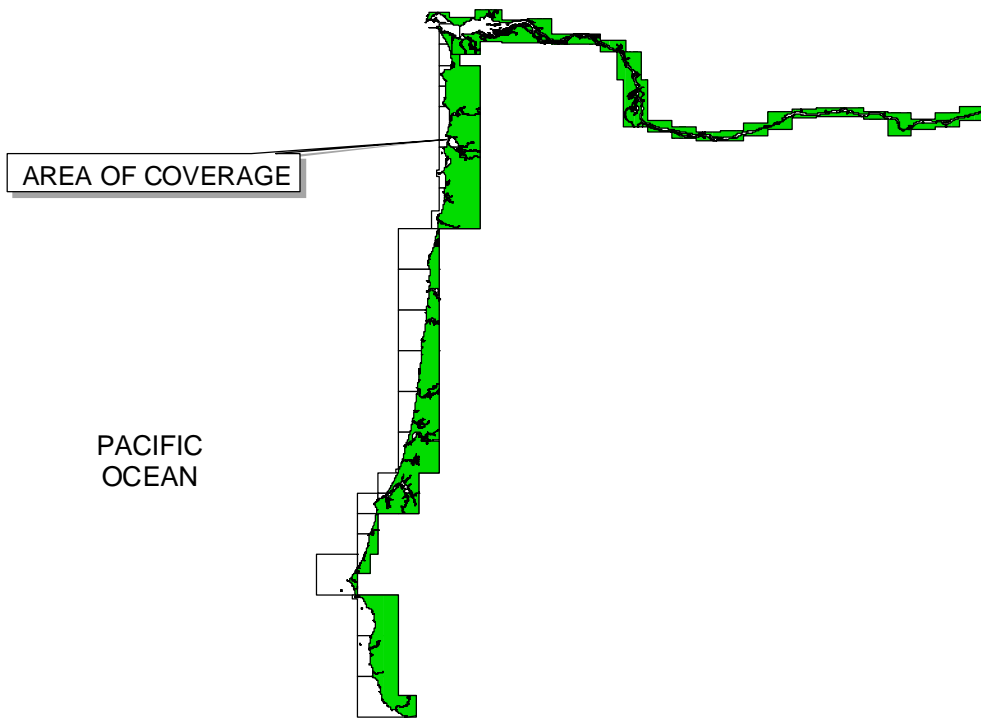




TILLAMOOK BAY, OREGON GEOGRAPHIC RESPONSE PLAN (GRP)



Spill Response Contact Sheet

Required Notifications For Hazardous Substance Or Oil Spills

USCG National Response Center	(800) 424-8802
In Oregon:	
Department of Emergency Management	(800) 452-0311 (800) OILS-911
In Washington:	
Emergency Management Division	(800) 258-5990
Department of Ecology	(360) 407-6300

U.S. Coast Guard

National Response Center	(800) 424-8802
Marine Safety Office Puget Sound:	
Watchstander	(206) 217-6232
Safety Office	(206) 217-6232
Marine Safety Office Portland	
Watchstander	(503) 240-9301
Port Operations	(503) 240-9379
Pacific Strike Team	(415) 883-3311
District 13:	
MEP/drat	(206) 220-7210
Command Center	(206) 220-7021
Safety Officer	(206) 220-7242
Public Affairs	(206) 220-7235
Vessel Traffic Service (VTS)	(206) 217-6050

Environmental Protection Agency (EPA)

Region 10 Spill Response	(206) 553-1263
Washington Ops Office	(206) 753-9083
Oregon Ops Office	(503) 326-3250
Idaho Ops Office	(208) 334-1450
RCRA/CERCLA Hotline	(800) 424-9346
Public Affairs	(206) 553-1203

National Oceanic Atmosphere Administration

Scientific Support Coordination	(206) 526-6829
Weather	(206) 526-6087

Canadian

Marine Emergency Ops	(604) 666-6011
Environmental Protection	(604) 666-6100
B.C. Environment	(604) 356-7721

Department Of Interior

Environmental Affairs	(503) 231-6157
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U.S. Navy

Naval Shipyard	(206) 476-3466
Naval Base Seattle	(206) 526-3225
Supervisor of Salvage	(202) 695-0231

Army Corps Of Engineers

Hazards to Navigation	(206) 764-3754
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Response Contractors

Airo Services * #	(206) 383-4916
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Response Contractors

Fred Devine	(503) 283-5285
Global Diving	(206) 623-0621
NRC Environmental	(503) 283-1150
US Environmental	(866) 876-7745

Washington State

Department of Ecology:	
Headquarters	(360) 407-6900
SW Regional	(360) 753-2353
NW Regional	(206) 649-7000
Department of Emergency Management	(206) 438-8639 (800) 258-5990
State Patrol	(206) 753-6856

Oregon State

Department of Environmental Quality	
Headquarters (Portland)	(503) 229-5153
Northwest Region (Portland)	(503) 229-5263
Eastern Region (Bend)	(541) 338-6146
Eastern Region (Pendleton)	(541) 278-4063
Western Region (Coos Bay)	(541) 269-2721
Western Region (Eugene)	(541) 686-7838
Western Region (Medford)	(541) 776-6010
Western Region (Salem)	(503) 378-8240
Emergency Management	(503) 378-6377
(In state)	(800) 452-0311
(In state)	(800) OILS-911
Stop Oregon Litter & Vandalism	(503) 647-9855

Boldface type are 24-hour numbers

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HOW TO USE THIS GEOGRAPHIC RESPONSE PLAN

Purpose of Geographic Response Plan (GRP)

This plan prioritizes resources to be protected and allows for immediate and proper action. By using this plan, the first responders to a spill can avoid the initial confusion that generally accompanies any spill.

Geographic Response Plans are used during the emergent phase of a spill which lasts from the time a spill occurs until the Unified Command is operating and/or the spill has been contained and cleaned up. Generally this last no more than 24 hours. The GRPs constitute the federal on-scene coordinators' and state on-scene coordinators' "orders" during the emergent phase of the spill. During the project phase the GRP will continue to be used, but with input from natural resource trustees.

Strategy Selection

Chapter 4.1 of the GRP contains complete strategy descriptions in matrix form and response priorities. The accompanying maps are located in Chapter 4.2. The strategies depicted in Chapter 4.2 will be implemented after reviewing on scene information including: tides, currents, weather conditions, oil type, initial trajectories, etc.

It is important to note that strategies rely on the trajectory of the spill. A booming strategy listed as a high priority would not necessarily be implemented if the spill trajectory and location did not warrant action in that area.

Chapter 6 outlines the sensitive resources requiring protection and the seasonality of their sensitivity. This information must be consulted before strategies are implemented as there may be flight restrictions associated with a resource. Flight restriction information is also found in chapter 6.

Standardized Response Language

In order to avoid confusion in response terminology, this GRP uses strategy names defined in Appendix A (e.g. diversion booming, exclusion booming).

Response Equipment

A table outlining equipment availability and response times is being developed for this geographic response plan. In the interim, strategies will be deployed in the order equipment arrives on scene and as directed/selected by the on-scene coordinator.

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Record of Changes

Date	Change Number	Summary of Changes
1 August 1995	Original Release	
1 August 1996	1	Editing. Added maps and tables to chapters 5 and 6.
1 October 1997	2	Editing. Added text to chapter 6.
1 June 2000	3	Renumbered chapter 4 strategies. Added Lat/Lon to chapter 4 table locations. Created new chapter 4 maps. Added Section 6.9, Aquaculture.
1 December 2004	4	Deleted “GRPs only address protection of public resources.” Updated DEQ logo and contact sheet.

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Tillamook Bay, Oregon

GEOGRAPHIC RESPONSE PLAN

1. Introduction: Scope of this Project

Geographic Response Plans are intended to help the first responders to a spill avoid the initial confusion that generally accompanies any spill. They prioritize resources to be protected and allow for immediate and proper action.

GRPs are developed for marine waters of Washington and Oregon States, the Columbia River, and the inland areas of Washington, Oregon and Idaho. They are prepared through the efforts of the Washington Department of Ecology, Oregon Department of Environmental Quality, Idaho State Emergency Response Commission, the U.S. Coast Guard, and the Environmental Protection Agency.

