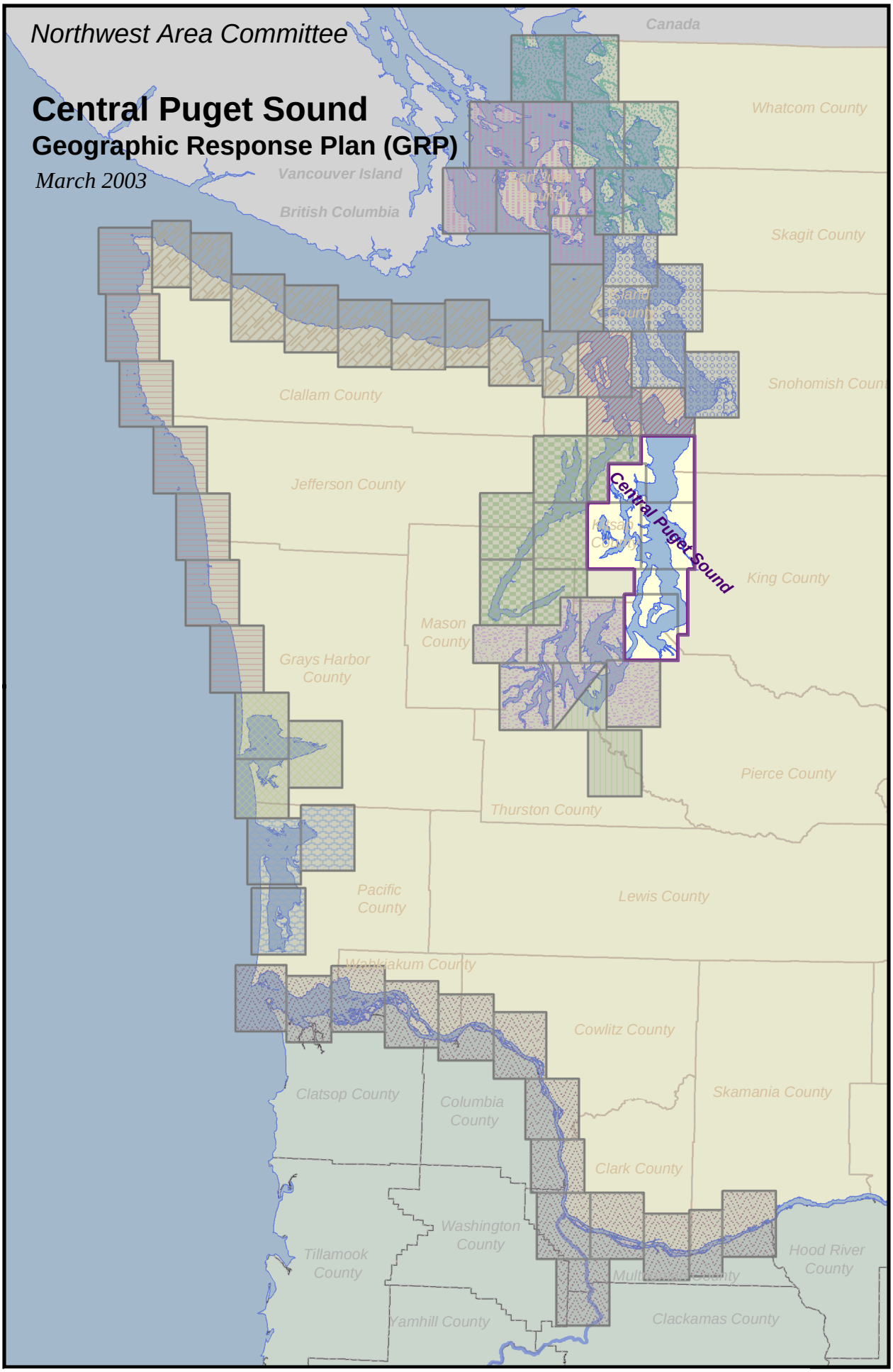
Washington State Department of Ecology Publication No. 94-205 (Rev. 3/03)



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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**
In Washington:
Emergency Management Division ..... **(800) 258-5990**
Department of Ecology Northwest Regional Office ..... **(425) 649-7000**
Department of Ecology Southwest Regional Office ..... **(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**
Safety Office	(503) 240-9379
Pacific Strike Team	**(415) 883-3311**
District 13:	
MEP/drat	(206) 220-7210
Command Center	(206) 220-7001
Public Affairs	(206) 220-7237
Vessel Traffic Service (VTS)	**(206) 217-6050**

Environmental Protection Agency (EPA)

Region 10 Spill Response	**(206) 553-1263**
Washington Ops Office	(360) 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/Vessel Traffic	(604) 666-6011
Environmental Protection	(604) 666-6100
B.C. Environment	(604) 356-7721

Department of Interior

Environmental Affairs	(503) 231-6157
	(503) 621-3682

U.S. Navy

Naval Shipyard	**(360) 476-3466**
Naval Base Seattle	(360) 315-5440
Supervisor of Salvage	**(202) 695-0231**

Army Corps of Engineers

Hazards to Navigation	(206) 764-3400

Muckleshoot Tribe

Tribal Office	(253) 939-3311
Tribal Police	(253) 833-7616

Nisqually Tribe

Tribal Office	(360) 456-5221
After Hours Emergencies	(360) 459-9603

Puyallup Tribe

Tribal Office	(253) 573-7800
After Hours Emergencies	**(253) 573-7911**

Suquamish Tribe

Tribal Office	(360) 598-3311
After Hours Emergencies	(360) 340-4508

Federal O.S.R.O./ State Approved Response Contractors

All Out Indust. & Env. Services	(360) 414-8655
Certified Cleaning Services, Inc.	(253) 536-5500
Clean Sound Cooperative, Inc.	**(425) 783-0908**
Cowlitz Clean Sweep, Inc.	(360) 423-6316
FOSS Environmental	**(800) 337-7455**
Global Diving and Salvage	(206) 623-0621
Guardian Industrial Services, Inc.	(253) 536-0455
Matrix Service, Inc.	(360) 676-4905
MSRC	(425) 252-1300
National Response Corporation	(206) 340-2772

Washington State

Department of Ecology Headquarters	(360) 407-6900
Southwest Region	**(360) 407-6300**
Northwest Region	**(425) 649-7000**
Central Region	**(509) 575-2490**
Eastern Region	**(509) 456-2926**
Department of Fish and Wildlife	**(360) 534-8233**
Emergency Management Division	(360) 438-8639
	(800) 258-5990

State Patrol

Bellevue	(425) 455-7700
Tacoma	(253) 536-6210
Bremerton	(360) 478-4646

Oregon State

Department of Environmental Quality	(503) 229-5733
Emergency Management	**(503) 378-6377**
	(800) 452-0311

*** Boldface type are 24 hour numbers**

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 lasts no more than 24 hours. The GRPs constitute the federal on-scene coordinators' and state on-scene coordinators' (Incident Commanders) "orders" during the emergent phase of the spill. During the project phase, the GRP will continue to be used, and the planned operation for the day will be found in the Incident Action Plan's Assignment List (ICS Form 204). The Assignment List is prepared in the Planning Section with input from natural resource trustees, the Incident Objectives (ICS Form 202), Operations Planning Worksheet (ICS Form 215), and Operations Section Chief.

Strategy Selection

Chapter 4 contains complete strategy descriptions in matrix form, response priorities, and strategy maps. The strategies depicted in Chapter 4 should be implemented as soon as possible, following the priority table in Section 2 with the "Potential Spill Origin" closest to the actual spill origin. These strategy deployment priorities may be modified by the Incident Commander(s) after reviewing on scene information, including: tides, currents, weather conditions, oil type, initial trajectories, etc.

It is assumed that control and containment at the source is the number one priority of any response. If, in the responder's best judgment, this type of response is infeasible then the priorities laid out in Chapter 4, Section 2 take precedence over containment and control.

It is important to note that strategies rely on the spill trajectory. A booming strategy listed as a high priority would not necessarily be implemented if the spill trajectory and booming location did not warrant action in that area. However, the priority tables should be followed until spill trajectory information becomes available, and modifications to the priority tables must be approved by the Incident Commander(s).

The strategies discussed in this GRP have been designed for use with persistent oils and may not be suitable for other petroleum or hazardous substance products. For hazardous substance spills, refer to the Northwest Area Contingency Plan, Chapter 7000.

Standardized Response Language

In order to avoid confusion in response terminology, this GRP uses standard National Interagency Incident Management System, Incident Command System (NIIMS, ICS) terminology and strategy names, which are defined in Appendix A, Table A-1 (e.g. diversion, containment, exclusion).

CENTRAL PUGET SOUND
Geographic Response Plan

Record of Changes

Date	Change Number	Summary of Changes	Initials of person making change
July 1, 1993	Original Release	N/A	N/A
Nov 30, 1994	1st Change	Replacement of document - includes new chapters and revised Chapter 4 based on field verification	
July 1, 1997	2nd Change	Revision to Chapter 4 strategies; update of several text pages	
October 15, 1997	3rd Change	Area code changes to contact sheet, Chapter 7	
March 2000	4th Change	General update of Chapter 4; conversion of GRP to pdf for internet distribution	D Davis
December 2000	5th Change	Finalized changes from March 2000 updates	D Davis
March 2003	6th Change	Update of Chapter 4 using GIS based maps, and new priority tables based on trajectory modeling.	D Davis

Central Puget Sound Geographic Response Plan
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Central Puget Sound, WA

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. This document serves as the federal and state on-scene-coordinators "orders" during a spill in the area covered by this GRP (see Chapter 3 for area covered). As such, it has been approved by the U.S. Coast Guard Marine Safety Office and the Washington State Department of Ecology Spills Program. Changes to this document are expected as more testing is conducted through drills, site visits, and actual use in spill situations. To submit comments, corrections, or suggestions please refer to Appendix C.

GRPs have been developed for the marine and inland waters of Washington, Oregon, and Idaho. They are prepared through the efforts and cooperation of the Washington Department of Ecology, Washington Department of Fish and Wildlife, Oregon Department of Environmental Quality, Idaho State Emergency Response Commission, the U.S. Coast Guard, the Environmental Protection Agency, tribes, other state and federal agencies, response organizations, and local emergency responders.

GRPs were developed through workshops involving federal, state, and local oil spill emergency response experts, response contractors, and representatives from tribes, industry, ports, environmental organizations, and pilots. Workshop participants identified resources which require protection, developed operational strategies, and pinpointed logistical support. A similar process has been used for major updates.

Following the workshops, the data gathered was processed and reproduced in the form of maps and matrices which appear in Chapters 4 through 6. The maps in Chapters 5 and 6 were generated using Canvas. Maps for Chapter 4 were generated using ArcView GIS. The matrices were created using MS Excel, and the balance of each GRP was produced using MS Word.

The first goal of a GRP was to identify, with the assistance of the Washington State Natural Resource Damage Assessment Team, resources needing protection; response resources (boom, boat ramps, vessels, etc.) needed, site access and staging, tribal and local response community contacts, and local conditions (e.g. physical features, hydrology, currents and tides, winds and climate) that may affect response strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Secondly, response strategies were developed based on the sensitive resources noted, hydrology, and climatic considerations. Individual response strategies identify the amount of boom necessary for implementation. The response strategies are then applied to Potential Spill Origins and trajectory modeling, and prioritized, taking into account factors such as resource sensitivity, feasibility, wind, and tidal conditions.

Draft strategy maps and matrices were sent out for review and consideration of strategy viability. Field verification was conducted for some strategies, and changes proposed by the participants were included in a semi-final draft, which was offered for final review to all interested parties and the participants of the field verification.

Finally, the general text of the GRP was compiled along with the site description, reference maps, and logistical support.

Items included in Logistical Support:

- Location of operations center for the central response organization;
- Local equipment and trained personnel;
- Local facilities and services and appropriate contacts for each;
- Site access & contacts;
- Staging areas;
- Helicopter and air support;
- Local experts;
- Volunteer organizations;
- Potential wildlife rehabilitation centers;
- Marinas, docks, piers, and boat ramps;
- Potential interim storage locations, permitting process;
- Damaged vessel safe-havens;
- Vessel repairs & cleaning;
- Response times for bringing equipment in from other areas.

2. SITE DESCRIPTION

Central Puget Sound is bounded by Edmonds to the north and Commencement Bay to the south. This also includes Liberty Bay, Port Orchard, Sinclair Inlet and Dyes Inlet.

Although abundant wildlife and natural resources exist throughout the region, it is heavily dominated by human population and important ports including Edmonds, Everett, Seattle, Tacoma, Bremerton, and Port Madison. Naval bases are also located at Keyport and Bremerton.

Several species of aquatic birds, clams, and beach spawning fish reside in Central Puget Sound. In the early fall, salmon return to many of the rivers and streams that flow into the Sound. In addition, kelp and eelgrass are common throughout the near-shore zone.[1]

Refer to Chapter 6 for detailed resource information.

2.1. Physical Features

The bays that comprise Central Puget Sound are generally characterized by sand and gravel beaches, sand and cobble beaches, and some areas of exposed tidal flats. Inlets that are adequately sheltered from Puget Sound itself have protected tidal flats and marshes. Central Puget Sound includes the following shoreline habitats:[2]

Pocket Beaches along rocky shores
Sand and cobble beaches
Sand and gravel beaches
Exposed tidal flats
Sheltered tidal flats

Commercial and ferry traffic dominate the area surrounding Edmonds, Bainbridge Island, Seattle, Vashon Island and Tacoma. Manmade features, including docks, wharves, fuel piers, waterways and marinas, also occupy much of the shoreline.

2.2. Hydrology

Net surface currents generally flow seaward and exit through Admiralty Inlet. A distinctive clockwise pattern exists around Vashon Island in East and Colvos Passages, extending from the surface to the bottom. There are also several eddies located off Alki Point.

