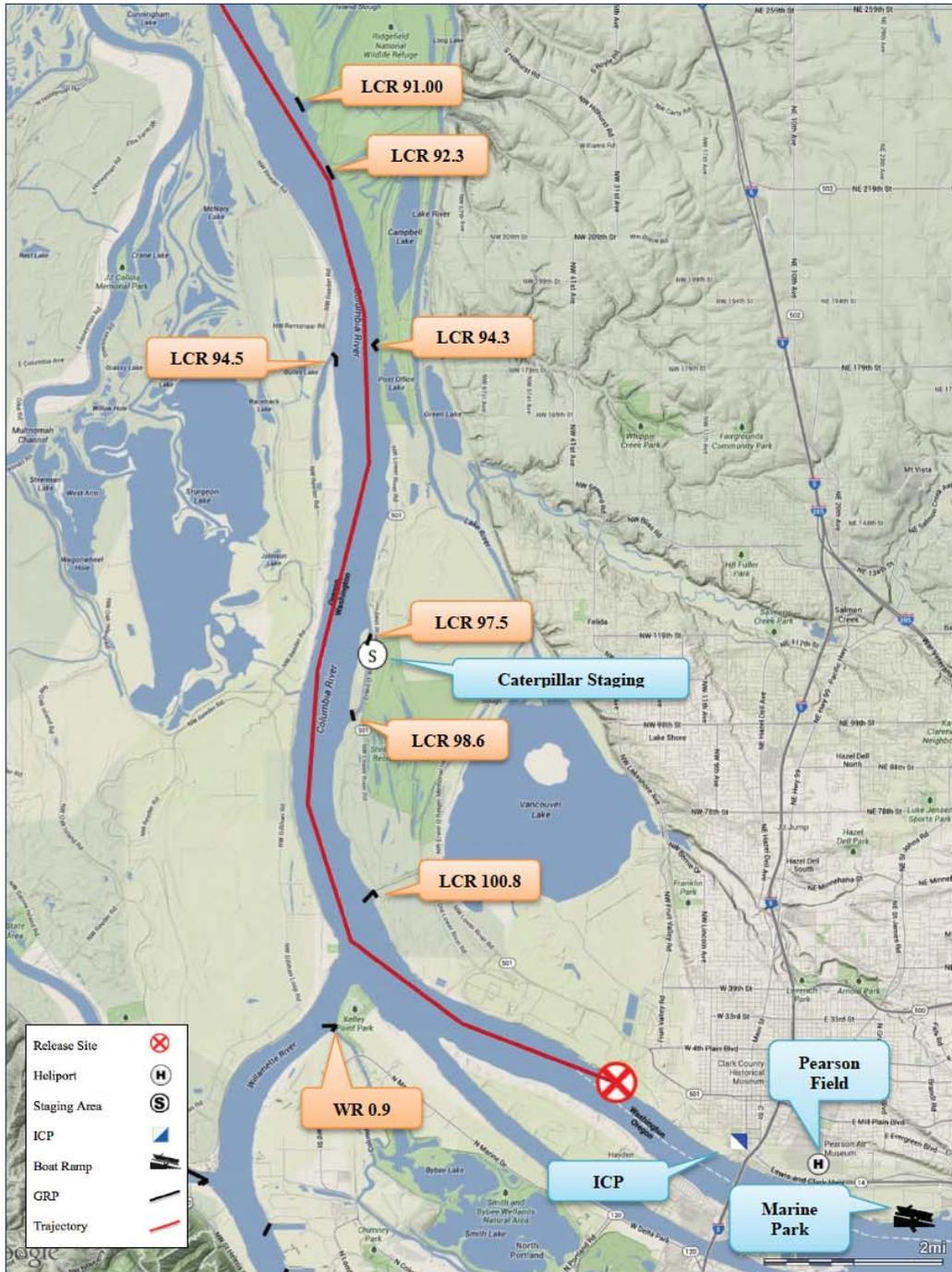
Planning Area Maps are provided in this Section that represent the linear distance traveled in miles based on historical average stream velocity (see section 4). Maps are provided for 48 hours from the time of an incident.

Release Site	
Heliport	
Staging Area	
ICP	
Boat Ramp	
GRP	
Trajectory	

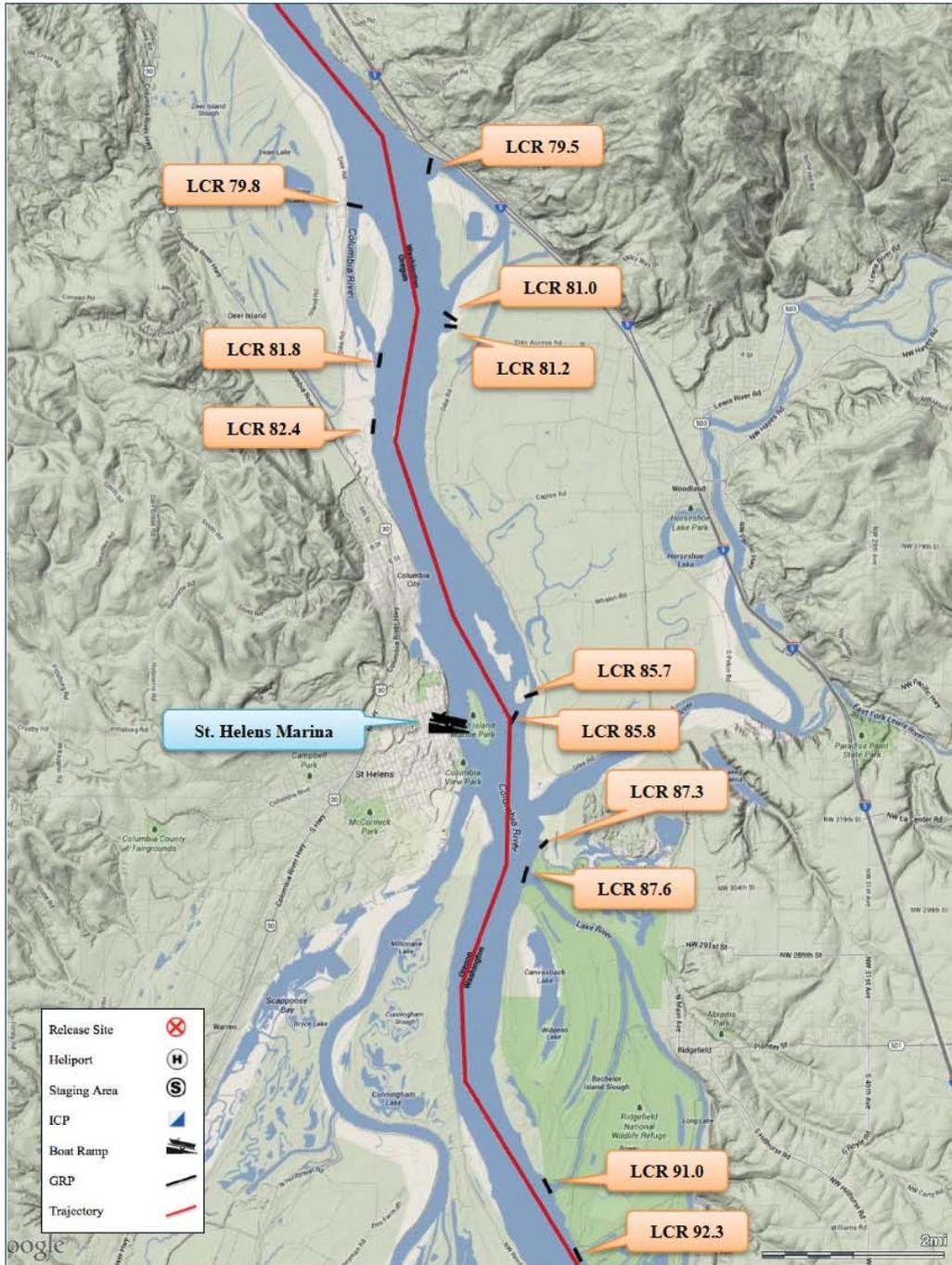
3.1 48-Hour Trajectory River Mile 105 - 47



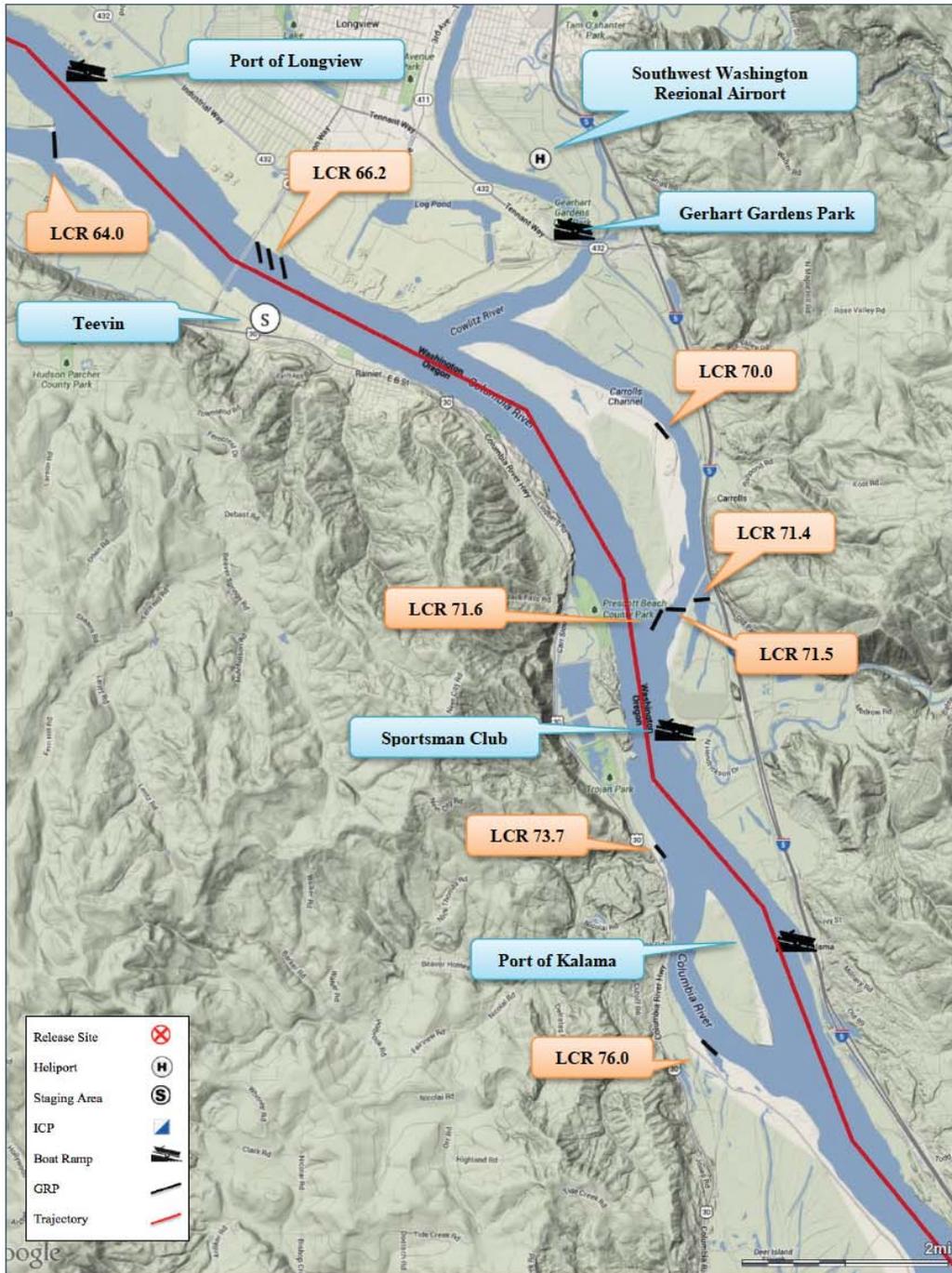
3.2 48 Hour Trajectory River Mile 105 – 91



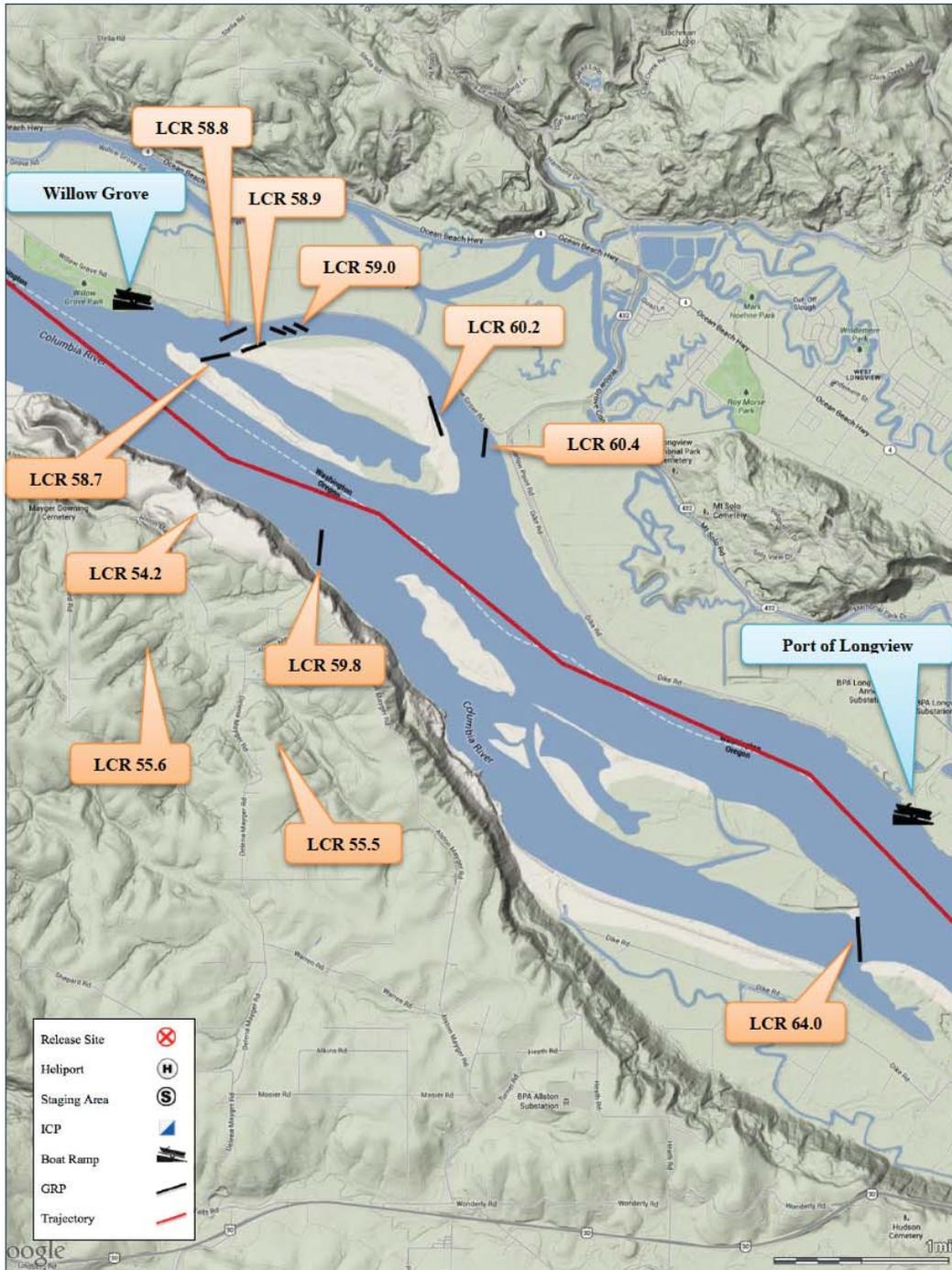
3.3 48 Hour Trajectory River Mile 91 – 78