GRPs are developed through workshops involving federal, state, and local oil spill emergency response experts, representatives from tribes, industry, ports, environmental organizations, pilots and response contractors. Workshop participants identify resources which require protection, develop operational strategies, and pinpoint logistical support.

The first goal of a GRP is to identify resources, physical features, hydrology, currents and tides, winds and climate that may affect response strategies. After compiling this information, sensitive resources are identified.

Secondly, response strategies are developed based on the sensitive resources noted, hydrology, and climatic considerations. Individual response strategies identify the amount and type of equipment necessary for implementation. The response strategies are then applied to likely spill scenarios for oil movement, taking into account factors such as wind and tidal conditions.

Finally, additional logistical support is identified, including:

- Location of operations center for the central response organization;
- Local equipment and trained personnel;
- Local facilities and services and appropriate contacts for each;
- Response times for bringing equipment in from other areas.

By using this plan as a guideline, the first responders to a spill can avoid the initial confusion that generally accompanies any spill. This plan prioritizes resources to be protected and allows for immediate and proper action.

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2. Site Description

The Tillamook Bay estuary is located on the northern Oregon Coast approximately 50 miles south of the mouth of the Columbia River. Three incorporated towns in the area are Garibaldi, Bay City, and Tillamook. The closest estuaries to the north and south are Nehalem Bay and Netarts Bay respectively.

2.1 Physical Features

Recently selected for study under the National Estuary Program, Tillamook Bay and its five major rivers comprise one of the most important wildlife areas along the Oregon coast. It supports over 750,000 waterfowl use days annually. Shorebirds, seabirds, and numerous small mammals and seals are common. Bald eagles are also occasionally sighted.

A large number of Chinook, Coho, and Chum Salmon as well as Steelhead and Cutthroat Trout and 58 other marine fish species are found in the bay. The area is also responsible for 80% of Oregon's Oyster production and is one of the top two estuaries in the state in terms of recreational clam harvest. Six species of clams are recreationally and commercially harvested in great numbers. Recreational harvest of Dungeness crab is another important activity.

Tillamook Bay is the third largest estuary in Oregon. Surface area measures 8,289 acres at mean high tide. Water arrives from five major rivers; the Tillamook, Miami, Kilchis, Trask, and Wilson, which drain a 574 square mile watershed. About 19 smaller tributaries also discharge directly into the bay.

Because of ongoing siltation, Tillamook Bay contains extensive shallows. There are 4163 acres of tidelands, of which 1070 acres are tidal marsh. The main concentration of marshes is in the delta area of the Wilson and Kilchis Rivers, extending over a square mile. The area contains primarily mature and immature high marshes, with some sedge islands in the fresher areas at the mouths of rivers.

2.2 Hydrology

Tillamook Bay's long term average daily discharge is 3900 cubic feet per second(cfs) with the maximum occurring in December (8400 cfs), and the minimum occurring in August (400 cfs). The bay's freshwater retention time is two days.

The north-south orientation of the bay keeps it well protected from waves at the throat, which has a width of 1485 feet. Tidal effects to the following points on its five major tributaries: Kilchis River, mile 1.3; Miami River, mile 0.4; Tillamook River, mile 7.0; Trask River, mile 4.2; and Wilson River, mile 2.4.

On the basis of salinity change from top to bottom, the bay has been classified as a two layered system during January, and a well mixed system during April.

Near the mouth of Tillamook Bay to Garibaldi, strong tides dominate the surface currents. Within Tillamook Bay, the surface circulation is primarily wind driven. Movement of oil spilled inside the bay depends upon the direction and magnitude of local winds. In addition, influences from the rivers mentioned above will affect surface circulation.

2.3 Currents and Tides

The tides of Tillamook are mixed semidiurnal with paired highs and lows of unequal duration and amplitude. The mean tidal range is 5.7 feet with an extreme range of 13.5 feet. Tide decreases upstream to the city of Tillamook where the mean range is 5.2 ft at Hoquarten Slough.

Maximum flood current velocities are somewhat greater than maximum ebb current velocities. Average speed of the maximum flood current is 3 knots at 141 degrees True. Average speed of the maximum ebb current is 2.6 knots at 305 degrees True.

2.4 Winds

January wind readings for the Tillamook station indicate 49 % of the time experiences winds less than 3 knots. The remaining 51% of the time is evenly distributed between winds from the east and south at speeds up to 30 knots. July wind readings show 39% of the time experiences winds less than 3 knots. The remaining winds come predominantly from the northwest with some as strong as 30-40 knots.

Along the Oregon coast during the summer, the predominant wind direction is from the northwest with speeds ranging from 10 to 15 knots. However, maximum peak wind gusts range from 30 to 40 knots. The mean wave heights are about 4.9 feet with maximum heights at 14.7 feet. In the winter, the winds are primarily from the east to southeast at 10 to 15 knots with maximum peak wind gusts ranging from 55 to 65 knots. Average wave heights are 4.9 feet with maximum wave heights of 32.8 feet.

2.5 Climate

The entire coast is characterized by a maritime climate with cool summers and mild winters. Air temperatures are in the mid 40's in the winter and the low 60's in the summer. Water temperatures are fairly constant, normally in the low 50's.

2.6 Risk Assessment

Although not a deepwater port, numerous large fishing charter and recreational boats utilize the various ports within Tillamook Bay. The Port of Garibaldi in the northern part of the bay hosts most of the larger fishing vessels, and spills typically occur as a result of vessel sinkings, and refueling. There are no fixed oil facilities, nor oil pipelines in the bay.

The primary transportation patterns for the Trans-Alaskan Pipeline Trade which affect the Oregon Coast are between Prince William Sound and Richmond, California. The routes for major shipping traffic keep the super tankers 50-60 NM off shore. This distance is thought to minimize coastal effects from a catastrophic spill. Refined product in barges and small tankers is transported closer to the shoreline, as do cargo vessels with bunker fuels while in transit off the coast. These all represent potential spill sources.

The nearshore current is capable of transporting floating product vast distances. Bunker fuel from the M/V Tenyo Maru, which sank off the northern coast of Washington during the summer of 1991, washed up as far south as Lincoln City. Additionally, unidentified or "mystery" tarballs occasionally wash up on Oregon's beaches. These are most likely from offshore vessels illegally pumping bilges while at sea.