Studies of contaminant transport in Elliott Bay show that contaminants introduced through the Duwamish River and the Seattle waterfront accumulate in a thin surface layer approximately five meters deep along the eastern side of the Bay. The along-shore current continues to West Point where tidal mixing destroys this distinct layer.[3]

2.3. Currents and Tides

[1] National Oceanic and Atmospheric Administration, Environmental Sensitivity Index, Central & Southern Puget Sound (Seattle: 1984).
[2] Ibid.
[3] Evans Hamilton, Inc. and D.R. Systems, Inc., Puget Sound Environmental Atlas, vol. 1. (1987) 122-125.

The mean tidal range (MHW - MLW) for the Central Puget Sound area is 9.4 to 10.48 feet. The diurnal tidal range (MHHW - MLLW) is 13.1 to 15.0 feet. Tidal ranges increase further south.[4]

The average currents in the Central Puget Sound area do not exceed much more than a knot. Exceptions are areas in and around narrow passages including Agate Passage, Rich Passage, Port Washington Narrows, and Tacoma Narrows. Weak currents are experienced along the east side of Central Puget Sound from the 20-fathom curve inland and in Port Orchard, East Passage, Colvos Passage (on the flood), and Carr Inlet.[5]

Tides and currents vary with seasonal runoff and lunar cycles in localized areas. Spill responders should consult tide and current tables for their particular location.

2.4. Winds

The winds in this area are a result of diverse topography including the Cascade and Olympic Mountains. The westerly winds from the Pacific appear to flow to the north and south around the Olympics, causing what is commonly known as the "Puget Sound Convergence" on the eastern side.

From October though March and April through May, winds are generally from a southwesterly direction at 10 to 20 mph. The summer months, June through September, usually have winds from the north at 0 to 9 mph.[6] Local wind conditions may vary.

2.5. Climate

The area has a maritime climate with cool summers and mild winters. Annual precipitation rate is between 18 and 50 inches. Fog may cause visibility problems on about 25 to 40 days per year, usually in autumn and again in January and February.[7]

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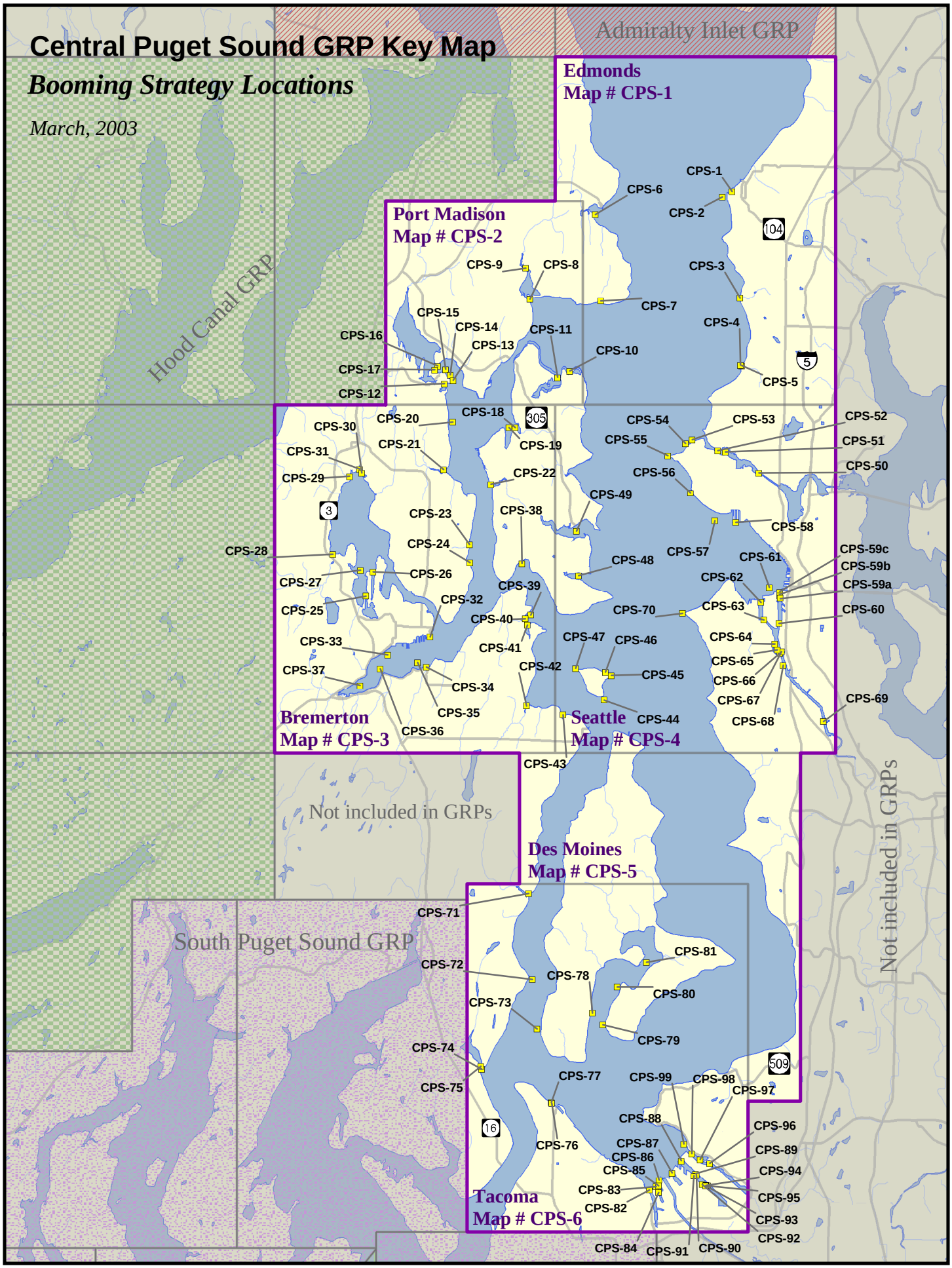
[4] National Oceanic and Atmospheric Administration, Tide Tables West Coast of North and South America. (1994).
[5] National Oceanic and Atmospheric Administration, Tidal Current Tables Pacific Coast of North America and Asia (1994).
[6] State of Washington Department of Natural Resources, Washington Marine Atlas, South Inland Waters, vol. 2 (1972).
[7] National Oceanic and Atmospheric Administration , U.S. Coast Pilot (1993) 312-313.


Central Puget Sound GRP Key Map
Booming Strategy Locations
March, 2003
Admiralty Inlet GRP
Hood Canal GRP
South Puget Sound GRP
Not included in GRPs
Not included in GRPs
Edmonds
Map # CPS-1
Port Madison
Map # CPS-2
Bremerton
Map # CPS-3
Seattle
Map # CPS-4
Des Moines
Map # CPS-5
Tacoma
Map # CPS-6
CPS-1
CPS-2
CPS-3
CPS-4
CPS-5
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CPS-91
CPS-92
CPS-93
CPS-94
CPS-95
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CPS-97
CPS-98
CPS-99
104
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509
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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 workshop for the Central Puget Sound area. It describes the strategies determined for each area and the prioritization of those strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Maps & Matrices

The maps in this chapter provide information on the specific location of booming strategies. They are designed to help the responder visualize response strategies. Details of each booming strategy are listed in corresponding matrix tables. Each matrix indicates the exact location, intent and implementation of the strategy indicated on the map. The "Status" column describes whether the strategy has been visited or tested in the field, and the date of the visit/test. Most strategies include a number for the corresponding shoreline photo, which is available on the Washington Department of Ecology's internet site at http://www.ecy.wa.gov/apps/shorephotos/.

Major Protection Techniques

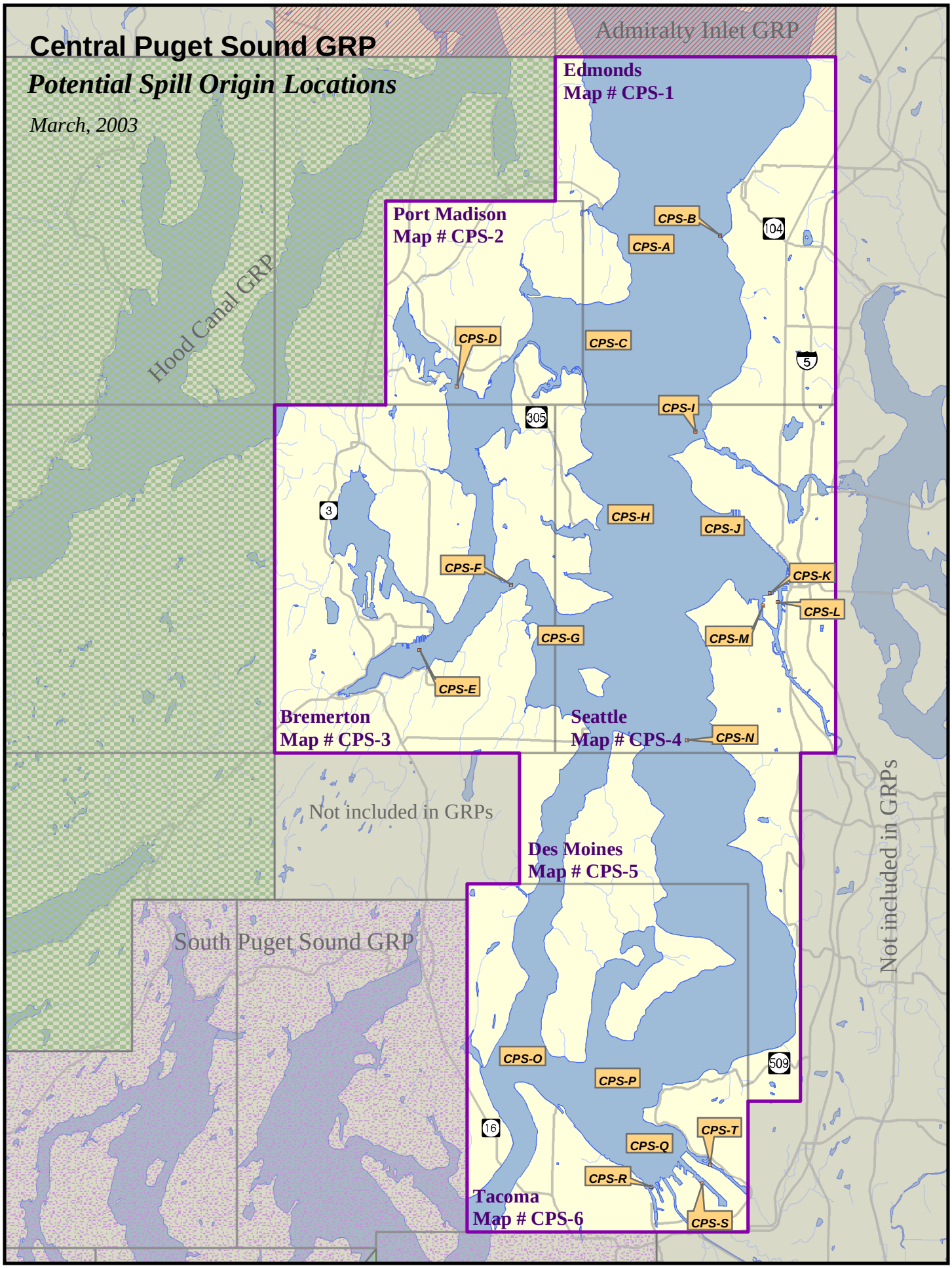
All response strategies fall into one of three major techniques that may be utilized either individually or in combination. The strategies listed in Section 4.2 are based on the following techniques, and are explained in detail in Section 4.3:

Dispersants: Washington State Policy currently does not allow use of dispersants in this area. Certain chemicals 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: Approval to burn in this area is unlikely due to the proximity of population to a potential burn site. Burning requires the authorization of the Unified Command, who determine conformance of a request to burn with the guidelines set forth in the Area Plan. This option is preferable to allowing a slick to reach the shore provided that population areas are not exposed to excessive smoke. Under the right atmospheric conditions, a burn can be safely conducted in relative close proximity to human population. This method works on many types of oil, and requires special equipment including a fire boom and igniters.

Mechanical Recovery and Protection Strategies: If a spill is too close to shore to use In Situ burning or dispersants, the key strategies are skimming and use of collection, diversion, or exclusion booming to contain and recover the oil, and prevent it from entering areas with sensitive wildlife and fisheries resources. These options are described in detail in Appendix A. Specific skimming strategies are not listed in the maps and matrices, but skimming should be used whenever possible and is often the primary means of recovering oil and protecting resources, especially when booming is not possible or feasible.

Priorities: The strategy priority tables (Section 4.2.) were developed using specific locations where spills are likely to occur. Trajectory modeling was used for each of these "Potential Spill Origins" to identify sensitive resources that would likely be impacted within the initial hours of the spill. A booming strategy priority table was developed for each of the "Potential Spill Origins" based on the sensitivity of resources, feasibility, etc. **Booming strategies should be deployed following the priority table for the "Potential Spill Origin" closest to the actual spill origin.** The map on page 4-2 shows the locations of all Potential Spill Origins for the Central Puget Sound GRP. The booming strategies indicated in the priority tables are explained in detail in the Maps & Matrices section (Section 4.3.). It is implied that control and containment at the source is the number one priority of any response. If in the responder's best judgment this is not feasible, then the priorities laid out in the priority tables take precedence over containment and control.