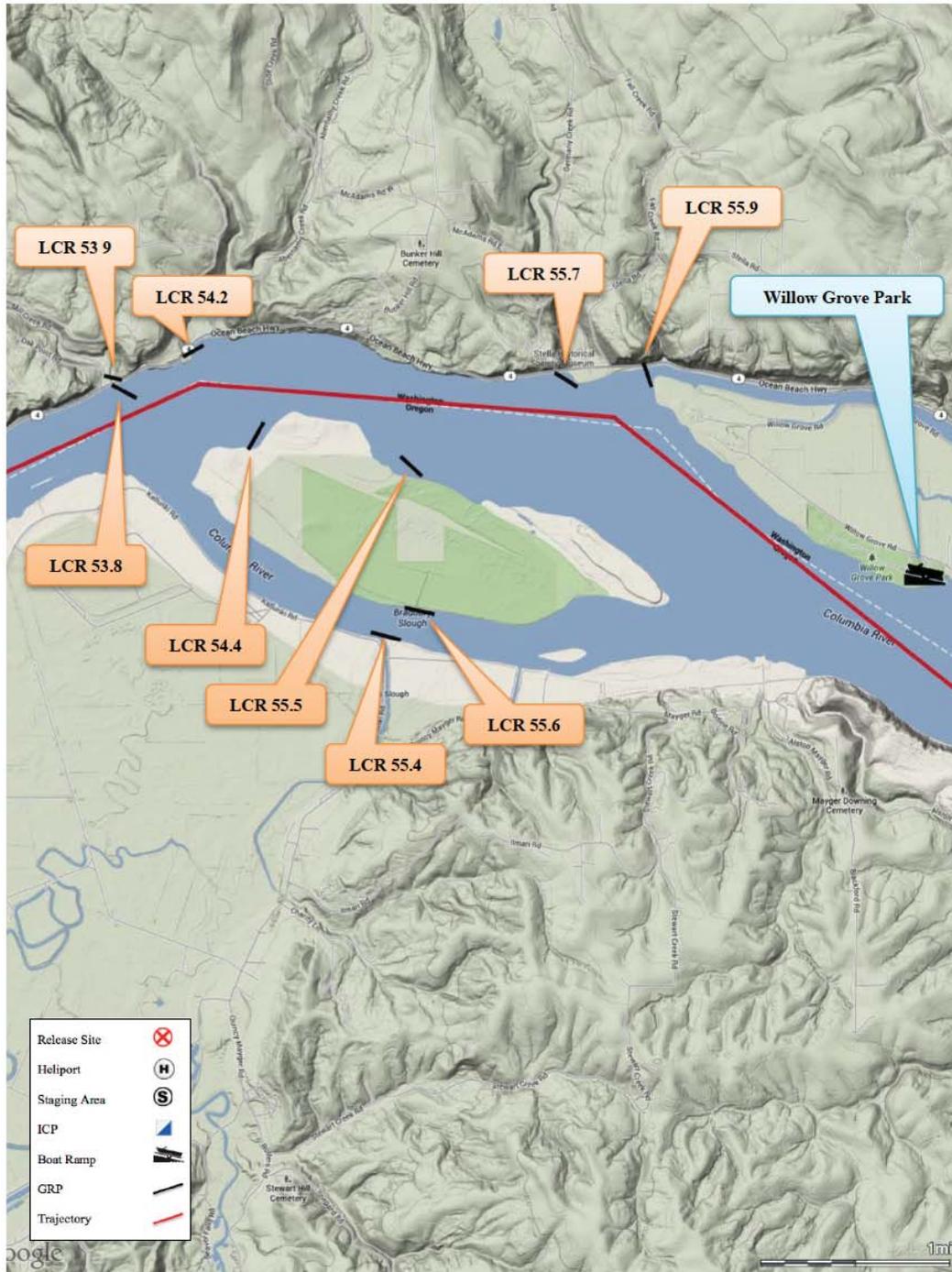
3.4 48 Hour Trajectory River Mile 78 – 63



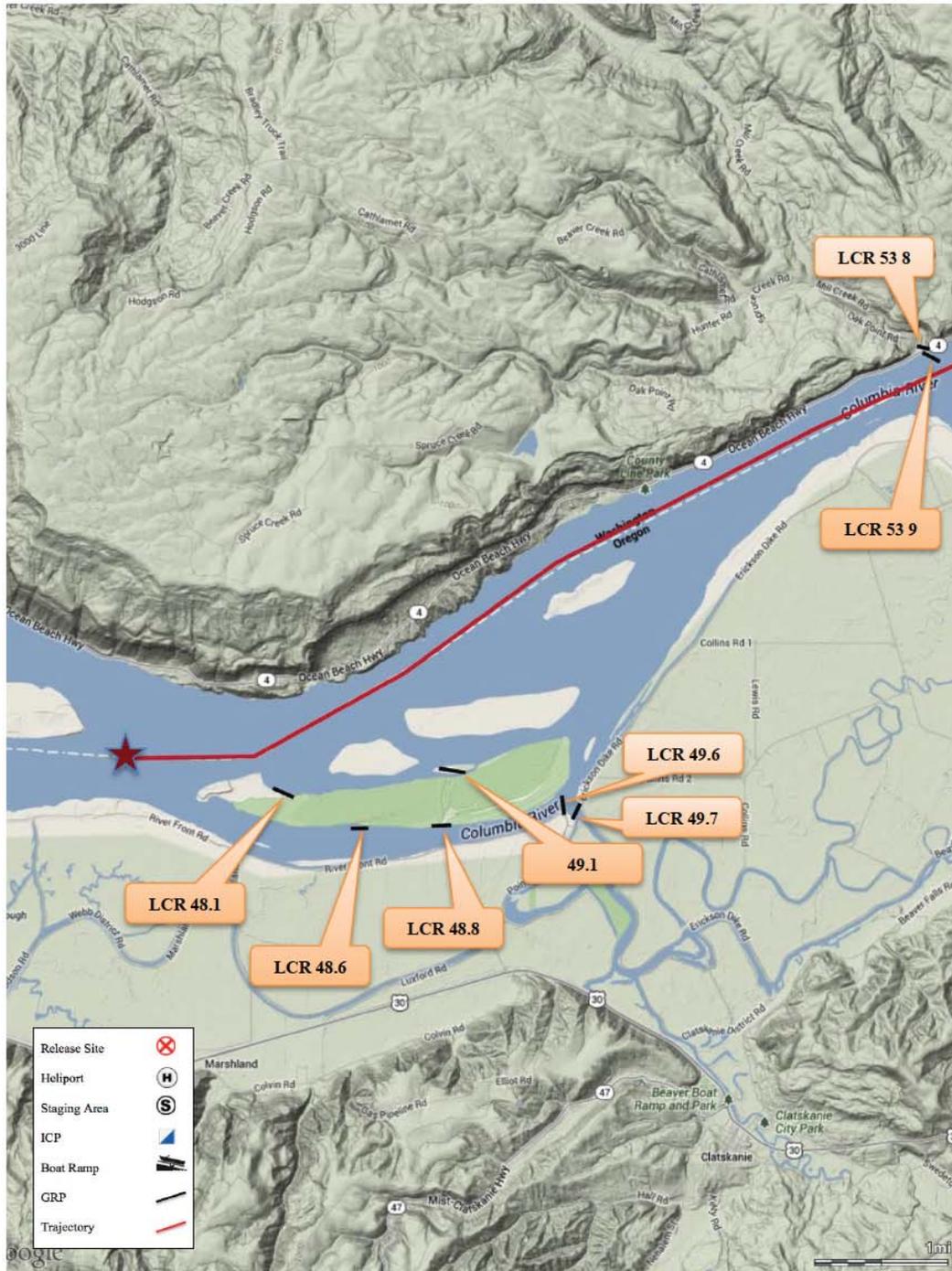
3.5 48 Hour Trajectory River Mile 63 – 57



3.5 48 Hour Trajectory River Mile 57 – 53



3.5 48 Hour Trajectory River Mile 54 – 47



## 4.0 Stream Velocity

Stream velocity data was obtained from the U.S. Geographic Survey.

<http://nwis.waterdata.usgs.gov>

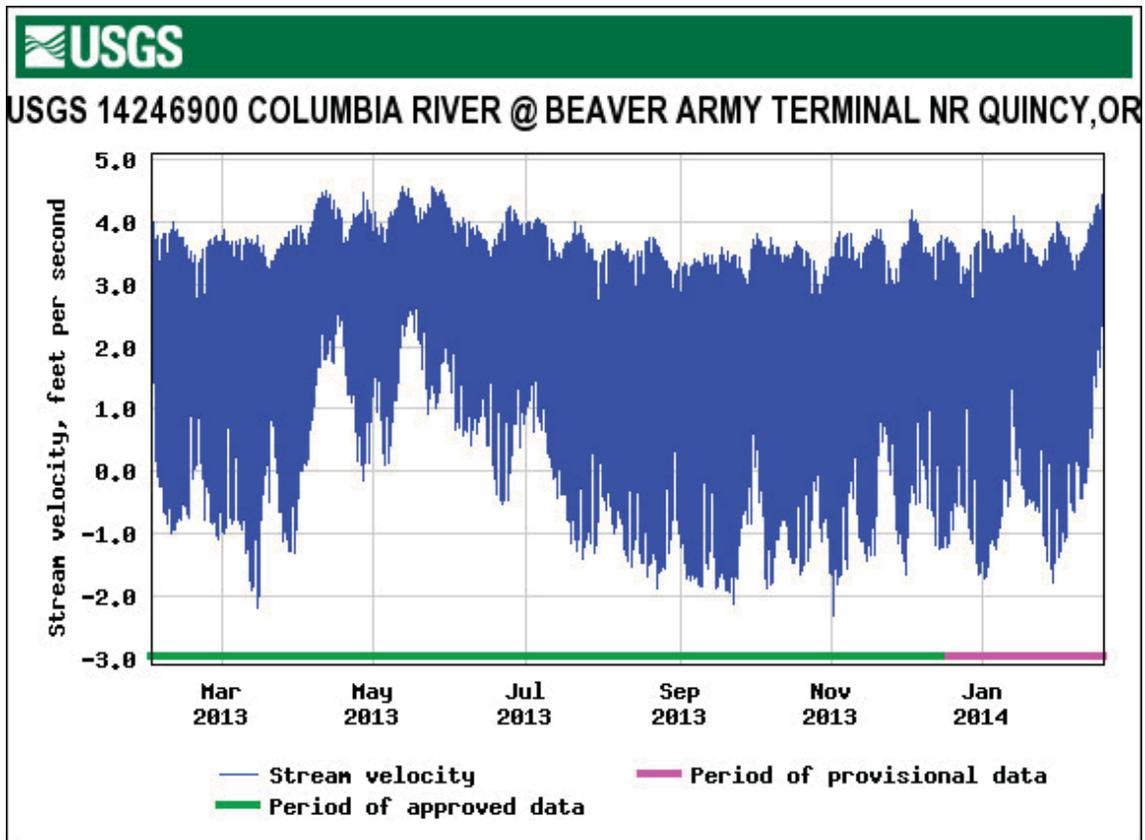


Figure 1 Stream Velocity in feet per second

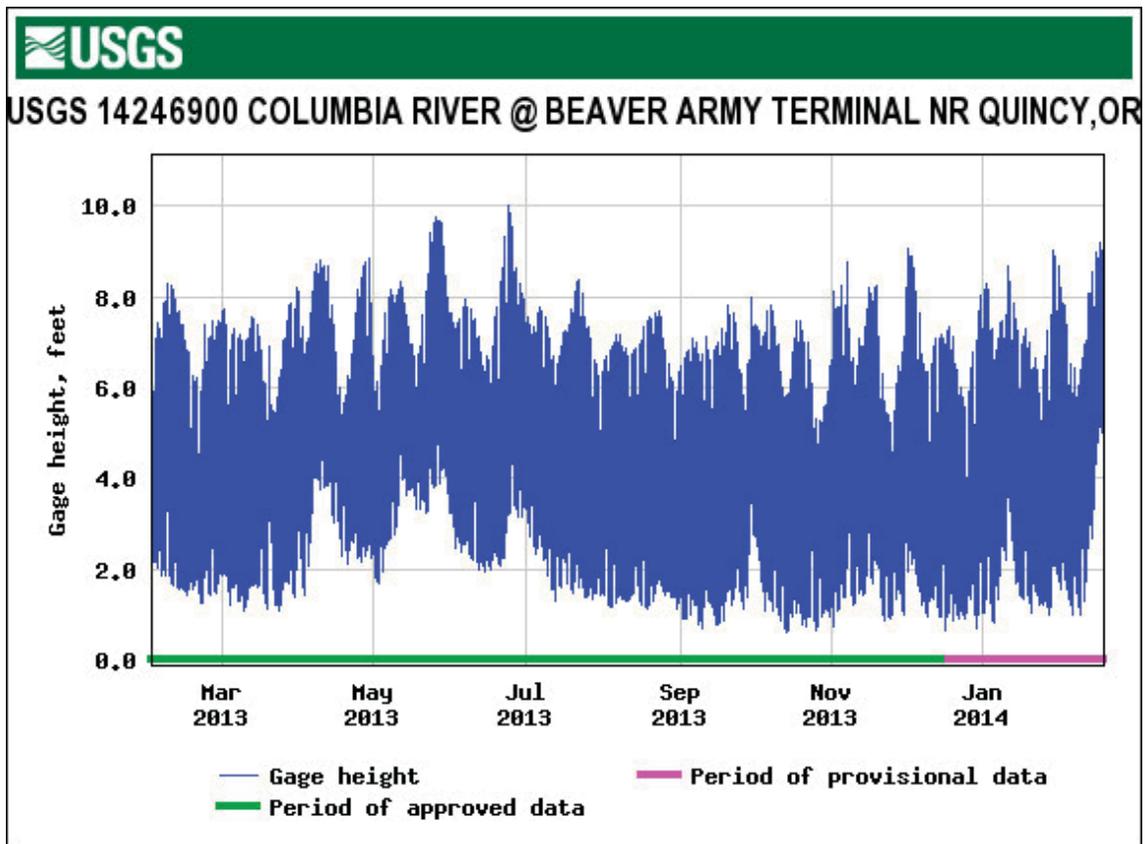


Figure 2 Gage Height, feet

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Docket No. EF131590



Appendix I  
Acronyms and Definitions

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**APPENDIX I  
ACRONYMS AND DEFINITIONS**

**ACRONYMS**

ACP ..... Area Contingency Plan  
 API.....American Petroleum Institute  
  
 bbl.....barrel  
 BS&W..... bottom sediment and water  
  
 CFR..... Code of Federal Regulations  
 CHRIS ..... Chemical Hazards Response Information System  
 Company..... Tesoro Savage Petroleum Terminal LLC  
 CRC..... Clean Rivers Cooperative, Inc.  
  
 DOT.....Department of Transportation  
  
 Ecology.....Washington State Department of Ecology  
 EFSEC ..... Energy Facility Site Evaluation Council  
 EMD ..... Emergency Management Division  
 EPA .....U. S. Environmental Protection Agency  
 ESA..... Endangered Species Act  
 ESI..... Ecological Site Inventory (EPA)  
  
 Facility ..... Vancouver Energy  
 FOSC .....Federal On-Scene Coordinator  
 fps..... feet per second  
 frac tanks.....fractionation tanks  
 FRP ..... Facility Response Plan  
  
 gal.....gallons  
 GRP..... Geographic Response Plan  
  
 hazmat.....hazardous materials  
  
 IBRRC ..... International Bird Rescue Research Center  
 IC/RP..... Incident Commander/Responsible Party  
 ICS ..... Incident Command System  
 IMT ..... Incident Management Team  
 IRT..... Initial Response Team  
  
 LOSC..... Local On-Scene Coordinator  
  
 MFSA ..... Marine Fire and Safety Association  
 MMPA..... Marine Mammal Protection Act  
 MRUs ..... Mobile Rehabilitation Units  
 MSRC..... Marine Spill Response Corporation

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NIMS ..... National Incident Management System  
 NMFS ..... National Marine Fisheries Service  
 NOAA ..... National Oceanic and Atmospheric Administration  
 NRC ..... National Response Center (USCG)  
 NRCES ..... NRC Environmental Services  
  
 OPA 90 ..... Federal Pollution Act of 1990  
 OSCP ..... oil spill contingency plan  
 OSSM ..... Oil Spill Simulation Model  
  
 PHS ..... Priority Habitats and Species  
 Port ..... Port of Vancouver USA  
 PPE ..... personal protective equipment  
 PRC ..... primary response contractor  
  
 RCW ..... Revised Code of Washington  
 RM 103.5 ..... River Mile 103.5  
 RRT ..... Regional Response Team  
  
 TOSC ..... Tribal On-Scene Coordinator  
 TPH ..... total petroleum hydrocarbons  
  
 USCG ..... U.S. Coast Guard  
 USDOT ..... U. S. Department of Transportation  
 USFWS ..... U. S. Fish and Wildlife Service (USDOI)  
  
 WAC ..... Washington Administrative Code  
 WDFW ..... Washington State Department of Fish and Wildlife  
 WSDOT ..... Washington State Department of Transportation

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## DEFINITIONS

### **Access/Staging Areas**

Designated areas offering access to spill sites for the gathering and deployment of spill response equipment and personnel.

### **Absorbent Material**

Any of the several materials designed to absorb oil, both hydrocarbon and non-hydrocarbon.

### **Adverse Weather**

The weather conditions that will be considered when identifying response systems and equipment in a response plan for the applicable operating environment. Factors to consider include significant wave height, ice, temperature, weather-related visibility, and currents with the Captain of the Port zone in which the systems or equipment are intended to function.

### **Alteration**

Any work on a tank or related equipment involving cutting, burning, welding, or heating operations that changes the physical dimensions or configuration of a tank.

### **Average Most Probable Discharge**

A discharge of the lesser of 50 barrels (2,100 gallons) or 1 percent of the volume of the worst-case discharge.

### **Barrel**

Measure of space occupied by 42 U.S. gallons at 60°F.

### **Boom**

Any number of specially designed devices that float on water and are used to contain or redirect the flow of oil on the water's surface.

### **Boom Deployment**

The methodology for installing boom based on differing water depths, currents, wave heights, etc.