3. Reference Map

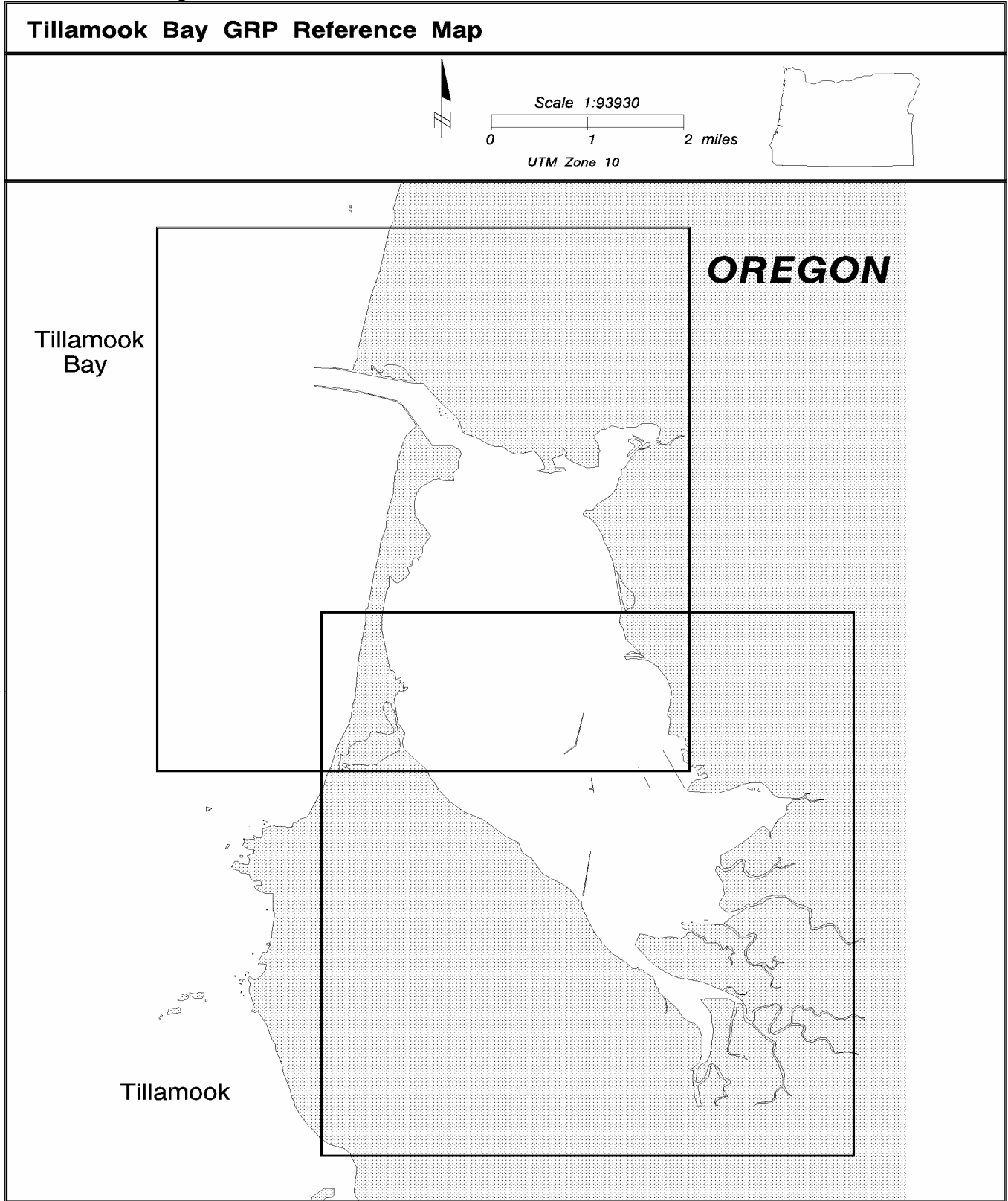


Figure 3-1. Tillamook Bay Reference Map

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4. General Protection/Collection Strategies

4.1 Chapter Overview

This chapter details the specific response strategies and resources to protect as outlined by the participants of the GRP workshops for each Geographical Response Area. It describes, amongst other things, the strategies determined for each area. Other pertinent information necessary for proper implementation of scenarios is found in chapters five and six. This information includes shoreline types, wildlife areas, economic areas, sensitive marine areas, archeological sites, and flight restriction zones which may be implemented by the OSC if necessary.

Sectors

Each **geographic region** is divided into smaller **sectors** as shown by the reference map in chapter three.

Maps

The maps in this chapter provide information on the specific location of strategy points. They are designed to help the responder visualize response strategies in relation to valuable wildlife and archeological locations, economic areas, and sensitive marine areas. Maps are grouped in their respective subject matter areas. The maps that are being developed will be added as they are completed and placed in their respective subject matter areas. For a complete list of all maps contained in this GRP refer to the Table of Figures on page 6.

- **Protection/Collection maps** provide information on the specific location of strategy points. These maps are designed to help the responder visualize response strategies in relation to valuable wildlife and archeological locations, economic areas, and sensitive marine areas.

Tables

This chapter contains tables which are placed in their respective subject matter areas. Some of the tables are incomplete and will be updated.

- **Scenario Response Priority Strategies** details the order in which strategies will be implemented based on various local scenarios.
- **Response Strategy Table** describes amongst other things, the details of the response strategies, indicates the purpose of the strategy and lists special considerations that may be needed to carry out the strategies.

Major Protection Techniques

All response strategies fall into one of three major techniques that may be utilized either individually or in combination. The strategies listed in 4-2 are based on one or more of the following techniques:

Dispersants:

Chemicals can be used to break up slicks on the water. Dispersants can decrease the severity of a spill by speeding the dissipation of certain oil types. Their use will require approval of the Unified Command. Dispersants will only be used in offshore situations under certain conditions, until further determinations are made by the Area Committee and published in the Area Contingency Plan.

In Situ Burning:

If possible, an oil slick may be set on fire. Burning must be authorized by the Unified Command, who confer with state and local air and water quality authorities. This option is often preferable to allowing a slick to reach the shore. This method works on many types of oil, and requires special equipment including a fire boom and ignitors. In Situ Burning will only be allowed when consistent with the Northwest Area Contingency Plan's In-Situ Burning Policy and Guidelines.

Mechanical Recovery Strategies:

If a spill is too close to the shore to use In Situ burning or dispersants, the key strategies are to use collection, diversion, or exclusion booming to contain the slick and prevent it from entering areas with sensitive wildlife and fisheries resources. This will be attempted through the use of various booming strategies. These options are described in detail in Appendix A.

4.2 Protection/Collection Maps

Table 4-1. North Tillamook Bay Protection/Collection Strategies Information

Strategy Number	Location	Response Strategy	Length & Type of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected (Items marked with * see Flight Restriction Zone)
STB-1	Kinchloe Pointarina 45°33'26"N 123°55'58"W	Deflection	900-1200' hard	Deflect oil to keep it out of south channel.		Dune Road or boat ramp near Garibaldi	
STB-2a	CG Pier @ Garibaldi 45°33'27"N 123°55'12"W	Deflection to Collection	1000' hard	Use step down booming to deflect oil to collection point west of basin.	USCG pier	Good access; road at site for vacuum trucks	
STB-2b	CG Pier @ Garibaldi 45°33'20"N 123°54'39"W	Protection	1000' hard	Use exclusion booming to keep oil out of basin.	USCG pier	Good access; road at site for vacuum trucks	
STB-3a	East Shore of Miami Cove 45°33'00"N 123°54'08"W	Deflection	(2) 200' sections (use marsh boom if available)	Position boom to deflect oil to collection point on SE corner of Miami Cove. Collect oil before tide ebbs.		road access	
STB-3b	Hobsonville Point 45°43'54"N 123°54'19"W	Deflection	400' hard	Deflect any oil that escapes 3a back to collection point for recovery.		road at site, use vacuum trucks for recovery	
STB-4	Larson Cove 45°32'08"N 123°51'52"W	Protection	200' hard	Boom across Larson Cove to protect.		road accessible	
STB-5	Between Hobsonville and Larson Cove 45°32'26"N 123°53'59"W	Deflection to Collection	1000' hard	If slight wind, cascade booms to bring oil down to shore collection points; if NW or W winds, use deflection booms off shoreline.		road accessible	