Central Puget Sound GRP
Potential Spill Origin Locations
March, 2003
Admiralty Inlet GRP
Hood Canal GRP
Edmonds
Map # CPS-1
Port Madison
Map # CPS-2
Bremerton
Map # CPS-3
Seattle
Map # CPS-4
Des Moines
Map # CPS-5
Tacoma
Map # CPS-6
Not included in GRPs
South Puget Sound GRP
Not included in GRPs
CPS-A
CPS-B
CPS-C
CPS-D
CPS-E
CPS-F
CPS-G
CPS-H
CPS-I
CPS-J
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4.2.2 Booming Strategy Priority Tables

Table 4-1

Potential Spill Origin: CPS-A - Apple Tree Cove			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-6	4-13	
2	CPS-3	4-13	
3	CPS-5	4-13	
4	CPS-4	4-13	
5	CPS-1	4-13	
6	CPS-2	4-13	

Table 4-2

Potential Spill Origin: CPS-B - Chevron - Point Wells			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-3	4-13	
2	CPS-5	4-13	
3	CPS-4	4-13	
4	CPS-1	4-13	
5	CPS-2	4-13	
6	AI-31	4-10	Refer to the Admiralty Inlet GRP

Table 4-3

Potential Spill Origin: CPS-C - Port Madison			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-11	4-14	
2	CPS-10	4-14	
3	CPS-7	4-13	
4	CPS-8	4-14	
5	CPS-6	4-13	
6	CPS-3	4-13	

Table 4-4

Potential Spill Origin: CPS-D - Keyport			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-12	4-14	
2	CPS-15	4-14	
3	CPS-14	4-14	
4	CPS-13	4-14	
5	CPS-16	4-14	
6	CPS-17	4-14	
7	CPS-8	4-14	
8	CPS-7	4-13	
9	CPS-19	4-15	
10	CPS-18	4-15	
11	CPS-10	4-14	
12	CPS-11	4-14	
13	CPS-21	4-15	
14	CPS-20	4-15	

Table 4-5

Potential Spill Origin: CPS-E - Puget Sound Naval Shipyard, Mouth of Dyes Inlet			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-33	4-15	
2	CPS-32	4-15	
3	CPS-37	4-15	
4	CPS-34	4-15	
5	CPS-36	4-15	
6	CPS-35	4-15	
7	CPS-23	4-15	
8	CPS-24	4-15	
9	CPS-38	4-15	
10	CPS-39	4-15	
11	CPS-40	4-15	
12	CPS-41	4-15	

Table 4-6

Potential Spill Origin: CPS-F - Rich Passage			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-39	4-15	
2	CPS-40	4-15	
3	CPS-41	4-15	
4	CPS-38	4-15	
5	CPS-23	4-15	
6	CPS-24	4-15	
7	CPS-37	4-15	
8	CPS-34	4-15	
9	CPS-32	4-15	
10	CPS-35	4-15	
11	CPS-33	4-15	
12	CPS-36	4-15	

Table 4-7

Potential Spill Origin: CPS- G - Manchester Fuel Depot			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-39	4-15	
2	CPS-40	4-15	
3	CPS-41	4-15	
4	CPS-42	4-15	
5	CPS-38	4-15	
6	CPS-23	4-15	
7	CPS-43	4-16	
8	CPS-24	4-15	
9	CPS-34	4-15	
10	CPS-22	4-15	
11	CPS-46	4-16	
12	CPS-47	4-16	
13	CPS-45	4-16	
14	CPS-44	4-16	
15	CPS-32	4-15	

Table 4-8

Potential Spill Origin: CPS-H - Puget Sound - East shore Bainbridge Island north of Eagle Harbor			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-49	4-16	
2	CPS-10	4-14	
3	CPS-11	4-14	
4	CPS-48	4-16	
5	CPS-7	4-13	
6	CPS-8	4-14	

Table 4-9

Potential Spill Origin: CPS-I - Lake Washington Ship Canal Entrance			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-53	4-16	
2	CPS-54	4-16	
3	CPS-55	4-16	
4	CPS-5	4-13	
5	CPS-3	4-13	
6	CPS-1	4-13	
7	CPS-2	4-13	

Table 4-10

Potential Spill Origin: CPS-J - Pier 91			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-58	4-16	
2	CPS-57	4-16	
3	CPS-56	4-16	
4	CPS-62	4-17	
5	CPS-59c	4-17	
6	CPS-61	4-17	
7	CPS-70	4-16	
8	CPS-55	4-16	

Table 4-11

Potential Spill Origin: CPS-K - Duwaumish River, Rainier Petroleum/Shell			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-61	4-17	Contain and control spill within waterways
2	CPS-63	4-17	New Strategy
3	CPS-60	4-17	New Strategy
4	CPS-64	4-17	
5	CPS-65	4-17	
6	CPS-66	4-17	
7	CPS-67	4-17	
8	CPS-68	4-17	
9	CPS-62	4-17	Deploy only if oil is escaping from the waterway
10	CPS-59c	4-17	Deploy only if oil is escaping from the waterway
11	CPS-58	4-16	
12	CPS-57	4-16	
13	CPS-70	4-16	

Table 4-12

Potential Spill Origin: CPS-L - Duwaumish River, East waterway, Kinder-Morgan Facility			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-59a,b,&c	4-17	Deploy CPS-59b&c as necessary depending on the success of 59a
2	CPS-60	4-17	New Strategy
3	CPS-61	4-17	
4	CPS-64	4-17	
5	CPS-65	4-17	
6	CPS-66	4-17	
7	CPS-68	4-17	
8	CPS-67	4-17	
9	CPS-62	4-17	
10	CPS-63	4-17	New Strategy

Table 4-13

Potential Spill Origin: CPS-M - Duwaumish River, West Waterway, ARCO facility			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-62	4-17	
2	CPS-63	4-17	New Strategy
3	CPS-61	4-17	
4	CPS-59c	4-17	Deploy only if oil is escaping from the waterway
5	CPS-60	4-17	New Strategy
6	CPS-64	4-17	
7	CPS-65	4-17	
8	CPS-66	4-17	
9	CPS-67	4-17	

Table 4-14

Potential Spill Origin: CPS-N - East Passage/Blake Island/Three Tree Point			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-70	4-16	
2	CPS-46	4-16	
3	CPS-45	4-16	
4	CPS-44	4-16	
5	CPS-47	4-16	
6	CPS-48	4-16	
7	CPS-49	4-16	
8	CPS-57	4-16	
9	CPS-56	4-16	

Table 4-15

Potential Spill Origin: CPS-O - Dalco Passage/Narrows/Gig Harbor			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-76	4-19	
2	CPS-77	4-19	
3	CPS-74	4-19	
4	CPS-75	4-19	
5	CPS-79	4-19	
6	CPS-78	4-19	
7	CPS-80	4-19	
8	CPS-81	4-19	
9	CPS-73	4-19	
10	CPS-72	4-19	
11	CPS-71	4-19	
12	SPS-4	4-9	Use South Puget Sound GRP for remainder of list
13	SPS-5	4-9	
14	SPS-6	4-9	
15	SPS-7	4-9	
16	SPS-21	4-10	
17	SPS-22	4-10	
18	SPS-1	4-8	

Table 4-16

Potential Spill Origin: CPS-P - Commencement Bay, East Passage, Des Moines			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-76	4-19	
2	CPS-77	4-19	
3	CPS-79	4-19	
4	CPS-78	4-19	
5	CPS-80	4-19	
6	CPS-81	4-19	
7	CPS-74	4-19	
8	CPS-75	4-19	
9	CPS-73	4-19	
10	CPS-72	4-19	

Table 4-17

Potential Spill Origin: CPS-Q - Commencement Bay			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-99	4-20	
2	CPS-98	4-20	
3	CPS-89	4-20	
4	CPS-88	4-20	Anchor but leave open to trap oil
5	CPS-87	4-20	Anchor but leave open to trap oil
6	CPS-76	4-19	
7	CPS-77	4-19	
8	CPS-79	4-19	
9	CPS-78	4-19	
10	CPS-80	4-19	
11	CPS-81	4-19	

Table 4-18

Potential Spill Origin: CPS-R - Commencement Bay, Shore Terminal LLC, Conoco/Phillips, and Simpson Facilities; Thea Foss, Middle, and St. Paul Waterways			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-82	4-20	
2	CPS-83	4-20	
3	CPS-84	4-20	
4	CPS-98	4-20	
5	CPS-99	4-20	
6	CPS-87	4-20	Anchor but leave open to trap oil
7	CPS-88	4-20	Anchor but leave open to trap oil
8	CPS-86	4-20	

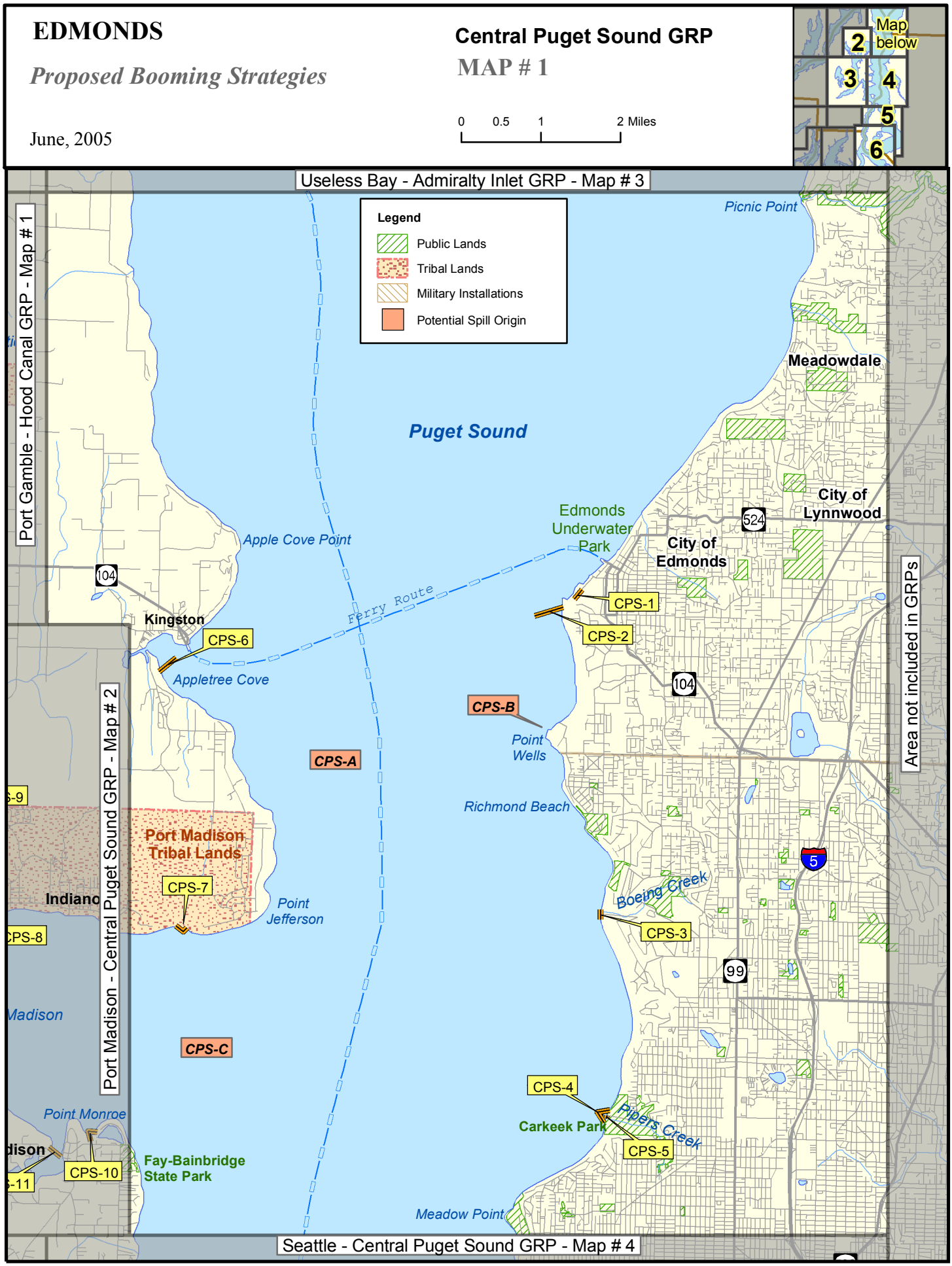
Table 4-19

Potential Spill Origin: CPS-S - Commencement Bay, U.S. Oil Facility/Dock, Blair Waterway			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-89	4-20	
2	CPS-88	4-20	
3	CPS-95	4-20	
4	CPS-98	4-20	
5	CPS-99	4-20	
6	CPS-92	4-20	
7	CPS-90 or 91	4-20	

Table 4-20

Potential Spill Origin: CPS-T - Commencement Bay, Sound Refining Oil Facility/Dock, Hylebos Waterway			
BOOMING PRIORITY	STRATEGY NUMBER	MAP PAGE NUMBER	COMMENTS
1	CPS-98	4-20	
2	CPS-97	4-20	
3	CPS-96	4-20	
4	CPS-99	4-20	
5	CPS-88	4-20	Anchor but leave open to trap oil