### **Booming Strategies**

Techniques which identify the location, quantity, and type of boom required to protect differing water bodies and their shore lines. These strategies are developed by identifying potential spill scenarios and assuming certain conditions which affect oil movement on water.

### **Captain of the Port Zone**

A zone specified in 33 CFR Part 3 and the seaward extension of that zone to the outer boundary of the exclusive economic zone.

### **Coastal Waters**

All tidally influenced waters extending from the head of tide seaward to the three marine league limit of state jurisdiction; and non-tidally influenced waters extending from the head of tide in the arms inland to the point at which navigation by regulated vessels is naturally or artificially obstructed.

### **Command Post**

A site located at a safe distance from the spill site where response decisions are made, equipment and manpower deployed, and communications handled. The Incident Commander and the On-Scene Coordinators may direct the on-scene response from this location.

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**Communication Equipment**

Equipment that will be used during response operations to maintain communication between employees, contractors, and federal/state/local agencies.

**Complex**

A facility possessing a combination of transportation-related and non-transportation-related components that is subject to the jurisdiction of more than one Federal agency under Section 311(j) of the CWA.

**Containment Boom**

A flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to entrap and contain the product for recovery.

**Contamination Reduction Zone**

The area between the contaminated zone and the clean zone. This area is designed to reduce the probability that the clean zone will become contaminated. Also known as the warm zone.

**Contingency Plan**

A document used by (1) federal, state, and local agencies to guide ties planning and response procedures regarding spill of oil, hazardous substances, or other emergencies; (2) a document used by industry as a response plan to spills of oil, hazardous substances, or other emergencies occurring upon their vessels or at their facilities.

**Contract or Other Approved Means**

Includes

- A written contractual agreement with a response contractor. The agreement should identify and ensure the availability of the specified personnel and equipment described under USCG Regulations within stipulated response times in the specified geographic areas;
- Certification by the facility owner or operator that the specified personnel and equipment described under USCG regulations are owned, operated, or under the direct control of the facility owner and operator, and are available within stipulated times in the specified geographic areas;
- Active membership in a local or regional oil spill removal organization that has identified specific personnel and equipment described under USCG regulations that are available to respond to a discharge within stipulated times in the specified geographic areas;
- A document, which
  - Identifies the personnel, equipment, services, capable of being provided by the response contractor within stipulated response times in specified geographic areas;
  - Sets out the parties' acknowledgment that the response contractor intends to commit the resources in the event of a response;
  - Permits the U.S. Coast Guard to verify the availability of the response resources identified through tests, inspections, and drills; and
  - Is incorporated by reference into the response plan; or
  - For a facility that could reasonably be expected to cause substantial harm to the environment, with the consent of the response contractor or oil spill removal organization, the identification of a response contractor or oil spill removal organization with specified equipment and personnel which are available within stipulated response times in specific geographic areas.

**Critical Areas**

Areas which, if impacted by a spill, may result in threats to public health and/or safety.

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**Crude Oil**

Any liquid hydrocarbon mixture occurring naturally in the earth, whether or not treated to render it suitable for transportation, and includes crude oil from which certain distillate fractions may have been removed and crude oil to which certain distillate fractions may have been added.

**Cultural Resources**

Current, historic, prehistoric, and archaeological resources which include deposits, structures, sites, ruins, buildings, graves, artifacts, fossils, or other objects of antiquity which provide information pertaining to historical or prehistoric culture of people as well as the natural history of the state.

**Damage Assessment**

The process of determining and measuring damages and injury to the human environment and natural resources, including cultural resources. Damages include differences between the conditions and use of natural resources and the human environment that would have occurred without the incident, and the conditions and use that ensued following the incident. Damage assessment includes planning for restoration and determining the costs of restoration.

**Decontamination**

The removal of hazardous substances from personnel and equipment necessary to prevent adverse health effects.

**Discharge Cleanup Organization**

A corporation, proprietorship, partnership, company organization, or association that has, as its primary function, engaged itself in the response to, cleanup, and removal of spills of oil or hazardous substance.

**Dispersants**

Those chemical agents that emulsify, disperse, or solubilize oil into the water column or promote the surface spreading of oil slicks to facilitate dispersal of the oil into the water column.

**Diversion Boom**

A flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to deflect or divert the product towards a pick up point, or away from certain areas.

**Ecology**

The Washington State Department of Ecology.

**Emergency Operations Center**

The pre-designated site where local and state agencies direct and manage off-scene logistics support to on-scene emergency operations.

**Emergency Response Phase, Emergency Phase**

The portion of a spill response where the primary concern is the alleviation of the immediate danger to human life, health, safety, or property by stabilizing the real or threatened release. This incident specific definition is to be made by the Incident Commander representing an appropriate First Response Agency.

**Emergency Service**

Those activities provided by the state and local government to prepare for and carry out any activity to prevent, minimize, respond to, or recover from an emergency.

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**Exclusion Zone**

The area where contamination does or may occur.

**Environmentally Sensitive Areas**

Streams and water bodies, aquifer recharge zones, springs, wetlands, agricultural areas, bird rookeries, endangered or threatened species (flora and fauna) habitat, wildlife preserves or conservation areas, parks, beaches, dunes, or any other area protected or managed for its natural resource value.

**Exclusive Economic Zone**

The zone contiguous to the territorial sea of the United States extending to a distance up to 200 nautical miles from the baseline from which the breadth of the territorial sea is measured.

**Facility**

Any pipeline, structure, equipment, or device used for handling oil including, but not limited to, underground and aboveground storage tanks, impoundment's, mobile or portable drilling or workover rigs, barge mounted drilling or workover rigs, and portable fueling facilities located offshore or on or adjacent to coastal waters or any place where a discharge of oil from the facility could enter coastal waters or threaten to enter the coastal waters.

**Facility that could be reasonably expected to cause significant and substantial harm**

Any fixed MTR onshore facility (including piping and bay structures that are used for the transfer of oil between a vessel and a facility) that is capable of transferring oil, in bulk, to or from a vessel of 250 barrels or more, and a deep-water port. This also includes any facility especially identified by the Captain of the Port.

**Facility that could reasonably be expected to cause substantial harm**

Any mobile MTR facility that is capable of transferring oil to or from a vessel with a capacity of 250 barrels or more.

**Federal Fund**

The oil spill liability trust fund established under OPA.

**First Responders, First Response Agency**

A public health or safety agency (i.e., fire service or police department) charged with responding to a spill during the emergency phase and alleviating immediate danger to human life, health, safety, or property.

**Fish and Wildlife and Sensitive Environments**

Areas that may be identified by either their legal designation or by evaluations of Area Committees (for planning) or members of the federal On-Scene Coordinator's spill response structure (during responses). These areas may include wetlands, National and State parks, critical habitats for endangered/threatened species, wilderness and natural resource areas, marine sanctuaries and estuarine reserves, conservation areas, preserves, wildlife refuges, wild and scenic rivers, recreational areas, and historical and archeological sites and parks. These areas may also include unique habitats such as aquaculture sites and agricultural surface water intakes, bird nesting areas, critical biological resource areas, designated migratory routes, and designated seasonal habitats.

**Harmful Quantity of Oil**

The presence of oil from an unauthorized discharge in a quantity sufficient either to create a visible film or sheen or discoloration upon water, shoreline, tidal flat, beach, or marsh, or to cause a sludge or emulsion to be deposited beneath the surface of the water or on a shoreline, tidal flat, beach, or marsh.

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**Hazardous Material**

Any nonradioactive solid, liquid, or gaseous substance which, when uncontrolled, may be harmful to humans, animals, or the environment. Including but not limited to substances otherwise defined as hazardous wastes, dangerous wastes, extremely hazardous wastes, oil, or pollutants.

**Hazardous Substance**

Any substance designated as such by the Administrator of EPA pursuant to the **Comprehensive Environmental Response, Compensation, and Liability Act**; regulated pursuant to Section 311 of the **Federal Water Pollution Control Act**.

**Hazardous Waste**

Any solid waste identified or listed as a hazardous waste by the Administrator of the EPA pursuant to the federal **Solid Waste Disposal Act**, as amended by the **Resources Conservation and Recovery Act** (RCRA), 42 U.S.C., Section 6901, et seq as amended. The EPA Administrator has identified the characteristics of hazardous wastes and listed certain wastes as hazardous in Title 40 of the **Code of Federal Regulations**, Part 261, Subparts C and D respectively.

**Heat Stress**

Dangerous physical condition caused by over exposure to extremely high temperatures.

**Higher Volume Port Area**

Ports of

- Boston, MA
- New York, NY
- Delaware Bay and River to Philadelphia, PA
- St. Croix, VI
- Pascagoula, MS
- Mississippi River from Southwest Pass, LA to Baton Rouge, LA
- Louisiana Offshore Oil Port (LOOP), LA
- Lake Charles, LA
- Sabine-Nachez River, TX
- Galveston Bay and Houston Ship Channel, TX
- Corpus Christi, TX
- Los Angeles/Long Beach Harbor, CA
- San Francisco Bay, San Pablo Bay, Carquinez Strait, Suisun Bay to Antioch, CA
- Straits of Juan De Fuca and Puget Sound, WA
- Prince William Sound, AK

**Hypothermia**

Dangerous physical condition caused by over exposure to freezing temperatures.

**Incident Command Agency**

The agency designated under state law (RCW 70.136) as the entity responsible for coordinating all activities and resources at a spill scene, within a particular jurisdiction.

**Incident Commander (IC)**

The **one** individual in charge at any given time of an incident. The Incident Commander will be responsible for establishing a unified command with all on-scene coordinators.

**Incident Command System (ICS)**

A method by which the response to an extra-ordinary event, including a spill, is categorized into functional components and responsibility for each component assigned to the appropriate individual or agency.

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**Initial Cleanup**

Remedial action at a site to eliminate acute hazards associated with a spill. An initial cleanup action is implemented at a site when a spill of material is an actual or potentially imminent threat to public health or the environment, or difficulty of cleanup increases significantly without timely remedial action. All sites must be evaluated to determine whether initial cleanup is total cleanup; however, this will not be possible in all cases due to site conditions (i.e., a site where overland transport or flooding may occur).

**Injury**

A measurable adverse change, either long- or short-term, in the chemical or physical quality of the viability of a natural resource resulting either directly or indirectly from exposure to a discharge of oil, or exposure to a product of reactions resulting from a discharge of oil.

**Inland Area**

The area shoreward of the boundary lines defined on 46 CFR Part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area shoreward of the lines of demarcations (COLREG lines) defined in §80.740 - 80.850 of Title 33 of the CFR. The inland area does not include the Great Lakes.

**Interim Storage Site**

A site used to temporarily store recovered oil or oily waste until the recovered oil or oily waste is disposed of at a permanent disposal site. Interim storage sites include trucks, barges, and other vehicles, used to store waste until the transport begins.

**Lead Federal Agency**

The agency which coordinates the federal response to incidents on navigable waters. The lead Federal agencies are:

- U.S. Coast Guard (USCG): Oil and chemically hazardous materials incidents on navigable waters.
- U.S. Environmental Protection Agency (EPA): Oil and chemically hazardous materials incidents on inland waters.

**Lead State Agency**

The agency which coordinates state support to Federal and/or Local governments or assumes the lead in the absence of Federal response.

**Location Boundaries**

Areas where oil may be expected to impact during the first day of a spill event.

**Lower Explosive Limit**

Air measurement to determine the lowest concentration of vapors that support combustion. This measurement must be made prior to entry into a spill area.

**Marine Transportation-Related Facility (MTR Facility)**

An onshore facility, including piping and any structure used to transfer oil to or from a vessel, subject to regulation under 33 CFR Part 154 and any deep-water port subject to regulation under 33 CFR Part 150.

**Maximum Extent Practicable**

The planning values derived from the planning criteria used to evaluate the response resources described in the response plan to provide the on-water recovery capability and the shoreline protection and clean-up capability to conduct response activities for a worst case discharge from a facility in adverse weather.

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**Maximum Most Probable Discharge (MMPD)**

A discharge of the lesser of 2,500 barrels or 10 percent of the volume of a worst case discharge.

**National Contingency Plan**

The plan prepared under the Federal Water Pollution Control Act (33 United States Code -1321 et seq) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 United State Code □9601 et seq), as revised from time to time.

**Navigable Waters of the State**

Waters of the state, and their adjoining shorelines, that are subject to the ebb and flow of the tide and/or are presently used, have been used in the past, or may be susceptible for use to transport intrastate, interstate, or foreign commerce. Includes the Columbia River, the Willamette River up to Willamette Falls, and the coastal waters and estuaries of the state.

**Nearshore Area**

The area extending seaward 12 miles from the boundary lines defined in 46 CFR Part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area extending seaward 12 miles from the line of demarcation (COLREG) lines) defined in □80.740 - 80.850 of Title 33 of the CFR.

**Non-Crude Oil**

Any oil other than crude oil.

**Non-Persistent or Group I Oil**

A petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions:

- At least 50% of which by volume, distill at a temperature of 340°C (645°F); and
- At least 95% of which volume, distill at a temperature of 370°C (700°F).

**Non-Petroleum Oil**

Oil of any kind that is not petroleum-based. It includes, but is not limited to, animal and vegetable oils.

**Offshore Area**

The area beyond 12 nautical miles measured from the boundary lines defined in 46 CFR Part 7 extending seaward to 50 nautical miles, except in the Gulf of Mexico. In the Gulf of Mexico it is the area beyond 12 nautical miles of the line of demarcation (COLREG lines) defined in - 80-740 - 80.850 of Title 33 of the CFR extending seaward to 50 nautical miles.

**Oil or Oils**

Naturally occurring liquid hydrocarbons at atmospheric temperature and pressure coming from the earth, including condensate and natural gasoline, and any fractionation thereof, including, but not limited to, crude oil, petroleum gasoline, fuel oil diesel oil, oil sludge, oil refuse, and oil mixed with wastes other than dredged spoil. Oil does not include any substance listed in Table 302.4 of 40 CFR Part 302 adopted August 14, 1989, under Section 101(14) of the Federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by P.L. 99-499.

**Oil Spill Cooperative**

Multi-company cooperative organization developed by industry to assist with oil spill response and clean up. Typically, manpower and equipment are identified by a company on a voluntary basis.

**Oil Spill Removal Organization**

See definition for Primary Response Contractors.

**Onshore Facility**

Any facility, as defined in Subsection (12) of this section, located in, on, or under any land of the state, other than submerged land, that, because of its location, could reasonably be expected to

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cause substantial harm to the environment by discharging oil into or on the navigable waters of the state or the adjoining shorelines.

**Operating Area**

The rivers and canals, inland, nearshore, Great Lakes, or offshore geographic location(s) in which a facility is handling, storing, or transporting oil.

**Operating Environment**

Rivers and canals, inland, Great Lakes, or ocean. These terms are used to define the conditions in which response equipment is designed to function.

**Owner or Operator**

(i) in the case of a vessel, any person owning, operating, or chartering by demise, the vessel; (ii) in the case of an onshore or offshore facility, any person owning or operating the facility; and (iii) in the case of an abandoned vessel or onshore or offshore facility, the person who owned or operated the vessel or facility immediately before its abandonment. **Note:** "Operator" does not include any person who owns the land underlying a facility if the person is not involved in the facility's operations.

**Persistent Oil**

A petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. For the purposes of this Appendix, persistent oils are further classified based on specific gravity as follows:

- Group II - specific gravity less than .85.
- Group III - specific gravity between .85 and less than .95.
- Group IV - specific gravity .95 to and including 1.0.
- Group V - specific gravity greater than 1.0.

**Primary Response Contractor(s)**

An individual, company, or cooperative that has contracted directly with the plan holder to provide equipment and/or personnel for the containment or clean-up of spilled oil. For use in contingency plans, primary response contractors must be approved by Ecology.

**Post-Emergency Response**

The portion of a response performed after the immediate threat of a release has been stabilized or eliminated and cleanup of the sites has begun.

**Qualified Individual(s)**

An English-speaking representative(s) of the facility identified in the plan, located in the United States, available on a 24-hour basis, familiar with implementation of the facility response plan, and trained in his or her responsibilities under the plan. This person must have full written authority to implement the facility's response plan. This includes:

- Activating and engaging in contracting with identified oil spill removal organization(s);
- Acting as a liaison with the predesigned Federal On-Scene Coordinator (OCS); and
- Obligating, either directly or through prearranged contracts, funds required to carry out all necessary or directed response activities.

**Regional Response Team**

The Federal Response Organization (consisting of representatives from selected Federal and State agencies) which acts as a regional body responsible for planning and preparedness before an oil spill occurs and providing advice to the FOSC in the event of a major or substantial spill.

**Repair**

Any work necessary to maintain or restore a tank or related equipment to a condition suitable for safe operation.

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**Response Contractors**

Persons/companies contracted to undertake a response action to contain and/or clean up a spill.

**Response Plan**

A practical plan used by industry for responding to a spill. Its features include (1) identifying the notification sequence, responsibilities, response techniques, etc. in an easy to use format; (2) using decision trees, flowcharts, and checklists to insure the proper response for spills with varying characteristics; and (3) segregating information needed during the response from that required by regulatory agencies to prevent confusion during a spill incident.