4.2.1 North Tillamook Bay

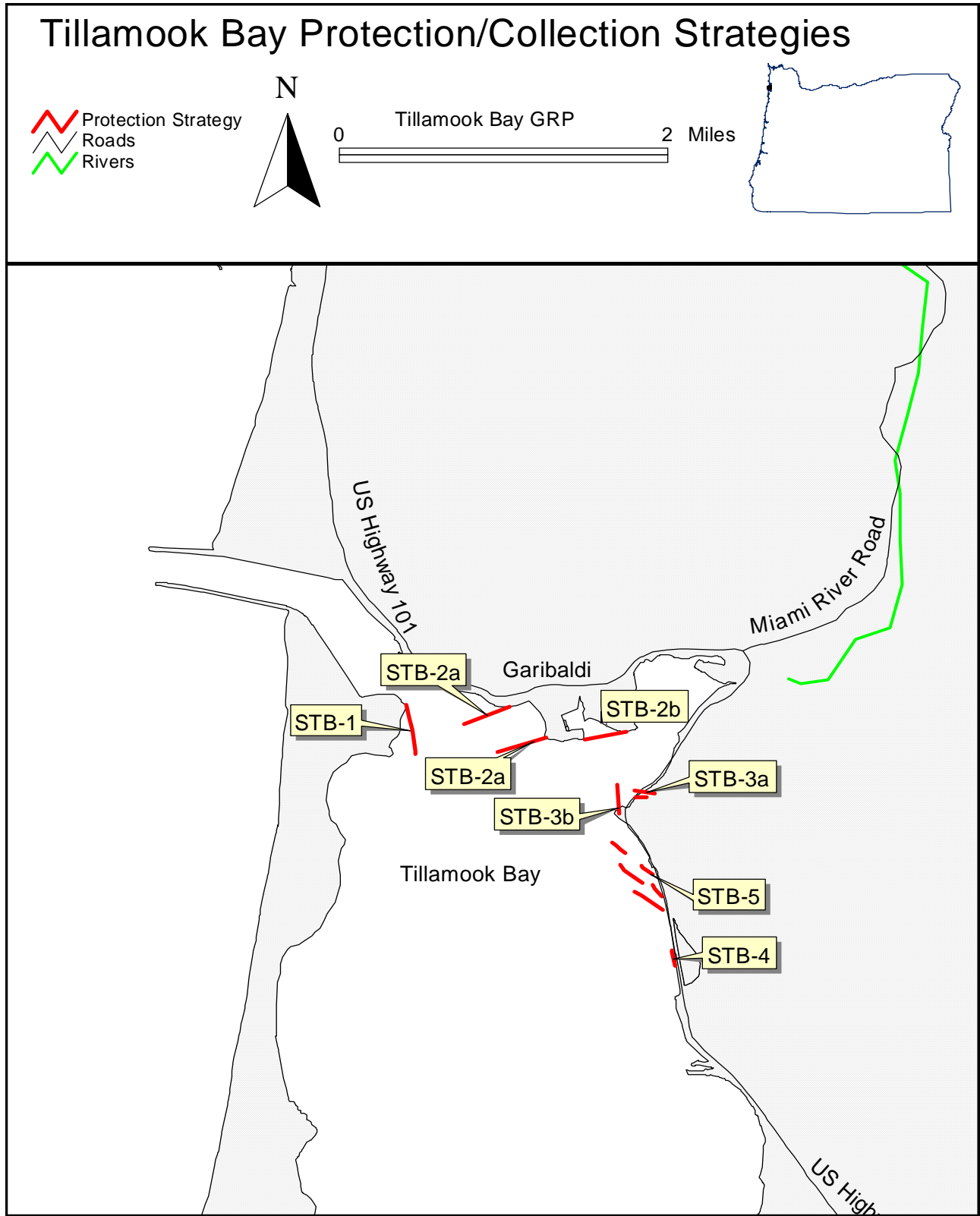


Figure 4-1. North Tillamook Bay Protection/Collection Options

Table 4-2. South Tillamook Bay Protection/Collection Strategies Information

Strategy Number	Location	Response Strategy	Length & Type of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected (Items marked with * see Flight Restriction Zone)
STB-6a	RR Bridge @ Hathaway Slough 45°30'04"N 123°51'34"W	Protection	100' hard	Boom across Hathaway Slough to protect fisheries resources. Use sorbent boom with hard boom for added protection.		can use road, then must offroad	
STB-6b	RR Bridge river south of S-6a 45°29'56"N 123°51'14"W	Protection	100' hard	Exclusion boom to protect fisheries resources.		can use road, then must offroad	
STB-6c	River Road South 45°29'42"N 123°51'26"W	Protection	100' hard	Exclusion boom to protect fisheries resources.		Use skiff at Hathaway Bridge must offroad	
STB-7	Road at Wilson River 45°29'00"N 123°51'59"W	Protection	300' hard	Exclusion boom across Wilson River (anchor bank to bank) to protect fisheries resources and hatcheries upriver.		road access	
STB-8a	Memaloose Point 45°28'15"N 123°53'14"W	Deflection	1500' hard	Deflect oil to keep out of Trask River and Tillamook River, need to assess outflow from Trask & Tillamook Rivers.		road access	
STB-8b	Bridges across Tillamook River 45°27'25"N 123°52'33"W	Collection	300' hard	Backup strategy to Memaloose Point strategy (S-8a), double up with sorbent boom.		road access	
STB-8c	East end of Dry Stocking Island 45°28'07"N 123°52'21"W	Collection	300' hard	Backup strategy to Memaloose Point strategy (S-8a), double up with sorbent boom.		road access	

4.2.2 South Tillamook Bay

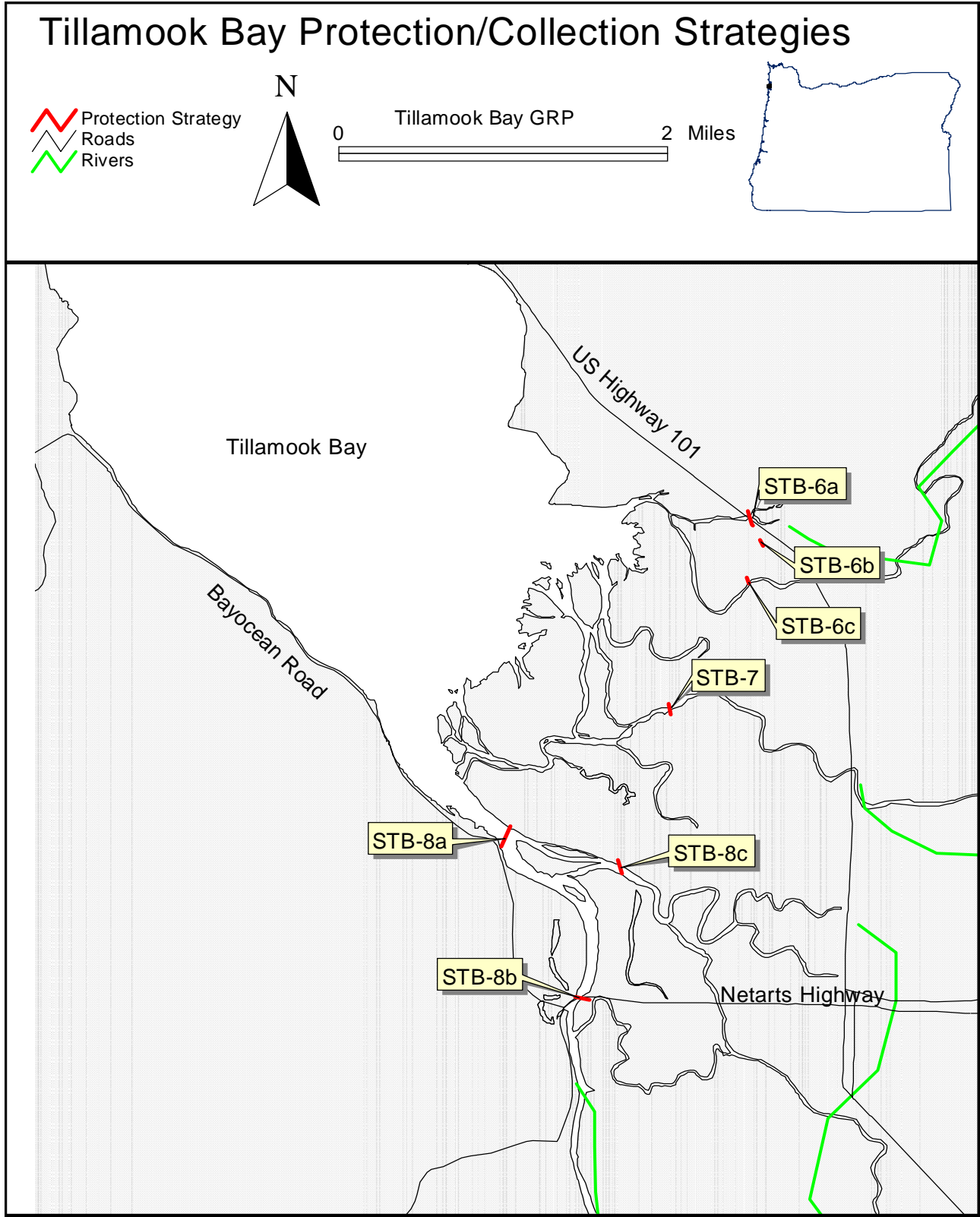


Figure 4-2. South Tillamook Bay Protection/Collection Options

4.3 Protection/Collection Priorities for Tillamook Bay Scenarios

The Protection/Collection Priority table for scenarios 1 - 2 give a detailed list of the priorities for each of 2 scenarios: oil spilled in Garibaldi, outgoing tide and oil spilled at Bay City, outgoing tide.