4.3.1 Proposed Booming and Collection Strategies: Maps



PORT MADISON

Proposed Booming Strategies

March, 2003

Central Puget Sound GRP

MAP # 2

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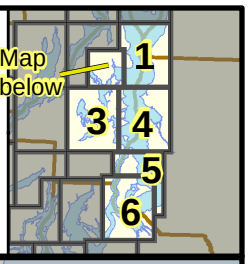
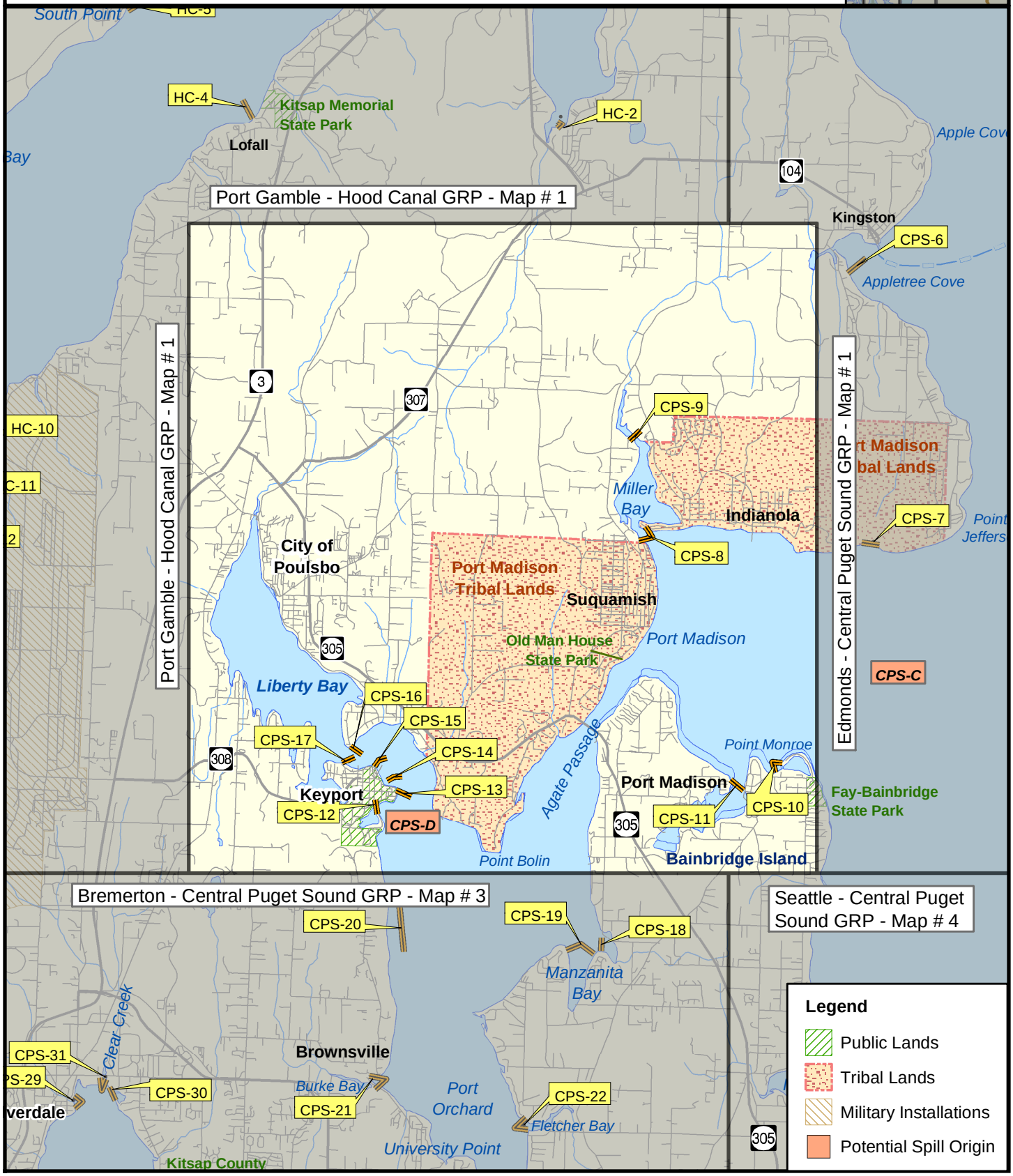