**Responsible Party**

Any person, owner/operator, or facility that has control over an oil or hazardous substance immediately before entry of the oil or hazardous substance into the atmosphere or in or upon the water, surface, or subsurface land of the state.

**Rivers and Canals**

A body of water confined within the inland area that has a projected depth of 12 feet or less, including the Intracoastal Waterway and other waterways artificially created for navigation.

**Securing the Source**

Steps that must be taken to stop the spill of oil at the source of the spill.

**Site Security and Control**

Steps that must be taken to provide safeguards needed to protect personnel and property, as well as the general public, to ensure an efficient clean-up operation.

**Site Conditions**

Details of the area surrounding the facility, including shoreline descriptions, typical weather conditions, socioeconomic breakdowns, etc.

**Skimmers**

Mechanical devices used to skim the surface of the water and recover floating oil. Skimmers fall into four basic categories (suction heads, floating weirs, oleophilic surface units, and hydrodynamic devices) which vary in efficiency depending on the type of oil and size of spill.

**Sorbents**

Materials ranging from natural products to synthetic polymeric foams placed in confined areas to soak up small quantities of oil. Sorbents are very effective in protecting walkways, boat decks, working areas, and previously uncontaminated or cleaned areas.

**Spill**

An unauthorized discharge of oil or hazardous substance into the waters of the state.

**Spill Management Team**

The personnel identified to staff of the organizational structure identified in a response plan to manage response plan implementation.

Designated company individuals who will fulfill the roles determined in the oil spill response plan in the event of an oil spill. They will supervise and control all response and clean-up operations.

**Staging Areas**

Designated areas near the spill site accessible for gathering and deploying equipment and/or personnel.

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**State Emergency Response Commission (SERC)**

A group of officials appointed by the Governor to implement the provisions of Title III of the Federal Superfund Amendments and Reauthorization Act of 1986 (SARA). The SERC approves the State Oil and Hazardous Substance Discharge Prevention and Contingency Plan and Local Emergency Response Plans.

**Substantial Threat of a Discharge**

Any incident or condition involving a facility that may create a risk of discharge of fuel or cargo oil. Such incidents include, but are not limited to, storage tank or piping failures aboveground or underground leaks, fire explosions, flooding, spills contained within the facility or other similar occurrences.

**Tidal Current Charts**

Comprehensive charts which contain the predicted tidal current for each day of the year for designated areas. These charts specify the direction and speed of the current in the specific areas.

**Tidal Current Tables**

Tables which contain the predicted times and heights of high and low waters for each day of the year for designated areas.

**Trajectory Analysis**

Estimates made concerning spill size, location, and movement through aerial surveillance or computer models.

**Unauthorized Spill**

Spills excluding those authorized by an in compliance with a government permit, seepage from the earth solely from natural causes, and unavoidable, minute spills of oil from a properly functioning engine, of a harmful quantity of oil from a vessel or facility either: (1) into coastal water; or (2) on any waters or land adjacent to coastal waters where harmful quantity of oil may enter coastal waters or threaten to enter coastal waters if the spill is not abated, not contained and the oil is not removed.

**Underwriter**

An insurer, a surety company, a guarantor, or any person other than an owner or operator who undertakes to pay all or part of the liability of an owner or operator.

**Unified Command**

The method by which Local, State, and Federal agencies and the responsible party will work with the Incident Commander to:

- Determine their roles and responsibilities for a given incident.
- Determine their overall objectives for management of an incident.
- Select a strategy to achieve agreed upon objectives.
- Deploy resources to achieve agreed-upon objectives.

**Waste**

Oil or contaminated soil, debris, and other substances removed from coastal waters and adjacent waters, shorelines, estuaries, tidal flats, beaches, or marshes in response to an unauthorized discharge. Waste means any solid, liquid, or other material intended to be disposed of or discarded and generated as a result of an unauthorized discharge of oil. Waste does not include substances intended to be recycled if they are in fact recycled within 90 days of their generation or if they are brought to a recycling facility within that time.

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**Waters of the State**

Includes lakes, rivers, ponds, streams, inland waters, underground water, salt water, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, sewers, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

**Wildlife Rescue**

Efforts made in conjunction with Federal and State agencies to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill.

**Worst Case Unauthorized Discharge**

The largest foreseeable unauthorized spill under adverse weather conditions. For facilities located above the high water line of coastal waters, a worst case spill includes those weather conditions most likely to cause oil spilled from the facility to enter coastal waters.

**Worst Case Discharge (MTR)**

For facilities with belowground storage supplying oil to or receiving oil from the MTR portion means the cumulative volume of all piping carrying oil between the marine transfer manifold and the non-transportation-related portion of the facility. The discharge of each pipe is calculated as follows: the maximum time to discover the release from the pipe in hours (based on best estimate or historic discharge data) multiplied by the maximum flow rate expressed in BPH (based on the maximum daily capacity of the pipe) plus the total line drainage volume expressed in barrels for the pipes between the marine manifold and the non-transportation-related portion of the facility.

**Worst-Case Discharge (EPA) (Storage Facilities)**

1. Loss of the entire capacity of all aboveground tank(s) at the facility not having secondary containment; plus
2. 100% of the capacity of the largest tank within a secondary containment system or 100% of the combined capacity of the largest group of aboveground tanks permanently manifolded together within the same secondary containment system - whichever is greater.

**Worst-Case Discharge (Pipeline)**

1. The loss of the entire capacity of all in-line and breakout storage tanks needed for the continuous operation of the pipelines used for the purpose of handling or transporting oil, in bulk, to or from a vessel regardless of the presence of secondary containment; plus
2. The discharge from all piping carrying oil between the marine transfer manifold and the non-transportation-related portion of the facility.

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REVISIONS

EFSEC Application for Site Certification No. 2013-01  
Docket No. EF131590  
11 January 2016



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### Revision Summary

No.	Date	Edits/Comments
00	26 June 2015	Submittal for Application Review
01	11 January 2016	Revisions for EFSEC Comment Letter



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## Plan Revisions

This document summarizes the revisions to the Vancouver Energy Operations Facility Oil Spill Contingency Plan originally submitted to EFSEC on 26 June 2015. Figures that have been revised are included within the document and are intended to replace the figures issued on 26 June 2015.

**Table 1. Summary of Operations Facility Oil Spill Contingency Plan Revisions**

Section	Page Number	Revision	26 June 2015 Version	11 January 2016 Revisions
1.4	1-6	Replace	For planning purposes, the geographic area at risk from a worst-case discharge (unabated release over <del>72</del> hours during maximum current speeds) extends from approximately 5 miles upriver from the facility (RM 109) to the mouth of the Columbia River and approximately 100 miles in either direction (north or south) along the Washington and Oregon coastlines (see Figure 1.5).	For planning purposes, the geographic area at risk from a worst-case discharge (unabated release over 48 hours during maximum current speeds) extends from approximately 5 miles upriver from the facility (RM 109) to the mouth of the Columbia River and approximately 100 miles in either direction (north or south) along the Washington and Oregon coastlines (see Figure 1.5).
2.7.2	2-6	Delete, Add	<ul style="list-style-type: none"> <li>Ensure primary boom is deployed before any material transfer operation begins.</li> </ul>	<ul style="list-style-type: none"> <li>Primary boom is deployed before any material transfer operation begins, <i>unless prohibited by weather conditions.</i></li> </ul>
2.7.2	2-6	Delete	<ul style="list-style-type: none"> <li>Deploy secondary facility containment boom, and skimmers <del>if available</del>, to attempt to isolate the slick and reduce the spread and potential impact area. Monitor the boom for effectiveness.</li> </ul>	<ul style="list-style-type: none"> <li>Deploy secondary facility containment boom, and skimmers to attempt to isolate the slick and reduce the spread and potential impact area. Monitor the boom for effectiveness.</li> </ul>
Figure 2.3	2-17	Delete	Type: Tank Overfill/Failure; Mitigation Procedure: <del>Consider facility evacuation for gasoline and ethanol spills.</del>	See Revised Figure 2.3
Figure 2.4	2-20	Delete	Environmental Observations: <del>Locations of kelp beds, seagrass beds, and other features that could be mistaken for oil</del>	See Revised Figure 2.4
Vancouver Energy Field Document	2-27	Delete	Vancouver Energy Field Document Page 1; Identification of Reportable Spills to Ground: <del>Releases from underground storage tanks</del>	See Revised Page 1 of the Vancouver Energy Field Document
3.2	3-1	Replace, Add	– Tesoro Refining and Marketing Company	– Tesoro Refining & Marketing Company LLC
Figure 3.3	3-9	Delete	L. Local Accommodations: <del>Red Lion at The Quay, (360) 694 8344</del>	See Revised Figure 3.3
4.1	4-1	Delete, Add	The Facility is owned and operated by Tesoro Savage Petroleum Terminal LLC (Company), a joint venture of Savage Companies and Tesoro <del>Corporation</del> .	The Facility is owned and operated by Tesoro Savage Petroleum Terminal LLC (Company), a joint venture of Savage Companies and Tesoro <i>Refining &amp; Marketing Company LLC</i> .
Figure 4.2	4-7	Delete	Position: Incident Commander/Deputy IC: <del>Schumacher, John – WA</del>	See Revised Figure 4.2
Figure 4.2	4-7	Delete	Position: Safety: <del>Lamigan, Harry – TX</del>	See Revised Figure 4.2

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5.8	5-20	Replace	Recovered Oil and Water Management Plan, Section 1.0 – Recovered Oil: Recovered oil and water mixtures will be immediately transported to <del>designated waste staging areas to bulk storage</del> <b>fractionation tanks (frac tanks)</b> used in the spill response operations.	Recovered oil and water mixtures will be immediately transported to <i>fractionation or other storage tanks on-shore</i> .
5.9	5-24	Delete	Recovered Oil Quantification Plan, Section 1.2 – Estimates of Recovered Oil and Oily Water. <ul style="list-style-type: none"> <li>Liquid will be removed from the water by pumping into <del>ballast tanks</del>, fractionation or other storage tanks on-shore.</li> </ul>	<ul style="list-style-type: none"> <li>Liquid will be removed from the water by pumping into fractionation or other storage tanks on-shore.</li> </ul>
Figure 6.4	6-12	Replace	Figure revised per October 2015 Lower Columbia River Geographic Response Plan	See Revised Figure 6.4
6.7	6-21	Replace	<ul style="list-style-type: none"> <li><del>Figure 6.7</del> contains proposed booming and collection strategies for the Columbia River in areas near the terminal.</li> </ul>	<ul style="list-style-type: none"> <li><b>Figure 6.9</b> contains proposed booming and collection strategies for the Columbia River in areas near the terminal.</li> </ul>
Figure 6.9	6-24	Replace	Replace with Revised Figure	See Revised Figure 6.9
Figure 6.10	6-28	Replace	Figure revised per October 2015 Lower Columbia River Geographic Response Plan	See Revised Figure 6.10
Figure 6.11	6-34	Add		Add Pacific Biofuels, see Revised Figure 6.10
7.5	7-13	Replace	The largest crude oil tank at the terminal may contain up to <del>360,000</del> barrels of product. For planning purposes, it will be assumed that 100 percent of this tank spills into the Columbia River.	The largest crude oil tank at the terminal may contain up to <b>380,000</b> barrels of product. For planning purposes, it will be assumed that 100 percent of this tank spills into the Columbia River.

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Figure 2.3 Spill Mitigation Procedures\* - Revised

Type	Mitigation Procedure
Any identified failure	Activate emergency shutdown system (ESO) to close all landside valves and stop transfer pumps.
Failure of Manifold, Mechanical Loading Arm, Transfer Equipment, or Hoses at Dock	<p>Notify vessel and terminal to stop all product transfers.</p> <p>Advise vessel and terminal to close all line and ship manifold discharge valves.</p> <p>Shut down all transfer pumps and close all dockside valves.</p> <p>Eliminate sources of ignition.</p> <p>If hose ruptured, drain hose in a manner that minimizes spillage into water. If other than hose ruptured, determine source of leak and control the source.</p> <p>Initiate spill response.</p>
Tank Overfill/Failure	<p>Stop transfer of product into tank.</p> <p>Eliminate sources of ignition.</p> <p>Consider transferring the product from the overflowing tank into an adjacent tank to stop overflow.</p> <p>Isolate tank by closing all valves.</p> <p>Secure area to protect pedestrian and vehicle traffic and prevent the spreading of spilled oil.</p> <p>Initiate spill response</p>
Piping Rupture/Leak	<p>Shut down pumps and close pipeline block valves on both sides of the spill.</p> <p>Determine if options are available to minimize line drainage.</p> <p>Secure area to protect pedestrian and vehicle traffic and to prevent spreading of spilled oil.</p> <p>Initiate spill response.</p> <p>Contact pipeline repair specialist. See <b>Figure 3.3</b>.</p>
Explosion/Fire	<p>Alert terminal employees.</p> <p>Request emergency assistance by dialing "911."</p> <p>Secure area to protect pedestrian and vehicle traffic from danger.</p> <p>Evacuate terminal as directed in the evacuation plan.</p> <p>Notify adjacent facilities. See <b>Figure 3.3</b>.</p> <p>Begin firefighting procedures.</p>
Equipment Failure, such as Pumping or Relief Valve	<p>Shut down and close adjacent valves.</p> <p>Eliminate sources of ignition.</p> <p>Secure area to protect pedestrian and vehicle traffic and to prevent spreading of oil.</p> <p>Initiate spill response.</p>

\*Worse-Case Discharge volume calculations are provided in **Appendix D**.

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**Figure 2.4 Oil Spill Surveillance Form - Revised**

Record your observations of spilled oil either in a notebook or directly on a chart, of the area under observation. This checklist is an aid for organizing your observations.

**General Information**

Date \_\_\_\_\_ Time \_\_\_\_\_ Case name \_\_\_\_\_

Observer's name \_\_\_\_\_ Observer's affiliations \_\_\_\_\_

Current stage of tide (flood, ebb, slack) \_\_\_\_\_

On-scene weather (wind, sea state, visibility)

TIDES: HIGH(s) \_\_\_\_\_ MAX CURRENT: \_\_\_\_\_  
LOW(s) \_\_\_\_\_ (W/VELOCITY FLOOD) \_\_\_\_\_

DAYLIGHT: SUNRISE \_\_\_\_\_ SLACK \_\_\_\_\_  
SUNSET \_\_\_\_\_ WATER \_\_\_\_\_

WIND: SPEED \_\_\_\_\_ DIRECTION \_\_\_\_\_

CURRENT CONDITIONS:

\_\_\_\_\_  
\_\_\_\_\_

FORECAST (NEXT OPERATIONAL PERIOD):

\_\_\_\_\_  
\_\_\_\_\_

Platform (helicopter, fixed-wing aircraft, boat) \_\_\_\_\_

Flight path/trackline \_\_\_\_\_

Altitude where observation taken (feet) \_\_\_\_\_

Location of oil's source (if known) \_\_\_\_\_

Areas not observed (e.g., foggy locations, restricted air spaces, shallow water areas)

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

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Figure 2.4 Oil Spill Surveillance Form (continued) - Revised

**Oil Observations**

Slick location(s) \_\_\_\_\_

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_ (central point)

Slick dimension(s) \_\_\_\_\_

Orientation of slick(s) \_\_\_\_\_

Description of oil distribution (e.g., as windrows, streamers, pancakes, or patches)  
\_\_\_\_\_  
\_\_\_\_\_

Color and appearance (e.g., rainbow, dull or silver sheen, black, or brown in color, or mousse)  
\_\_\_\_\_

Percent coverage \_\_\_\_\_ Is oil recoverable (Y/N)? \_\_\_\_\_  
(examples of recoverable oil types include black oil, mousse, and heavy dull- or dark - colored sheens)

**Considerations**

1. During surveillance flights, travel beyond known impacted areas to check for oil beyond these areas.
2. Include the name and phone number of the person making the observations.
3. Clearly describe the locations where oil is observed, as well as the areas where no oil has been seen.

**Other Observations**

**Response Operations**

*Skimmer deployment* (general locations where skimmers are working).

Are they working in the heaviest concentration of oil? Describe.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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**Figure 2.4 Oil Spill Surveillance Form (continued) - Revised**

*Boom deployment*

Describe general locations of boom(s). \_\_\_\_\_

Does the boom contain oil? \_\_\_\_\_ Is oil entraining under the boom? \_\_\_\_\_

**Environmental Observations**

Locations of any convergence line, rip tides, and sediment plumes

\_\_\_\_\_

General description of wildlife present in area (locations and approximate numbers of birds and marine mammals)

BIRDS \_\_\_\_\_

MARINE MAMMALS \_\_\_\_\_

\_\_\_\_\_

**General Comments:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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Vancouver Energy  
Field Document

**OIL SPILL RESPONSE – EMERGENCY PROCEDURES**

- **STOP THE PRODUCT FLOW:** Act quickly. Secure pumps. Close valves, etc.
- **WARN PERSONNEL:** Enforce safety and security measures.
- **SHUT OFF IGNITION SOURCES:** Motors, electrical circuits, open flames, etc.
- **CONTAIN / CONTROL THE SPILL:** Use berms, boom, absorbents, etc.