Procedures:

Identify the appropriate scenario based on the available information, select the priority, identify the strategy and go to the appropriate table in this chapter.

**Table 4-1. Oil spilled in Garibaldi, Outgoing tide.
(Scenario 1)**

Priority	Strategy	Comments
1	STB-2a	Containment at source
2	STB-2b	Containment at source
3	STB-1	Modify strategy to keep oil in channel

Refer to Table and Maps for exact locations of strategies.

**Table 4-2. Oil spilled at Bay City, Outgoing tide.
(Scenario 2)**

Priority	Strategy	Comments
1	STB-4	Protect Larson Cove
2	STB-5	Use angled booms to deflect oil to collection point near roadway
3	STB-3b	collect oil at Hobsonville Pt.
4	STB-2b	Protect Garibaldi Marina

Refer to Table and Maps for exact locations of strategies.

5. Shoreline Countermeasures

5.1 Chapter Overview

The following text and map are in draft form, and are intended to serve as a training tool for countermeasure contingency planning and implementation for shoreline areas in Federal Region X. Shoreline countermeasure processes evolve to reflect increasingly efficient treatment techniques. Accordingly, the following information will be altered as new information is added.

5.2 Shoreline Type Maps

The shoreline types in the following map are a modified version of the environmental sensitivity index types for the Oregon coast and estuaries. The shoreline types were regrouped into five levels of sensitivity from the original ten shoreline types. The modified types are:

1. Open water, banks, or cliffs
2. Sand or gravel beaches
3. Riprap, sandy flats, or organic debris
4. Vegetated banks or tidal mud flats/aquatic beds
5. Marsh, swamp, or rocky intertidal

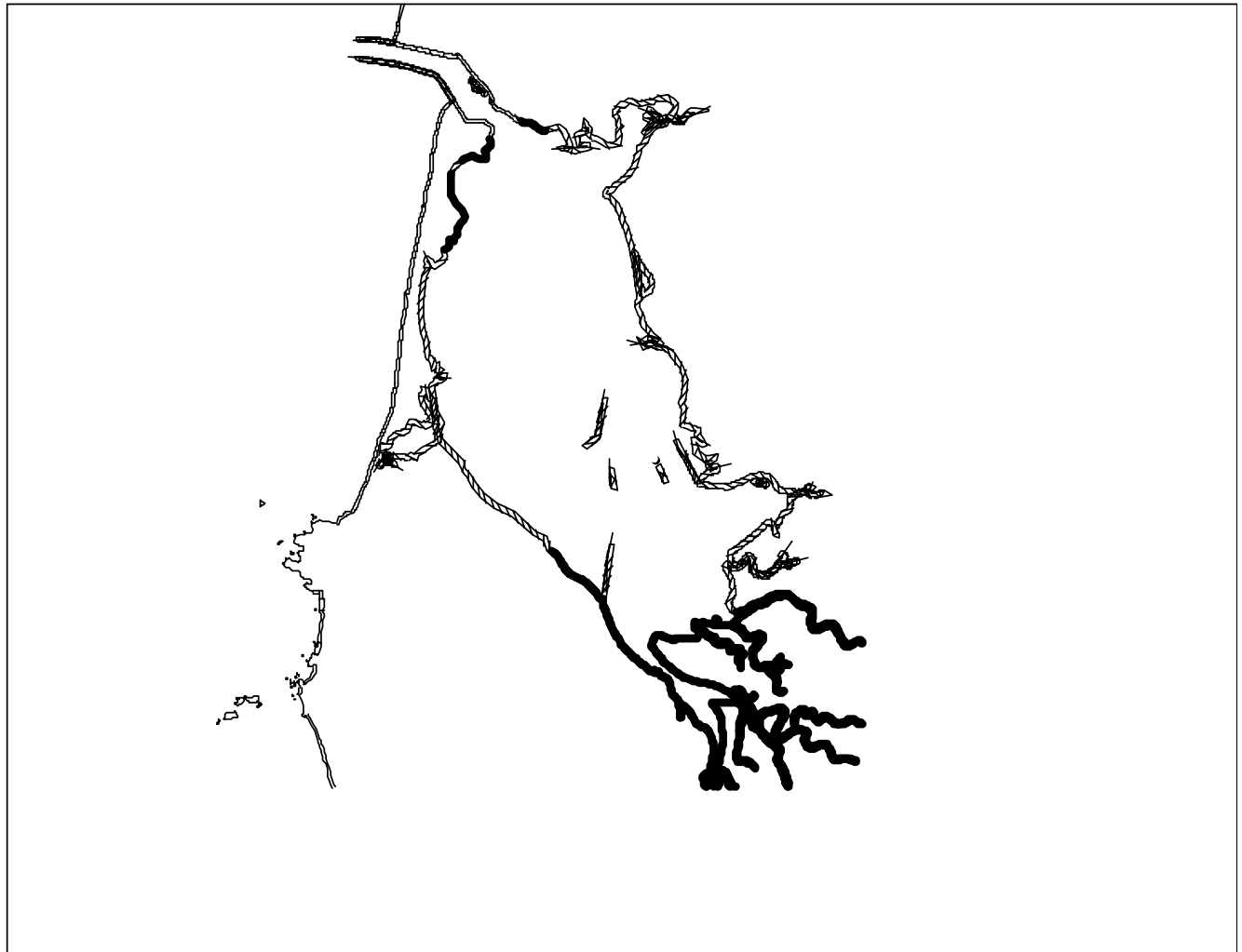
5.3 Oil Countermeasure Matrix

The Northwest Area Committee has developed a manual and a series of matrices as a tool for shoreline countermeasure response. The shoreline countermeasures matrices and manual will be included as a technical appendix to the Northwest Area Contingency Plan.

Shoreline countermeasures following an oil spill are a critical element in determining the ultimate environmental impact and cost resulting from a spill. Local response organizations and agencies have developed mechanisms for identifying shorelines requiring treatment, establishing treatment priorities, monitoring the effectiveness and impacts of treatment and for resolving problems as the treatment progresses.

Each section of the manual has been adapted to the specific environments, priorities, and treatment methods appropriate to the planning area. These elements provide the information needed to select cleanup methods for specific combinations of shoreline and oil types. Local information on shoreline types (Discussed in chapter 2) can be obtained from Environmental Sensitivity Index (ESI) atlases prepared by NOAA for northern and southern Puget Sound, the Washington and Oregon coast, and the Columbia River.

Tillamook Bay



Shoreline Type






-  Open water, banks, or cliffs
-  Sand or gravel beaches
-  Riprap, sandy flats, or organic debris
-  Vegetated banks or tidal mud flats/aquatic beds
-  Marsh, swamp, or rocky intertidal

Figure 5-1. Tillamook Bay Shoreline Types

6. Sensitive Resource/Wildlife Flight Restriction Information

Text provided by Oregon Department of Fish and Wildlife.

6.1 Chapter Overview/Sensitive Resource Description

-Tillamook Bay is one of the largest estuaries on the Oregon coast, and home to diverse wildlife resources including pinnipeds, seabirds, raptors, waterfowl and shorebirds. Bayocean Spit borders the bay to the west, and is owned mostly by Tillamook County. The spit is a well-known bird watching area, especially during the winter.

6.2 Fisheries

-Coho: Throughout all river systems; juvenile (smolt) outmigration mid-April to May. Some tidewater rearing.

-Chum: Tidewater and short distances above with some tributaries. Juvenile outmigration April to May.

-Steelhead (winter): All river systems, smolt migration April to May. Some lower river/tidewater rearing.

-Chinook (spring): Large river systems, summer rearing in tidewater and estuary, including sloughs. Smolt migration August to September.

-Searun Cutthroat: In rivers and estuary virtually year round.

-Resident Cutthroat: In almost all river systems above tidewater year round.