BREMERTON

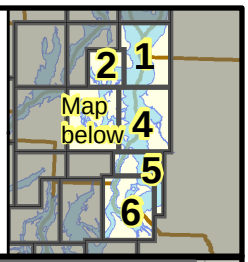
Proposed Booming Strategies

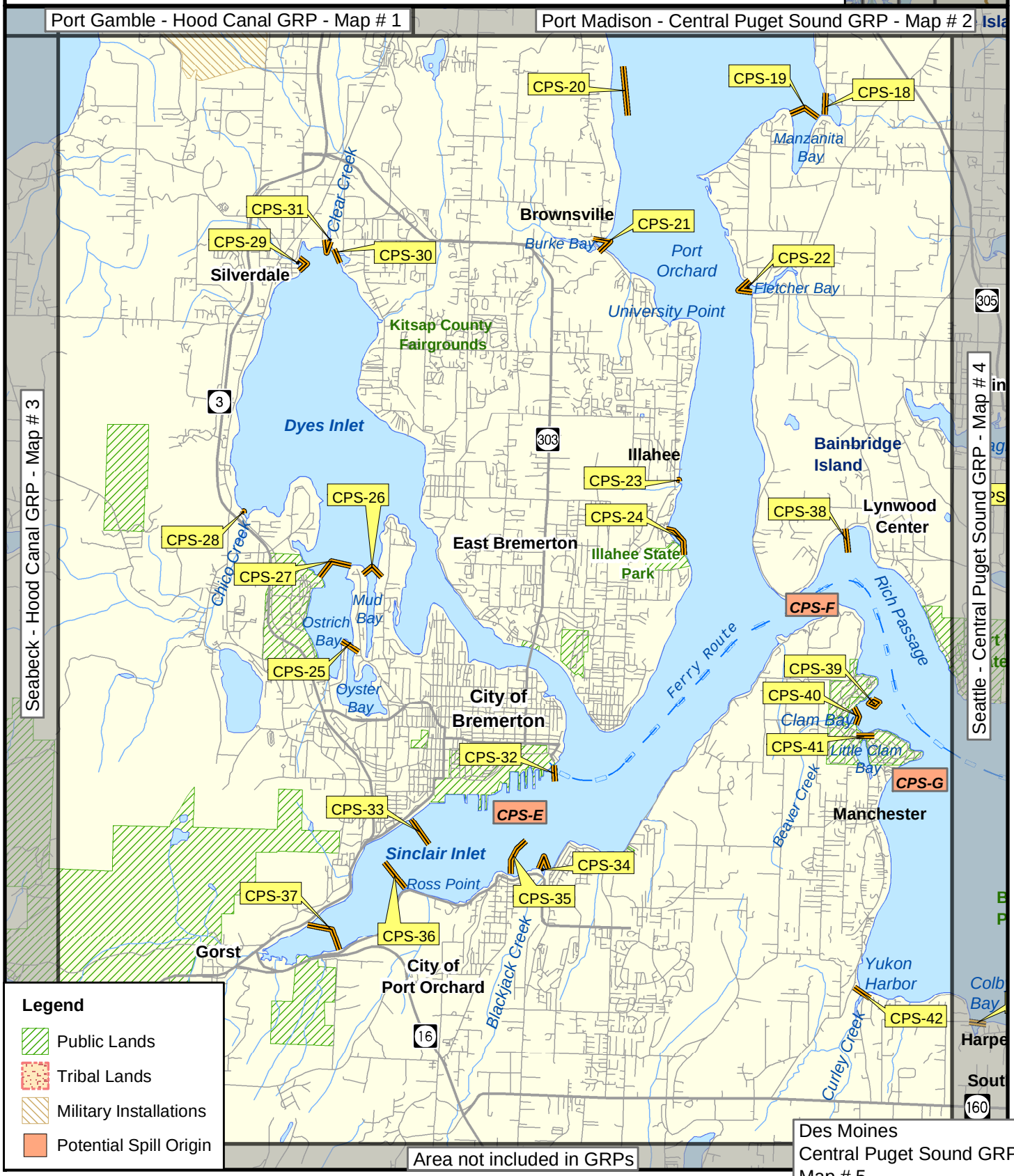
March, 2003

Central Puget Sound GRP

MAP # 3

0 0.5 1 2 Miles





SEATTLE

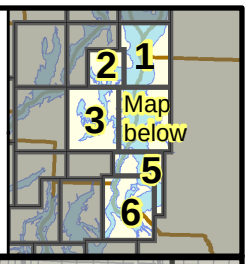
Proposed Booming Strategies

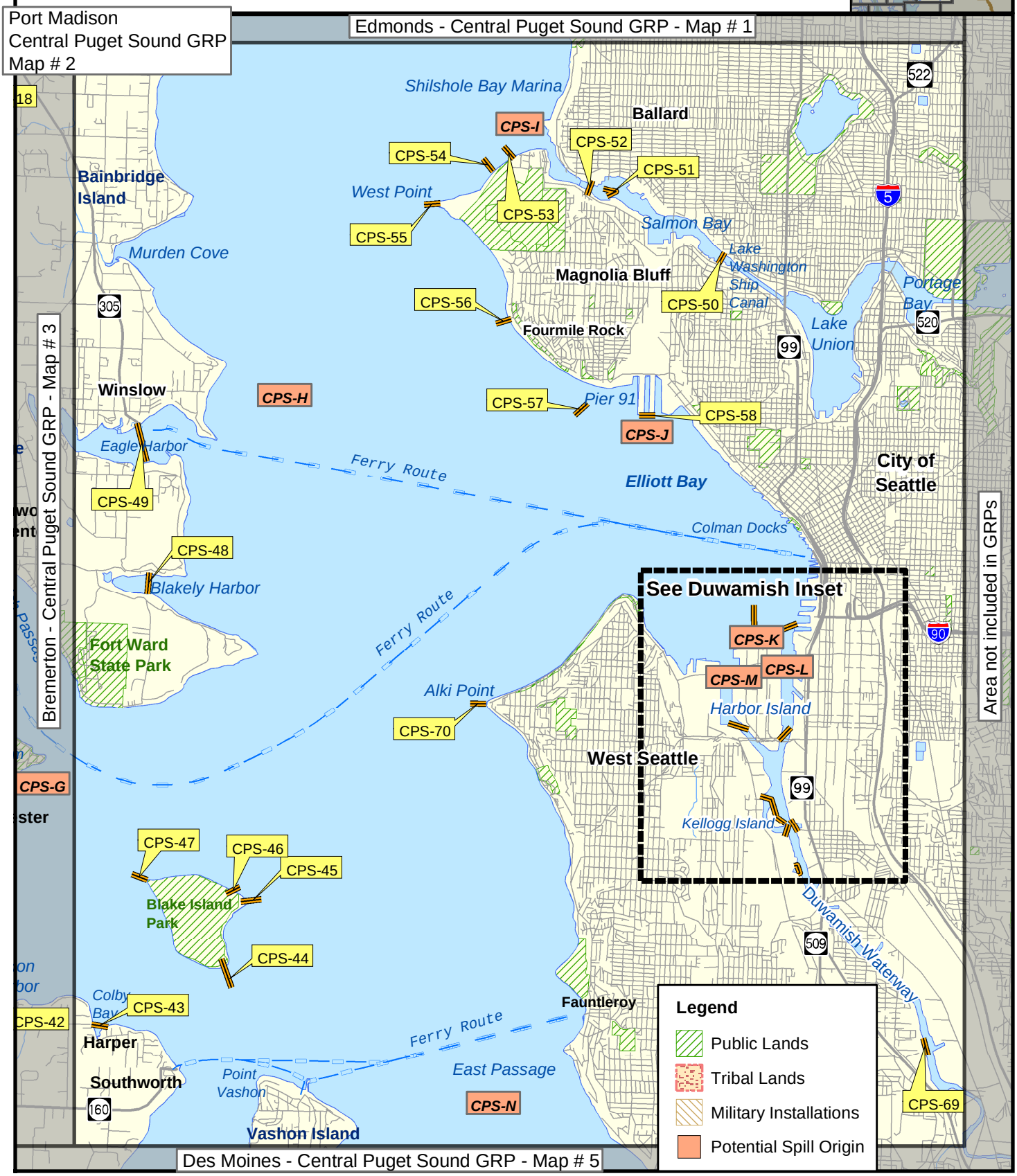
March, 2003

Central Puget Sound GRP

MAP # 4

0 0.5 1 2 Miles





DUWAMISH WATERWAY INSET MAP

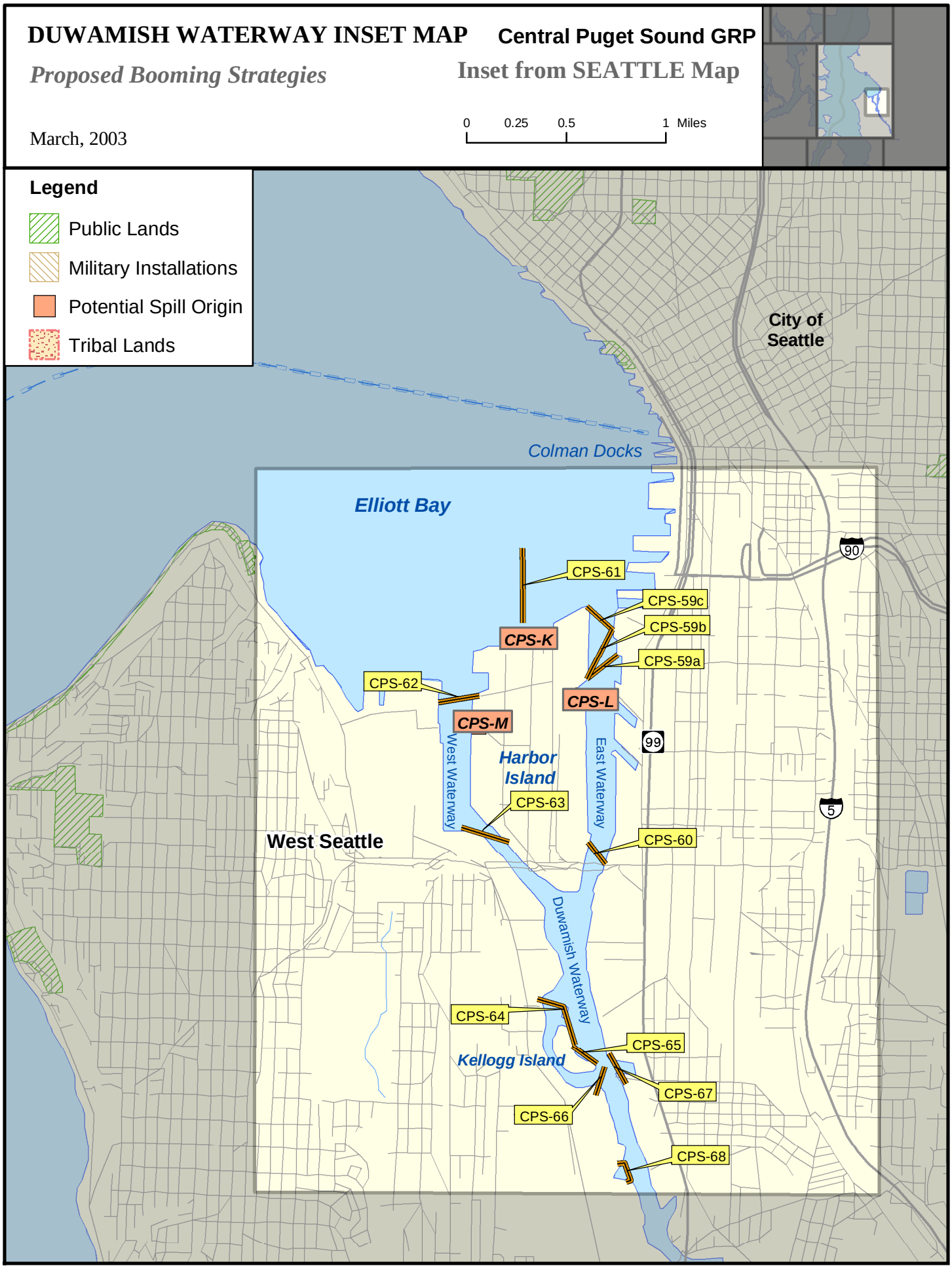
Central Puget Sound GRP

Proposed Booming Strategies

Inset from SEATTLE Map

March, 2003

0 0.25 0.5 1 Miles



DES MOINES

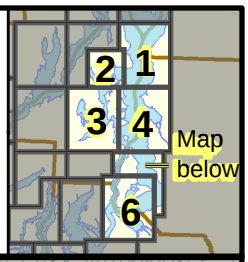
Proposed Booming Strategies

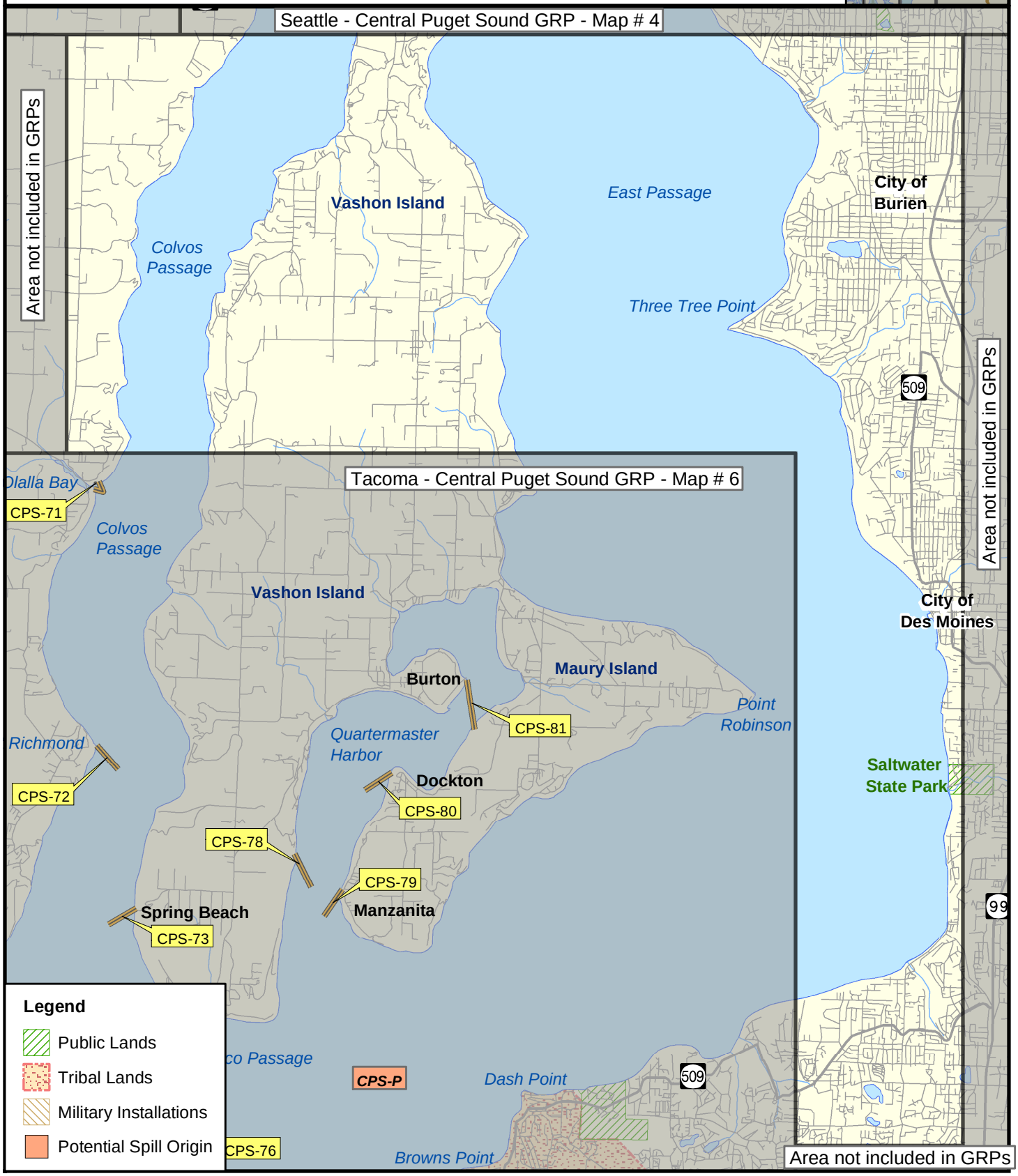
March, 2003

Central Puget Sound GRP

MAP # 5

0 0.5 1 2 Miles





TACOMA

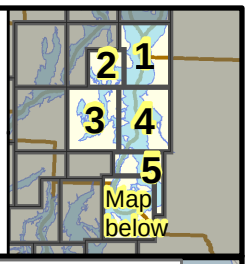
Proposed Booming Strategies

March, 2003

Central Puget Sound GRP

MAP # 6

0 0.5 1 2 Miles



COMMENCEMENT BAY INSET MAP

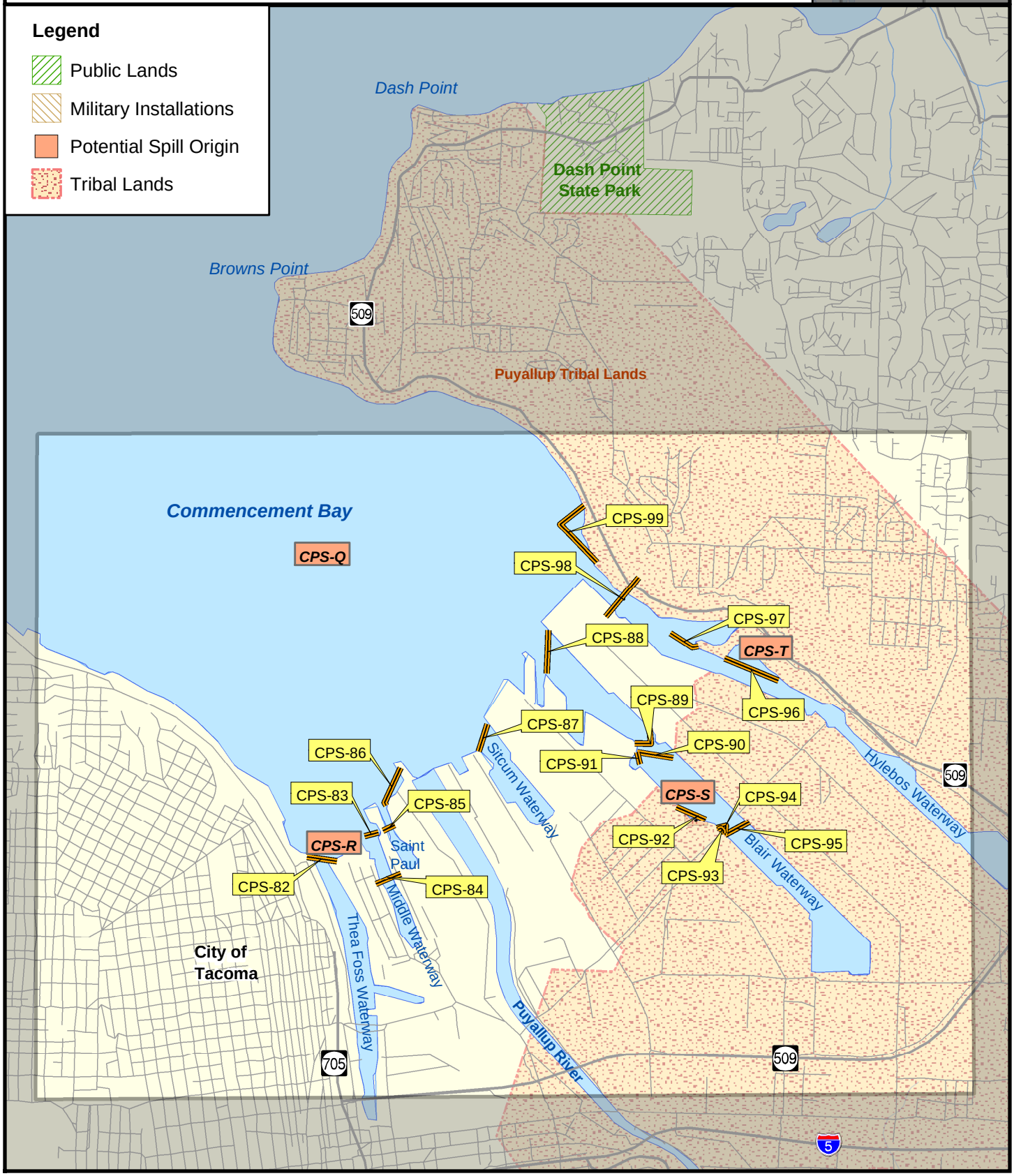
Central Puget Sound GRP

Proposed Booming Strategies

Inset from TACOMA Map

March, 2003

0 0.25 0.5 1 Miles



4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-1	Field visit 3/97	Edmonds Wildlife Sanctuary SNO0268 47º-48.40'N 122º-23.30'W	Exclusion - Keep oil out of wildlife sanctuary.	N/A	Shut tide gates if the threat of oiling exists. Tide gate is 0.3 mile south of Dayton St., off gravel road along RR tracks. Tide gate has chain/lock - key at Edmonds Public Works 425-771-0235 (also can be cut).	Edmonds Marina.	Edmonds Marina.	Sensitive nesting species, Harbor Seals, California Sea Lions.
CPS-2	Field visit 10/96	Unocal Dock SNO0269 47º-48.25'N 122º-23.60'W	Collection	2000'	Extend boom along & past existing pier - collect at pier. Boom reel already at end of pier.	Edmonds Marina; Richmond Beach.	Boat access from Edmonds Marina.	Kelp beds to north; sensitive resources north and south.
CPS-3	Field tested 3/97	Boeing Creek KIN0009 47º-44.95'N 122º-22.85'W	Exclusion - Prevent oil from entering creek mouth.	100' - increase to 500' at low water &/or high creek flow	High tide only - no threat otherwise. Place weir dam or other partial dam at culverts to prevent oil/tidal water from entering but allowing creek flow out. Will need sandbags, cement, plywood, etc. Boom as last resort.	Richmond Beach park parking lot.	Boat access from Edmonds or Shilshole Bay; land access possible.	Protect salmon and Carkeek watershed program area.
CPS-4	Field visit 3/97	Piper Creek - Inner Strategy KIN0020 47º-42.70'N 122º-22.75'W	Exclusion - Keep oil out of Piper Creek estuary	200'	Close off both culverts where RR crosses creek.	Carkeek Park - Parking lot	Road access from Shilshole Bay or Edmonds, difficult to reach by land.	Protect salmon. Active public watershed enhancement area. Note - oil only will enter under extreme tide/flow conditions.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-5	Field visit 3/97	Piper Creek - Outer Strategy KIN0020 47º-42.70'N 122º-22.75'W	Exclusion - Keep oil out of Piper Creek estuary and intertidal area.	1000'	Secondary Strategy - Deploy chevron at creek mouth. Note - oil will enter only under extreme tide/flow conditions. Deploy boom from land at low water.	Richmond Beach park parking lot.	By boat Shilshole Bay or Edmonds.	Protect salmon. Active public watershed enhancement area. Note - oil only will enter creek under extreme tide/flow conditions.
CPS-6	Field Tested 3/97	Appletree Cove KIT0339 47º-47.55'N 122º-30.00'W	Exclusion/Collection - Prevent oil from entering Appletree Cove mud flats and intertidal area.	1500'	Attach 200 feet of intertidal to south end of cove at treeline east of retaining wall. Connect with 1300 feet of harbor boom which should be attached to the south end of the breakwall. (variation, attach to piling first and then to breakwall. 3 anchors should be placed in and 3 outside of boom. Collection can take place in cusps that form between anchors.	Kingston Marina.	Accessible from Kingston Marina, road access around cove. Note - beach to South is a natural collection area.	Crab larvae / adults.
CPS-7	New strategy 12-04	Doe-Kag-Wats Marsh, east of Indianola KIT0323 47º-44.69'N 122º-29.68'W	Exclusion	1000'	Deploy boom in a chevron configuration in front of the entrance to the marsh. Current is very strong in entrance channel during tidal changes. Oil could be collected with a vac truck from the west side of the boom.	Indianola.	Boat access from Mller Bay or Shilshole. Vehicle access through Indianola and a church camp.	Sensitive nesting species, waterfowl concentrations; Suquamish Tribe land.
CPS-8	Field tested 9/96	Outer Miller Bay KIT0300 47º-44.85'N 122º-33.30'W	Exclusion - Prevent oil from entering bay.	800'	Anchor boom at south end of south shore to close off entrance.	Boat launch area within Miller Bay.	Boat access from Miller Bay, East of Indianola, or private launch in Suquamish.	Great Blue Heron and waterfowl concentrations; salmonid concentrations.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-9	Field tested 9/96	Inner Miller Bay KIT0306 47º-45.65'N 122º-33.20'W	Exclusion - Prevent oil from entering creek mouth.	300'	Close off creek mouth.	Boat launch area within Miller Bay.	Boat access from Miller Bay, East of Indianola, or private launch in Suquamish.	Great Blue Heron and waterfowl concentrations; salmonid concentrations.
CPS-10	Field visit 6/94	Point Monroe Lagoon KIT0666 47º-42.40'N 122º-30.95'W	Diversion / Collection - Keep oil out of the lagoon.	1000'	Deploy boom in a chevron configuration from the Pt. Monroe sand spit to the shoreline to the south to close off the entrance to the lagoon.	Fay Bainbridge State Park (boat launch).	Boat launch at Fay Bainbridge State Park; private and public access near area for vehicles.	Protect fish & wildlife resources.
CPS-11	Field visit 6/94	Port Madison KIT0673 47º-42.20'N 122º-31.60'W	Deflection / Collection - Prevent oil from entering Port Madison.	1200'	Deploy boom at an angle across the entrance of Port Madison to divert oil to the east shore near the road for collection.	Fay Bainbridge State Park (boat launch).	Boat launch at Fay Bainbridge State Park; private and public access for vehicles.	Protect fish & wildlife resources.
CPS-12	Field visit 6/94	Keyport Lagoon KIT0232 47º-41.90'N 122º-37.10'W	Exclusion - Keep oil out of lagoon.	200'	Close causeway and add 200' of protective boom in front of causeway.	Keyport Naval Base.	Access by vehicle from downtown Keyport, boat access from Naval Base or fuel dock at Poulsbo.	Pigeon Guillemots.
CPS-13	Field visit 6/94	Entrance to Liberty Bay KIT0233 47º-41.95'N 122º-36.80'W	Diversion/ Collection - Prevent oil from entering Liberty Bay.	1000'	Anchor at launch ramp, collect oil between launch ramp and stone rip-rap. Caution - Pipeline Area.	Keyport Naval Base.	Vehicle access from downtown Keyport, boat access from Naval Base or Poulsbo fuel dock.	Marine birds, waterfowl, & baitfish spawning beaches.
CPS-14	Field visit 6/94	Entrance to Liberty Bay KIT0233 47º-42.15'N 122º-36.85'W	Diversion/ Collection - Prevent oil from entering Liberty Bay.	1000'	Anchor at launch ramp, collect oil between launch ramp and stone rip-rap. Caution - Pipeline Area.	Keyport Naval Base.	Vehicle access from downtown Keyport, boat access from Naval Base or Poulsbo fuel dock.	Marine birds, waterfowl, & baitfish spawning beaches.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-15	Field visit 6/94	Entrance to Liberty Bay KIT0234 47º-42.30'N 122º-37.15'W	Diversion/ Collection - Prevent oil from entering Liberty Bay.	1000'	Anchor at launch ramp, collect oil between launch ramp and stone rip-rap. Caution - Pipeline Area.	Keyport Naval Base.	Vehicle access from downtown Keyport, boat access from Naval Base or Poulsbo fuel dock.	Marine birds, waterfowl, & baitfish spawning beaches.
CPS-16	Field visit 6/94	Liberty Bay KIT0275 47º-42.50'N 122º-37.50'W	Diversion/ Collection - Divert and collect oil before it can reach Liberty Bay.	500'	Angle north leg toward the east to collect oil in North of bay.	Keyport Harbor.	Boat access from Keyport Marina, Naval Base, fuel dock at Poulsbo.	Protect fish & wildlife resources in inner Liberty Bay.
CPS-17	Field visit 6/94	Liberty Bay KIT0236 47º-42.30'N 122º-37.60'W	Diversion/ Collection - Divert and collect oil before it can reach Liberty Bay.	500'	Locate south leg just West of power lines and East of the house w/ flagpole flying several state flags - Collect oil at small private ramp (caution pipeline area).	Keyport Harbor.	Boat access from Keyport Marina, Naval Base, fuel dock at Poulsbo.	Protect fish & wildlife resources in inner Liberty Bay.
CPS-18	Field visit 6/94	Manzanita Bay - East Inlet KIT0557 47º-40.53'N 122º-33.63'W	Exclusion - Prevent oil from entering bay.	900'	Place boom across East inlet.	Keyport Naval Base.	Boat access from Brownsville Marina, road access at bridge.	Protect herring spawning area.
CPS-19	Field visit 6/94	Manzanita Bay KIT0558 47º-40.47'N 122º-33.90'W	Exclusion - Prevent oil from entering bay.	2000'	Place booms in chevron configuration across mouth of bay; anchor to pilings. Large anchor at apex.	Keyport Naval Base.	Boat access from Brownsville Marina, road access at bridge.	Protect herring spawning area.
CPS-20	Field visit 6/94	University Pt. to Keyport	Exclusion - Prevent oil from reaching shore.	As much boom as is available to protect as much shoreline as possible.	Roving barriers along shore as needed - Need to make best guess as to where oil will landfall, protect most likely landfall areas.	Keyport Naval Base.	Boat access from Brownsville Marina, road access at bridge.	Sensitive nesting species & smelt spawning beach.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-21	Field visit 6/94	Burke Bay KIT0223 47º-39.05'N 122º-37.00'W	Exclusion - Prevent oil from entering Burke Bay.	400'	Deploy boom in a chevron configuration on the east side of the bridge.	Brownsville Marina.	Boat access from Brownsville marina, road access at bridge.	Blue heron rookery on South shore and wetlands in bay.
CPS-22	Field visit 6/94	Fletcher Bay KIT0578 47º-38.65'N 122º-34.60'W	Exclusion - Keep oil out of Fletcher Bay.	600'	Deploy boom in a chevron configuration across the entrance to the bay.	Vessel and/or Brownsville.	Boat launch at Brownsville, shoreline on both sides private.	Protect fish & wildlife resources.
CPS-23	Field visit 6/94	Illahee KIT0206 47º-36.05'N 122º-35.75'W	Exclusion - Keep oil out of creek.	200'	Deploy boom in a chevron configuration across mouth of the creek.	Illahee State Park.	Road access via Illahee Rd.	Waterfowl & salmonids.
CPS-24	Field visit 6/94	Illahee State Park KIT0206 47º-36.05'N 122º-35.75'W	Exclusion - Keep oil off shoreline.	2200'	Anchor boom from SE shore to mooring buoys then to dock and into NE shore at the bulkhead.	Illahee State Park.	Illahee State Park boat launch.	State Park beaches.
CPS-25	Field visit 6/94	Oyster Bay KIT0145 47º-34.90'N 122º-40.60'W	Exclusion - Keep oil out of bays.	500'	Close off mouth to Oyster Bay w/ 250' sections anchored to boulders, trees & pilings.	Bremerton Naval Hospital (helo pad).	Boat access.	Sensitive nesting species, smelt and sand lance spawning area.
CPS-26	Field visit 6/94	Mud Bay KIT0128 47º-35.70'N 122º-40.30'W	Exclusion - Keep oil out of bay.	1000'	Place chevron w/ apex to the North - Need land and (4) 70lb anchors.	Bremerton Naval Hospital (helo pad).	Boat access.	Sensitive nesting species, smelt and sand lance spawning area.
CPS-27	Field visit 6/94	Ostrich Bay KIT0152 47º-35.65'N 122º-40.85'W	Exclusion - Keep oil out of bays.	3500'	Form chevron at mouth of Ostrich Bay anchored to dock at Elwood Pt. and to East shore.	Bremerton Naval Hospital (helo pad).	Boat access.	Sensitive nesting species, smelt and sand lance spawning area.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-28	Field visit 6/94	Chico Creek KIT0162 47º-36.20'N 122º-42.25'W	Exclusion - Prevent oil from entering creek.	200'	Place boom across the mouth of Chico Creek.	Bremerton Naval Hospital (helo pad).	Road access via Hwy 3.	Salmon.
CPS-29	Field visit 6/94	Baker Creek KIT0173 47º-38.80'N 122º-41.50'W	Exclusion - Prevent oil from entering creek estuary.	200'	Close off flat in front of creek; High water deploy from boat, Low water from road.	Silverdale.	Boat and vehicle from Silverdale, Traceyton Beach Rd goes over mouth of creek.	Waterfowl concentrations.
CPS-30	Field visit 6/94	Lagoon near Clear Creek KIT0175 47º-38.90'N 122º-40.95'W	Exclusion - Prevent oil from entering lagoon.	100'	Close off small lagoon to SE of Clear Creek.	Silverdale.	Boat from Silverdale.	Waterfowl concentrations; wetlands.
CPS-31	Field visit 6/94	Clear Creek KIT0174 47º-39.00'N 122º-41.10'W	Exclusion - Prevent oil from entering creek estuary.	200'	Close off flat in front of creek (two culverts where road crosses creek) High water = deploy from boat; Low water = from road.	Silverdale.	Boat and vehicle from Silverdale, Bucklin Hill Rd goes over Clear Creek.	Waterfowl concentrations; wetlands upstream.
CPS-32	Field tested 8/96	Bremerton Naval Shipyard KIT0096 47º-33.70'N 122º-37.40'W	Deflection / Collection - Prevent oil from going up Dyes Inlet.	1000' (untended) or 2000' (boat tended)	Anchor to cement pilings under ferry terminal; run boom out at a SW angle. Deflect oil into cement pocket next to shipyard property - Collect w/ vac truck. Note - notify ferry control tower to have captains come in and out on a slow bell.	Bremerton Naval Shipyard & Ferry dock parking lot.	Access by vehicle and vessel from the shipyard (360-476-3467), or by vessel from the Bremerton Yacht Club.	Waterfowl concentrations.