**DO NOT** use any cleaning or dispersing agents on the spilled oil (e.g. no liquid soaps, chemical dispersants, and bio-agents). The use of such products is strictly controlled by government laws and regulations and will result in fines/penalties.

**IDENTIFICATION OF REPORTABLE SPILLS TO GROUND**

All spills are considered reportable spills to ground, except as follows:

- Spills of known volume less than 42 gallons,
- CERCLA releases,
- Air releases to atmosphere only.
- Spills contained within areas controlled by NPDES permitted systems that are not likely to threaten groundwater and do not exceed federal reportable quantities.

For spills of unknown volume, the spill should be considered reportable if the spill is ongoing, if the spill has a pathway to water of the state, if environmental conditions (rain or high groundwater) might lead to environmental exposure, if the volume is not known to be less than 42 gallons.

**SPILL OBSERVER INITIAL PROCEDURES CHECKLIST**

- \_\_\_ Make an immediate and rapid assessment to determine:
  - If anyone has been injured
  - If situation poses hazards to other personnel or the public (i.e., fire, explosion, fumes, etc.)
  - Source of the spill
  - Type of material spilled and approximate size
- \_\_\_ Take immediate steps to stop the flow.
- \_\_\_ Ensure the safety of personnel. If someone requires medical attention or there is an emergency, dial 911.
- \_\_\_ Notify the Terminal Manager and/or the Area Supervisor.
- \_\_\_ Evacuate personnel as necessary (refer to Figures 2.3 and 2.4 in the Spill Contingency Plan).
- \_\_\_ Shut down and control the source of the spill, if safe to do so. Assess the potential hazards for explosion and airborne toxins.
- \_\_\_ If safe to do so, shut down or direct appropriate personnel to shut down potential ignition sources.
- \_\_\_ Monitor the area for potential explosion and fire hazards. If fire is present, enable fire alarm and water system.
- \_\_\_ Ready the area for firefighting, if necessary.

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Figure 3.3 Notification Summary and Documentation Form - Revised

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>A. COMPANY PERSONNEL</b>			
TBD	TBD		
<b>B. MANDATORY NOTIFICATIONS</b>			
National Response Center (NRC)	(800) 424-8802*		
Washington Emergency Management Division (EMD)	(800) 258-5990		
Port of Vancouver Security	360-992-1120		
<b>C. SECONDARY NOTIFICATIONS</b>			
Clean Rivers Cooperative	(503) 220-2040		
Marine Spill Response Corporation	(425) 252-1300 (800) 645-7745		
Department of Ecology – Southwest Office	(360) 407-6300		
Oregon Emergency Response System	(800) 452-0311		
Clark Regional Emergency Services Agency	(360) 737-1911		
USCG Marine Safety Unit – Portland	(503) 240-9301*		

\*Represents after-hour telephone numbers

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Figure 3.3. Notification Summary and Documentation Form (continued) - Revised

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>C. NOTIFICATIONS AS APPROPRIATE</b>			
<b>Federal Agencies</b>			
EPA Region 10 – Seattle	(206) 553-1264*		
National Ocean and Atmospheric Association (NOAA) Seattle (Hazmat)	(206) 526-6317 (206) 526-4911		
National Weather Service Portland	(503) 326-2340 (503) 326-2720		
Federal Bureau of Investigation Portland	(503) 224-4181*		
U.S. Forest Service Mountlake Terrace, WA	(800) 627-0062		
U.S. Department of the Interior Portland, OR	(503) 326-2489		
<b>Tribal Nations</b>			
TBD	TBD		
<b>Other State Agencies</b>			
(EFSEC) State of Washington Energy Facility Site Evaluation Council	TBD		
Washington Highway Patrol (Emergency Only)	(360) 757-1175* (360) 753-6540		
Washington State Department of Fish and Wildlife	(800) 258-5990 (360) 534-8233 (pager) (360) 902-8124 (office)		
Washington State Department of Fish and Wildlife Oil Spill Response Team	(360) 534-8233 (pager) (360) 902-8124 (office)		
Washington State Department of Natural Resources (Regional)	(360) 856-3500		
Washington State Department of Parks and Recreation	(360) 755-9231		
Washington State Fire Marshall	(360) 596-3900		
Washington State Dept. of Transportation – Southwest Region	(360) 905-2000		
Oregon Department of Wildlife	(503) 872-5268		
<b>Local Agencies</b>			
Vancouver Public Works Operations Ctr	(360) 693-9302		
Clark Public Utilities	(360) 992-3000		
Clark County Public Works (waste water)	(360) 397-6118		
Vancouver-Clark Parks and Recreation	(360) 487-8311		
Clark County Public Health	(888) 727-6230		

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AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>D. EMERGENCY SERVICES</b>			
<b>Emergency Medical and Hospitals</b>			
Legacy Salmon Creek Hospital	(360) 487-1000		
SW Washington Medical Center (Emergency Room)	(360) 514-2064		
Clark County/Vancouver Emergency Services	(360) 737-1911 or 911		
Clark County Public Health	(360) 397-8215		
Oregon Health & Science University (Portland)	(503) 494-7686		
Providence Portland Medical Center	(503) 215-1111		
Legacy Good Samaritan Hospital & Medical Center (Portland)	(503) 413-7711		
<b>Fire Departments</b>			
Vancouver Fire Department	911 or (360) 487-7211		
Clark County Fire Marshall	(360) 397-2375 x-2186		
Clark County Hazardous Materials	(360) 397-2375		
<b>Police Departments</b>			
Vancouver Police Administration	911 or (360) 487-7400		
Clark County Sheriff Administration	911 or (360) 397-2366		
<b>E. MEDIA</b>			
<b>Radio</b>			
AM 750 KXL, Portland	(503) 417-9595		
AM 1190 KEX, Portland	(503) 225-1190		
<b>Television</b>			
KING TV NBC, Channel 5 (Seattle)	(206) 448-5555		
KIRO TV CBS, Channel 7 (Seattle)	(206) 728-7777		
KOMO TV ABC, Channel 4 (Seattle)	(206) 404-4145		
KATU ABC, Channel 2 (Portland)	(503) 231-4222		
KOIN NBC, Channel 6 (Portland)	(503) 464-0600		
KGW NBC, Channel 8 (Portland)	(503) 226-5000		
<b>Newspapers</b>			
Seattle Times	(206) 464-2111 (206) 464-2261 (fax)		
Associated Press	(206) 682-1812		
The Columbian (Clark County)	(360) 699-6006		
The Oregonian (Portland)	(503) 221-8100		

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Figure 3.3. Notification Summary and Documentation Form (continued) - Revised

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>F. RESPONSE CONTRACTORS</b>			
Marine Spill Response Corporation	1-800-645-7745 (360) 417-9287 (Office) (206) 799-1621 (Cell)		
Clean Rivers Cooperative	(503) 220-2040*		
CARDNO ENTRIX Environmental Consultants	(800) 476-5886*		
Global Diving and Salvage Inc. (no contract in place)	(206) 623-0621* 1-800-441-3483		
NRC (no contract in place)	(800) 337-7455		
Harder Mechanical	(503) 281-1112		
<b>G. MUTUAL AID</b>			
Nustar	(360) 694-8591 (360) 772-5031 (Cell) (360) 567-8871 (Cell)		
<b>H. MARINAS/PORTS</b>			
Port of Vancouver	(360) 992-1120		
Port of Portland	(800) 547-8411		
Tomahawk Island Marina	(503) 289-5511		
Marineland at Pier 99	(503) 286-8221		
Ridgefield Marina	(360) 903-8517		
Kadow's Marina	(360) 693-0723		
<b>I. LOCAL WATER SUPPLY</b>			
City of Vancouver Municipal Water Treatment	(360) 696-8177		
Clark County Groundwater	(360) 397-6118		
Port of Vancouver Facilities	(360) 518-0501		
<b>J. HELICOPTERS AND AIRCRAFT CHARTERS</b>			
C&C Aviation (Portland)	(503) 760-6969		
Precision Helicopters	(503) 537-0108		
Hillsboro Helicopters (Contract with)	(503) 648-2831		

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AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>K. WILDLIFE REHABILITATION SPECIALISTS</b>			
International Bird Rescue & Research Center (IBRRC)	(888) 447-1743*		
Focus Wildlife	(310) 386-5965 (800) 578-3048		
Oiled Wildlife Care Network	(530) 979-7561 (800) 645-1911 (oil spill) (877) 823-6926 (oiled animal)		
Progressive Animal Welfare Society (PAWS)	(425) 787-2500 (425) 412-4040		
Tri-State Bird Rescue	(302) 218-7371 (cell) (302) 737-7241		
<b>L. LOCAL ACCOMMODATIONS</b>			
Staybridge Suites	(360) 891-8282		
Homewood Suites	(360) 750-1100		
Gateway Inn Express	(360) 576-1040		
La Quinta Inn	(360) 566-1100		
Hilton	(360) 993-4500		
<b>M. NEIGHBORING FACILITIES</b>			
Glacier/CalPortland	(360) 693-3611		
NGL Supply Terminal Company	(360) 892-5100 (360) 907-9607 (cell) (360) 694-9420 ext. 1 (Office)		
Clark Public Utilities	360-694-2844		
Clark County Jail Work Center	360-992-3000		
Tidewater Terminal Company	360-397-2138		
Farwest Steel	360-693-1491		
Subaru of America	360-735-8744		
Tri-Star Transload	360-737-7630		
West Vancouver Materials Recovery Center	503-807-2952 (24-hr)		
HME Construction	360-690-6842 (24-hr) or 360-904-0667		
BPA Substation	360-695-4553 or 888-699-1053		
Kelly Pipe	360-570-4338 (Office) 360-951-4464 (Cell)		

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Figure 3.3. Notification Summary and Documentation Form (continued) - Revised

AFFILIATION	PHONE NUMBER	NAME OF PERSON CONTACTED	TIME CONTACTED
<b>N. DOWNRIVER WATER USERS</b>			
U.S. Fish & Wildlife Services Ridgefield Refuge (River Mile 94)	(360) 887-4106		
Bachelor Island Ranch (5 Intakes) (River Mile 90)	(360) 887-3883		
Boise Cascade Industrial Intake (River Mile 88)	(503) 397-2900		
Emerald Environmental (River Mile 75)	(360) 673-2550		
Trojan Nuclear Power Plant Intake (River Mile 73)	(503) 556-3713		
City of Rainier Drinking Water (River Mile 68)	(503) 556-7301 (City Hall) (503) 410-2173 (Cell)		
Longview Fiber (River Mile 68)	(360) 425-1550		
Weyerhaeuser Company (4 Intakes) (River Mile 64)	(360) 425-2150		
City of Longview (Discharge only) (River Mile 64)	(360) 442-5000		
Jammies Environmental (River Mile 58)	(360) 577-5691		
Portland General Electric (River Mile 53)	(503) 728-7470		

\*Represents after hours telephone numbers

NOTE: For information about local food services and local transportation resources, consult the Vancouver-area yellow pages.

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**Figure 4.2. Company West Coast Regional Response Team - Revised  
(Primary and Alternate Leaders)**

Position	Last name	First name	Office	Cell	Location
Incident Commander/Deputy IC	Brown	Shawn			AK
	Carter	Jeffrey			AK
	Haugstad	Eric			TX
	Walker	John			CA
Legal	Haffner	Jeff			TX
	Harriss	Heather			TX
	Vail	Vanessa			TX
	Vining	Stoney			TX
Public Information Officer	Barbee	Christina			TX
	Marcy	Mike			CA
	Saletta	Jill			TX
Liaison	Bean	Jack			CA
	Dami	Kenneth			CA
	Gill	Matt			AK
	Marcy	Mike			CA
	Riley	Daniel			TX
	Sotelo	Brissa			CA
Safety	Alder	Anne			UT
	Pineda	Gerald			TX
Intelligence	Kohler	Jeffry			AK
Operations	Alleyn	Michael			WA
	Carter	Brock			UT
	Markee	Thomas			TX
	McCaughey	Robert			CA
	Miller	Bob			CA
	Rosin	Scott			AK
	Waldron	Clark			UT
Planning	Carter	Brock			UT
	Helberg	Pamela			WA
	Jungbluth	Robert			TX
	Miller	Bob			CA
	Shea	Mike			WA
	Waldron	Clark			UT
Environmental	Baker	Jeff			WA
	Donovan	Robert			WA
	Scheetz	Doug			ND
	Norcross	Neil			WA
	Ribbens	Peter			AK
	Spencer	Claire			CA
	Stockdale	Robert			CA
	Trujillo	Sharon			CA

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Position	Last name	First name	Office	Cell	Location
Documentation	Courtney	Jeannie			HI
	Cox	Gloria			UT
	Grinton	Leilani			CA
	Stigall	Amanda			AK
	Straus	Michelle			WA
	Young	Carol			WA
Resources	Carter	Brock			UT
	Kestenbaum	Robert			CA
Situation	Cowan	Tracy			TX
	Harris	Sherry			UT
	Pedroza	Roel			WA
Logistics	Carroll	Jason			ND
	Havard	Tara			WA
	Kohler	Jeffry			AK
	Tingey	Roy			UT
Security	Burris	Mark			WA
	Griffin	Bonnie			TX
Finance	Devito	Aleja			AK
	Elsberry	Jamie			CA
	Gillett	Bruce			WA
Human Resources	Kimmel	Ryan			TX
	Sambrano	Rose			TX
IT	Keith	Kris			CA
	Necessary	Lance			AK

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**Figure 6.4 Environmental Response Map Index - Revised**

Priority	Strategy Number
<b>LCR-A (Port of Ilwaco LCR-3.0R)</b>	
1	LCR-3.5R
2	LCR-2.2R
3	LCR-2.4R
4	CHINR-0.3
5	LCR-8.4R
6	LCR-8.5R
7	LCR-7.5L
8	LCR-6.8L
9	LCR-7.1L
10	LCR-10.1L
11	LCR-10.8L
12	LCR-10.9L
<b>LCR-B (Port of Astoria/ US-101 LCR-13.0L)</b>	
1	L&C-1.2
2	YOR-3.6L
3	LCR-10.1L
4	LCR-10.8L
5	LCR-10.9L
6	LCR-6.8L
7	LCR-7.1L
8	LCR-7.5L
9	L&C-1.7
10	L&C-2.3
11	L&C-2.6
12	YOR-4.1R
13	YOR-4.0R
14	YOR-3.3R
<b>LCR-C (Highway Bridge/Cathlamet Marina LCR-40.7R)</b>	
1	LCR-35.0M
2	LCR-35.3R
3	LCR-35.7R
4	LCR-36.0R
5	ELOCR-1.6
6	LCR-37.7M
7	LCR-37.2R
8	LCR-38.2L
9	LCR-38.5M
10	LCR-38.8L
11	LCR-38.6R

Priority	Strategy Number
<b>LCR-D (James River Mill LCR-41.6L)</b>	
1	LCR-35.0M
2	LCR-34.6M
3	LCR-33.7R
4	LCR-35.0R
5	LCR-35.3R
6	LCR-35.7R
7	LCR-36.0R
8	LCR-37.7M
9	LCR-37.2R
10	LCR-38.2L
11	LCR-38.5M
12	LCR-38.8L
13	LCR-38.6R
14	ELOCR-1.6
15	LCR-40.5M
16	LCR-41.3M
<b>LCR-E (Clatskanie Crude Oil Terminal LCR-55.0L)</b>	
1	LCR-49.8L
2	LCR-49.7L
3	LCR-49.1M
4	LCR-50.5L
5	LCR-48.1M
6	LCR-48.8M
7	LCR-48.6M
8	LCR-54.4M
9	LCR-55.1M
10	LCR-55.4L
11	LCR-55.3M
12	LCR-55.5M
13	LCR-54.2R
14	LCR-45.2M
15	LCR-45.0M
16	LCR-53.8R

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Figure 6.4 Environmental Response Map Index (continued) - Revised