-Notes:

--Summer steelhead present; hatchery stock - no wild production.

--Fall chinook: stock presently healthy; not the degree of concern as associated with spring chinook.

However, there is still concern as they have the same life history as spring chinook.

-- Sturgeon: Present in the bay year round. Some tidewater use June until September.

6.3 Wildlife

-Seabirds are common in the bay from late fall through spring.

-Raptors use the bay as both wintering and nesting areas. The bald eagle is the most common resident of the bay.

-Tillamook Bay is one of the most heavily used estuaries on the Oregon coast by wintering waterfowl, with mid winter counts in excess of 30,000 being common. The fall, winter, and spring are all documented periods of heavy use.

-Shorebirds use the estuary shorelines throughout the year, but heaviest use occurs in the spring and fall.

6.4 Marine Mammals

Disturbance to marine mammals during oil spill response actions should be avoided at all times. Harassment of mammals by aircraft, boat and land activities causes animals to become agitated and engage in abnormal "avoidance" behaviors that are likely to increase the risk of exposure to oil contaminated areas. Of particular importance is to avoid disturbance of pinnipeds (seals and sea lions) on land haul-out areas. The more time these animals are allowed to rest on land, out of the water, the less chance for oil contamination.

Overflights of the large tidally exposed sand flats at the north end of the bay (just south of Garibaldi) should be avoided at all times.

6.5 Shorebirds, Waterfowl, and Raptors

During the late fall through early spring months, waterfowl use estuaries as resting and feeding areas. Estuaries and inland lakes are also home to nesting and wintering raptors such as bald eagles and ospreys. Black brant are seasonally present. Low elevation flights for extended periods of time over the bay, its shoreline, and adjacent large conifer stands should be avoided to minimize disturbance to wintering and/or nesting birds.

6.6 Archeological Sites

To be developed.

Geographic Site Locations

General Resources:

Seasonal Sensitivity:

Recommendations:

6.7 Flight Restriction Maps

Wildlife Resource/Flight Restriction zones are designed to protect shorebirds and marine mammals from aerial disturbances common during a spill response.

6.8 Wildlife Resource/Flight Restriction Tables

The Wildlife Resource/Flight Restriction Table details the location, protected resources, and applicable season for each flight restriction zone.

6.9 Aquaculture

Aquaculture is an important economic resource, which can be severely impacted by an oil spill. Because of the extreme sensitivity of these resources, owners and operators of these facilities should be notified if a spill threatens their resources so that they can take appropriate protective action. The following table lists aquaculture facilities within the area of the Tillamook Bay GRP.

Facility	Address	Point of Contact	Phone Number	Type
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Contact the Oregon Department of Agriculture Duty Officer through the Oregon Emergency Response System, (800) 452-0311, for current aquaculture facility information.

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Table 6-1. Wildlife Resource/Flight Restriction Table

A list of wildlife resources and any corresponding flight restriction zones is found below. Flight restriction zones are designed to protect shorebirds and marine mammals from aerial and terrestrial disturbances common during a spill response.

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Seasonality of Resource												Flight Restriction
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
W-1	Cape Meares Lake	Pelicans																		
W-2	Bay				Harbor Seals															
W-3						Bald Eagle														Yes
W-4							Yes													
W-5				Yes																
W-6						Blue Heron														Yes

 Months that resource is present in this location

All zones include a 1200 foot flight restriction and a 1000-1500 foot ground access restriction. Contact the Oregon Department of Fish and Wildlife before entering restriction zones.