CPS-33	Field tested 6/97	Bremerton Naval Shipyard KIT0090 47º-33.15'N 122º-39.60'W	Deflection - Deflect oil from entering the head of Sinclair Inlet.	2000'	Use shore anchor to anchor boom from west end of PSNS; extend out to anchor system or tend with boat.	Bremerton Naval Shipyard - has boom to deploy from their waterfront.	Naval shipyard (360-476-3467), Bremerton Yacht Club, Lyons Park, Downtown City Park.	Waterfowl, shorebird & seabird concentrations.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-34	Field visit 6/94	Blackjack Creek KIT0070 47º-32.60'N 122º-37.60'W	Exclusion - Keep oil out of creek.	200'	Close off mouth of creek - stake boom to the flat; tide condition dependent - Shallow deploy from road.	Bay Ford - Port Orchard Marina.	Port Orchard Marina, Bremerton Yacht Club, road access to the site.	Waterfowl concentrations.
CPS-35	Field tested 6/97	Port Orchard Marina KIT0072 47º-32.65'N 122º-38.15'W	Deflection/ Collection - Prevent oil from reaching shoreline of Sinclair Inlet.	2500'	Anchor boom along the east edge of marina dock and extend out at angle toward reflector markers. Collect at dock with vac trucks.	Port Orchard Marina / Fuel dock.	Port Orchard Marina, Bremerton Yacht Club, Naval Shipyard.	Waterfowl, shorebird & seabird concentrations.
CPS-36	Field tested 6/97	Ross Point KIT0076 47º-32.40'N 122º-39.65'W	Exclusion - Protect shoreline from oil.	2200'	Depending on direction of tidal flow, secure one end of boom to beach on east or west side of point; extend out to deflect away from point. Boom must be tended by boat.	Port Orchard Marina (fuel).	Port Orchard Marina, Bremerton Yacht Club. Road access possible to point.	Waterfowl & shorebird concentrations, smelt spawning area.
CPS-37	Field tested 8/96	Sinclair Inlet head (south side KIT0079, north side KIT0085) 47º-31.90'N 122º-40.95'W	Deflection / Collection - Prevent oil from entering inlet.	3000'	Apex at outermost log buoy, adjust leg angle to make chevron.	Port Orchard Marina (fuel).	Port Orchard Marina, Bremerton Yacht Club, road access to the site.	Waterfowl, shorebird & seabird concentrations - High Priority.
CPS-38	Field visit 6/94	Lynnwood Center / Rich Passage KIT0704 47º-31.80'N 122º-29.05'W	Collection - Enhance natural collection site.	1500'	Deploy boom from North shore to collect oil in eddy.	Manchester Fuel depot.	Road access from Pt. White Dr.	General protection of fish and wildlife resources.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-39	Field visit 6/94	Clam Bay / NMFS Fish Net Pens KIT0050 47º-34.45'N 122º-32.60'W	Exclusion/ Collection - Prevent oil from reaching NMFS Fish Net Pens.	1000'	Surround the net pens at the end of the NMFS pier. Note - does not address adjacent net pens anchored in the mouth of the bay that are privately owned.	Manchester or Bremerton.	Roads on the inside of Clam Bay.	Salmon in net pens at NMFS pier (but not the commercial pens).
CPS-40	New strategy 11/02	Clam Bay Tide Flats/ Beaver Creek KIT0049 47º-34.30'N 122º-32.90'W	Exclusion - Keep oil out of the tide flats and Beaver Creek.	1200'	Deploy boom in a chevron configuration across the front of the tide flats east of the mouth of Beaver Creek and the NMFS buildings.	Manchester or Bremerton.	Roads on the inside of Clam Bay.	Fish ladder at Beaver Creek; coho and chum salmon, sea run cutthroat. Tidal flat habitat, waterfowl concentrations, herons from rookery in Little Clam Bay.
CPS-41		Little Clam Bay KIT0048 47º-34.10'N 122º-32.75'W	Exclusion - Keep oil out of Little Clam Bay.	100'	Shut down tide gate during incoming tide. Boom the gate if it cannot be closed or it leaks.	Manchester or Bremerton.	Roads on the inside of Clam Bay.	Endangered salmon.
CPS-42	Field visit 6/94	Yukon Harbor / Curley Creek KIT0038 47º-31.45'N 122º-32.70'W	Exclusion - Prevent oil from entering marsh @ high tide.	100'	Place boom across creek at bridge, deploy from road.	Southworth or Manchester.	Road access.	Marsh area upstream.
CPS-43	Field visit 6/94	County Park north of Southworth (Colby Bay, at Harper) KIT0033 47º-31.10'N 122º-31.00'W	Exclusion - Keep oil out of inlet.	1000'	Close off mouth of inlet, anchor to pilings on East shore and road guard-rail on West shore.	Manchester boat launch.	Harper Co. Park small boat launch @ high tide.	Protect county park and eelgrass beds.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-44	Field visit 6/99	Blake Island SE corner KIT0704 47º-31.80'N 122º-29.05'W	Deflection - Deflect oil away from shore.	2000'	Pivot boom around point depending on current - Need to tend end of boom w/ boat.	Harbor Island.	Access by boat.	Sensitive nesting species, eelgrass, piniiped feeding area, hardshell clams along entire S shore, State Park.
CPS-45	Field visit 6/99	Blake Island East Site KIT0696 47º-32.45'N 122º-28.80'W	Deflection - Deflect oil away from shore.	1000'	Pivot boom around point depending on current - Need to tend end of boom w/ boat.	Harbor Island.	Access by boat.	Sensitive nesting species, eelgrass, piniiped feeding area, hardshell clams along entire S shore, State Park.
CPS-46	Field visit 6/99	Blake Island marina KIT0696 47º-32.55'N 122º-28.95'W	Deflection - Deflect oil away from shore.	500'	Place boom across mouth of marina anchor to break water.	Harbor Island.	Access by boat.	State Park Marina.
CPS-47	Field test 6/99	Blake Island NW corner KIT0699 47º-32.65'N 122º-30.25'W	Deflection - Deflect oil away from shore.	1000'	Pivot boom around point depending on current - Need to tend end of boom w/ boat.	Harbor Island.	Access by boat.	Sensitive nesting species, eelgrass, piniiped feeding area, hardshell clams along entire S shore, State Park.
CPS-48	Field visit 6/94	Blakely Harbor KIT0613 47º-35.75'N 122º-30.25'W	Exclusion - Keep oil out of the back of Blakely Harbor.	1500'	Close at mid-harbor - Need large land anchors. If unable to deploy boom at mid-harbor, boom across narrow opening at head of bay (200' chevron).	Eagle Harbor marina & County Park.	Good road access along the S. end.	Smelt spawning area.
CPS-49	Field visit 6/94	Eagle Harbor KIT0635 47º-37.20'N 122º-30.50'W	Exclusion.	3000'	Close off harbor at ferry dock; deploy boom from west side of ferry dock to pilings just west of old creosote plant.	Winslow Ferry.	Access by boat or roads north and south ends of harbor.	Smelt spawning habitat.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-50	Visit 5/00	Lake Washington Ship Canal 47º-39.20'N 122º-21.60'W	Exclusion/ Collection - Keep oil out of Puget Sound.	300'	Boom across canal; use skimmer along boom; anywhere along canal that is appropriate/ accessible.	Salmon Bay Marina; bridge - lots.	Roads on both sides of canal - deploy boom by boat only.	Protect salmon migration area.
CPS-51	No field visit/ test	Lake Washington Ship Canal KIN0037 47º-39.90'N 122º-23.75'W	Exclusion - Prevent oil from reaching Locks.	1200'	Boom across the canal from the old Time Oil Co. facility on the south shore, just east of the locks, to solid shoreline beyond the wooden pier on the north shoreline.	Old Time Oil Co. facility.	Roads on both sides of canal.	Protect the locks, fish and wildlife.
CPS-52	No field visit/ test	Chittenden Locks - Salmon Bay KIN0037 47º-40.00'N 122º-23.75'W	Exclusion - Keep oil in lakes.		Notify Lock Master at 206-783-7000. Lock master will close the locks, fish ladder, and spillway gates and await further guidance from Unified Command.	Oil facilities just above locks.	Roads on both sides of channel.	Protect fish & wildlife resources.
CPS-53	Field visit 7/95	South of Ship Canal KIN0043 47º-40.20'N 122º-24.95'W	Diversion.	1000'	Angle boom NNW from the shoreline south of the ship canal. Divert to skimmer for collection.	Shilshole Bay Marina.	Road access on Metro property (lower boom); boat for upper boom.	Kelp and rockfish eel grass habitat just south of ship canal entrance.
CPS-54	Field visit 7/95	South of Ship Canal KIN0045 47º-40.05'N 122º-25.30'W	Diversion.	1000'	Use diversion boom - Angle NNW from the shoreline south of the ship canal.	Shilshole Bay Marina.	Road access on Metro property (lower boom); boat for upper boom.	Kelp and rockfish eel grass habitat just south of ship canal entrance.
CPS-55	Visit 5/00	West Point KIN0047 47º-39.75'N 122º-26.10'W	Diversion or Deflection (depending on tide)	1000'	Angle boom close to shore to keep oil from coming back around point, enhance natural deflection of point, can pivot boom around point depending on oil direction and tide.	Shilshole Bay Marina	Boat only - use Armeni ramp, take exit 163 off I-5, follow to Harbor Is. exit, go right 1.1 miles.	Protect kelp beds to the N & S and rock fish habitat.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-56	Visit 5/00	Magnolia Bluff KIN0054 47º-38.60'N 122º-25.00'W	Deflection.	1000'	Angle boom SW from shore; angle dependent on wind direction; deflect to skimmers.	Shilshole, or Magnolia Park.	Boat only - use Armeni ramp (see CPS-55).	Protect kelp and eelgrass areas to the North.
CPS-57	Field visit 7/95	Elliott Bay Marina KIN0059 47º-37.75'N 122º-23.75'W	Deflection - Keep oil out of adjacent kelp beds.	1000'	Anchor to west end of marina breakwater and extend to SW, anchoring in approx. 45' of water.	Elliott Bay Marina; Pier 91.	Elliott Bay Marina.	Kelp beds to west of Elliott Bay Marina.
CPS-58	Visit 5/00	Pier 91 KIN0061 47º-37.60'N 122º-22.80'W	Exclusion/ Collection - Prevent oil from reaching Puget Sound or collect at pier.	1000'	Deploy boom across the end of the pier for spills from the pier. For spills in Elliott Bay, deploy boom from the end of the pier for collection.	Elliott Bay Marina; Pier 91.	Deploy boom by boat only - use Armeni ramp (see CPS-55).	General protection of fish and wildlife resources.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-59a	Field test 8/03	Harbor Island - East Waterway, North End, **PRIMARY STRATEGY**	Exclusion/ Collection - Prevent oil in the waterway from entering Elliott Bay.	1100'	Deploy boom across the north end of the East Waterway from the north end of the Kinder-Morgan perma-boom under Terminal 18 at linear foot marker 2150 (47º-35.074'N, 122º-20.762'W, KIN0112), NE at a deflection angle to where the sheet piling meets the rip-rap beach on the east side of the waterway (47º-35.152'N, 122º-20.578'W, KIN0075). Collect with skimmers/vac trucks at the beach on the east shore from Terminal 30. For small spills, if possible, boom only one side of the waterway to allow vessel traffic in and out. For spills in Elliott Bay, allow oil to enter the waterway and then deploy boom to prevent oil from moving back into Elliott Bay.	Harbor Island.	Numerous access points from Harbor Island.	Elliott Bay/ Puget Sound resources.
CPS-59b	Field visit 8/03	Harbor Island - East Waterway, North End, **BACKUP STRATEGY #1**	Exclusion/ Collection - Prevent oil in the waterway from entering Elliott Bay.	1800'	If the current in the East Waterway is too strong for effective containment with CPS-59a, also deploy boom across the waterway from the north end of the Kinder-Morgan perma-boom under Terminal 18 at linear foot marker 2150 (47º-35.074'N, 122º-20.762'W, KIN0112), NE at a deflection angle to the Port of Seattle public access park beach just south of the USCG property on the east side of the waterway (at 47º-35.303'N, 122º-20.569'W, KIN0074). Collect with skimmers/vac trucks from the public access beach on the east shore.	Harbor Island.	Numerous access points from Harbor Island.	Elliott Bay/ Puget Sound resources.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-59c	Field visit 8/03	Harbor Island - East Waterway, North End, **BACKUP STRATEGY #2**	Exclusion/ Collection - Prevent oil in the waterway from entering Elliott Bay.	1300'	If strategies CPS-59a & b are not containing oil in the waterway, also deploy boom across the waterway from where the sheet piling meets the rip-rap at the far northwest corner of Terminal 18 (at 47º-35.419'N, 122º-20.790'W, KIN0114), under the pier and SE at a deflection angle to the Port of Seattle public access beach on the east side of the waterway (at 47º-35.303'N, 122º-20.569'W, same site as in CPS-59b, KIN0074). Collect with skimmers/vac trucks on the west shore from Terminal 18. For spills in Elliott Bay, allow oil to enter the waterway and then deploy boom to prevent oil from moving back into Elliott Bay.	Harbor Island.	Numerous access points from Harbor Island.	Elliott Bay/ Puget Sound resources.
CPS-60	Field test 8/03	Harbor Island - East Waterway, South End KIN0079 and KIN0108	Exclusion/ Collection - Prevent oil from moving into the Duwamish Waterway.	500'	Deploy boom across the south end of the East Waterway from the west side near Olympic Tug and Barge (at 47º-34.373'N, 122º-20.737'W) to the east side near the bridge at Rainier Cold Storage (at 47º-34.311'N, 122º-20.679'W). Collect at the east side.	Harbor Island.	Numerous access points from Harbor Island.	Heron nesting areas, waterfowl, wetland habitat.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-61	Field visit 10/96	Harbor Island KIN0115 47º-35.35'N 122º-21.10'W	Diversion/ Collection.	2000'	Deploy boom from the end of the Rainier Petroleum Pier (perma-boom extends the length of the pier) to divert oil from Elliott Bay for collection at the base of the pier. Deploy boom at an angle that is most effective for collection depending on the source and movement of the oil.	Rainier, TODD facilities.	Rainier, TODD facilities.	General protection of fish and wildlife resources.