Priority	Strategy Number	Priority	Strategy Number
<b>LCR-F (Port of Kelso-Longview/Cowlitz River LCR-68.5R)</b>		<b>LCR-I (Whipple Creek LCR-94.5R)</b>	
1	LCR-58.7M	1	LCR-85.6M
2	LCR-58.8R	2	LCR-85.8M
3	LCR-58.9M	3	LCR-86.2R
4	LCR-58.95M	4	LEWR-0.35
5	LCR-59.8L	5	LCR-87.3R
6	LCR-60.2M	6	LCR-87.5R
7	LCR-64.0M	7	LCR-87.6R
8	LCR-64.4L	8	LCR-91.0R
9	LCR-65.9R	9	LCR-94.3R
10	LCR-66.2R	10	LCR-94.5L
11	CWLZR-1.0	11	WPPLC-0.8
12	CLWZR-1.45	<b>LCR-J (Port of Vancouver LCR-103.0)</b>	
<b>LCR-G (Port of Kalama/Kalama River LCR-73.1R)</b>		1	LCR-94.5L
1	LCR-64.0M	2	LCR-94.8R
2	LCR-64.4L	3	LCR-95.0R
3	LCR-65.9R	4	LCR-97.0R
4	LCR-66.2R	5	LCR-97.5R
5	LCR-70.0M	6	LCR-98.6R
6	LCR-71.4R	7	LCR-99.9R
7	LCR-71.5M	8	LCR-100.8R
8	LCR-71.6R	9	WR-0.9R
9	KLMAR-0.7	<b>LCR-K (Linnton Tank Farms WR-5.7)</b>	
10	LCR-59.8L	1	MC-0.1
11	LCR-60.2M	2	MC-0.5
<b>Priority Table LCR-H (Lewis River LCR-86.5R)</b>		3	MC-0.2
1	LCR-87.3R	4	MC-0.4
2	LCR-87.5R	5	WR-0.9R
3	LCR-87.6R	6	MC-1.5
4	LCR-81.0M	7	WR-3.7R
5	LCR-81.2R	8	WR-3.8L
6	LCR-81.8L	9	WR-4.2R
7	LCR-82.4L	10	WR-4.3R
8	LCR-85.6M	11	WR-4.5R
9	LCR-85.8M		
10	LCR-86.2R		
11	LEWR-1.9		
12	LEWR-0.4		
13	LEWR-0.35		

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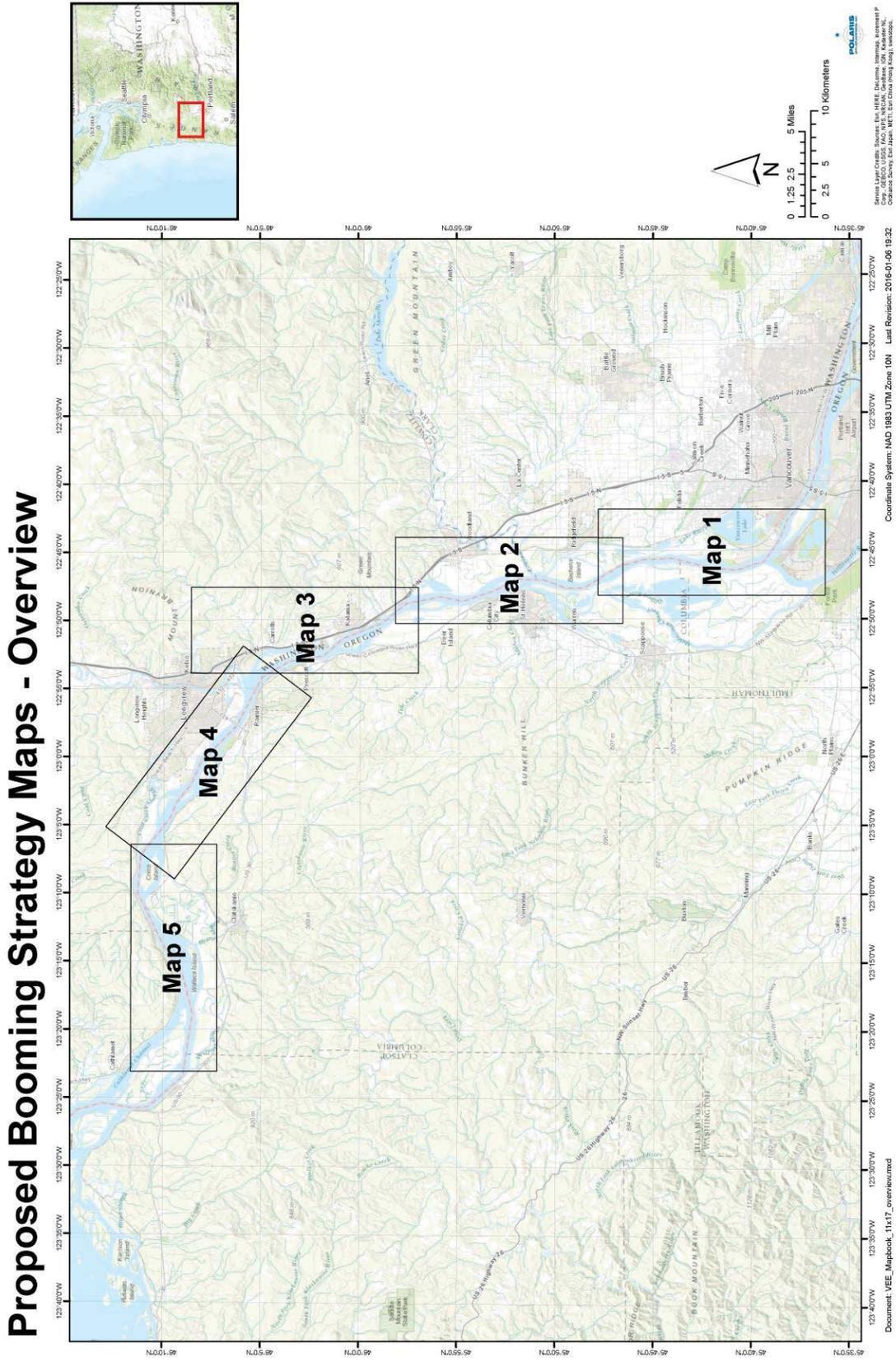
Figure 6.4 Environmental Response Map Index (continued) - Revised

Priority	Strategy Number	Priority	Strategy Number
<b>LCR-L (Port of Portland WR-8.6)</b>		<b>LCR-O (Franz Lake Refuge LCR-138.4R)</b>	
1	WR-7.5L	1	LCR-128.0R
2	WR-7.4R	2	LCR-131.0R
3	WR-6.9L	3	LCR-137.0R
4	SIL-0.4	4	LCR-138.0L
5	WR-6.9R	5	LCR-138.2R
6	WR-5.9L	<b>LCR-P (Bonneville Dam LCR-145.4)</b>	
7	WR-5.8R	1	LCR-131.0R
8	MC-0.1	2	LCR-137.0R
9	WR-4.5R	3	LCR-138.0L
10	WR-4.3R	4	LCR-138.2R
11	WR-4.2R	5	LCR-140.3R
12	WR-0.9R	6	LCR-141.4R
<b>LCR-M (Willamette Falls Locks WR-26.5)</b>		7	LCR-142.4R
1	WR-26.1L	8	LCR-143.4R
2	WR-25.5R	9	LCR-144.9L
3	WR-25.9R		
4	WR-23.8L		
5	WR-23.6L		
6	WR-23.9R		
7	WR-18.5R		
8	WR-15.9R		
9	WR-15.5M		
<b>LCR-N (Port of Camas-Washougal LCR-121.0)</b>			
1	LCR-111.0R		
2	LCR-113.3M		
3	LCR-113.8R		
4	LCR-114.8M		
5	LCR-115.0R		
6	LCR-115.7R		
7	LCR-119.1R		
8	LCR-119.8R		
9	LCR-120.6R		

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Figure 6.9 Proposed Booming Strategy Maps - Revised

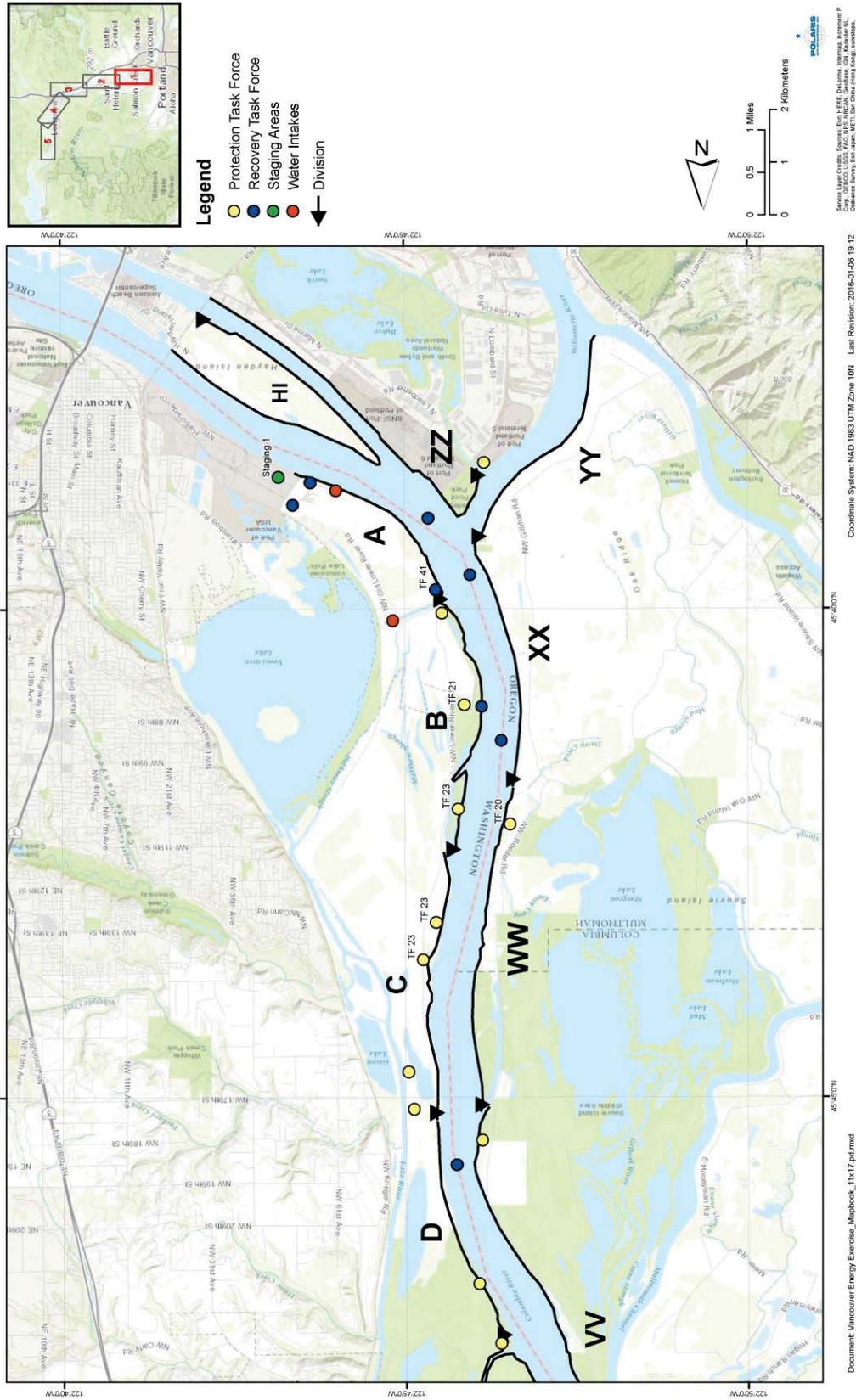


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# Proposed Booming Strategy - Map 1

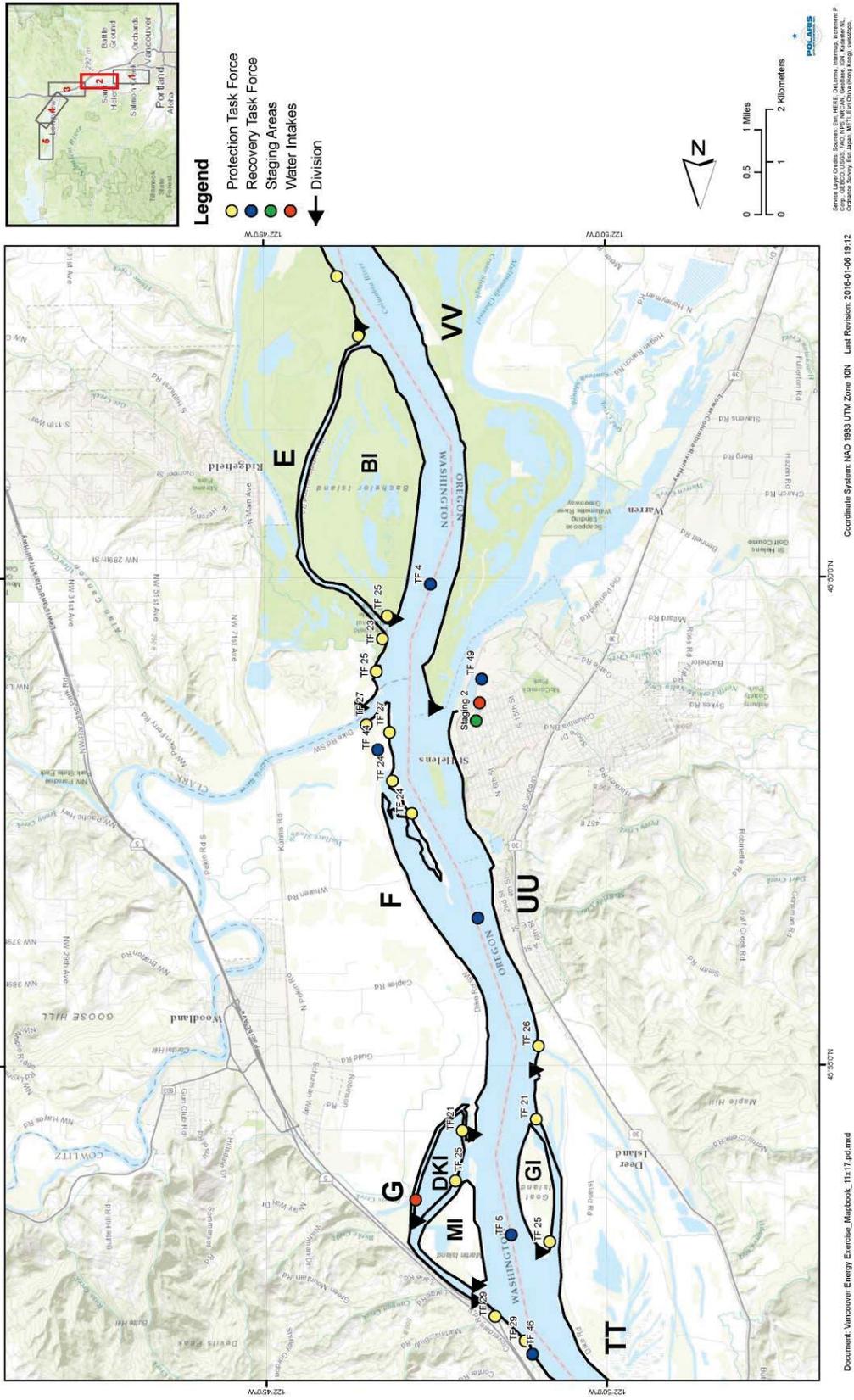


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Figure 6.9 Proposed Booming Strategy Maps (continued) - Revised

# Proposed Booming Strategy - Map 2

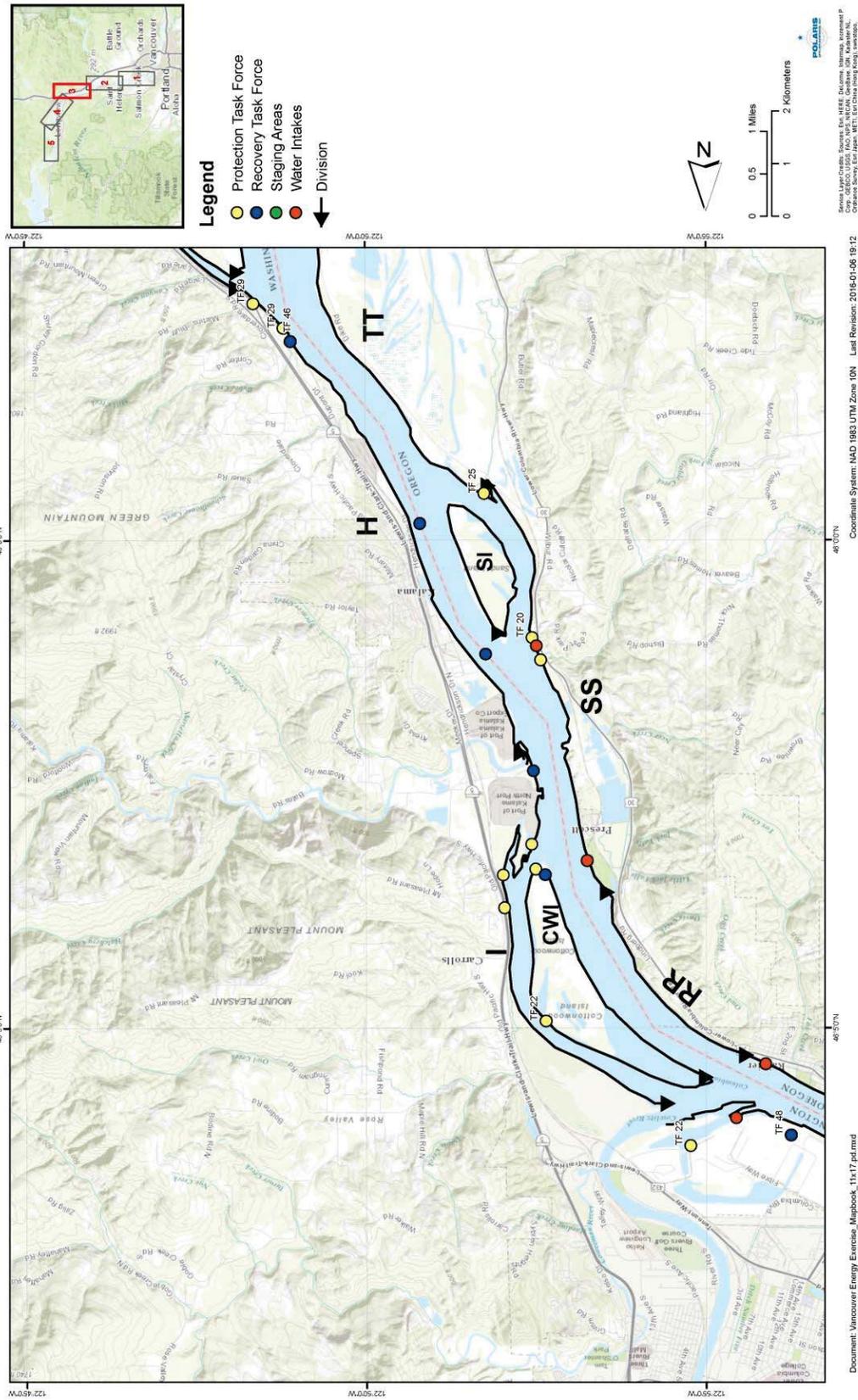


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Figure 6.9 Proposed Booming Strategy Maps (continued) - Revised