Tillamook Bay

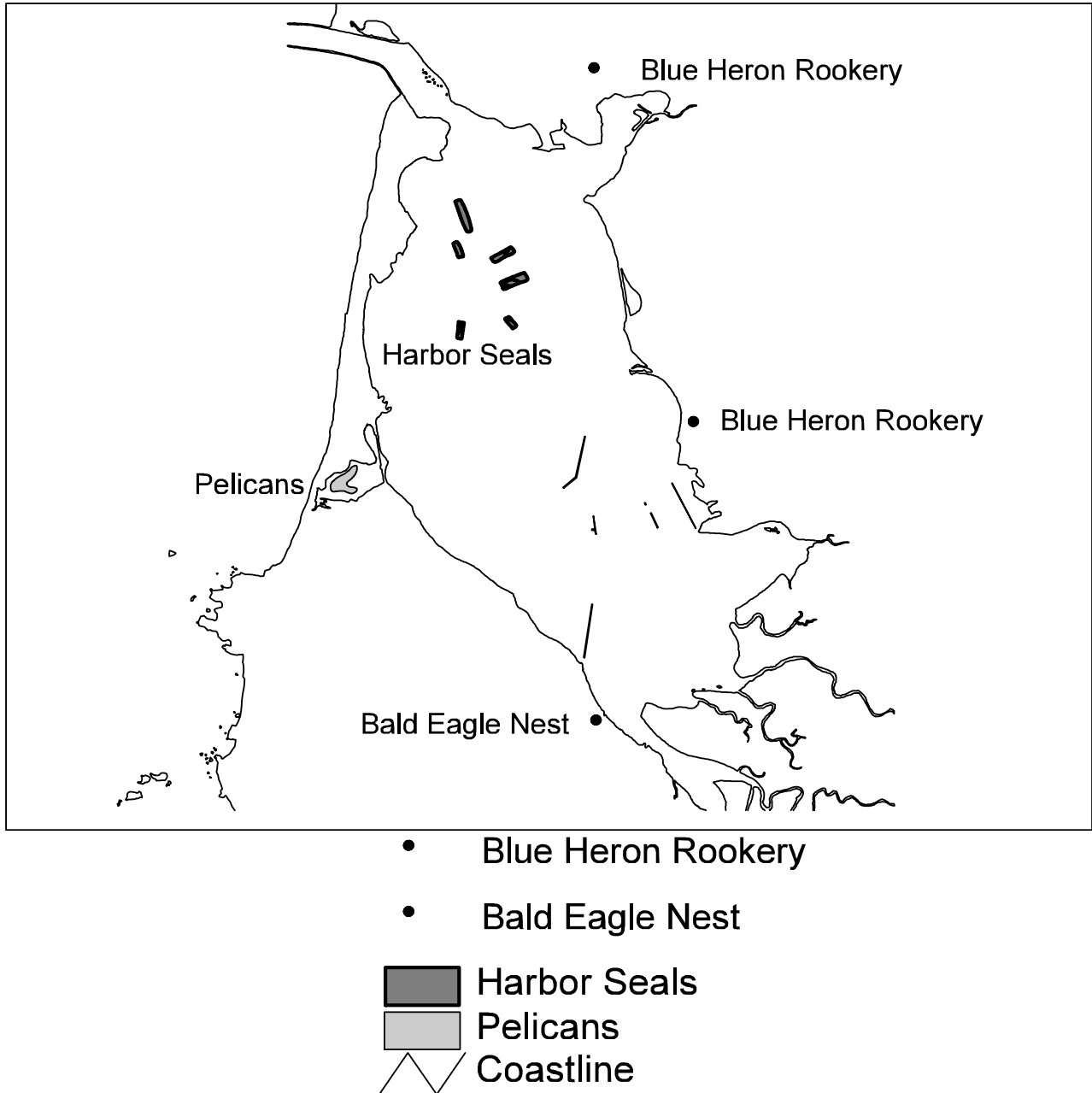


Figure 6-1. Tillamook Bay Nests, Mammals, and Seabirds

Tillamook Bay

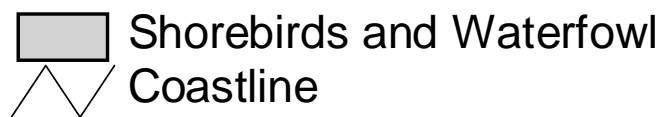
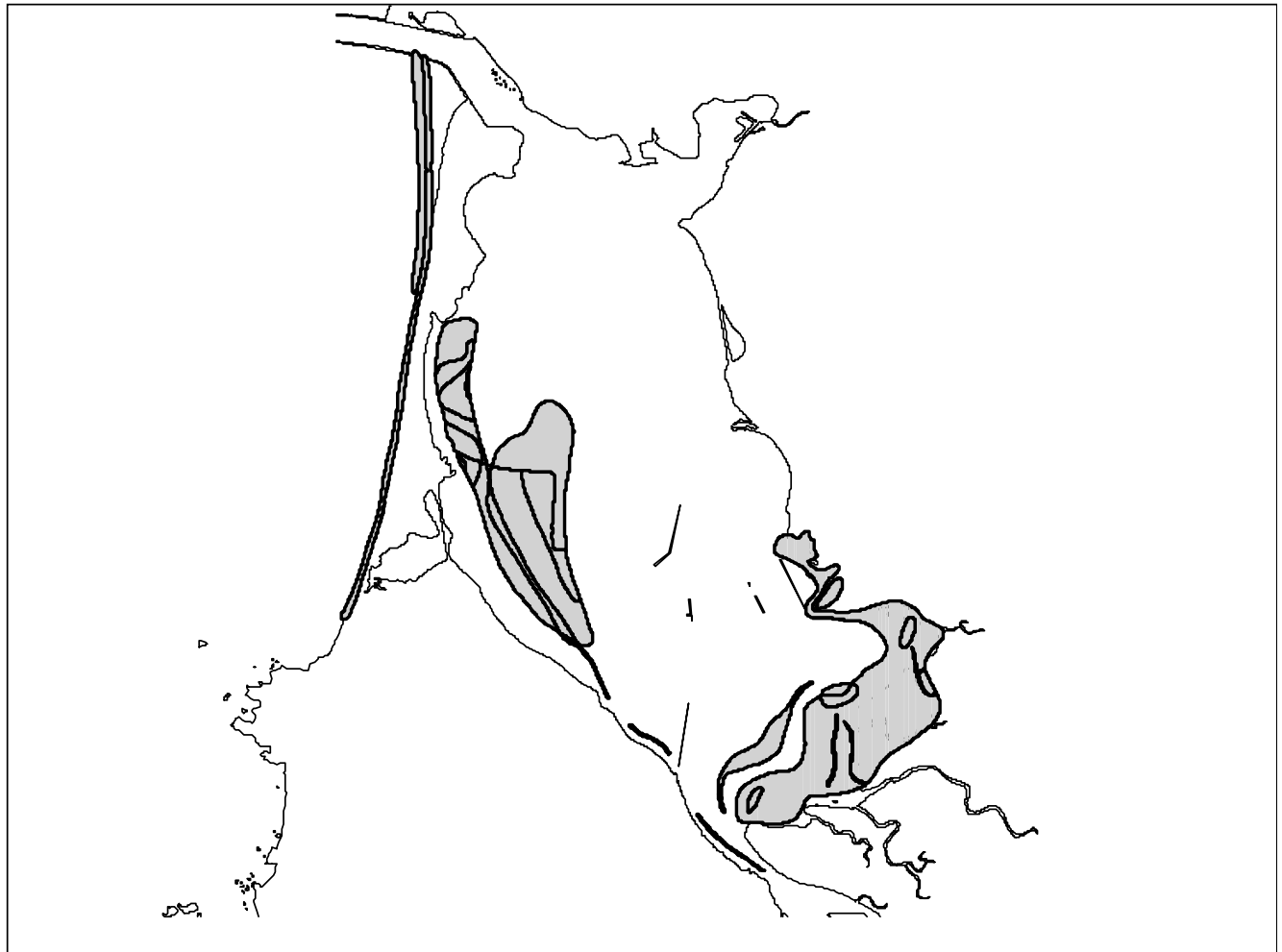


Figure 6-2. Tillamook Bay Shorebirds and Waterfowl

7. Logistical Information

The following list was compiled at the North Coast/Tillamook Bay Geographic Response Plan Workshop held at Camp Rilea, OR on February 18, 1993. Areas of information include: command posts; communications; equipment cache locations; inventory of local support equipment; air support; access points to the Bay; and other pertinent logistical support.

Table 7-1. Logistical Information

Subject	Name	Characteristics	Contact	Phone #
Command Posts				
Garibaldi	USCG Station	Communications	Duty Officer	
Warrenton	Camp Rilea	Communications, berthing, air traffic control, security	OR National Guard	(503) 861-3835
Warrenton	CG Airstation Astoria	Communications	CG Group Astoria	(503) 861-6211
Nehalem	Nehalem State Park		OR State Parks	
Various	Doubletree	Lodging, meeting rooms		1-800-547-8010
Tillamook	Tillamook County Fairgrounds		4603 Third Street	(503) 842-2272
Communications				
Cellular One	Cellular Phones			(541) 265-2900
US West	Cellular Phones			1-800-477-7211
Clackamas Communications	UHF Mobile Frequency			(503) 267-4931
BLM	40 trucks with comms to center		Larry Matthews	(541) 756-0100
MSRC	Mobile Communications Van			(206) 252-1300
OERS	Mobile Communications Van			1-800-452-0311
Equipment Cache Locations				
Astoria	MSRC	VOSS/ propositioned boom & skimmers		(206) 252-1300
Astoria	Clean Rivers Cooperative	Boats, Boom & skimmers		(503) 220-2040
Astoria	Foss Environmental.	Boats, Boom & skimmers		800-FESPILL
Astoria	Smith Environmental	Boats, Boom & skimmers		800-334-0004

Tillamook Bay Geographic Response Plan

Subject	Name	Characteristics	Contact	Phone #
Inventory of Local Support Equipment				
Astoria/Portland	Fred Devine	Diving and Salvage Equipment	Kerry Walsh	(503) 283-5285
Newport	Yaquina Marine Tow & Salvage		Scott Martin	(541) 336-5205
Astoria	Bergerson Construction		Dennis Bjork	(503) 325-7130
Helicopter Support/Air Support				
Warrenton	USCG Airstation Astoria		Air Station Duty Officer	(503) 861-6211
Portland	Oregon Air National Guard		116 TAC Con Squadron	(503) 861-1815
McMinnville	Evergreen Helicopters			(503) 472-9361
Astoria	Astoria Flight Center			(503) 861-1222
Access Points/ Boat Ramps				
Tillamook Bay	Garibaldi Marina	Asphalt		
Tillamook Bay	Port of Bay City	Asphalt		
Tillamook Bay	Memaloose Point	Concrete		
Tillamook River	Big Barn Marina	Gravel		
Property Access Information and Contacts				
Staging Areas				
Tillamook	Tillamook County Fairgrounds		4603 Third Street	(503) 842-2272
Recreational activities which could interfere				
Tillamook	County Rodeo		June	(503) 842-7526
Tillamook	June Dairy Parade		June	(503) 842-7526
Tillamook	Oregon Polka Festival		July	(503) 842-7526
Tillamook	County Fair		August	(503) 842-7526

Tillamook Bay Geographic Response Plan

Subject	Name	Characteristics	Contact	Phone #
Garibaldi	Fall Salmon Fishery	Intense boat traffic	Mid September-October	(503) 842-2741
Tribal Resources				
Key Local Elected Officials				
Bay City	City Administrator		Linda Wheeler or John Law	(503) 377-2179
Garibaldi	City Recorder			(503) 322-3327
Nehalem	City Manager		C. Melan Brown	(503) 368-5627
Rockaway Beach	City Manager		Dawn Mason	(503) 355-2291
Tillamook	City Manager		Mike Mahoney	(503) 842-2472
Wheeler	City Recorder		Eugene Cox	(503) 368-5767
Fire Department				
Tillamook	Fire Department		Business phone	(503) 842-7587
Garibaldi	Fire Department		Mike Sheldon	(503) 322-3770
Local Personnel Support				
Volunteers				
Coos Bay	Audubon		Ray Nolan	(541) 756-2026
Newport	Oregon Shores Coalition		Jeff Ouderkirk	(541) 265-8823
Wildlife Rehab facilities				
Marinas/Port docks				
Garibaldi	Port of Garibaldi	shallow draft		(503) 322-3292
Tillamook	Port of Tillamook Bay	shallow draft		(503) 842-2413
Housing/ feeding/ support				
Tillamook	Chamber of Commerce			(503) 842-7526
Garibaldi	Chamber of Commerce			(503) 322-0301