CPS-62	Field tested 9/95	Harbor Island - West Waterway, North End KIN0103 47º-34.95'N 122º-21.50'W	Exclusion/ Collection - Prevent oil in the waterway from entering Elliott Bay.	1200'	Deploy boom from the north end of the BP/Arco pier to the old fire station pier on the west shore using a rolling bridle. For spills in Elliott Bay, allow oil to enter the waterway and then deploy the boom to prevent oil from moving back into Elliott Bay. Collect with skimmers/vac trucks.	Rainier, Todd, Arco facilities (Arco has 2,500' boom on a reel).	Rainier, Todd, Arco facilities.	Elliott Bay/ Puget Sound resources.
CPS-63	New strategy 11/02	Harbor Island - West Waterway, South End KIN0097 47º-34.44'N 122º-21.36'W	Exclusion/ Collection - Prevent oil from moving into the Duwamish Waterway.	1000'	Deploy boom across the south end of the West Waterway at a site suitable for collection from shore with a vac truck.	Rainier, Todd, Arco facilities.	Numerous access points from Harbor Island.	Heron nesting areas, waterfowl, wetland habitat.
CPS-64	Field visit 6/94	Kellogg Island KIN0094 47º-33.60'N 122º-20.85'W	Exclusion / Collection - Protect backwaters west of Kellogg Island.	1600'	1600' on North entrance, anchor to pilings, boom around small island, can also connect to barges.	Ideal Cement - across shore from Crowley.	Ideal Cement - across shore from Crowley.	Heron nesting area, waterfowl, only developed area in waterway.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-65	Field test 6/02	Kellogg Island KIN0093 47º-33.45'N 122º-20.70'W	Exclusion / Collection - Protect backwaters west of Kellogg Island.	800'	Boom gaps in barges to protect East side of island.	Ideal Cement - across shore from Crowley	Ideal Cement - across shore from Crowley.	Heron nesting area, waterfowl, only developed area in waterway.
CPS-66	Field visit 6/94	Kellogg Island KIN0092 47º-33.35'N 122º-20.55'W	Exclusion / Collection - Protect backwaters west of Kellogg Island.	1000'	SE corner angle 1000' section off end of Ideal Cement dock to divert oil into main channel (reverse direction when tide changes).	Ideal Cement - across shore from Crowley.	Ideal Cement - across shore from Crowley.	Heron nesting area, waterfowl, only developed area in waterway.
CPS-67	Field visit 6/02	SE of Kellogg Island KIN0083 47º-33.40'N 122º-20.45'W	Exclusion - Prevent oil from entering small inlet.	300'	Boom across inlet SE of Kellogg Island; existing pre-deployed boom needs repair.	Port of Seattle.	Port of Seattle (728-3732).	Wetland habitat.
CPS-68	Field visit 6/94	Lone Star Cement Dock KIN0091 47º-32.95'N 122º-20.35'W	Exclusion - Keep oil out of marsh area.	1000'	Place boom outside of the cement piled dock to protect the marsh area west of the dock.	Port of Seattle.	Lone Star Cement Co.	Wetland, bird rookery.
CPS-69	Field test 6/02	Northwest Cooperage (barrel factory) 47º-31.15'N 122º-18.40'W	Exclusion - Keep oil out of small inlet.	200'	Place boom at mouth of inlet behind barrel factory.	Parking lot above GRP.	NW Cooperage.	Wetland habitat.
CPS-70	Field visit 6/94	Alki Point KIN0129 47º-34.60'N 122º-25.20'W	Deflection - Deflect oil away from shore toward skimmers.	1000'	Pivot boom around point depending on current - Need to tend end of boom w/ boat.	US Coast Guard lighthouse.	Access by boat or road.	Public Beaches.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-71	Field visit 8/94	Olalla Bay KIT0010 47º-25.30'N 122º-32.42'W	Exclusion - Keep oil out of Olalla Bay.	600'	Deploy boom in chevron configuration at mouth of bay.	Olalla Bay boat ramp	Cresent Valley Rd. on South side of bay has public ramp and parking.	Waterfowl.
CPS-72	Field visit 8/94	Richmond Point PIE0526 47º-22.63'N 122º-32.25'W	Diversion/ Collection - Prevent oil from flowing further north into Colvos Passage.	2000'	Deploy from beach in N/S direction with boat in J configuration to catch oil. Tend end w/ boat, collect oil in hook w/ portable skimmer.	Tacoma - Point Defiance.	Road access to point off Hallstrom Dr NW.	Waterfowl, murres.
CPS-73	Field visit 8/94	Spring Beach KIN0408 47º-20.95'N 122º-31.63'W	Diversion/ Collection - Prevent oil from flowing further north into Colvos Passage.	2000'	Anchor to pilings and deploy at an angle to SW, tend end of boom w/ boat. Collect oil at small group of houses with permission from owners, w/ vac trucks or portable skimmers (Note: Currents are generally northward on all tides).	Tacoma - Point Defiance.	Road access to Spring Beach via SW 280th St.	Waterfowl, murres.
CPS-74	Field visit 8/94	Gig Harbor PIE0502 47º-19.60'N 122º-34.45'W	Exclusion/ Deflection/ Collection - Keep oil out of harbor.	1000'	Place chevron across mouth, anchor to dock w/ davit on West side & to East spit w/ land anchor (may be able to use bridle on small lighthouse).	Gig Harbor.	Road access to both sides of harbor.	Smelt spawning.
CPS-75	Field visit 8/94	same as above	Exclusion/ Deflection/ Collection - Keep oil out of harbor.	500'	Angle boom behind chevron (CPS-74) from lighthouse NW to sand beach by private ramp next to flagpole.	same as above.	same as bove.	same as bove.
CPS-76	Field visit 5/95	Point Defiance Park PIE0105 47º-18.48'N 122º-31.00'W	Exclusion - Keep oil away from herring tanks, water intake, and public beach.	200'	Deploy boom around herring tank/ water intake.	Point Defiance.	Roads; marina; Vashon ferry dock.	Aquarium herring resources offshore; public recreation area. Water intake at 14' depth.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-77	Field visit 5/95	same as above	same as above.	1000'	Enclose tank, beach, and water intake with chevron extending from boat house to west shoreline.	Point Defiance.	Roads; marina; Vashon ferry dock.	same as above.
CPS-78	Field visit 8/94	Quartermaster Harbor, south end KIN0226 47º-21.00'N 122º-29.35'W	Deflection/ Collection - Keep oil out of harbor.	2000'	Angle boom SE from West shore, tend end of boom w/ boat, collect oil w/ portable skimmers (strategy best implemented by boat).	Tacoma Note: Pier 23 National Guard landing craft could bring over vac trucks.	Road to SW side of harbor, boat access - Burton & Dockton Co. Park boat ramps.	Same as above.
CPS-79	Field visit 8/94	Quarter-master Harbor, south end KIN0284 47º-21.20'N 122º-28.50'W	Deflection/ Collection/ Exclusion - Keep oil out of harbor.	2000'	Angle 2000' section SW from sand beach near Manzanita, collect oil at beach w/ vac trucks.	Tacoma Note: Pier 23 National Guard landing craft could bring over vac trucks.	Roads on both sides; quickest access - Point Defiance.	Highly sensitive area: Herring, smelt, sandlance, waterfowl & seabird concentrations, Great Blue Heron colony, Scoters.
CPS-80	Field visit 8/94	Quartermaster Point - Point N. of Dockton KIN0278 47º-22.45'N 122º-27.80'W	Diversion/ Collection - Keep oil out of the North end of Quartermaster Harbor.	2000'	Anchor at the large dock w/ yellow building; angle out to the SW to trap oil at flood tide; collect w/ portable skimmers & vac trucks.	Dockton Co. Park dock & boat ramp.	Dockton Road S.W.; quickest access - Point Defiance.	Same as above.
CPS-81	Field Test 4/97	Quatermaster Harbor, boat ramp @ Burton KIN0246 47º-23.15'N 122º-26.65'W	Deflection/ Collection/ Exclusion - Prevent oil from reaching the north end of the harbor.	3000'	Deploy boom from the point adjacent to the boat ramp at an angle to the southeast to the opposite shore. Collect with vac trucks at the boat ramp.	Boat ramp parking lot NW side of harbor.	By boat or ferry to Vashon and then ramp parking lot NW side of harbor.	Same as above.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-82	Field visit 1/03	Thea Foss Waterway PIE0089 47º-15.70'N 122º-26.20'W	Deflection/ Collection/ Containment - Keep oil in or out of waterway.	1000'	Deploy boom from the Shore Terminal LLC dock on the east shore across the waterway to a suitable anchor point on the west shore. Deploy at an angle to collect at the dock.	Old fire dept. building and dock near 11th St bridge and opposite the Foss Waterway Marina.	Land access from Shore Terminal LLC. Road access on both sides of waterway.	Salmonids in wetlands and creeks at head of waterway. Conservation area (check on ownership).
CPS-83	Field test 12/02	Middle Waterway PIE0075 47º-15.85'N 122º-25.90'W	Exclusion - Keep oil in or out of waterway.	400'	Boom across the waterway from the Foss dock on the west shore to the east shore south of the Clean Sound Cooperative barge.	Foss Facility has dock w/ 100,000 lb capacity and a launch ramp.	Road access to both sides of waterway (Private Property).	Salmonids in wetlands and creeks at head of waterway. Conservation area (check on ownership).
CPS-84	Field test 12/02	Middle Waterway PIE0076 47º-15.62'N 122º-25.87'W	same as previous.	400'	Deploy boom from the north side of the green boat house on the west side of the waterway in a north northeast direction to the east shore in front of the brown building.	same as previous.	same as previous.	same as previous.
CPS-85	Field visit 9/94	St. Paul Waterway PIE0074 47º-15.95'N 122º-25.80'W	Exclusion - Keep oil in or out of waterway.	400'	Angle from pilings to dolphins.	Simpson Plant.	Road access to both sides of waterway (Private Property).	Same as above + mudflat N of waterway is a Super Fund restoration site.
CPS-86	Field visit 9/94	St. Paul Waterway PIE0073 47º-16.00'N 122º-25.80'W	Deflection - Deflect from waterway.	1200'	Waterway spill: place deflection boom off North point to protect mudflats.	Simpson Plant.	Road access to both sides of waterway (Private Property).	Same as above + mudflat N of waterway is a Super Fund restoration site.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-87	Field visit 9/94	Sitcum Waterway PIE0058 47º-16.30'N 122º-25.15'W	Exclusion - Keep oil in or out of waterway.	1500'	Angle SW from end of concrete abuttment on East shore to pilings on West shore.	Port of Tacoma Office, head of Sitcum Waterway.	Access through gate on W shore.	Salmonids in wetlands and creeks at head of waterway; Puget Sound resources.
CPS-88	Field visit 9/94	Mouth of Blair Waterway PIE0056 47º-16.70'N 122º-24.70'W	Exclusion - Keep oil in or out of waterway	1300'	Angle from tip of Pier 2 to the opposite shore at mouth of waterway.	Port of Tacoma Office, head of Sitcum Waterway	Road access to both sides of waterway (Private Property).	Salmonids in wetlands and creeks at head of waterway. Conservation area (check on ownership).
CPS-89	Field tested 99	Inner Blair Waterway PIE0041 47º-16.30'N 122º-24.05'W	Exclusion - Keep oil in or out of waterway.	1000'	Place chevron just SE of where 11th St. bridge was & just NW of Lincoln Ave.	Port of Tacoma Office.	Road access to both sides of waterway (private property).	Puget Sound resources.
CPS-90	Field tested 99	Inner Blair Waterway PIE0053 47º-16.20'N 122º-24.10'W	Exclusion - Protect mitigated wetland area SE of 11 st bridge.	500'	For small spills in waterway, place boom across mouth of mitigation area.	Port of Tacoma Office.	same as previous.	Wetland.
CPS-91	Field tested 99	Inner Blair Waterway PIE0053 47º-16.25'N 122º-24.10'W	Collection - Keep oil in waterway.	1000'	For large spills in waterway, use boom to deflect oil into the wetland mitigation area for collection.	Port of Tacoma Office.	same as previous.	Puget Sound resources.
CPS-92	Field tested 99	Inner Blair Waterway PIE0052 47º-15.95'N 122º-23.70'W	Protect mitigated wetland area between US Oil dock and Linconln Outfall.	500'	Place boom across mouth of wetland area.	Port of Tacoma Office.	Road access to both sides of waterway (private property).	Wetland.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-93	Field tested 9/95	Inner Blair Waterway PIE0051 47º-15.90'N 122º-23.50'W	Keep oil out of waterway.	300'	Place boom around Lincoln Ave. ditch outfall.	same as previous.	same as previous.	Puget Sound resources.
CPS-94	Field tested 9/95	Inner Blair Waterway PIE0051 47º-15.90'N 122º-23.50'W	Keep oil out of waterway.	1000'	Surround CPS-93 with a chevron.	same as previous.	same as previous.	Puget Sound resources.
CPS-95	Field tested 9/95	Inner Blair Waterway PIE0044 47º-15.90'N 122º-23.40'W	Keep oil in or out of waterway.	1000'	Place boom from just SE of Lincoln Ave. ditch outfall to steel pole in parking lot NW of casino.	same as previous.	same as previous.	Puget Sound resources.
CPS-96	Field visit 11/01	Hylebos Waterway PIE0019 47º-16.65'N 122º-23.40'W	Exclusion - Protect mudflat.	2000'	Anchor just east of 11th St. bridge on the north side (at 47º-16.685'N 122º-23.533'W), east to the east end of the Sound Refining Dock.	Olie & Charlie's Marina.	Road access via Hwy 509 (Marine View Drive).	Mudflats, waterfowl.
CPS-97	Field test 11/01	Hylebos Waterway PIE0018 47º-16.45'N 122º-23.46'W	Exclusion - Protect mudflat.	1000'	Deploy boom from an anchor point just west of the 11th St. bridge on the north side, to the north end of the dock at the Chinook Marina to the west of the bridge (at 47º-16.797'N 122º-23.892'W). An additional 500' of boom can be deployed from the Chinook dock to the southeast to collect oil coming from the east.	same as previous.	same as previous.	Mudflats, waterfowl.