# Proposed Booming Strategy - Map 3

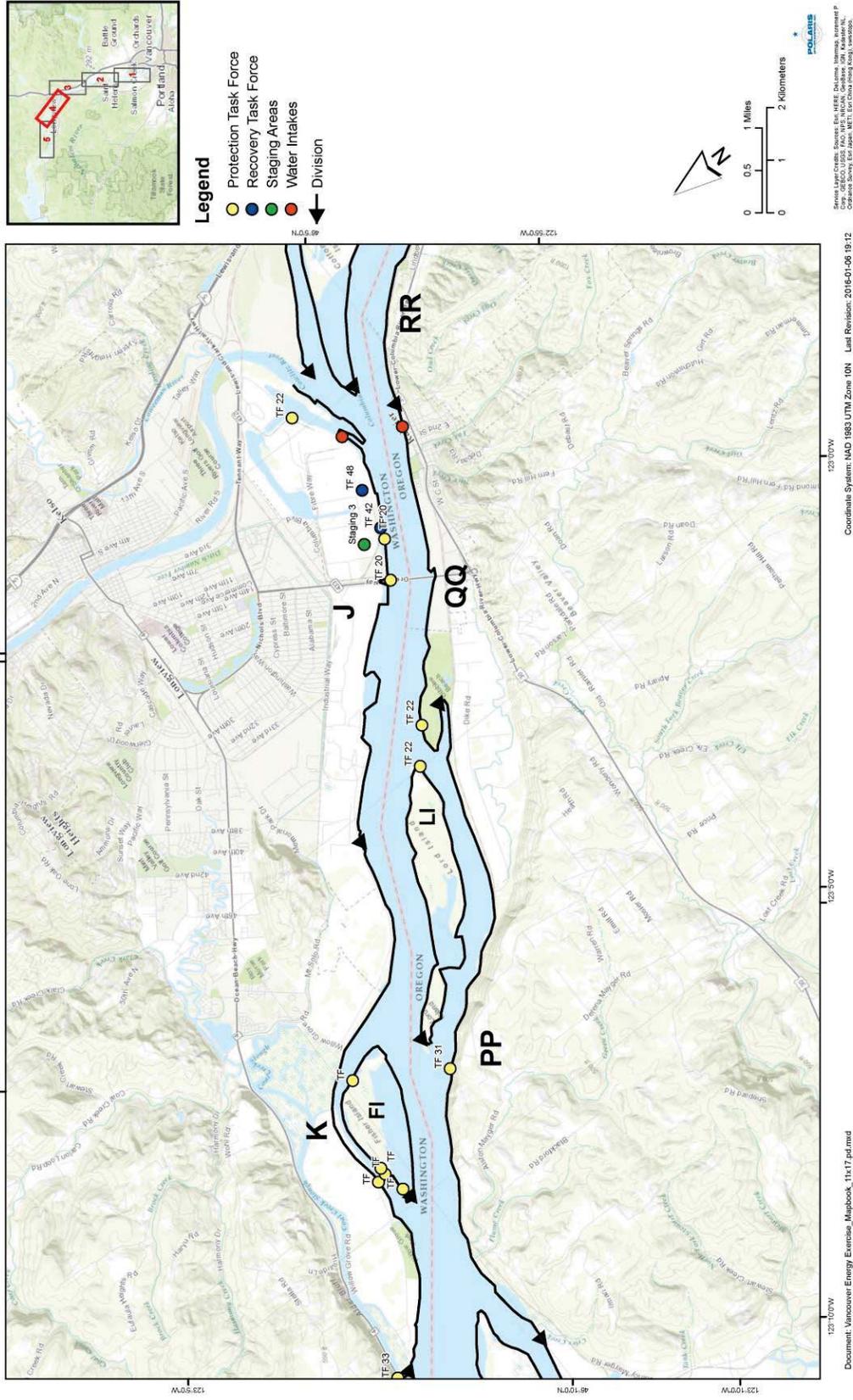


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Figure 6.9 Proposed Booming Strategy Maps (continued) - Revised

# Proposed Booming Strategy - Map 4



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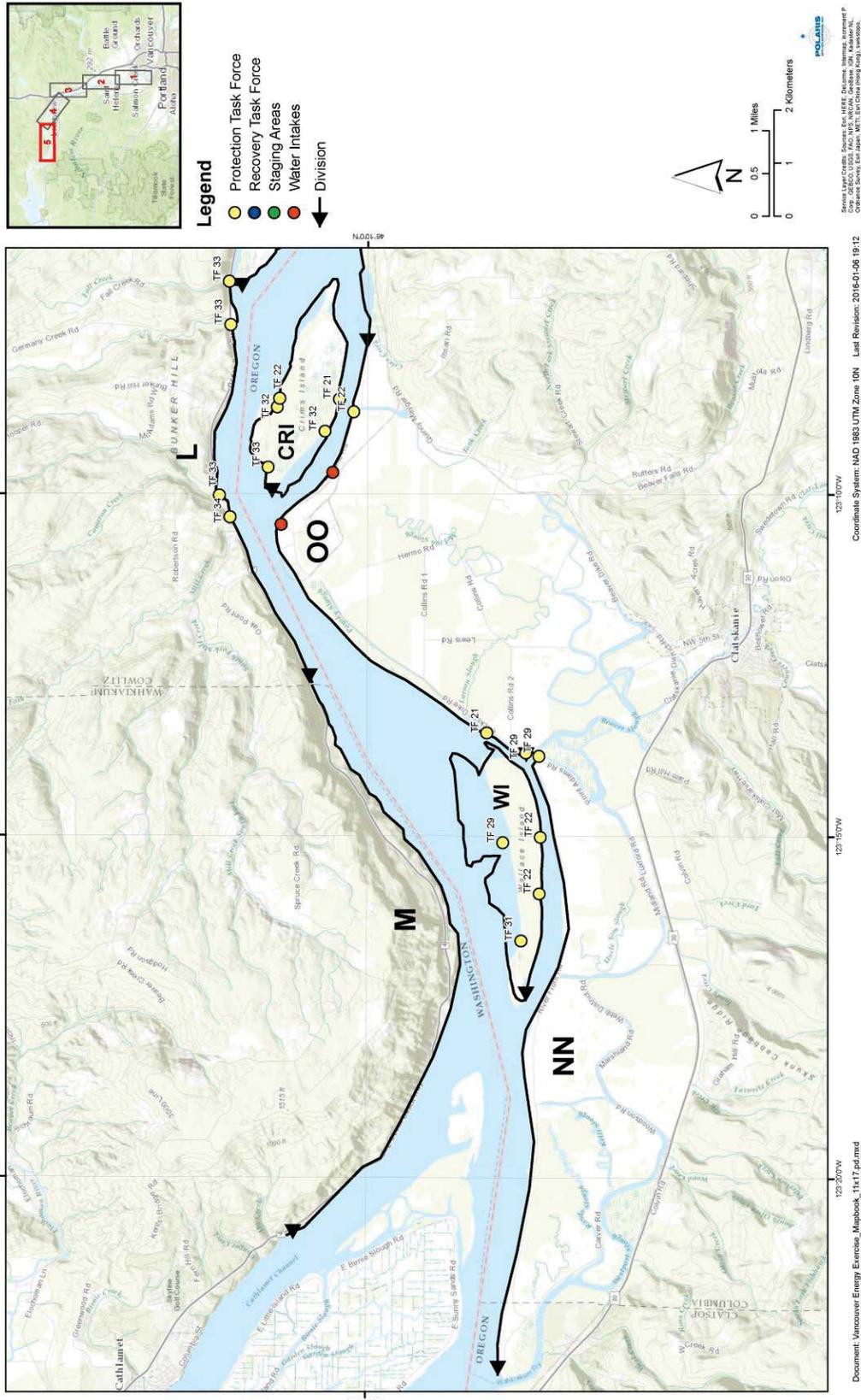
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Figure 6.9 Proposed Booming Strategy Maps (continued) - Revised

# Proposed Booming Strategy - Map 5



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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River - Revised

LOWER COLUMBIA RIVER GRP

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-53.8L	Pacific Biofuels								
LCR-53.8R	Mill Creek (WA) 46.18850 -123.17569	Collection	Boom 1000ft	Yes	Onsite Stage onsite at large gravel parking area on W side of creek and N side of highway.	Downstream Resources	Strong currents, particularly during outgoing tides, may make collection difficult. Vehicle access from Highway 4 to parking area on west side of creek.	66	301
LCR-54.2R	Abernathy Creek (WA) 46.19092 -123.16740	Exclusion	Boom 300ft	Yes	Remote Stage at Port Westward boat launch, SA-LCR-53.8L. Launch from same BL-LCR-53.8L.	Hérons and Other Wading Birds, Salmon Concentrations and Habitat, Sensitive Resources Nearby, Sensitive Shoreline and Back-Beach, Shorebirds	Strategy site has limited vehicle access but is best accessed via boat. Do not use stakes or anchor posts in this area.	69	303
LCR-54.4M	Gull/ Grims Islands - W opening (OR) 46.18419 -123.15950	Exclusion	Boom 500ft	Yes	Remote Stage at Port Westward boat launch, SA-LCR-53.8L. Launch from same BL-LCR-53.8L.	Wetland Habitat	Water in this area is very shallow. At low water, strategy may not be feasible or necessary.	69	305
LCR-55.1M	Grims Island- South Side (OR) 46.17278 -123.15106	Exclusion	Boom 700ft	Yes	Remote Stage at Port Westward boat launch, SA-LCR-53.8L. Launch from same BL-LCR-53.8L.	Mudflat Habitat, Wetlands Restoration Site	Water is very shallow in this area. During low water, strategy may not be feasible or necessary.	69	307

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**Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised**

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-55.3M	Gull Island-North Side (OR) 46.18309 -123.14644	Exclusion	Boom 800ft	Yes	Remote Stage from Willow Grove County Park, SA-LCR-57.8R	Mudflat Habitat, Wetland Habitat	Boat access only. This strategy is only needed during high flow conditions.	69	309
LCR-55.4L	John Slough (OR) 46.16923 -123.14627	Exclusion	Boom 200ft	Yes	Remote Stage at Port Westward boat launch, SA-LCR-53.8L. Launch from same BL-LCR-53.8L.	Wetland Habitat	Best access to this strategy is by boat, but there is limited vehicle access from Kallunki Rd. Water is very shallow in this area. Strategy may not be feasible at low water.	69	311
LCR-55.5M	Gull/Crims Islands - East opening (OR) 46.18175 -123.14447	Exclusion	Boom 400ft	Yes	Remote Stage at Willow Grove County Park, SA-LCR-57.8R	Wetland Habitat	Boat access only. Water is very shallow in this area and access will not be possible during low water. Strategy is only necessary during high water.	69	313
LCR-55.6M	Crims Island Channel (OR) 46.17158 -123.14226	Exclusion	Boom 300ft	Yes	Remote Stage at Port Westward boat launch, SA-LCR-53.8L. Launch from same BL-LCR-53.8L.	Wetland Habitat, Wetlands Restoration Site	Boat access only. This strategy is needed for all water levels.	69	315

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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LOWER COLUMBIA RIVER GRP

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
<b>LCR-55.7R</b>	Germany Creek (WA) 46.18975 -123.12534	Exclusion	Boom 100ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Osprey Nest(s), Salmonid Concentrations and Habitat, Sensitive Resources, Sensitive Shoreline and Back-Beach	Best access for this strategy is by boat, although there is limited landside access from WA-4. Do not use anchor posts in this area, particularly on east side of creek.	69	317
<b>LCR-55.9R</b>	Coal Creek Slough (WA) 46.18961 -123.11635	Exclusion	Boom 500ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Slough and Marsh Habitat, Wetland Habitat	Boat access only. Site is at the mouth of Coal Creek Slough.	69	319
<b>LCR-58.7M</b>	Fisher Island/Hump Island (WA) 46.16916 -123.07608	Exclusion	Boom 800ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Wetland Habitat	This strategy is most necessary on incoming tide or a strong upriver wind. Boat access only. Water is very shallow in this area for much of the year.	68	321
<b>LCR-58.8R</b>	Fisher Island Slough - W end (WA) 46.17179 -123.07372	Collection	Boom 1000ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Downstream Resources, Wetland Habitat	Deploy both segments of boom if the strategy will be in place over multiple tidal cycles. Site can be accessed by vehicle via Willow Grove Road, but best access is via boat. Shoulders of road are narrow.	68	323
<b>LCR-58.9M</b>	Fisher Island - W end (WA) 46.17110 -123.07090	Exclusion	Boom 600ft	Yes	Remote Stage at Willow Grove County Park, SA-LCR-57.8R	Wetland Habitat	Boom length required will vary depending on water level in the marsh.	68	325

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
<b>LCR-58.95M</b>	Fisher Island - West End (WA) 46.17043 -123.07205	Deflection	Boom 500ft	Yes	Remote Stage at Willow Grove County Park, SA-LCR-57.8R	Wetland Habitat	Boat access from the ramp at Willow Grove Park.	68	327
<b>LCR-59.8L</b>	Walker Island (OR) 46.15128 -123.06239	Collection	Boom 600ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Downstream Resources	Boat access only. At 30 feet from shore water is about 25 feet deep. Do not allow people/equipment within 25' of railroad tracks.	68	329
<b>LCR-60.2M</b>	Fisher Island - E end (WA) 46.16526 -123.05029	Exclusion	Boom 700ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Wetland Habitat	Boat access only. This strategy may be difficult to implement under high flow conditions.	68	331
<b>LCR-64.0M</b>	Lord Island - E end (OR) 46.12177 -122.99828	Collection, Exclusion	Boom 1600ft	Yes	Remote Stage at SA-LCR-57.8R, Willow Grove County Park	Waterfowl Use Area, Wetland Habitat	This strategy may only be feasible during low water and low flow conditions.	68	333
<b>LCR-64.4L</b>	Slaughters Dike (OR) 46.11830 -122.99029	Collection	Boom 600ft	Yes	Onsite Stage at SA-LCR-67.1L, Rainier City Marina. Launch at same BL-LCR-67.1L or from beach onsite.	Downstream Resources	Good vehicle access with sandy beach for recovery.	68	335
<b>LCR-65.9R</b>	Port of Longview (WA) 46.10691 -122.95932	Collection	Boom 700ft	Yes	Remote Stage at Gerhart Gardens Park, SA-CWLZR-1.6	Downstream Resources	Protected area under Lewis and Clark Bridge at the Port of Longview.	70	337