Tillamook Bay Geographic Response Plan

Subject	Name	Characteristics	Contact	Phone #
Interim storage/permits				
Astoria-Liquid	McCall Oil		Geary Powell	(503) 221-5755
Astoria-Liquid	Foss Maritime			(800) FESPILL
Warrenton-Debris	Fort Stevens			(503) 861-1671
Fishing fleets & affiliated organizations				
Boat cleaning capability				
Garibaldi	Boatyard	Marine ways		
Safe havens				
Astoria	Port of Astoria		Bob Miller	
Newport	Port of Newport		Donn Mann	(541) 765-7758
Coos Bay	Port of Coos Bay		Allan Rumbaugh	(541) 267-7678

Appendices

Appendix A: Summary of Protection Techniques

Protection Techniques	Description	Primary Logistical Requirements	Limitations
ONSHORE			
Beach Berms	A berm is constructed along the top of the mid-inter tidal zone from sediments excavated along the downgradient side. The berm should be covered with plastic or geo-textile sheeting to minimize wave erosion.	<ul style="list-style-type: none"> • Bulldozer/Motor grader -1 • Personnel - equipment operator & 1 worker • Misc. - plastic or geotextile sheeting 	<ul style="list-style-type: none"> • High wave energy • Large tidal range • Strong along shore currents
Geotextiles	A roll of geotextile, plastic sheeting, or other impermeable material is spread along the bottom of the supra-tidal zone & fastened to the underlying logs or stakes placed in the ground.	<ul style="list-style-type: none"> • Geotextile - 3 m wide rolls • Personnel - 5 • Misc. - stakes or tie-down cord 	<ul style="list-style-type: none"> • Low sloped shoreline • High spring tides • Large storms
Sorbent Barriers	A barrier is constructed by installing two parallel lines of stakes across a channel, fastening wire mesh to the stakes & filling the space between with loose sorbents.	Per 30 meters of barrier <ul style="list-style-type: none"> • Wire mesh - 70 m x 2 m • Stakes - 20 • Sorbents - 30 m² • Personnel - 2 • Misc. - fasteners, support lines, additional stakes, etc. 	<ul style="list-style-type: none"> • Waves > 25 cm • Currents > 0.5 m/s • Tidal range > 2 m
Inlet Dams	A dam is constructed across the channel using local soil or beach sediments to exclude oil from entering channel.	<ul style="list-style-type: none"> • Loader - 1 • Personnel - equipment operator & 1 worker or several workers w/shovels 	<ul style="list-style-type: none"> • Waves > 25 cm • Tidal range exceeding dam height • Freshwater outflow
NEARSHORE			
Containment Booming	Boom is deployed in a "U" shape in front of the oncoming slick. The ends of the booms are anchored by work boats or drogues. The oil is contained within the "U" & prevented from reaching the shore.	For 150 meters Slick: <ul style="list-style-type: none"> • Boom - 280 m • Boats - 2 • Personnel - boat crews & 4 boom tenders • Misc. - tow lines, drogues, connectors, etc. 	<ul style="list-style-type: none"> • High winds • Swells > 2 m • Breaking waves > 50 cm • Currents > 1.0 m/s
Exclusion Booming	Boom is deployed across or around sensitive areas & anchored in place. Approaching oil is deflected or contained by boom.	Per 300 meters of Boom <ul style="list-style-type: none"> • Boats - 1 • Personnel - boat crew & 3 boom tenders • Misc.- 6 anchors, anchor line, buoys, etc. 	<ul style="list-style-type: none"> • Currents > 0.5 m/s • Breaking waves > 50 cm • Water depth > 20 m

Protection Techniques	Description	Primary Logistical Requirements	Limitations
Deflection Booming	Boom is deployed from the shoreline away from the approaching slick & anchored or held in place with a work boat. Oil is deflected away from shoreline.	Single Boom, 0.75 m/s knot current <ul style="list-style-type: none"> • Boom - 60 m • Boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit 	<ul style="list-style-type: none"> • Currents > 1.0 m/s • Breaking waves > 50 cm
Diversion Booming	Boom is deployed from the shoreline at an angle towards the approaching slick & anchored or held in place with a work boat. Oil is diverted towards the shoreline for recovery.	Single Boom, 0.75 m/s knot current <ul style="list-style-type: none"> • Boom - 60 m • boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit 	<ul style="list-style-type: none"> • Currents > 1.0 m/s • Breaking waves > 50 cm
Skimming	Self-propelled skimmers work back & forth along the leading edge of a windrow to recover the oil. Booms may be deployed from the front of a skimmer in a "V" configuration to increase sweep width. Portable skimmers are placed within containment booms in the area of heaviest oil concentration.	Self-propelled (None) Towed <ul style="list-style-type: none"> • Boom - 200 m • Boats - 2 • Personnel - boat crews & 4 boom tenders • Misc. - tow lines, bridles, connectors, etc. Portable <ul style="list-style-type: none"> • Hoses - 30 m discharge • Oil storage - 2000 liters 	<ul style="list-style-type: none"> • High winds • Swells > 2 m • Breaking waves > 50 cm • Currents > 1.0 m/s

Source is R. Miller of Clean Sound Cooperative.

Appendix B: Geographic Response Plan Contributors

Local Representatives

Industry and Response Contractors

Federal Representatives

Department of the Interior

Mr. Chuck Polityka

Mr. Preston Sleeper

NOAA

Dr. Sharon Christopherson

Mr. Gary May

United States Coast Guard

LT(jg) Chris Curatilo

LT(jg) Robert Myles

USFWS

Ms. Colleen Henson

Mr. Roy Lowe

State Representatives

Oregon Department of Environmental Quality

Mr. Paul Slyman

Mr. Jack Wylie

Mr. Mike Greenburg

Oregon Department of Fish and Wildlife

Mr. Herman Biederbeck

Mr. Jim Cadwell

Mr. Dave Fox

Mr. Dale Nelson

Mr. Greg Robart

Oregon State Service Center for Geographic Information Systems

Mr. Richard Crucchiola

Mrs. Patti Haggerty

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Appendix C: Geographic Response Plan Comments/Corrections/Suggestions

If you have any questions regarding this document or find any errors with this document please notify one of the following agencies:

- USCG Marine Safety Office Puget Sound, Planning Department
- USCG Marine Safety Office Portland, Planning Department
- Washington Department of Ecology, Central Programs Branch
- Oregon Department of Environmental Quality, Land Quality Division
- Idaho Emergency Response Commission
- Environmental Protection Agency Region 10

You can use the tear out suggestion form or contact an agency using one of the following:

Phone Numbers:

USCG MSO Puget Sound	(206) 217-6213
USCG MSO Portland	(503) 247-4015
Washington DOE	(206) 407-6971
Oregon DEQ	(503) 229-5716
Idaho ERC	(208) 334-3263
EPA	(206) 553-6901

Internet Address:

USCG	RPMatthews@pacnorwest.uscg.mil
Oregon DEQ	Wylie.Jack@deq.state.or.us

Address:

Commanding Officer United States Coast Guard MSO Puget Sound Planning Department 1519 Alaskan Way South Seattle, WA 98134-1192	Washington Department Of Ecology Central Programs Branch Policy and Planning Section P.O. Box 47600 Olympia, WA 98504	Office Of The Governor Idaho Emergency Response Commission 1109 Main Statehouse Boise, ID 83720-7000
Commanding Officer United States Coast Guard MSO Portland Planning Department 6767 North Basin Ave Portland, OR 97217-3992	Oregon Department of Environmental Quality Land Quality Division 811 SW Sixth Avenue Portland, OR 97204	Environmental Protection Agency Emergency Response Branch 1200 Sixth Avenue Seattle, WA 98101

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U.S. Department
of Transportation
U.S. Coast Guard

Marine Safety Office Portland
Planning Department
6767 N. Basin Ave.
Portland, OR 97217-3992

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

Northwest Area Committees
c/o Marine Safety Office Portland
Planning Department
6767 N. Basin Ave.
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