4.3.2 Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
CPS-98	Field test 11/01	Hylebos Waterway PIE0016 47º-16.93'N 122º-24.18'W	Exclusion - Keep oil in or out of waterway.	1000'	Deploy 600' of boom from the rip-rap or old dock on the south shore (at 47º-16.898'N 122º-24.264'W) to the end of the finger pier at the west end of the Chinook Marina if oil is coming from the east. If oil is coming from the west, deploy an additional 400' of boom from the finger pier to the north shore.	Oxy Chemical.	Road access via main gate at Oxy Chemical.	Salmonids in wetlands and creeks at head of waterway. Conservation area (check on ownership).
CPS-99	Field visit 11/01	Hylebos Waterway PIE0015	Exclusion - Protect mudflats.	3000'	Deploy boom from the north shore at the west end of Olie & Charlie's Marina (at 47º-17.088'N 122º-24.442'W) out to buoy "1", then back to shore just east of the log boom (at 47º-17.390'N 122º-24.467'W).	Olie & Charlie's Marina.	Road access via Hwy 509 (Marine View Drive).	Mudflats, waterfowl.

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 ex-cavated along the downgradient side. The berm should be covered with plastic or geo-textile sheeting to minimize wave erosion.	• Bulldozer/Motor grader -1 • Personnel - equipment operator & 1 worker • Misc. - plastic or geotextile sheeting	• 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.	• Geotextile - 3 m wide rolls • Personnel - 5 • Misc. - stakes or tie-down cord	• 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 • Wire mesh - 70 m x 2 m • Stakes - 20 • Sorbents - 30 m^2 • Personnel - 2 • Misc. - fasteners, support lines, additional stakes, etc.	• 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.	• Loader - 1 • Personnel - equipment operator & 1 worker or several workers w/shovels	• 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: • Boom - 280 m • Boats - 2 • Personnel - boat crews & 4 boom tenders • Misc. - tow lines, drogues, connectors, etc.	• 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 • Boats - 1 • Personnel - boat crew & 3 boom tenders • Misc.- 6 anchors, anchor line, buoys, etc.	• Currents > 0.5 m/s • Breaking waves > 50 cm • Water depth > 20 m
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 • Boom - 60 m • Boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit	• 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 • Boom - 60 m • boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit	• 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 • Boom - 200 m • Boats - 2 • Personnel - boat crews & 4 boom tenders • Misc. - tow lines, bridles, connectors, etc. Portable • Hoses - 30 m discharge • Oil storage - 2000 liters	• High winds • Swells > 2 m • Breaking waves > 50 cm • Currents > 1.0 m/s

Source is R. Miller of Clean Sound Cooperative.

Appendix B: Original Geographic Response Plan Contributors

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Appendix C: Geographic Response Plan Comments/Corrections/Suggestions

If you have any questions regarding this document or find any errors, please notify one of the following agencies: or use tear out sheet (page C-3)

- Washington Department of Ecology, SPPR program, Natural Resources Unit
- USCG Marine Safety Office Puget Sound, Planning Department
- USCG Marine Safety Office Portland
- Oregon Department of Environmental Quality
- Idaho Emergency Response Commission
- Environmental Protection Agency Region 10

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Oregon Department of Environmental Quality
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Office Of The Governor
Idaho Emergency Response Commission
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Environmental Protection Agency
Emergency Response Branch
1200 Sixth Avenue
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Geographic Response Plan

Comments/Corrections/Suggestions

Directions:
Fill in your name, address, agency, and phone number. Fill in the blanks regarding the location of information in the plan being commented on. Make comments in the space provided. Add extra sheets as necessary. Submit to: Dale Davis
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Spills Program
300 Desmond Drive
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dald461@ecy.wa.gov

Name: _____ Title:_____ Agency:_____

Address:_____

City: _____ State/Province:_____ Zip/Postal Code:_____

Phone: (____) _____ E-Mail:_____

GRP:_____Page Number:_____

Location on page (chapter, section, paragraph) (e.g. 2.1, paragraph 3):_____

Comments:_____

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Northwest Area Committee
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