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-66.2R	Port of Longview (WA) 46.10407 -122.95160	Collection	Boom 800ft	Yes	Onsite Stage onsite at Port of Longview.	Downstream Resources	Vehicle access from Longview to the port docks. Boat access from the Ramp at Willow Grove Park or Rainier.	70	339
LCR-70.0M	Cottonwood Island - E side slough (WA) 46.08176 -122.87675	Exclusion	Boom 600ft	Yes	Remote Stage at Sportsmen's Club, SA-LCR-72.7R	Wetland Habitat	Boat access only. Slough entrance is very shallow.	71	341
LCR-71.4R	Carrolls Channel - S end (WA) 46.05817 -122.86829	Exclusion	Boom 1000ft	Yes	Remote Stage at Sportsmen's Club, SA-LCR-72.7R	Wetland Habitat	Boat access only. Water is shallow with little current.	72	343
LCR-71.5M	Carrolls Channel - S End (WA) 46.05537 -122.87633	Collection	Boom 1400ft	Yes	Remote Stage at Sportsmen's Club	Downstream Habitat, Wetland Habitat	Boat access only. Large beach area.	72	345
LCR-71.6R	Carrolls Channel - S end (WA) 46.05253 -122.87491	Collection, Deflection	Boom 800ft	Yes	Remote Stage at SA-LCR-72.7R, Sportsmen's Club	Downstream Resources, Wetland Habitat	Vehicle access from east shore, Port of Kalama property.	72	347
LCR-73.7L	Goble Creek (OR) 46.02052 -122.87656	Exclusion	Boom 100ft	Yes	Remote Stage at SA-LCR-74.5L, Goble Marina. Launch at same BL-LCR-74.5L.	Salmon Concentrations and Habitat	Railroad tracks and US-30 cross Goble Creek at this site. Salmon habitat. Peak times are Sept - Oct, Apr - May.	71	349
LCR-76.0L	Tide Creek (OR) 45.99420 -122.86667	Exclusion	Boom 1000ft	Yes	Remote Stage at Port of Kalama Marina, SA-LCR-75.2R	Salmon Concentrations and Habitat, Wetland Habitat	Boat access only. Log rafts in area may complicate deployment. Numerous pilings in water.	71	351

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-78.9R	Mill Creek Outfall 45.95777 -122.80413	Collection	Boom 200ft, Sorbent 200ft	Yes	Remote Stage and launch from Port of Kalama Marina, BL-LCR-75.2R	Canadian Goose Nesting Habitat, Downstream Resources, Waterfowl (Wintering)	Confluence of Mill Creek and Columbia River just downstream of Martin Island. Mill Creek is submerged under I-5 and BNSF tracks and enters river via outfall pipe.	73	353
LCR-79.5R	Martin Island - N end (WA) 45.95598 -122.80060	Exclusion	Boom 800ft	Yes	Remote Stage at Woodland Bottoms, SA-LCR-82.1R	Canadian Goose Nesting Habitat, Waterfowl (Wintering)	Boat access only. Shallow water and pilings at north end of Martin Island.	73	355
LCR-79.8L	Goat Island - N end (OR) 45.94802 -122.82068	Exclusion	Boom 700ft	Yes	Remote Stage at Woodland Bottoms, SA-LCR-82.1R. Launch at same BL-LCR-82.1R.	Geese (Summer), Waterfowl (Wintering)	Boat access only. This strategy is mainly needed if oil is moving upriver due to wind or tidal current.	73	357
LCR-81.0M	Martin Island - S end (WA) 45.93539 -122.79825	Exclusion	Boom 800ft	Yes	Remote Stage at Woodland Bottoms, SA-LCR-82.1R	Geese (Summer), Waterfowl (Wintering)	Boat access only. Need a shallow water skiff. Dredge dump site, very shallow. Pillings in slough prevent access from north.	73	359
LCR-81.2R	Burke Island - S end (WA) 45.92988 -122.79852	Exclusion	Boom 400ft	Yes	Remote Stage at Woodland Bottoms, SA-LCR-82.1R. Launch at same BL-LCR-82.1R.	Geese (Summer), Waterfowl (Wintering)	Boat access only. Use caution around the long row of wood pilings just north of the strategy.	73	361

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LOWER COLUMBIA RIVER GRP

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
<b>LCR-81.8L</b>	Goat Island - S end (OR) 45.92590 -122.81556	Exclusion	Boom 900ft	Yes	Remote Stage at Woodland Bottoms, SA-LCR-82.1R	Geese (Summer), Waterfowl (Wintering)	Boat access only. Water is shallow with moving sand bars. Amount of boom needed will vary greatly depending on flow conditions.	73	363
<b>LCR-82.4L</b>	Deer Island Slough (OR) 45.91417 -122.81704	Exclusion	Boom 400ft	Yes	Remote Stage at Woodland Bottoms, SA-LCR-82.1R. Launch at same BL-LCR-82.1R.	Creek Habitat, Freshwater Clams, Wetland Habitat	Boat access only. Shallow water and pilings in area. Slough opening will vary greatly in width depending on water flow.	73	365
<b>LCR-85.6M</b>	Goerig Slough (WA) 45.87282 -122.78510	Exclusion	Boom 1000ft	Yes	Remote Stage at St. Helens Marina, SA-LCR-85.8L	Downstream Resources	Pilings are present across the entire channel. Shallow water during summer and fall.	75	367
<b>LCR-85.8M</b>	Goerig Slough (WA) 45.86952 -122.78161	Exclusion	Boom 800ft	Yes	Remote Stage at St. Helens Marina, BL-LCR-85.8L.	Downstream Resources	Boat access from the south only. Piling walls prevent boat access into Goerig Slough. Very shallow during summer and fall.	75	369
<b>LCR-86.2R</b>	Port of Woodland at Austin Point 45.86051 -122.78109	Collection	Boom 800ft	Yes	Onsite Stage onsite on undeveloped sandy beach.	Downstream Resources	Good sandy beach with vehicle access and ability to launch small workboat from shore.	75	371
<b>LCR-87.3R</b>	Gee Creek (WA) 45.84815 -122.77770	Exclusion	Boom 100ft	Yes	Remote Stage at Stevens' Moorage, SA-LEWR-0.4	National Wildlife Refuge, Sensitive Resources Nearby, Wetland Habitat	Boat access only. Will likely require a shallow-draft boat.	75	373

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-87.5R	Ridgefield NWR/ Bachelor Is. Slough (WA) 45.84418 -122.78059	Deflection	Boom 700ft	Yes	Remote Stage at SA-LKRRV-1.0, Port of Ridgefield	Sensitive Resources Nearby, Waterfowl and Shorebird Concentrations, Wetland Habitat, Wildlife Refuge	North entrance to Bachelor Island Slough/Lake River. Shoreline is heavily vegetated. Sensitive resources in area.	75	375
LCR-87.6R	Ridgefield NWR/ Bachelor Is. Slough (WA) 45.84185 -122.78120	Deflection	Boom 700ft	Yes	Remote Stage at SA-LKRRV-1.0, Port of Ridgefield	Bald Eagle Nesting, Great Blue Heron Rookeries, National Wildlife Refuge, Sandhill Crane (Wintering), Sensitive Resources Nearby, Waterfowl, Wetland Habitat	North entrance to Lake River/Bachelor Island Slough. Boat access only. Will need boat to tend boom due to heavy boat traffic.	75	377
LCR-91.0R	Ridgefield NWR/ Bachelor Is. Slough (WA) 45.79324 -122.77448	Exclusion	Boom 700ft	Yes	Remote Stage at Port of Ridgefield Marina, SA-LKRRV-1.0	Bald Eagle Nests, Great Blue Heron Rookeries, National Wildlife Refuge, Sandhill Crane (Wintering), Sensitive Resources Nearby, Waterfowl, Wetland Habitat	South entrance of Bachelor Island Slough. Boat access only. Oil may collect naturally at this site.	74	379

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-92.3R	Campbell Lake (WA) 45.78263 -122.76911	Exclusion	Boom 300ft	Yes	Remote SA-LKRRV-1.0 / Lake River	National Wildlife Refuge, Sandhill Crane Roost Area, Sensitive Resources Nearby, Waterfowl, Wetland Habitat	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	74	381
LCR-94.3R	Post Office Lake (WA) 45.75425 -122.75797	Exclusion	Boom 200ft	Yes	Remote Stage at Langsdorf Landing, SA-LCR-97.7R	National Wildlife Refuge, Sensitive Resources Nearby, Waterfowl, Wetland Habitat	Boat access only. Site is adjacent to decommissioned dike road, but it is largely eroded away.	74	383
LCR-94.5L	Willow Bar Island (OR) 45.75319 -122.76813	Collection, Exclusion	Boom 600ft	Yes	Remote Stage at Langsdorf Landing, SA-LCR-97.7R	State Protected Area/Lands, Wetland Habitat	If necessary, site can be accessed land-side from Brown Road on Sauvie Island.	74	385
LCR-94.8R	Ridgefield Levee Breach #1 45.74761 -122.75813	Exclusion	Boom 300ft	Yes	Remote Stage at Langsdorf Landing	Sensitive Resources Nearby, Waterfowl and Shorebird Concentrations, Wildlife Refuge	Site is decommissioned dike road at Ridgefield National Wildlife Refuge where drainage has eroded the road and dike to create breach that could open to Post Office Lake at high water.	74	387

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-95.0R	Ridgefield Levee Breach #2 45.74477 -122.75804	Exclusion	Boom 500ft	Yes	Remote Stage at SA-LCR-97.7R, Langsdorf Landing	Sensitive Resources Nearby, Waterfowl and Shorebird Concentrations, Wildlife Refuge	Site is decommissioned dike road at Ridgefield National Wildlife Refuge where drainage has eroded the road and dike to create breach that could open to Post Office Lake at high water.	74	389
LCR-97.0R	NW Lower River Road 45.71624 -122.76053	Collection	Boom 500ft	Yes	Remote Stage at SA-LCR-97.7R, Langsdorf Landing.	Downstream Resources, Sensitive Resources Nearby	Property is owned by New Columbia Gardens. Contact for access.	74	391
LCR-97.5R	Caterpillar Island - N end (WA) 45.70888 -122.76006	Exclusion	Boom 400ft	Yes	Remote Stage at Langsdorf Landing, SA-LCR-97.7R	Houseboats, Sensitive Resources Nearby, Wetland Habitat	Site is boat access only. Recreational vessels and houseboats on slough.	74	393
LCR-98.4L	Dairy Creek (OR) 45.69826 -122.77601	Exclusion	Boom 300ft	Yes	Remote Stage at SA-LCR-97.7R	Habitat Restoration Site/Project, Wetland Habitat	Dairy Creek feeds into Sturgeon Lake, which is an important wildlife area. Log jams and debris are present upstream from mouth. At low water, this strategy may not be feasible or necessary.	76	395
LCR-98.6R	Caterpillar Island - S end (WA) 45.69395 -122.76462	Exclusion	Boom 600ft	Yes	Remote Stage at Langsdorf Landing, SA-LCR-97.7R	Sensitive Resources Nearby, Wetland Habitat	Boat access only. Sensitive resources in the vicinity.	76	397

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Figure 6.10 Proposed Booming and Collection Strategies – Lower Columbia River (continued) - Revised

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-99.9R	Frenchman's Bar Park (WA) 45.67702 -122.76812	Collection	Boom 500ft	Yes	Onsite Stage onsite at Frenchman's Bar Park.	Downstream Resources, Public Recreation Site/Area, Sensitive Resources Nearby	Strategy site is Frenchman's Bar Park. Sandy beach and recreational area with paved parking and vehicle access to river.	76	399
LCR-100.8R	Vancouver Lake/Flushing Channel (WA) 45.66549 -122.75889	Collection, Exclusion	Boom 1000ft	Yes	Onsite Stage onsite at Frenchman's Bar Park.	Downstream Resources, Sensitive Resources Nearby, Wetland Habitat	Vehicle access from Lower River Road. Boat access from Vancouver or Portland. Notify Environmental Unit when deploying strategies in this area.	76	401
LCR-107.1R	Waterfront Park on SE Columbia Way 45.61485 -122.65596	Collection	Boom 1000ft	Yes	Remote Stage at SA-LCR-108.4R, Marine Park in Vancouver	Economic Resource, Economic Resource, Habitat and Waterfowl, Public Recreation Site/Area	Site is upstream from a public park along SE Columbia Way. Sensitive resources exist in this area. Contact the Environmental Unit for guidance before deploying this strategy.	82	403
LCR-108.4R	Marine Park Boat Ramp - upstream of Ryan Point 45.61164 -122.63282	Collection	Boom 800ft	Yes	Onsite Marine Park Boat Ramp, Vancouver, SA-LCR-108.4R	Downstream Resources	Marine Park Boat Ramp access via Marine Parkway.	82	405
LCR-109.1R	Marine Park wetland (WA) 45.61276 -122.62344	Exclusion	Boom 800ft	Yes	Remote Stage at Marine Park, SA-LCR-108.4R	Economic Resource, Freshwater Wetlands	Site is directly to the east of Marine Park in Vancouver and to the south of the Water Resources Education Center.	82	407

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Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LCR-109.6R	Wintler Park (WA) 45.61028 -122.61143	Collection	Boom 500ft	Yes	Remote Marine Park Boat Ramp, SA-LCR-108.4R	Downstream Resources	Boat access from the ramp at Marine Park. Vehicle access off of Highway 14.	82	409
LCR-111.0R	Hillcrest Community Club Park (WA) 45.60498 -122.58069	Collection	Boom 900ft	Yes	Onsite Stage onsite at community park.	Downstream Resources, Economic Resource, Economic Resource, Habitat and Waterfowl, Public Recreation Site / Area	Site is a private park owned by the Hillcrest Community Club. Gate is unlocked, but access is restricted to community members and guests.	82	411
LCR-113.3M	Government Island Slough (OR) 45.58530 -122.54299	Exclusion	Boom 500ft	Yes	Remote Stage at SA-LCR-109.4L, M. James Gleason Memorial Boat Ramp. Launch from same BL-LCR-109.4L.	Critical Waterfowl Area, Wetland Habitat	Length of boom needed will vary depending on water level.	82	413
LCR-113.8R	Steamboat Landing (WA) 45.59237 -122.52786	Deflection, Exclusion	Boom 800ft	Yes	Remote Stage at SA-LCR-109.4L, M. James Gleason Memorial Boat Ramp. Launch from same BL-LCR-109.4L.	Boat Basin/Marina, Marina, Sensitive Resources Nearby	Boat access from Vancouver or Portland, land access from SE Evergreen Highway. There is a strong eddy which moves water east (upriver) along the shoreline.	82	415

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**Figure 6.11. Clean Rivers Co-op Boom Site List - Revised**

Environmental Resources	Columbia River Mile	Pre-staged Boom Available at	Boom Function and Estimated Length Required (feet)
Columbia Slough	0.9 (Willamette River)	RES Portland	400' deflection & 500' containment
Multnomah Channel	3.0 (Willamette River)	RES Portland	3,000' deflection & containment
Vancouver Lake Channel	101	RES Portland	400' containment
Hathaway Lake Entrance	92.3	St. Helens	300' protection
Bachelor Island Slough	91.5 & 87.6	St. Helens	1,200' deflection & containment
West Side of Lewis River	84.0 – 87.0	St. Helens	800' containment, 1,300' protection
Deer Island Slough	82.4	St. Helens	300' containment
Burke Island/Martin Island	81.0 – 81.3	St. Helens	1,600' deflection & containment
Kalama River	73.0	Rainier	500' protection
Carroll's Channel	71.5	Rainier	400' deflection & 800' containment
Longview Dock	67.5	Rainier	3,000' containment
Slaughters Dike Entrance	66.0	Rainier	400' containment
Cottonwood Island	70.0 – 72.0	Rainier	400' containment
Brix Marina	67.8	Rainier	800' protection
Fisher Island	60.4 – 60.0	Stella	800' deflection
Coal Creek, East	57.0	Stella	1,000' containment
Coal Creek, West	57.0	Stella	600' containment
Crims Island	57.0	Stella	1,200' deflection & 1,700' containment
Pacific Biofuels	53.8		
Wallace Island	50.0	Stella	1,000' containment & protection
Cathlamet Channel	47.0	Cathlamet	2,000' deflection & 3,000' containment
Elochman Slough	37.0	Skamokawa	200' containment
Westport Slough	43.3	Wauna	1,000' deflection & containment
Wauna Channel	42.0	Wauna	1,000' containment
Puget Island	46.0	Wauna	1,600' containment
Steamboat Slough	35.0	Skamokawa	600' deflection & 600' containment
Brooks Slough	33.0	Skamokawa	300' containment
Skamokawa Marine	33.0	Skamokawa	1,000' containment
Big Creek Entrance	28.0	Tongue Point	200' containment
Karlson Island	27.0	Tongue Point	200' containment
Miller Sands Lagoon	24.0	Tongue Point	2,000 containment
Crooked Creek	23.0	Tongue Point	100' containment
Grays River	22.5	Tongue Point	1,000; protection
Deep River	21.0	Tongue Point	500' containment
Brix Bay Marsh	20.0	Tongue Point	500' containment
Portuguese Pt. Marsh	19.0	Tongue Point	3,00' containment

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Environmental Resources	Columbia River Mile	Pre-staged Boom Available at	Boom Function and Estimated Length Required (feet)
John Day River Entrance	18.0	Tongue Point	600' containment
Clifton Channel	36.0	Astoria	2,000' deflection & 3,000' containment
West Basin Seal Haulout	15.0	Astoria	1,200' protection
West Basin Marina	13.0	Astoria	200' protection
Lewis & Clark River	13.0	Astoria	1,000' containment
Skipanon Waterway	11.0	Astoria	600' containment
Tansy Point	10.0	Astoria	600' deflection
Hammond Marina	8.0	Astoria	600' containment
Swash Lake Entrance	7.0	Astoria	600' containment
Youngs River	7.0	Astoria	700' containment
Ilwaco Marina	3.0	Astoria	400' containment, 4,100' sorbent & 1,000' deflection

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